HIGHWAYS AND PATHWAYS

EXPLORING NEW ZEALAND'S E-LEARNING OPPORTUNITIES

The Report of the E-Learning Advisory Group
March 2002

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He Ako Pūpekapeka

'Me he pūpekapeka e kore e taea e te matakahi'

Ka māmā te mahi a te matakahi mena kano tahi te tinana o te rākau engari kia tini ngā peka e kore e wāhi noa.

'Mā te tini peka e u ai te tumu mātauranga'

'The wedge easily splits the wood of a straight grained tree. However with many branches the wood holds firm.'

'Through multiple learning experiences the body of knowledge is realised.'

Minister's Foreword

I am delighted to receive this report by the E-Learning Advisory Group into e-learning. The Government wants our learners to have the highest-quality teaching and believes that e-learning has an important role to play in growing an innovative New Zealand.

The E-Learning Advisory Group was established by the government in July 2001 to provide advice to the Ministry of Education on innovative ways to achieve a strategic direction for e-learning in New Zealand's tertiary education sector. This group consisted of 10 sector representatives, with a wide range of skills and experience in e-learning initiatives.

We must recognise our successes: there are a large number of e-learning initiatives underway in the tertiary education sector. However, we must ensure our e-learning environment evolves in a manner that delivers high quality learning, has a sharp focus on the needs of the learner and can advance New Zealand's economic and social development.

The E-learning Advisory Group's advice closely aligns with the Government's framework 'Growing an Innovative New Zealand' and the draft Tertiary Education Strategy 2002-2007, particularly in terms of Information and Communication Technology (ICT) where there is an expectation that New Zealand will leverage some of its strengths. This advice also links with other government strategies such as e-government and e-commerce.

I thank the E-Learning Advisory Group and, in particular, Shona Butterfield (Chair), for undertaking the task presented to them with enthusiasm and commitment. It was not an easy task in light of the time constraint, but the group responded to the challenge by focusing on the key issues facing e-learning for the tertiary education sector. Each member of the group is to be commended for the time and effort they devoted to providing this advice. This report will inform any future e-learning decisions by the Government.

Steve Maharey
Associate Minister of Education (*Tertiary Education*)

Letter from the Chair

Hon Steve Maharey
Associate Minister of Education (*Tertiary Education*)

Dear Minister

The E-Learning Advisory Group has been convened to explore issues related to the development of e-learning in the tertiary education sector. E-learning is set to play an increasingly-important role in expanding learning opportunities and helping New Zealand's transformation into a Knowledge Society.

Technology is opening up new learning pathways and making it possible for people to undertake tertiary education in new ways from home, work, as well as traditional campus-based study.

There are a number of challenges for tertiary institutions in realising the potential of this new learning medium. It is imperative that we act now to avoid falling behind international developments and do so in a coordinated way that maximises our resources and avoids duplication of effort.

The Advisory Group has found New Zealand has plenty to build on in this area with nearly all institutions already involved with e-learning in some way. A strong theme throughout this report is the need to coordinate these efforts to deliver the best possible learning experience for a diverse and growing range of New Zealanders.

Much will rest on our ability to forge strong and enduring partnerships between providers, the private sector, industry and the community. We must develop resources and digital material that reflects our needs, culture and values so that a distinctive New Zealand e-learning environment evolves.

The E-Learning Advisory Group combine many years of expertise and commitment to e-learning, e-teaching and Maori Education. Within a heavily-restricted timeframe, the members have provided invaluable insight into the many ways in which New Zealand can meet the e-learning challenge.

On behalf of the Advisory Group, I am pleased to present this report to the Government and the Ministry of Education. It contains a number of recommendations which we hope will provide clear direction and momentum in the short and medium term in this important area.

In addressing the Terms of Reference, we have been guided by the following convictions:

- e-learning must be learner-centred
- e-learning must be quality-based and informed by excellent pedagogy
- e-learning offers a key tool for increasing Maori participation and success in educational programmes
- e-teaching must be supported by capability development in institutions
- e-learning development must reflect New Zealand's unique identity, with the Treaty of Waitangi underpinning this development
- New Zealand tertiary providers must achieve a new level of partnership and dialogue
- e-learning can positively contribute to New Zealand's global competitive advantage and build on current export education initiatives.

I would like to express my gratitude to my colleagues on the E-Learning Advisory Group for all their hard work, ideas and inspiration. I am aware that our work is only the beginning of an ongoing journey, but I am confident that it is an important foundation for providing quality, accessible learning opportunities for all.

Shona Butterfield
Chair
E-Learning Advisory Group

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Shona Butterfield (*Chair*)

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Acknowledgements

Nigel Beckford and Michael Fitzsimons provided the editing expertise for this report. Their writing skills were invaluable to the E-Learning Advisory Group. The E-Learning Advisory Group also greatly appreciates the considered thoughts of the many people who contributed to the drafting of this report. Their experience and views of e-learning – where it sits now and practical dreams for the future – were important contributions.

The E-Learning Advisory Group is grateful for the assistance of Ministry of Education staff, particularly Paula Kimble, Natasha Rickett and Murray Leach.

The E-Learning Advisory Group also thanks all those tertiary education providers who responded to the questionnaire on e-learning capability.

Executive Summary

New Zealand's learning environment is being transformed by new advances in technology, electronic media and the Internet. E-learning, the provision of learning through the electronic media, has the potential to be an enormously useful educational tool.

Many exciting developments in e-learning are already underway in tertiary education providers around the country. These range from on-line tutorials to dual-mode campus-based courses, to courses that are entirely web-delivered.

At present, however, these initiatives are not part of a coherent national e-learning strategy. If New Zealand wants to truly realise the potential of e-learning, it must develop a shared vision of the kind of learning environment it wants to create which reflects our unique identity and strengths and the changing needs and expectations of learners. We must establish an inclusive system that can cater for people of all ages and educational backgrounds.

E-learning will not replace our campuses but it will change the way students learn when they are there. It will also open up new learning pathways and make it possible for people to more effectively undertake tertiary learning from home, work and other centres in the community.

The challenge is to shape our system to meet these diverse demands. This will require a much more collaborative approach to e-learning between government, tertiary education providers, communities and industry.

New Zealand needs an e-learning vision that fits within the overall vision for learning in the tertiary sector and is underpinned by a learner-centred approach. Technology alone will not achieve our goals. What is required is a focus on the needs of learners and an unflagging commitment to quality in governance, teaching and learner support. These elements and a willingness to collaborate will be the hallmarks of New Zealand's success and the key to our being internationally competitive in e-learning.

E-learning is a global phenomenon and New Zealand must carve out its own niche in the e-learning market, mindful that it has many competitors. We must expand our vision of export education to harness the potential of e-learning, extending our educational services to people all over the world who may never set foot in this country.

At the same time, we must be mindful of our own unique identity in developing a New Zealand e-learning environment. It's vital that our e-learning future empowers all cultures and communities. The implications of the Treaty of Waitangi must underpin e-learning developments in New Zealand. It is a priority to develop Internet resources and other digital material that reflects both Māori culture and values and supports Māori aspirations into the 21st century.

We must build on our impressive track record in creating flexible and adaptable learning solutions that are tailored to student needs. This could be done in a number of ways and the Advisory Group has recommended the phased implementation of the following initiatives:

- The establishment of a tertiary e-learning consortium comprising institutions with appropriate expertise in the area. The consortium would be funded by government to coordinate the development of e-learning within the tertiary sector
- The creation of a single electronic point of entry, a portal, for people to gain access to a wide range of information, services and resources offered by New Zealand's tertiary education sector. Over time it is envisaged that students would be able to enrol, learn, be assessed and credit transfer between providers and programmes using this portal
- The establishment of a Collaborative Development Fund (CDF) to provide capital for tertiary providers to access funds to develop their e-learning capability.

E-learning in New Zealand will only be successful if it is based on sound pedagogical approaches. Increasingly New Zealand will require educators who have the skills to work confidently in an internet environment as well as a lecture theatre. A new generation of students is emerging from New Zealand secondary schools who are technologically-capable and expect e-learning to be part of their educational experience.

It is imperative that professional development is a priority throughout the tertiary sector so that academic staff have the abilities required for this new medium. Once again collaboration is crucial, since mentoring is already proving itself to be one of the most effective means of upskilling in many of our tertiary education providers.

In developing our strategy for e-learning, the Advisory Group found it very useful to consider the impact of e-learning on all aspects of the teaching and learning process. The three underpinning requirements in this educational value chain are effective leadership, high standards of quality assurance and sufficient capability in terms of systems, people and infrastructure.

The key activities in the chain itself are market analysis, curriculum design, course development, marketing and enrolments, delivery and assessment and credentialing. All these functions have the potential to be greatly enhanced in an e-learning environment. However to date there has been little analysis and research done into the needs and wants of students, the type of courses required, modes of delivery and key factors that influence student choice.

The sector as a whole stands to benefit substantially from timely research that will help to focus our efforts. In terms of curriculum design and course development, increased collaboration between providers has the potential to reduce costs as well as improve developments. An important issue here is the need for New Zealand to develop agreed standards for e-learning content and indexing.

At community level, collaboration will also be essential in making full use of the Internet. Schools, marae and libraries all offer exciting potential. Closer links between providers, industry and workplaces will also significantly enhance e-learning opportunities and broaden access to quality learning throughout the community.

E-learning will bring its fair share of challenges. Academic staff will be required to adopt new roles and approaches; institutions will need to be open to new partnerships. The creation of a highly-networked learning environment full of shared learning objects also challenges traditional notions of intellectual property rights. The outcome of the current review of the Copyright Act 1994 will have major impact on e-learning. It is imperative that it meets the needs of a digital learning environment.

The development and delivery of e-learning opportunities will require different cost structures from conventional education and bring different financial demands. There are also technical and infrastructural challenges to surmount such as ensuring learners have access to sufficient bandwidth in their learning venue to make use of all their opportunities. Experience shows that such developments can be costly and care must be taken to develop our own materials and systems cost-effectively, sharing best practice and avoiding duplication of effort wherever possible.

Government has a central role to play in providing incentives for institutions to collaborate but there must also be scope for innovation and autonomous action at institutional and local level.

E-learning will come of age in this country when students have access to an integrated, quality e-learning system, with the right connections and support no matter when or where they choose to learn. The case studies in this report show the many different directions that e-learning is already taking us. It will be an exciting journey but ultimately success will rest on our ability to work effectively together.

Commonly-used E-Learning Terms and Definitions

E-Learning – Learning that takes place in the context of using the Internet and associated web-based applications as the delivery medium for the learning experience.

Digital Learning Objects – Electronic "stand-alone" information and learning packages. The learning objects may be as simple as the chapter of a textbook or as sophisticated as a virtual tour of a museum.

E-Education – E-Education involves e-teaching and e-learning along with the various administrative and strategic resources needed to support teaching and learning in an Internet environment. It will incorporate a local, regional, national and international view of education.

E-Educators – E-educators are the new generation of academic staff who work in an Internet environment in both regular and virtual learning situations.

Portal – A website that acts as a 'doorway' to the Internet or a portion of the Internet, matching a person's needs to available offerings.

Bandwidth – The transmission capacity of an electronic line such as a communications network, computer bus or computer channel.

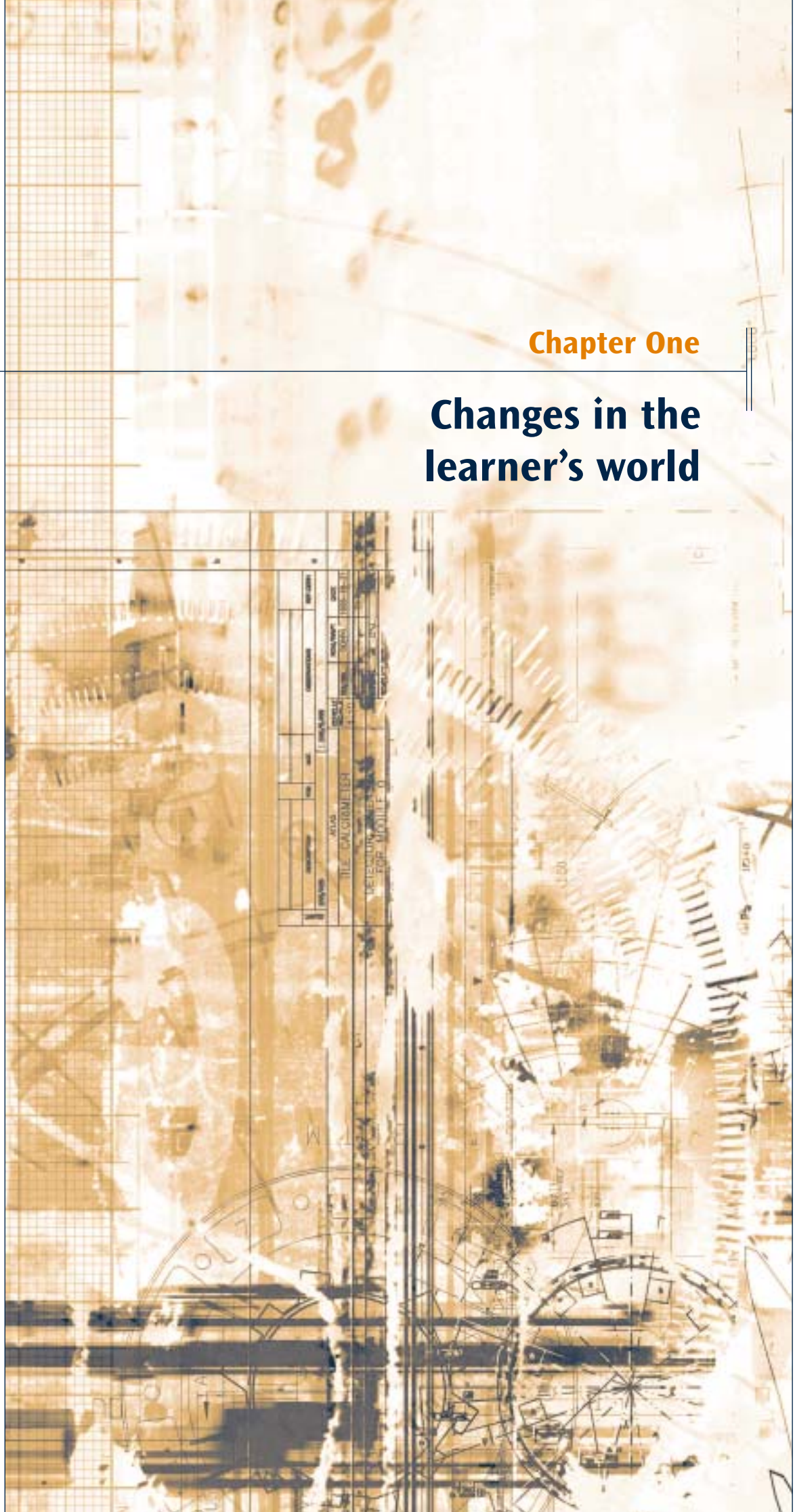
Recommendations of the E-Learning Advisory Group

1. That the Government provides proactive leadership in the development of an e-learning strategy for the tertiary sector. This can be demonstrated in the first instance by:
   - encouraging collaboration between Government agencies, tertiary providers, iwi and other stakeholders including private enterprise
   - ensuring that future policy development is informed by development and evaluation of strategic options for e-learning, through use of tools such as scenario planning
   - commissioning a project to examine the cost structures required to support e-learning and promote business models that will assist institutions to make appropriate investments in e-learning
   - asking TEC to ensure that documentation of an e-learning strategy is a requirement in institutional Charters and Profiles
   - recommending that Education New Zealand create a working group to develop an appropriate strategy for promoting and developing e-learning opportunities for the international market.
2. That the Government recognises its responsibilities under the Treaty of Waitangi to ensure that Māori participate equally at all levels of e-learning and, in particular, encourage:
   - establishment of a Kaupapa Māori group to work with Kaupapa Māori-based programmes using e-learning
   - development of Internet resources and other digital material for a Māori audience
   - research into key areas of Māori development in the field of e-learning
   - professional development for Māori tertiary practitioners.
3. That Government ensure appropriate scoping and provision of funding for the phased implementation of the following three initiatives:
   - the establishment of an e-learning leadership centre through funding a consortium, made up of tertiary education providers with appropriate expertise, to coordinate the development of e-learning research and capability within the tertiary education sector and manage both the portal and the Collaborative Development Fund as set out below
   - the creation of a central portal capable of being developed in stages to achieve maximum benefits with managed risk, the first stage being an electronic point of entry for people to access information on New Zealand's tertiary education sector and e-learning opportunities within it
   - the establishment of a Collaborative Development Fund (CDF) as a pool of funding for tertiary providers to access capital in order to develop e-learning capability.

4. That quality assurance for e-learning meet the same standards as those set for conventional education and that New Zealand institutions develop a voluntary code of practice or 'quality mark' in e-learning that would assist students to know which providers have agreed to that code of practice.
5. That tertiary funding continue to be provided at the same level regardless of the learning mode.
6. That infrastructure requirements for access to e-learning initiatives be addressed by:
   - building on bandwidth developments in New Zealand's school system and encouraging the Tertiary Education Commission and the Ministry of Education to achieve closer links between the school and tertiary sectors in e-learning initiatives
   - the further development of learning centres.
7. That the Government ensure that the review of the Copyright Act 1994 meets the needs of students and educational institutions in a digital environment.
8. That the Government establish processes to ensure that intellectual property issues and particularly the management of intellectual property rights are understood and appropriately addressed within the tertiary sector.

Chapter One

Changes in the learner's world



Introduction

Everyone who talks about e-learning has a particular vision of what that means, depending on their experience and their situation. Our definition is:

E-learning is learning that takes place in the context of using the Internet and associated web-based applications as the delivery medium for the learning experience.

New Zealand's learning environment is undergoing a powerful and exciting transformation. New advances in technology, electronic media and the Internet are revolutionising the way we live, learn and work.

E-learning – the provision of learning through the electronic media – has enormous potential as an educational tool. It can provide immediate and ongoing access to the skills, knowledge and experiences that will help transform New Zealand into a Knowledge Society with learning opportunities for all, young and old.

But technology alone won't achieve this transformation. What is also required is a shared vision of the kind of learning environment we want to create, with genuine representation of all cultures and communities. This is essential if we are to develop our own distinctive approach to e-learning and use it, along with other approaches, to reflect and contribute to a collective New Zealand identity.

The tertiary education systems and support structures we establish must be tailored to the diverse needs of our learners and be flexible enough to evolve over time as technology advances and our learning needs change. Above all, the needs of the learner must be paramount and drive the process of transformation. E-teachers must be well-supported in their efforts to fully utilise e-learning, or its potential will never be realised.

Care must be taken to establish an inclusive system which can offer quality learning to people of all ages and educational backgrounds, from entry-level learning through to advanced research. It needs to be a system that is responsive to students' learning needs and capable of replenishing their skills throughout life.

Within that system e-learning can make a significant contribution to ensuring equity of access, improving quality and delivering on the promise of lifelong learning. It will not replace our campuses, although it will change the way students learn when they are there. It will also help develop a variety of other learning contexts – at home, at work and learning centres – to meet diverse demands.

At a Glance – E-learning opportunities

- Improved access to lifelong learning
- An enhanced learning experience for the learner, tailored to their individual circumstances
- The potential for new educational partnerships and joint ventures
- The potential to share costs and revenue from the delivery of programmes
- Increased export education revenue

What's happening internationally

E-learning is a global phenomenon fuelled by a variety of economic, technological and social forces as well as student demand. There is a growing awareness among nations that knowledge holds the key to their future prosperity and social well-being. Governments and businesses around the world are increasing their capacity to learn and are placing a premium on the development of a knowledge economy. Workers of the future will require new and different skills and experiences.

New Zealand is now part of a global marketplace, serviced by increasingly-sophisticated communications systems. In this new global economy, New Zealand must compete by developing a highly-skilled population which is constantly improving its skills and knowledge base.

In such a society, ongoing learning is integral to the lives of all individuals and communities. It assumes there will be increasing numbers of people participating in learning and that there will be a vigorous pursuit of excellence in teaching and research.

E-learning's potential is already well-established globally. By the end of 2000, more than 200 million people were using the Internet worldwide and this figure is expected to reach 638 million by 2004. In the United States alone, knowledge services in the school, tertiary and corporate markets is already worth $740 billion dollars. It is estimated that the global industry is worth $2 trillion.

As Moe and Blodget[1] note in their May 2000 report: "At no previous time has human capital been so important – finding, developing and retaining knowledge workers will be mission-critical functions and areas of high growth in the new economy."

Different countries have approached the e-learning challenge in different ways. The European Commission recently announced a US$13 billion three-year e-learning action plan to deliver technology-based education. The United States is also moving towards a systematic national approach to e-learning and has established a web-based education commission to maximise the educational promise of the Internet across all levels of education.

The United Kingdom and Australia are debating the merits of establishing national "virtual" universities while Canada already has one up and running.

The challenge for New Zealand is to decide where it should sit internationally in the provision of e-learning services, mindful of the fact that we have many competitors at home and abroad in this e-learning market. We must identify where our competitive edge lies and where international links might usefully be fostered.

Key educational drivers

In addition to these global trends, there are a number of educational pressures which are driving change in this area. First and foremost there is rapidly-increasing demand among learners, employers and communities for lifelong learning opportunities. There are also many opportunities for people to continue their education, including those with a low record of academic achievement at school.

At the same time there is also an awareness among educators of the need to enhance the quality of traditional education learning by enabling greater inter-activity and collaboration between teachers and learners and between groups of learners.

Further, new technology enables functions that have traditionally been provided by a single institution to be more easily shared among a number of providers. This unbundling of services provides significant new opportunities which, given New Zealand's size, would benefit from collaborative approaches.

Overall, many educators are looking for opportunities to embrace new technology to enhance the quality of the learning experience and to make education accessible for students who choose not to or cannot attend classes on campus.

While supporting this thrust, politicians and administrators are also seeking benefits from efficiencies in administration support and opportunities for development of e-business.

[1] Moe. Michael T. and Blodget. Henry (2000) *The Knowledge Web*. New York: Merrill Lynch, May 23

Key constraints

Although New Zealand has consistently been in the top ten for rates of Internet access over the last decade, there are still many New Zealanders who are not connected to the Internet and cannot therefore access e-learning opportunities. Rates of Internet access are much lower for Māori and Pacific peoples than for a Pākehā. They are also lower for older people than younger people and for people on low incomes.

The term "digital divide" has been coined to describe the gap between people who can access Information and Communications Technology (ICT) and those who cannot. It goes without saying that e-learning will only work if New Zealanders have the confidence and skills to use ICT. Care must be taken to ensure that ICT does not become a vehicle for increasing the digital divide.

A further constraint is the cost of developing technical infrastructure, learner support systems and teaching resources. More fundamentally, concerns remain among many teachers about the validity and quality of learning possible through on-line provision. These concerns are reinforced by the lack of agreed standards for academic quality and resource development.

Perhaps the most pressing constraint within tertiary education providers is a shortage of staff with relevant ICT skills and the difficulty of retaining those staff who have expertise with web-based teaching.

Current situation in New Zealand

The Government has a number of strategies underway to utilise ICT in schools and the tertiary area. Across the education sector, providers are enhancing traditional teaching with new web-based courses, some of which are internationally aligned.

For example, the oral biology course at the University of Otago is taught jointly with a number of Australian universities, thus benchmarking quality teaching internationally, maximising student access and enabling learning materials to be developed efficiently.

The Open Polytechnic is making its Bachelor of Business available on-line for domestic and international students with introductory papers already available. It will gradually move other degrees on-line too. Most of its courses are web-supported with students able to access frequently-asked questions, discussion forums and send in their assignments electronically.

In 2001, some 300 courses at Massey university were web-delivered or web-supported and over 15,000 students were registered users of Massey's standard development platform, WebCT.

At the University of Waikato in 2001, more than 800 papers were e-supported or e-delivered, with a hundred fully on-line. There are more than a hundred academic staff teaching on-line.

Meanwhile, the Auckland University of Technology is a member of the Global Universities Alliance. This alliance is made up of nine Universities who are pursuing new markets with on-line programmes.

A broader overview of e-learning developments in a wide range of New Zealand's tertiary institutions is provided in Appendix 1.

To date much of the debate about e-learning has focused on the merits of on-line versus face-to-face teaching. However there is an emerging consensus that the real issue is less about delivery methods than how technology can be used in an educationally-sound way to meet a wider range of learner needs.

E-learning and the interface with industry

... the Internet has irrevocably altered how people access information, and how much information anybody can access, while local and wide-area networks release the Internet as a learning resource with software tools that enable communication.

(Bernard, de Rubalcava & St-Pierre, 2000)

Industry has an increasing interest in e-learning and there are opportunities for tertiary education providers to contribute to and support these developments. For companies interested in more effective ways of managing employees' professional development, the ability to access new learning models on a flexible basis supported by information technology is very attractive.

Distance education is not new and models using the technology of satellites, videotape, audio and video conferencing, and broadcast television have been established for some time. These have now evolved into web-based delivery models that provide greater flexibility for both the individual and the organisation. Anytime, anywhere delivery of learning content can be provided via the Internet, organisational intranets and/or CDROM, with the inclusion of streamed video and audio, and interactive functionality including chat, bulletin boards and threaded discussions. Some of the strengths of on-line learning models are increased access, greater flexibility, possible cost savings and greater opportunities for collaboration.

Gates (1999) identifies the web as a mechanism that redefines boundaries between organisations and between people and organisations. In the new knowledge economies, context is as important as content. The Web not only allows people to learn in context, it also allows them to learn in communities. There is a taxonomy of places on the Internet that serve all kinds of needs: portal exchanges, community sites and support sites.

Many large companies are now using on-line technology to support development of employees. The market for corporate web-based training is exploding, with International Data Corporation (IDC) projecting this to grow at a 111% cumulative annual growth rate to US$11.5 billion by 2003. Gates commented on the popularity of on-line training at Microsoft. "In 1998 on-line participation increased five times faster than classroom participation, and total on-line participation was more than double our physical class attendance. This increase indicates to us that people want to improve their knowledge and job skills but simply haven't had time-efficient ways to get training before" (1999, p.249).

At Cisco the on-line learning model distinguishes between "structured learning" and "emergency learning". There are no required classes or minimum training hours. Employees take assessments that determine their competency and how much training they may need. They can chart a long-term, structured learning plan, get all relevant short-term updates, and automatically receive necessary time-critical information for emergency learning situations (Muoio, 2000). EDS has developed a Digital Learning Platform enabling companies to provide on-line training for employees. The model aims to deliver the right content to the right people in the right media and at the right pace. The model features three components: asynchronous content development and delivery for Internet-based interactive self-paced courseware, synchronous content development and delivery for Internet-based instructor-led events that are live or replayed on demand, and learning management systems to manage learning assets and trainee information.

The issues with on-line learning models include quality of content and process, hidden costs, language and localisation issues and the readiness of the on-line learner. The Internet allows access to a vast amount of material including web pages, databases and structured learning courses. The on-line learning model is seen by many as promising reduced costs. However, well-designed on-line learning material that engages learners in meaningful experiences and provides opportunities for collaboration can be costly to develop, maintain and deliver. Many of those developing on-line learning material may be content specialists but have little or no experience in instructional design.

Tertiary education institutions need to be ready to build partnerships with industry to collaborate on development of e-learning material that is educationally sound. Industry companies are already forging ahead with e-learning models and some of the material available is not based on good design principles.

Other challenges for on-line learning models include language and localisation issues, particularly for multinational organisations. Appropriate material may need to be available in several languages and content made relevant for different locations.

Organisations need to provide encouragement and support for employees using on-line learning models as part of required training programmes. Web management tools allow learning experiences to be managed and performance to be measured. Successful on-line learners need to possess qualities of independence and discipline. Mentor and buddy systems can be very useful in this area. Feedback on performance, commitment and ongoing development can provide early information on possible dropout by learners, triggering the need for support interventions to occur. Appropriate support infrastructure can be developed in collaboration with tertiary education providers.

The way forward – a learner-centred approach

E-learning can offer many benefits, but only if learner-centred opportunities are developed that ensure it is an effective educational tool. This means giving learners much greater choice in how their learning is delivered, enabling them to interact easily with teachers and fellow students and access appropriate levels of administrative, educational and technical support. It means designing our systems in ways that best fit the circumstances and needs of our learners.

Effective e-learning also means ensuring that on-line resources and assessment are of equivalent or superior quality to those available in a traditional learning environment. We must ensure that the knowledge and skills that students gain on-line, or already have, can be assessed and credited towards nationally-recognised qualifications and future learning pathways. The growth of e-learning also brings with it a wonderful opportunity to enrich the learning experience by developing our own indigenous expertise and resources.

All of this has major implications for educators. There will be a growing demand for student-centred e-learning. E-learning does not mean the demise of bricks and mortar institutions. Rather the Advisory Group sees an expanded role for providers to use e-learning to enrich traditional classroom-based learning, at all levels of education, as well as meet the needs of students who want to study in their own place.

What's called for is a vision of integrated learning – the broadening of learning across the campus, the home, the classroom, the community and the workplace. Undoubtedly this combination of learning venues and opportunities will shape the tertiary system of the future.

New Zealand's Unique Qualities as an E-Learning Nation

New Zealand:

- has a focus on a learner-centred mode of teaching that provides meaningful and relevant learning experiences for students
- has a long history of meeting the needs of students who choose to study through a mix of distance and campus-based education and, recently, on-line education modes
- has a track record in being flexible and adaptable in meeting student needs
- strives to be a relatively egalitarian society which encourages collaboration and the contributions of all players
- strives to be a bicultural nation with an increasing sensitivity to the values of other cultures
- is a geographically-remote country which is open to new ideas and experiences
- has a highly-respected education system and a positive national image. These features provide the opportunity for New Zealand to offer an e-learning experience which is diverse and innovative.

Taking the next step

New Zealand needs a strategic e-learning vision that fits within the overall vision for learning in the tertiary sector. It must address key issues of equity of access, quality, diversity of provision and flexible approaches to meeting the needs of learners. Applying a technological veneer to existing practices and policies will not realise the potential of this new educational tool.

The scale of the changes underway may well mean an evolution of the whole learning enterprise and its relation to our society and economy as a whole. It will entail addressing significant issues such as e-teacher roles in the new environment, intellectual property rights, quality assurance and the size of financial investment required.

With an appropriate vision and government incentives, e-learning can help usher in a new era of collaboration in the development and teaching of programmes. New partnerships and joint ventures are likely to emerge to share the investment required to offer expanded e-learning opportunities.

All this raises a number of issues for consideration. E-learning needs to be tailored to meet clearly-identified learning needs and offered in a way that is practical and fit for purpose. We must ensure that teachers and faculties are skilled and confident in the use of new technology and supported by excellent multimedia content and services. They must also be skilled in guiding learners through the virtual learning process.

Improving learner information and credit transfer will be a necessity for an integrated e-learning environment and an overall commitment to quality will be essential.

Our ability to offer students comprehensive support is an area where New Zealand can gain a competitive advantage internationally. Attention to this area is not only critical to success but it could provide New Zealand's edge in the e-learning market.

We must, however, ensure that the costs of meeting these challenges is within our reach and avoid duplication of effort and resources wherever possible. In a country of our size, investment decisions in ICT must be wise ones. E-learning has much to offer New Zealand but it will only succeed if we commit to a shared vision and work collaboratively.

Chapter Two

Developing a Vision for E-Learning in New Zealand's Tertiary Sector

A Treaty-Based Approach to E-Learning

There are five Treaty-based principles which should underpin New Zealand's e-learning strategy.

- **The Kawanatanga Principle** (Government principle) is based on Article 1 of the Treaty and recognises the right and obligation of the Crown to govern and make laws for the common good.

In the light of this, the Advisory Group believes any legislative framework or regulations developed for e-learning needs to explicitly address how e-learning will benefit Māori. For example, this could be a requirement for Tertiary Education Institutions (TEIs) to include in their Charters and Profiles.

- **The Tino Rangatiratanga Principle** (Self-determination) is based on Article 2 of the Treaty and guarantees to Māori their rangatiratanga over all they possess for as long as they wish to retain it. It recognises the right of iwi to manage their own affairs. It affirms the rights of Māori to development in the widest sense.

This principle could be translated into action through, for example, appropriate Māori advisory structures and processes and specific funds for development of Māori e-learning resources.

- **The Partnership Principle** refers to the notion of good faith and is based on the Treaty as a whole as signed between Māori and the Crown. The partnership principle is important in developing a greater sense of mutuality between the partners.

The notion of mutuality is critical for the success of e-learning in this country. There are many opportunities for institutions to work together in e-learning for the benefit of students and for the institutions.

- **The Protection Principle** refers to the sense of active protection for Mātauranga Māori, Te Reo Māori and Tikanga Māori, and other taonga or treasures of the ancestors that have been handed down to and augmented by successive generations. Within this principle is also a principle of redress.

An example of putting this principle into practice would be resourcing the development of Learning Objects in Māori language along with acknowledgement and implementation of appropriate processes for managing that Māori intellectual property. Another area is research into Māori uptake and use of e-learning.

- **The Participation Principle** refers to the rights of citizenship and equality. In education, generally this principle means such things as the right to equitable access and educational opportunity.

The Advisory Groups sees that any strategy must improve participation, and more importantly, increase success for Māori. Specific projects could focus on piloting new opportunities for Māori.

(The principles identified in this section are based on material obtained from the Tertiary Education Advisory Commission and the published work of R Bishop and S Graham (1997), *Implementing Treaty of Waitangi Charter Goals in Tertiary Institutions; A Case Study*, D Crengle (1993) *Taking into Account the Principles of the Treaty of Waitangi. Ideas for the Implementation of Section 8 Resource Management Act 1991*, Ministry for the Environment, Wellington; M Durie Te Mana, *Te Kawanatanga. The Politics of Self-Determination*. Oxford University Press (1998), Auckland; I Kawharu (ed) (1989) *Waitangi. Māori and Pākehā Perspectives of the Treaty of Waitangi*. Oxford University Press, Auckland.)

Need for vision and strategy

While many tertiary education providers are making significant progress in advancing e-learning opportunities, New Zealand lacks a coherent, national e-learning strategy. This is not surprising since Government policy in the 1990s encouraged a competitive market-driven approach to education, resulting in institutions working to a large extent in isolation.

The challenge now is to find ways to achieve an overall, integrated approach without sacrificing institutional autonomy. Participation must be voluntary. The concepts of competition and collaboration must not be seen as mutually-exclusive and a balance will need to be struck to encourage a responsive, innovative approach.

At the same time, it is recognised that given the current limited capabilities and resources of tertiary education providers, the formation of strategic alliances will be essential to fully develop New Zealand's e-learning capability.

Learning from overseas experience

Many countries around the world are striving to create their own e-learning environments as part of their efforts to develop a more highly-skilled and qualified population. Some nations have attempted to develop national e-learning strategies; other have taken a more ad hoc approach. Whatever the approach, the most compelling motivation appears to have been the need to move swiftly so as not to be left behind.

In its research to date, the Advisory Group has found very little evidence of evaluation of strategies that might inform New Zealand's strategic vision. We have found it useful however to examine the underlying approaches taken by other countries seeking to develop an effective e-learning environment.

While New Zealand can learn much from these examples, the overwhelming conclusion is that New Zealand must forge its own e-learning vision, with a confident indigenous dimension.

For example, the Advisory Group notes overseas examples in developing bilingual e-learning approaches and believes there is exciting potential to explore the possibility of using Māori language, culture and concepts in developing on-line learning content and services. These themes are expanded on in the chapter relating to Māori and e-learning.

Overall, international developments highlight the dynamic potential of e-learning as a tool, but also reveal that sound pedagogy, policies and approaches must underpin it. The fundamentals of quality teaching, learning, assessment and certification still apply along with basic business models of investment.

The challenge is to fulfill the potential of this exciting learning tool without compromise to the learning process itself. It is clear from international experience that this is far more likely to happen through collaboration between Government, providers and business.

It is tempting to treat e-learning as an add-on to existing learning methods. However, overseas experience reinforces the need to take a much bigger picture. We need to view e-learning as part of a total student experience with the potential to revolutionise enrolment procedures, learning and teaching, certification and student support.

Overseas, e-learning is blurring the lines between institutions and between learning and work. This evolution is occurring because governments see it as a national priority to increase choice and access to lifelong learning for all their citizens. Overseas experience also underlines the importance of a collaborative tertiary environment with strong links between institutions.

New Zealand context

The Advisory Group sees that central government has a key role in helping to facilitate this national strategy and providing incentives for providers to further national goals. Aspects of a strategy might involve all providers acting together but there must also be scope for autonomous action at institutional and local level.

It is extremely difficult to predict what is the best single way forward. It is therefore very useful for the strategy to include a sufficient range of options so that lessons can be learned from the range of activity underway and the overall strategy adapted as this occurs.

Each institution must see their work as part of a wider tertiary learning experience and enable their students to enhance their e-literacy while studying. Students must be able to access a range of e-learning options, whether it be at the institution or at home or in the workplace. The tertiary education system as a whole needs to have the technical and human capacity to support this range of e-learning options for students.

This means having the capacity to provide students with web-based information about courses and services. It also means a full range of on-line support services particularly for non-campus-based students and learning venues. And, of course, it means the provision of web-based courses and an integrated on-line learning service such as enrolments and enquiries.

All of this will offer a significant opportunity for specialisation and cooperation across existing and new tertiary alliances and boundaries. It is envisaged that institutions will contribute to this system to different degrees, according to their capabilities and resources.

The fundamental assumption is that wherever students are learning they will have access to an integrated quality e-learning system with appropriate connections and support.

Fresh approaches

This strategy is not just about doing more of the same. To be successful, it must usher in new approaches and fresh contributions. For example the Advisory Group is excited about the potential of e-learning, with its emphasis on participatory and interactive learning, to be a powerful education tool for Māori. This will require effective partnerships with iwi and Māori providers to develop Māori learning objects.

The Advisory Group believes it is vital that the Treaty of Waitangi inform the development of an e-learning strategy and ensure its success for all New Zealanders. The implications of a Treaty-based approach are highlighted in the sidebar panel. There is potential for e-learning to give Māori greater control over their learning and reduce current disparities in achievement.

There are other exciting gains to be made in areas such as workplace and adult learning or in regions where people are geographically isolated. And, as we have noted, there are opportunities for enhancing the quality of learning in campus-based institutions.

The potential gains, however, will only be realised if there is a common vision of what an e-learning future can offer and institutions prepare their own strategies in ways that contribute to the tertiary system as a whole.

The Advisory Group believes that over time, this collaborative approach will work to considerably strengthen the position and capacity of participating institutions in terms of teaching, learning, staff development and technological capacity.

Our vision for e-learning

The Advisory Group shares a vision where all New Zealanders will access:

- Learner-centred e-learning opportunities that maximise choice and flexibility
- E-learning of world-class quality, that draws on the best offerings, from here and overseas
- E-learning that reflects New Zealand's unique cultures, Treaty-based responsibilities and the special strengths of its teachers and educators
- A cost-effective system that benefits from the involvement of both public education providers and private enterprise.

Our strategy

There are a number of e-learning opportunities that need to be explored within the context of an overall national strategy. Building on the vision outlined above, these might be summarised as follows:

Increase access

- Build scaleable delivery options that will enable responses to the increasing demands of domestic and international markets in a lifelong learning environment.
- Develop infrastructure, particularly bandwidth, human resource capability and adaptive systems to support e-learning developments.

Maximise choice and flexibility

- Provide New Zealanders with comprehensive information about learning opportunities in New Zealand.
- Develop systems of mutual accreditation for agreed qualifications.

World-class quality

- Provide assistance to tertiary education institutions collaborating in the development and delivery of e-learning.
- Foster and fund e-learning quality assurance systems ensuring world class status.

New Zealand's uniqueness

- Foster e-learning based on New Zealand research and best practice.
- Encourage research and practice-based teaching strategies using electronic methods.
- Encourage Māori language learning opportunities through e-learning.

Cost-effectiveness

- Ensure funding regimes do not penalise the adoption of e-learning and distance education strategies.
- Create reward systems for tertiary education providers undertaking effective collaboration in e-learning with industry.

Innovation

- Contribute to the development of an innovative, e-learning nation through local, national and international provider alliances and by partnering with industry and science organisations.

In the chapters that follow, the Advisory Group addresses these opportunities by focusing on the key educational components that make up the "value chain" for delivery of learning options.

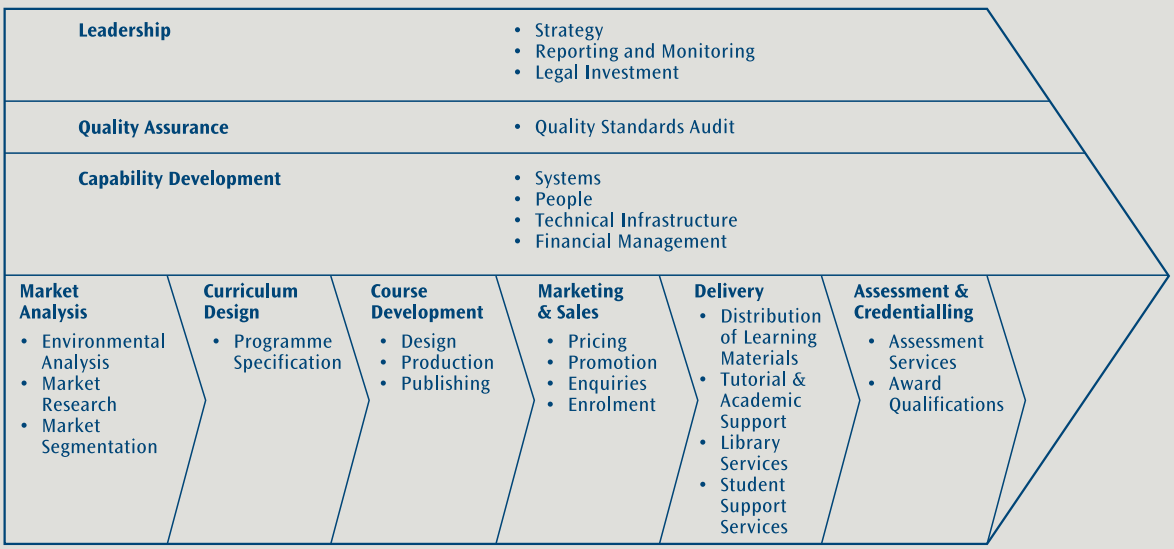
To gain full advantage from our strategy, New Zealand must make sure that it covers all aspects of the value chain.

As the diagram below illustrates, the components are market analysis, curriculum design, course development, enrolment, delivery, teaching, assessment and credentialling. Spanning this whole process are the three supporting functions of leadership, quality assurance and capability development.

The Advisory Group has found this to be a useful model in evaluating what might happen with e-learning. Overseas experience shows that one of the characteristics of e-learning is the potential it offers for providers to develop new products and services at each step of the value chain. At the same time, many institutions will be involved in enhancing their services by focusing on all aspects of the value chain.

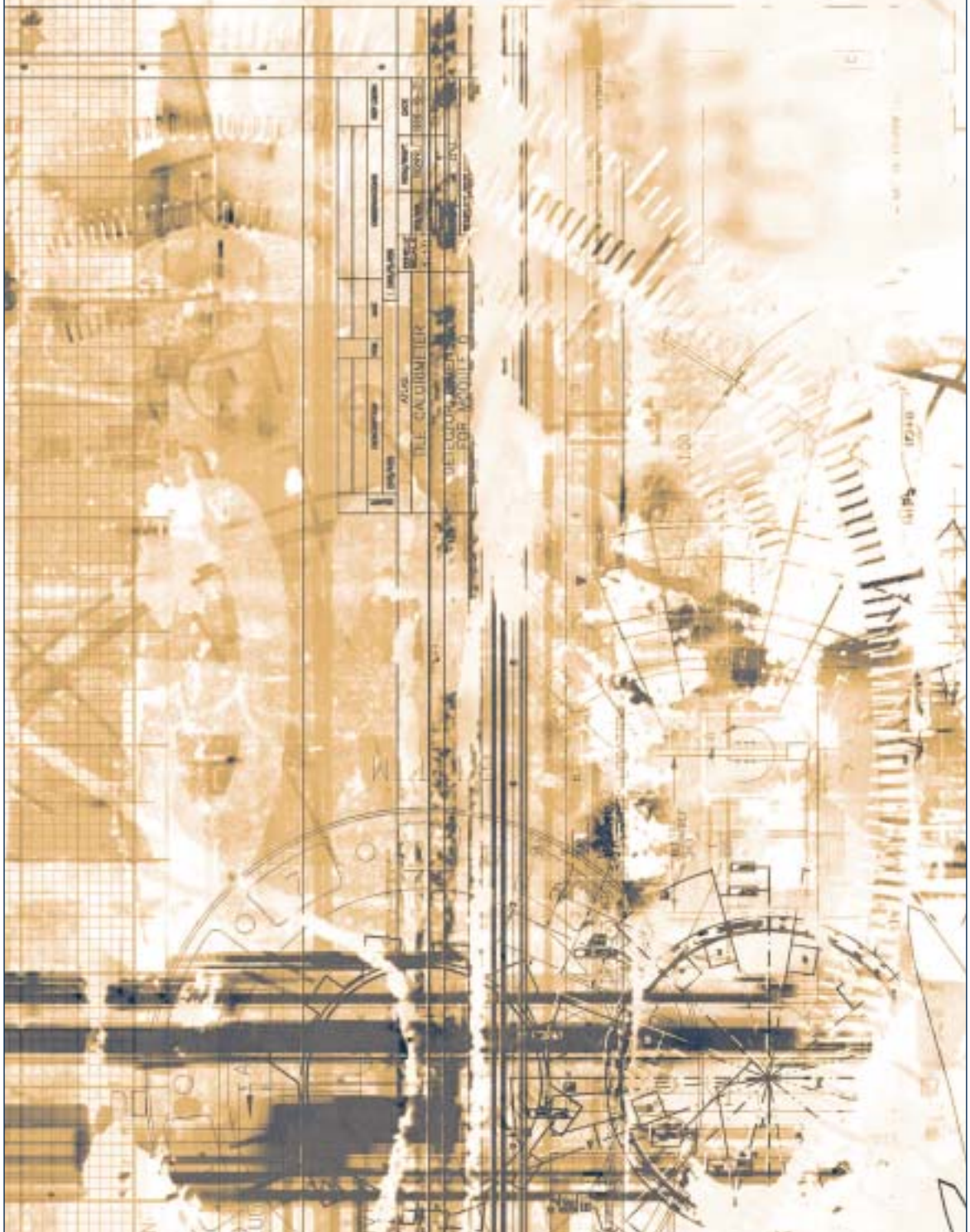
The overall aim is to maximise the benefits for learners and providers through both options. While it is vital that cost-effective decisions are made in implementing an e-learning strategy for New Zealand, the Advisory Group is strongly of the view that e-learning must not become a vehicle for cutting costs and diminishing the learning options.

With e-learning as with all kinds of learning, the needs of the student must take priority and shape our thinking as we consider the investment options for using technology to create a quality learning experience.



Chapter Three

Exploring New Zealand's E-Learning Opportunities



Challenges for the sector

Planning for e-learning

Evolving e-learning in New Zealand, as in the rest of the world, is uncharted territory. The Advisory Group has identified a number of challenges that will need to be carefully considered and explored with the assistance of further research.

An immediate pressure is that there are an increasing number of students who are emerging from the secondary sector with well-developed IT skills and an expectation that e-learning will be part of their tertiary education experience. This trend will obviously continue and represents a fundamental challenge for tertiary educators, many of whom still regard e-learning as a future phenomenon.

However the issues surrounding e-learning are complex and student expectations of e-learning are diverse. For example, most students will leave secondary school and still want a campus-based experience which is web-enhanced. But there will be some who might prefer or require a fully on-line learning experience.

In addition to school-leavers, there are growing numbers of adult learners who are much more likely to want access to learning on-line. In the lifelong learning context, these adult learners will always outnumber school-leavers and we must ensure that a range of learning options are available to them. In an age of lifelong learning where the Government is attempting to build a Knowledge Society, on-line learning offers the potential to greatly improve access to education by providing more flexible learning options.

However, there are considerable differences of opinion among academic staff about the potential of the new technology and whether it should be used to enhance existing teaching practice or to revolutionise it. The Internet could be used simply to dispense information and course notes or it could be the platform for a teacher-led tutorial or an interactive experience which may not include academic staff directly at all. A wide range of quality is already evident in web-based courses overseas, ranging from information dumped on-line without any quality check to highly-supported interactive learning experiences.

We must also determine how we are going to develop and contextualise our own e-learning experience. There is likely to be a small New Zealand demand for high-profile overseas programmes but the needs of the vast majority of New Zealand learners will be best served by programmes that are tailored to our local needs, cultures and context. Failure to develop quality New Zealand e-learning programmes could result in the virtual recolonisation of our country via the Web.

While these overall trends are clear, there is a lack of information about how the education market is likely to develop in the years ahead. For some students, e-learning may be the ideal solution, for others it may be only part of the solution and for others again it may even represent a barrier to learning. Research and planning are required to address these issues.

It would be timely for TEC to support a project in scenario development to test some strategic options for the sector. For example, one future scenario might explore New Zealand developing e-learning in partnership with Australia; another might investigate using the Web as the dominant business strategy for the sector. Scenarios for different levels of collaboration could be developed, one with each institution acting alone as now, and one with a fully-integrated approach that spans the sector. Such work enables focused strategies to be developed that will ensure we capitalise on our innovative capability, while ensuring we do not get locked into any system that cannot be readily adapted over time.

The Advisory Group recommends that future policy development be informed by development and evaluation of strategic options for e-learning, through use of tools such as scenario planning. (Recommendation 1)

Meeting e-learner needs

While there are a host of challenges at the macro level, we must not lose sight of the needs of the learner. As with any programme of formal learning, our e-learning policies, procedures and student support need to be well-attuned to the needs of students. We need to be clear about the support we can realistically offer e-learners and how it can be accessed. It is likely that academic staff will have to play a greater support role.

Another set of issues relate to learners' own motivations and attitudes. E-learning away from a campus demands that students are responsible for organising their own learning time and space and therefore the need for self-motivation and learning independence is greater. Prospective e-learners need to be well advised on this, and to have "Help Desk" assistance on technical matters as part of their educational service.

Students returning to study after a time away may also require help on how to structure their learning and access information. Further, people who are uncomfortable with technology will need to be assisted with guides, support and information about where they can get additional technical help.

All of these issues highlight the importance of good e-learning design that results in meaningful interaction and encourages depth of thought. Without these supports, there is a risk that e-learners will not be retained or that their learning experience will be an inferior one.

The economics of e-learning

There are also significant challenges in estimating the scale of investment which might be required to advance e-learning in New Zealand and what return this investment is likely to bring.

The development and delivery of e-learning opportunities will require quite different cost structures from those of conventional education. For example, conventional delivery requires a capital investment in land and buildings and modest investment in the development of courses with staff salaries being a significant cost.

E-learning, on the other hand, is likely to bring different financial demands. For example, the costs of developing courses and learning objects and infrastructure to support them are likely to be high. The costs however of transmitting information are negligible. On-line administration and assessment could also bring efficiencies to current practice.

Many existing institutions will find it difficult to fund the transition to on-line learning from their existing operational funding. On-line courseware and supporting infrastructure will require sizeable capital investment and those committed to campus-based options need also to maintain their investments in those assets.

The development of digital learning objects is another area that presents considerable financial challenges for New Zealand educators. Learning objects are expensive to develop and often have a limited shelf-life since they have to be updated to take account of new technologies. In a country of our size, collaboration between providers seems the sensible way forward.

Faced with these challenges, it is vital that the tertiary education sector be given assistance to develop a sound business approach to operating effectively in the new e-learning environment. This will enable them to reach an informed decision on whether, for example, they are able to develop content themselves or collaborate with others. It will also be necessary to ensure that large-scale investment will bring the benefits assumed. It would be unrealistic to expect each institution to undertake this research on its own.

The Advisory Group recommends that the Tertiary Education Commission (TEC) commission a project to examine the cost structures required to support e-learning and promote business models that will assist institutions to make appropriate investments in the transition to e-learning. (Recommendation 1)

Technical and infrastructural issues

There are also technical and infrastructural challenges to surmount in making e-learning widely available. An obvious one is having sufficient bandwidth to enable learners to make use of all the opportunities associated with digital learning. At present, access is limited to 56K for many users.

The amount of technical support which learners are able to call on will also greatly affect their chances of success in e-learning. Institutions need to be clear about the support they can realistically offer e-learners and how it can be accessed. Most importantly, technical support needs to be made available to learners on the scale required.

The Advisory Group has identified that many tertiary education providers have already invested heavily in infrastructure to support their existing strategies and it is unlikely that the adoption of a single national technology platform will meet all their needs. While institutions will continue to develop their own technical infrastructure, it is important that all institutions are able to obtain up-to-date independent advice on emerging technical standards. This is particularly important for small institutions.

Possible Options

In considering the range of challenges discussed above, the Advisory Group focused on several possible initiatives which would assist the overall evolution of e-learning throughout the sector.

Establishing a Virtual University for New Zealand

One option is to create one New Zealand Virtual University. A difficulty with this approach, however, is that several universities are already part of international alliances. Auckland University, for example, is involved in Universitas 21 and the Auckland University of Technology is involved in the Global University Alliance.

On balance, the Advisory Group is not in favour of a single virtual university. It believes greater national benefits would accrue from retaining institutional autonomy and creating instead a single portal or electronic entry-point into the tertiary sector. This strategy would support a range of developments that would encourage individual institutions to collaborate within the portal.

Establishing a New Zealand tertiary e-learning portal

An increasing number of portals are being provided by government agencies around the world, as well as being used to access learning opportunities. A good example is the Canadian site **http://www.cvu-uvc.ca**

An e-learning portal is an electronic point of entry for people to obtain access to information and services related to the tertiary education sector. By clicking on this website address, the user is introduced to a community of interest with a multitude of links to other sites. There is considerable potential to develop portals in different ways. An advantage in using such a tool as the base for developing a national e-learning strategy is that initiatives can be staged in ways that bring maximum benefits while managing risks.

Here are four levels at which a New Zealand portal could operate. Ideally, New Zealand would evolve its portal over time through the various phases of development outlined below.

Phase 1

The portal simply creates the place for tertiary education institutions to all be accessed. The major advantage is that students can find information about and from all TEIs about their on-line offerings in one place, as occurs with the Canadian virtual university model. Students still enrol and interact with one particular institution. As well as e-courses, the portal could offer information on a range of levels, from courses and qualifications to career and employment information. It could also provide students with ready access to loans, fees and scholarship information in a way that is comprehensive and up-to-date. This fits well with TEAC's recommendation for multimedia options to be developed for improving information to students.

Phase 2

Some institutions would collaborate to offer students a single point of enrolment with choice of e-courses from each of their institutions all crediting towards the particular qualification chosen by the student. Of course, this example could be developed in a different way. It might be, for example, that a single discipline like nursing had all nursing schools agree that they would develop a single "clearing house" within the portal for applications for nurses.

Phase 3

At this level you would begin to see the development of a range of different services being offered either by single institutions or by consortia of institutions. These services might include specific help in particular areas like literacy. They may relate to special interest groups or they may offer services like recognition of prior learning or just-in-time assessment.

Phase 4

This level of development would see a portal where students have a single point of entry, one enrolment system that will take them to any institution, one place where they can find out what credits they can earn and transfer from one qualification to another, one place where they can obtain course and career information. Essentially it would be a one-stop shop for students that enables them to easily choose the kind of support they need to succeed in their learning goals.

The provision of on-line technical help and a library of New Zealand learning objects could accompany any of the above phases.

The Advisory Group recommends that Government fund the development of a tertiary education portal as set out in Phase One. (Recommendation 3)

Such a portal would bring benefits to a wide variety of people. It would be used by school-leavers, potential learners here and overseas, people seeking employment or job-training, employers and industry sectors. The site would have links to individual providers as well as relevant government agencies.

A portal could lower the costs for learners to make informed decisions about education and training as well as lower the costs of compliance for participating providers. Importantly, it could provide a reliable source of information and provide the opportunity for the free exchange of knowledge and ideas and lead to the development of more uniform standards among institutions.

The first stage is relatively simple. Achieving full potential of the portal will depend on collaboration of TEIs and the involvement of a critical mass of private and public sector organisations to develop services. Bringing all these parties together will be a complex undertaking, requiring leadership, vision and adequate resourcing. It will be important to provide evidence of progress to encourage wide involvement and acceptance across the sector.

It is envisaged the portal project would have four phases:

- Scoping and preparing a business case
- Building a community of providers and users
- Construction and launch of the portal
- Ongoing evaluation, development and maintenance.

There are a number of issues to address in each of these areas. For example, it is vital that the portal fits in with the Government's e-government strategy and complements, rather than competes with, specialised sites. Issues of governance and control will need to be clearly defined and overseen by an appropriate body.

The costs involved in constructing and maintaining a site will need to be carefully identified and managed. Costs vary enormously from highly-focused transactional sites costing $150,000 to large corporate sites costing anywhere from $1 million to $2 million.

Lessons about e-learning

- Students who have access to the Internet increasingly expect to be able to access learning on the web.
- Expectations about what is quality service in providing education are different in a web environment.
- E-learning can be provided in many different ways to meet different learner needs.
- It can provide opportunities for global "master classes" with high levels of interactivity between students and teachers – an Oxbridge model on the web.
- It can also provide any range of teacher support through to "teacherless" options which use "intelligent teachers" programmed by academics.
- In every instance one major feature is the ability to facilitate high levels of interactivity between students.
- Decisions about how to offer e-learning very much depend on the answers to questions about the particular student markets being served. The economics of provision using this mode are very different from either contact or print-based distance learning.
- The infrastructure required to support e-learning well is much more than the technical capability. It includes changing core business functions to enable all transactions from enrolment through to graduation being available on the Web.
- The role of the teacher/academic in teaching on the Web requires some different skills from traditional teaching.
- Technology is the "easy" issue to address. Organisational issues are much more difficult.

Establishing leadership and guidance in e-learning

The Advisory Group recommends that the Government, through TEC, seek bids from consortia comprising tertiary education providers with appropriate expertise to advance e-learning in the tertiary sector. Its function would be to provide leadership and guidance on the best way to meet New Zealand's tertiary e-learning needs. (Recommendation 3)

The Advisory Group believes that best results will be achieved by using a decentralised approach with appropriate incentives to encourage collaboration among institutions. To this end, we recommend that the contract for the Consortium be for a set period of three to five years. One of the key criteria for letting the contract would be the ability of the Consortium to demonstrate how it would interact with the sector as a whole and achieve national goals.

The Consortium would also have responsibility for running the portal and developing it through its various stages, as well as administering the Collaborative Development Fund. The Advisory Group believes that outsourcing these leadership and management functions to the sector through a contestable bidding process, is the best way of gaining sector ownership.

More work needs to be done on the detail of how these arrangements might operate. Whatever decisions are made, it is of the utmost importance that opportunities for collaboration are maximised and a genuinely-national strategy is implemented in which all institutions can participate.

Growing our export education industry

E-learning is a $2 trillion global industry and is set to play an increasingly-pivotal role in the development of knowledge societies. It includes formal education, non-formal education and corporate / industry training.

An estimated 16 million people use the Internet every day, with more than a quarter of a million educational programmes available to them. Increasingly, New Zealand institutions are receiving applications for enrolment from countries around the world. One short course at Auckland University of Technology, for example, enrolled learners from South Africa, Korea and Mongolia. Britain's Open University enrols 30,000 students on-line from 43 different countries.

New Zealand could position itself to take better advantage of this new environment. There are huge opportunities for New Zealand to export its education capabilities globally, but this will require substantial investment and cooperation.

As the recent Ministry of Education report, *Export Education in New Zealand*, makes clear, the New Zealand economy stands to benefit substantially from planned and managed growth of the export education sector.

Export education is a transaction across borders involving the provision of education services in exchange for financial consideration. Cross-border supply, including distance education and e-learning, may be provided across borders but without the movement internationally of either students or teachers.

UNESCO data shows that in the late 1990s over 1.6 million tertiary students studied internationally. There is a growing number of students receiving classroom, distance or e-learning from foreign providers within their own national boundaries. The extent of this kind of service is poorly documented.

Export education is an important contributor to New Zealand's development as a knowledge economy. The benefits of export education are more than financial. In the increasingly-globalised world, knowledge of other cultures, cross-cultural communications skills and international linkages are essential for national performance. The export education industry will only continue to grow in sustainable ways if the service provided by New Zealand's education sector is of consistently-high quality. Successful participation in the e-learning and distance environments demands substantial investment in curriculum development, technology, tutoring and administrative support. The field is becoming dominated by resource-rich large provider institutions and corporates as well as institutional consortia, of which New Zealand has several examples.

There are a range of national barriers to export education, for example, visa, investment and foreign exchange regulations, as well as more directly education-focused policies. While international arrangements such as the General Agreement on Trade Tarriffs in Services (GATTS) provide a framework to overcome such barriers, education remains an area where most governments are unwilling to act. However, the barriers vary according to the mode of delivery. An APEC study of factors inhibiting export education in the Asia Pacific Region found that there were few restrictions on distance education and e-learning but that establishing a physical presence for an institution overseas was difficult. Where delivery modes are mixed, barriers in the latter area (physical presence) can interfere with delivery of the overall "package" which may include a distance or e-learning component. Some Asia Pacific and European educators and policy makers are suspicious of export education, seeing it as a one-way relationship with negative social and cultural outcomes.

Beyond conventional trade barriers, there are obstacles relating to quality assurance and recognition of qualifications internationally. The negotiation of agreements for quality assurance of programmes offered across borders, and of recognition of qualifications for the purpose of employment or future study are among measures which can help address these barriers. High-quality collaborative learning is also one way to expand the international e-learning sector.

Collaboration between institutions

The concept of collaboration between institutions can be evaluated in terms of the following hierarchy which is established in terms of increasing difficulty and potential benefits:

Low risk, modest benefits:

- Sharing information
- Exchanging experience
- Exchanging advisers and consultants
- Collaborative staff training
- Accepting each other's students
- Acquiring and/or exchanging external materials
- Collaborating on evaluating external materials
- Co-operating on development of related course units
- Establishing credit transfer arrangements
- Creating a common open learning system

High risk, major benefit

(Dhanarajan, G. and Timmers, S. 1990. Transfer and Adaptation of Self-Instructional Materials: Some issues for Consideration. Open Learning Institute Hong Kong).

E-learning could have a huge role to play in this growth market but it will entail a completely different set of challenges to bringing foreign students to New Zealand.

Current estimates are that the export education industry contributed $700 million to the economy in 2000 and has the potential to realise $1 billion per annum within two years. The good news is that New Zealand has significant advantages to offer the wired global village.

A favourable exchange rate means that our programmes are competitively priced on the world market with the potential to generate significant revenue. (The size of profit margins is subject to debate). The quality of our education is recognised throughout the world and, being in English, is in demand by the non-English speaking world. E-learning services are already playing a role in New Zealand's Overseas Development Assistance strategy in the Pacific and more could be done to expand this further.

New Zealand has a high level of technical capability and has pioneered many aspects of distance education. We have a track record of being innovative and creative with limited resources and the foundations of a knowledge society are in place.

Particularly noteworthy are our student-centred approach to learning and our strong commitment to supporting indigenous education. Furthermore, cooperative arrangements with institutions overseas show our ability to work well with other countries and cultures. Finally, we have educators with the talent and dedication to compete with the world's best in their field in the international market, despite our relatively small size.

There are also potential opportunities for tertiary institutions to form partnerships with New Zealand companies developing e-learning material for export. For example, the Wellington Creative Capital cluster has an e-learning sub-group with a focus on export and is interested in working collaboratively to develop material for overseas markets. The cluster has already achieved success in gaining contracts for creative work in Singapore.

Thus far, Education New Zealand has focused on developing a strategy and brand to attract foreign students to New Zealand. The value proposition relates to New Zealand as a destination for study. That is not appropriate for a web world, where students stay in their own country. Education New Zealand needs to establish a complementary brand for moving into this market. In doing so it will need to recognise the importance of clearly establishing what is the comparative advantage that New Zealand can offer. It would be unwise to compete in most instances on development of content. However there may be some particular areas where this could be useful – e.g. environment education, indigenous issues. It will be important to promote the fact that New Zealand e-learning institutions support students to succeed throughout the learning process.

The Advisory Group strongly recommends that Education New Zealand create a working group to develop an appropriate strategy for promoting and developing e-learning opportunities for the international market. (Recommendation 1)

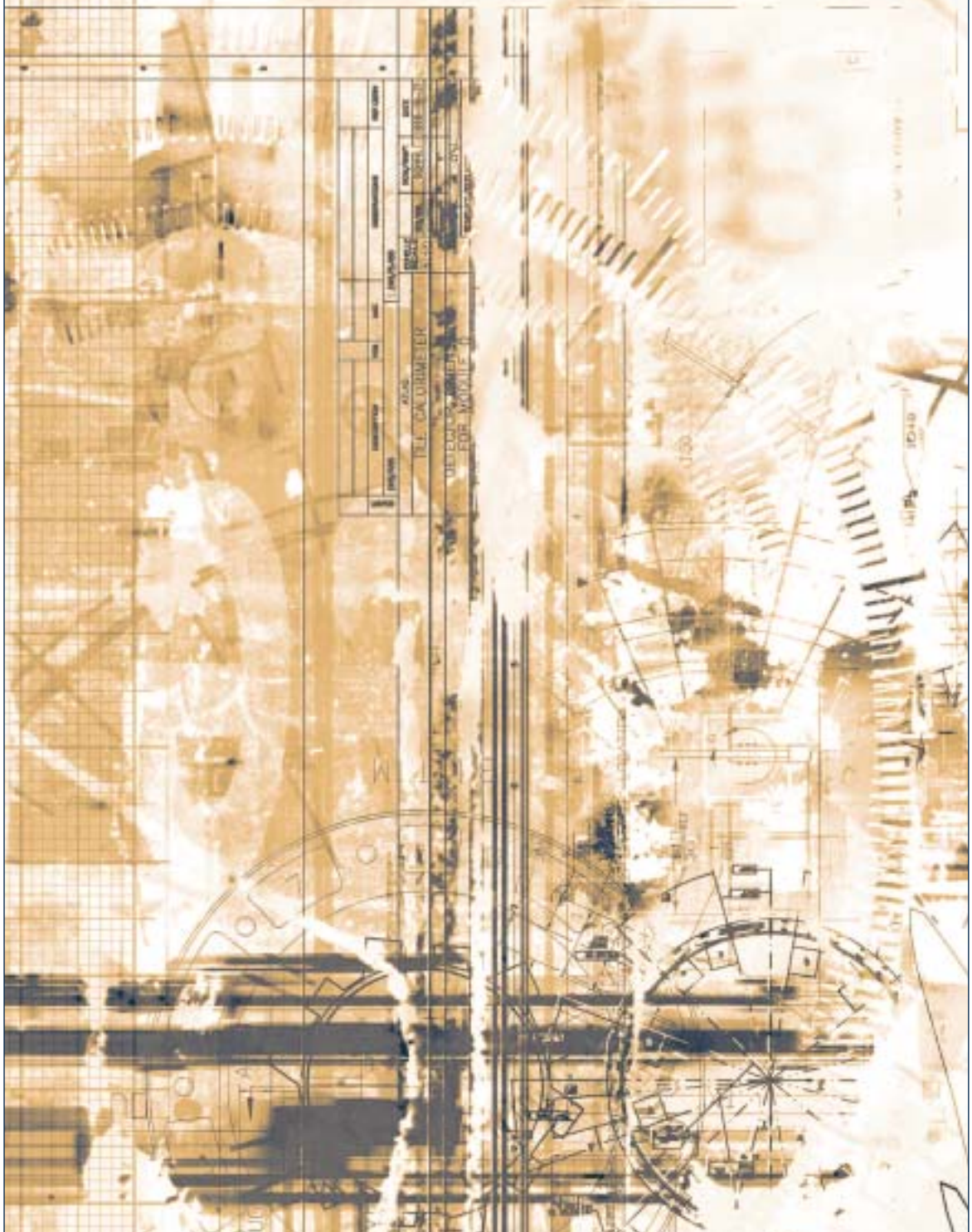
Conclusion

New Zealand's priority must be to ensure that e-learning initiatives add value to all the different ways of learning that currently exist. For example, the enhancement of campus-based studies presents an immediate opportunity to harness the new technology for the benefit of learners. Huge potential also exists to increase our share of the export education and distance learning markets through a well-developed tertiary education portal.

All of this will only be possible through a new spirit of collaboration which frees us to broaden our approach to learning to better meet the needs of all learners.

Chapter Four

Māori and E-learning



It is vital that Māori are able to fully participate in and achieve success in e-learning.

The Advisory Group has already stated its view that the implications of the Treaty of Waitangi, including self-determination, partnership and equitable participation and access, should underpin the evolution of e-learning in New Zealand.

This means providing opportunities for Māori to determine what form this participation should take and what processes and structures Māori would like to establish to achieve these goals.

It is in the interests of the country as a whole that New Zealand's e-learning environment enables Māori to participate equally at all levels of e-learning. This applies not only to the numbers of Māori participating, but also to the quality of outcomes they achieve.

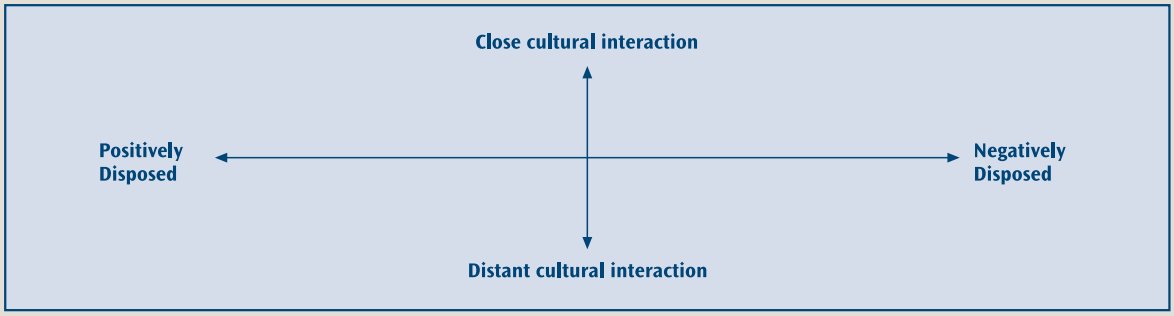
Throughout this report the Advisory Group has focussed on the learning needs of students and how e-learning can support their learning experience. This is particularly important for Māori. Such an approach requires a clear understanding of the characteristics of Māori learners as particular course options are developed. We must ensure that Māori learners can access e-learning that best meets their needs as individuals.

In particular, New Zealand's e-learning environment must provide a setting where Māori approaches to life and learning can be fully realised. For example, Māori educational aspirations often tend towards advancing communities, rather than individualistic goals. We must ensure that e-learning developments enable this to happen.

Anecdotal evidence to the Advisory Group also suggests that a significant number of Māori may prefer e-learning options to traditional contact class situations. If this is the case then it is vital that e-learning opportunities for Māori are maximised.[1]

Further anecdotal evidence suggests that many Māori students find they are heard on-line in ways they have never experienced before and this makes them feel valued. They also have much more choice over when and how they participate.

The following excerpt from research done for The Open Polytechnic provides one possible framework for looking at what the different needs might be.



[1] From a lifelong learning perspective, it is notable that The Open Polytechnic, without implementing any particular strategies to do so, has attracted 4,000 Māori enrolments. The Polytechnic reports that research into why these students chose to study with The Open Polytechnic reveals some quite distinctive features.

Convenience was critical, as nearly all students were juggling significant numbers of roles as well as study. However, a further feature was an apparent predisposition towards distance education because it affords a level of anonymity. "Some Māori students who lack confidence in their ability to study favour distance education because in the event of failure it preserves their pride and avoids embarrassment (whakama) before family, friends, tutors, workmates and potential detractors." The study also showed that for many of these students an e-learning environment would increase positive aspects of the particular mode of study without introducing any of the negative aspects of attending a campus.

[2] The dimensions of this map and the attributes of each group (segment) have been drawn from research conducted by Nan Wehipeihana for Te Puni Kokiri – Factors facilitating Māori participation and entry into professional occupations in July 1995. This research conducted with Māori students of The Open Polytechnic further confirms the broad typologies in relation to the diversity of what it means to be Māori.

"Alongside the motivations to study and the barriers that Māori students face, there is a need to understand how Māori students perceive Māori culture and what it means to be Māori, acknowledging that Māori culture itself can take a wide range of forms. The following map[2] is one way to represent Māori students' perceptions and feelings about 'being' Māori.

The vertical axis shows students who have or have had a close or distant relationship with things Māori.

Students who have a close cultural connection with things Māori are those students who describe themselves as having been brought up and/or immersed in Māori culture/cultural practices.

I was brought up by my nanny in and around the marae... going to land meetings. I knew all of the old people.

Students who have a distant cultural connection are those who describe themselves as having had little or no involvement or exposure to Māori cultural practices and values.

My dad was Māori but I was brought up by my mum (Pākehā). I don't know my dad's side of the family and we didn't have much to do with cultural things... It's only this year that I learnt what a 'boil up' was.

The horizontal axis shows how students feel about being Māori. That is, whether they are positively or negatively-disposed to Māori cultural practices and values.

Those who are at the positive end of the horizontal axis feel positive about being Māori.

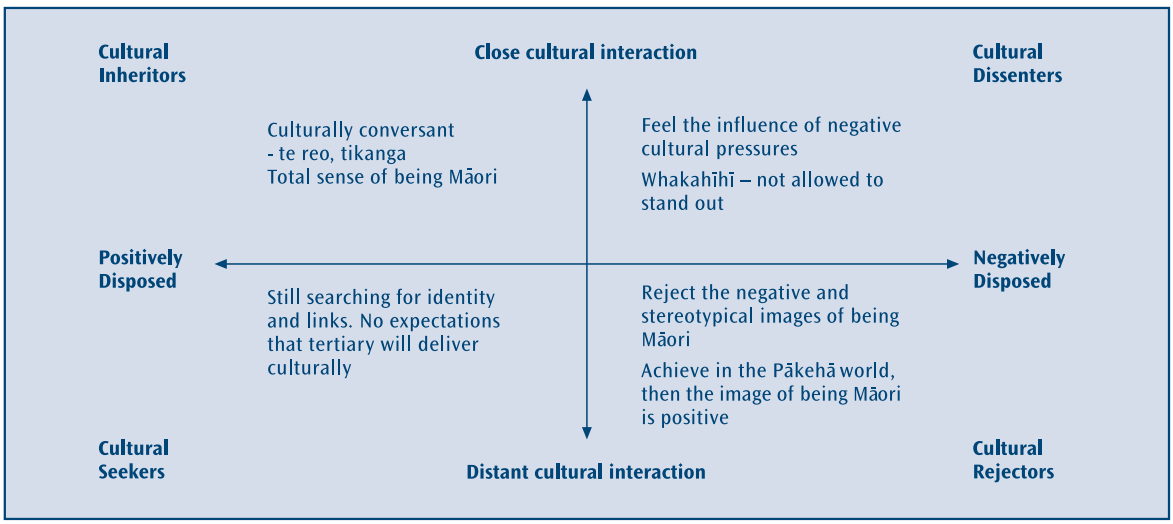
My whole sense of being, purpose comes from being Māori. It's who I am.

Those who are at the negatively-disposed end feel that being Māori, or the images of being Māori, are negative. Consequently, they will reject the negative image of being Māori by not being Māori themselves.

The image of being Māori is all negative – gangs, unemployed, on the DPB. That's not me.

Using these dimensions, there are four main typologies that emerge in relation to Māori students' disposition to and feelings about being Māori. These are:

- *culture inheritors*
- *culture dissenters*
- *culture seekers*
- *culture (Image) rejectors."*



Case Study – Te Rau Pūāwai

Te Rau Pūāwai is a Māori mental health workforce development programme established as a joint initiative between the Ministry of Health and Massey University. The programme began in early 1999 and currently provides financial and learning support to 123 undergraduate and postgraduate Māori students. As the majority of Te Rau Pūāwai students are mature Māori who are studying part-time from a distance, distance learning support is integral to Te Rau Pūāwai's learning support model. The wealth of knowledge, academic and employment experience among students has led to an exploration of ways to assist Te Rau Pūāwai students to access each other, communicate and participate in collective learning at an affordable cost.

The Te Rau Pūāwai website is designed to provide secure Web CT access to the Te Rau Pūāwai support team, graduates and students through electronic introductions, photos and email contacts, discussion groups and learning support material. Several design factors have been incorporated, including a virtual whare or meeting house and group photo features, to ensure that the site reflects the student body and reinforces the notion of a designated 'meeting place' which belongs to Te Rau Pūāwai.

The on-line support however has not been developed in isolation. In recognition of the importance of kanohi ki te kanohi (face to face contact) and whakawhanaungatanga (the importance of building relationships). Te Rau Pūāwai has developed the on-line support avenue as one aspect of a complete learning support package which includes: compulsory biannual hui; a monthly newsletter; an 0800 number; peer mentoring through a weekly call centre and regional visits twice a year. Developing a whanau or community of Māori students on-line must be a part of a wider learning support package for maximum utilisation and participation.

A recent evaluation revealed that 78% of students found the electronic introductions useful and 79% found the discussion groups useful. However only 50% said they used the website regularly, primarily due to lack of time, computer access and familiarity with the Internet.

This outcome is consistent with the year 2000 annual student evaluation, conducted by the Te Rau Pūāwai office, where only 50% of students reported the website to be useful all or most of the time. Based on these indications, Te Rau Pūāwai is currently implementing a range of strategies to increase participation including the provision of group and individual tutorials and the distribution of a user-friendly guide to the website.

The experience of the Te Rau Pūāwai programme in developing a community and whanau on-line has reinforced that as a tool, the Internet has enormous potential in bringing Māori students together and encouraging the utilisation of collective learning strategies and support. However to maximise that potential, a number of factors need to be considered from the outset and built into a continuing development process.

Culture Inheritors

This group of Māori students embrace Māori culture, and being Māori gives meaning to their life, which in turn shapes their thoughts, feelings and beliefs. They feel confident about being Māori and, for the most part, it is indistinguishable from their sense of self.

Being Māori, it's who I am, it's what I am, it's what I believe in and it shapes my thoughts and words and actions. It makes me, me.

Culture Dissenters

Some Māori feel that certain aspects of Māori culture do not support the pursuit of education. They cite whakahihi, which in this context they see as broadly equivalent to the 'tall poppy' syndrome discussed previously. It is important to note that they do not reject being Māori. However, they selectively reject certain aspects of Māori cultural values and practices which they perceive as negative.

I am Māori, and I'm proud to be Māori, but there are some parts of Māori culture which don't support success or being successful. It's not always seen as okay to stand out. You've got to know your place.

Culture Seekers

This group of Māori students have had limited exposure to Māori culture. "Being" Māori and Māori cultural practices have not featured strongly in their upbringing. They seek to understand and be part of Mā ori culture, but experience feelings of inadequacy and of not belonging and not fitting in. This is for one or a number of the following reasons. Namely, they:

- Don't speak te reo (Māori language)
- May not understand customs and cultural practices e.g. marae protocol/etiquette
- May not be perceived as 'being' Māori because they don't physically appear to be Māori or don't fit the negative stereotypes of being Māori.

People in my position won't go to tangi for fear of doing something wrong, 'cause I've never been told; but it's part of my heritage and I feel I should know.

Culture (Image) Rejectors

The rejection of negative Māori cultural images and stereotypes often involves the 'sidelining' of many aspects of Māori culture. Negative images such as being low achievers or gang members can, for some Māori, act as a catalyst to not be like the stereotype. This group, therefore, will play down being Māori (and possibly pass themselves off as Pākehā). They will choose not to be associated with Māori people/activities in order to feel that they do not fit the stereotypical image.

The image of being Māori is all negative – gangs, unemployed, on the DPB/WB. That's not me.

The framework highlights that approaches used must recognise the diversity that exists within the Māori community and not attempt to impose a uniform solution.

Te Whānau ā Apanui – learning on-line

Te Whānau ā Apanui is a rural tribe. Sixty-three percent of its members are under 30 and 80% live outside the tribal rohe. The tribe is using e-learning programmes as a cost-effective means of upskilling people and helping them 'pathway' into the IT industry.

The tribe sees that on-line training solutions enable people to easily refresh and update their skills, gain additional certifications and learn about new advances in technology. They can learn at their own pace when they have time and make progress in manageable amounts.

Their vision is to exist as a tribe in the "knowledge economy" and be in control of their own destiny. The tribe has developed relations with Cisco systems and has academies operating in two low-decile high schools in the Tairāwhiti. An Academy was recently launched at Tangaroa College (South Auckland). The tribe's main task at present is investigating deployment options and delivery costing models into other areas. The e-learning model it is developing will allow them to deliver up to 1,300 IT and Desktop courses and 200 business e-learning courses to any Te Whānau ā Apanui member (or others) anywhere in the world so long as they have access to the Internet.

Not only must we enhance Māori participation in e-learning, we must ensure that the e-learning experience reflects the richness and diversity of Māori tikanga and reo. To achieve these goals educational providers/facilitators must engage with Māori communities and develop meaningful responses to their needs and aspirations.

The development of e-learning in New Zealand must take account of trends such as the demand for cultural authenticity and identity by Māori learners and the emergence of dynamic Māori language and Kaupapa Māori learning environments. In terms of provision, Māori tertiary providers too face challenges. There are few Māori providers with the knowledge or capacity to deliver e-learning. The growth and demand for Māori tertiary provision is placing pressure on Māori providers which may reduce their ability to make progress in this area. It is also critical that there is collaboration between non-Māori and Māori-based TEIs (Wānanga) so that scarce resource is best utilised and duplication is avoided.

Bridging the digital divide

As mentioned earlier in this report, there is a significant gap between Māori and non-Māori in Internet access and participation. This reflects a number of factors, including:

- lack of economic resources
- lower levels of educational achievement
- fear of technology
- high cost of digital technology
- lack of phone connections within Māori homes
- preference for face-to-face contact
- lack of appropriate Māori digital material
- lack of Māori providers offering a culturally-appropriate learning environment.

While Māori enrolments in IT courses and the number of computers in Māori homes have increased, this has not led to high levels of technological literacy or achievement among Māori. A key point therefore is that participation alone is not a barometer of success. Strategies for involving Māori in e-learning must focus on the quality of learning taking place and outcomes achieved.

Research relating to the experience of indigenous learners in other countries will be important to identify useful parallels and lessons to be learned. There is opportunity here, too, for Māori to develop a leadership role internationally through sharing and possibly promoting successful approaches.

The Advisory Group recommends a number of initiatives to enhance Māori participation and achievement. In particular, a Kaupapa Māori group to work with Kaupapa Māori-based programmes. (Recommendation 2)

This group would have a mandate to draw on the best expertise here and abroad and establish good practice guidelines and performance measures.

At the same time Government must challenge tertiary education providers to act proactively in this area and improve access to technology for local Māori communities. There may be potential here to involve sponsors and technology suppliers, as has happened with the SeniorNet nationwide programme.

Other initiatives might include mobile e-learning units, community classes in e-learning with a Māori focus and flexible use of institutional resources during the weekend and in the evening.

The Advisory Group recommends developing Internet resources and other digital material for a Māori audience. For example, the nationwide portal proposed earlier must have a Māori presence, including a Māori cultural component and a full Māori language environment. The Ministry of Education's Te Kete Ipurangi site could also be expanded to provide material for Māori adults. This would involve expanding its current brief as a site for primary and secondary learners. (Recommendation 2)

More must be done to assist Māori to participate in e-learning. It is recommended that entry-level computer classes be run to get them started. Fees should be minimal or not be charged. It will be important that secondary schools and tertiary education providers involve themselves in developing these programmes so there is the potential for students to carry on to higher levels of study.

The Advisory Group recommends that research be commissioned into key areas of Māori development in the field of e-learning. This would encourage much-needed innovation and research in the field to determine what works for Māori and why. (Recommendation 2)

Steps also need to be taken to meet the professional development needs of Māori involved in e-learning education and development so that these practitioners have the capacity to develop e-learning in the way that best suits Māori needs.

The Advisory Group recommends that Government recognises its obligations within the Treaty of Waitangi as they pertain to the e-learning environment. (Recommendation 2)

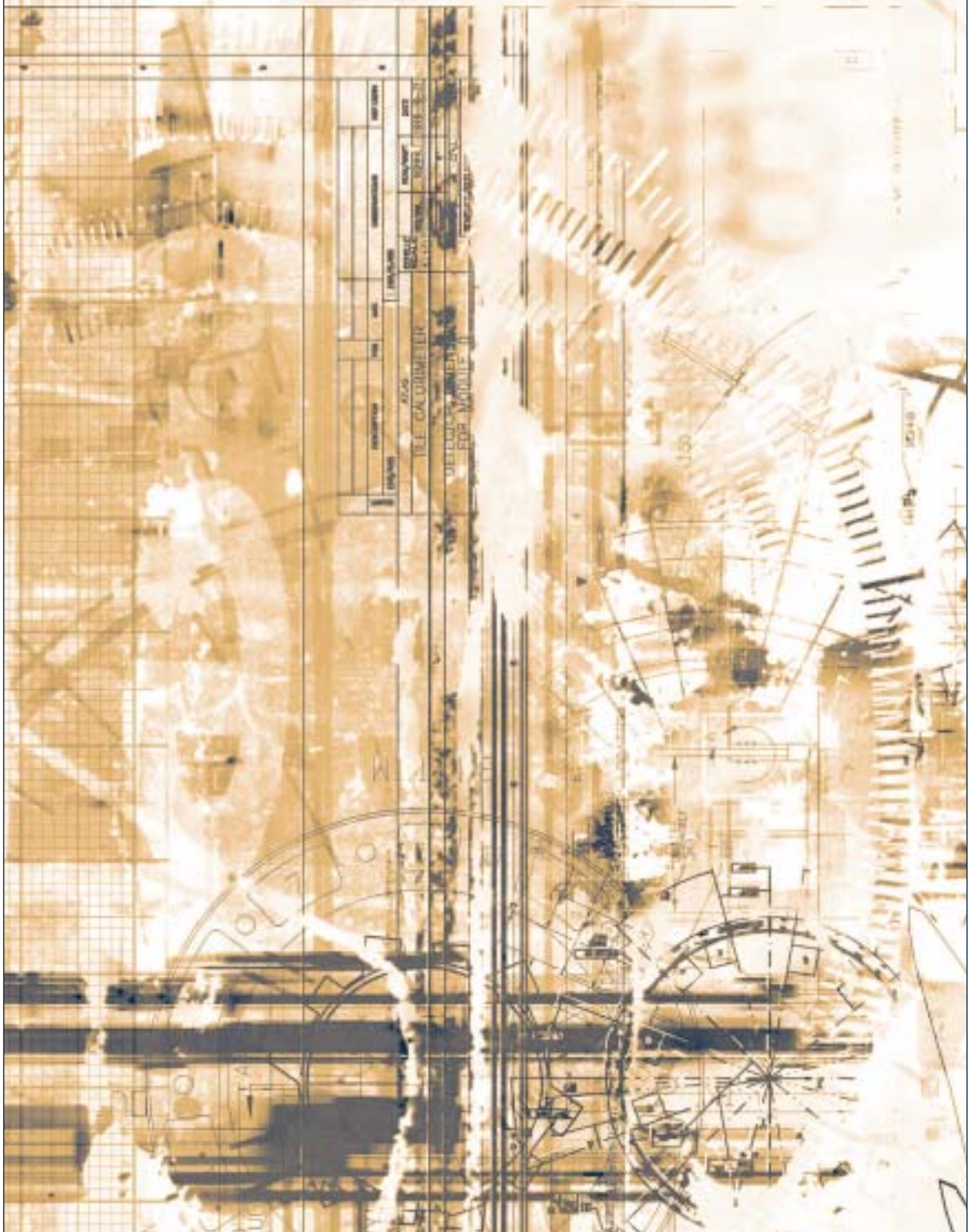
Building the capacity of Māori to participate in e-learning

EDUCA (NZ) Limited is involved in the following ICT professional development with Māori at the schools level. These examples might also provide useful reference point for tertiary developments since each one of these Ministry of Education interventions uses some form of distance or flexible learning technology.

- Professional Development Lead Schools are working in partnership with cluster schools in Tūhoe, Wairoa, Ngā Kura Kaupapa Māori o Te Puku o te Ika and Te Taitokerau to design and deliver professional development programmes that take into account their unique features and experiences.
- Access to ICT is a problem faced by New Zealand Teachers. Te Hiringa i te Mahara ICT is a national project that seeks to address this problem by supplying participants of the programme with laptops, technical services and professional development support. EDUCA has supported the Ministry of Education programme with professional development interventions.
- Kaupapa ara Whakawhiti Mātauranga is a Ministry of Education information and communications technologies programme aimed at improving outcomes for Māori learners in targeted geographical regions as well as in Wharekura and Māori Boarding Schools. The programme has adopted the training models of Te Hiringa i te Mahara, and also includes a video-conferencing component.

Chapter Five

Pedagogy and E-Learning



E-learning in New Zealand will only be successful if it helps students achieve their learning goals and is established with a strong pedagogical base. While a focus on learning will help to ensure that the technology is used to add value, it is important to recognise that e-learning is a voyage into the unknown as new technologies open up new approaches and opportunities. We must assess its impact on academic staff and acknowledge that it is going to change their role in all learning environments.

Substantial developments in e-learning are inevitable. Good educators are already embracing the opportunities it offers to enhance their teaching and students will increasingly put pressure on teachers to be able to support learning in this way. Employers want employees who can work effectively in an information age and businesses are promoting partnerships with institutions to implement ICT. There are increasing demands from school leavers who have been raised in a digital age and have an increasing number of e-learning opportunities open to them, both here and abroad.

E-learning offers the potential for an interactive environment facilitated by an e-educator who is able to use a range of learning environments to best meet the needs of students. The Internet is also a highly-flexible tool for learning in the workplace.

It is therefore not a question of whether we implement e-learning, but how well we do it.

The "e" terms in education

Here are some useful definitions of e-teachers, e-learning and e-education as described in this paper.

Who are e-educators, and what do they do?

E-educators are the new generation of academic staff who will work in an Internet environment in both regular and virtual learning situations. They will build new concepts of working in time and space with more and more "blended" options including a range of teaching modes. E-educators collaborate, build and discover new learning communities and explore resources as they interact with information, materials and ideas with their students and colleagues. E-educators are sensitive to strategies that work in the web environment; they do not expect to use classroom techniques in this medium.

What is e-learning?

E-learning is learning which takes place as a result of experiences and interaction in an Internet environment. It is not restricted to times when the teacher is available and can take place in a variety of locations including home, school and community locations, e.g. libraries and cafes.

What is e-education?

E-education involves e-teaching and e-learning along with the various administrative and strategic measures needed to support teaching and learning in an Internet environment. It will incorporate a local, regional, national and international view of education.

Building a broad vision of e-education

The possibilities for e-education will only become stronger if it is accompanied by a clear vision and strategy.

An effective e-learning strategy must be more than technology itself and web content. It also relies on critical factors such as building a learning culture, supportive leadership, utilising an appropriate business model and integrating the e-learning strategy throughout an organisation.

So it is essential that we encourage New Zealand educators to view e-learning in the widest possible context and broaden their horizons.

The impact of e-learning on teaching and learning

E-learning is expanding opportunities for teaching and learning. However, its implementation may present real challenges for educators to teach in a way they may have never experienced themselves, using unfamiliar technology.

It is only natural therefore that fear of e-teaching among educators may become a barrier to realising the possibilities of e-learning. Key concerns among teachers may include a lack of knowledge about ICT, a perceived lack of adequate support and an unwillingness to experiment with innovation. These issues must be acknowledged and addressed before real progress can be made. They highlight the need for ongoing training and support for educators and administrators at all levels.

The table below highlights some of the day-to-day features of e-learning that might impact on educators depending on how an institution chooses to offer e-education and the choices learners make.

Some distinctive features of e-learning

- The speed with which the teaching / learning process can take place enables students to study at their own pace. It also facilitates rapid feedback, a critical factor in motivation for learning.
- Discussion can be asynchronous and offer time for reflection and the opportunity to return.
- Opportunities to access a wide range of resources via the Internet.
- Opportunities to be able to share aspects of learning with other class members in different locations.
- Content can be presented in a digital format with links to information at greater depth when and if required. Material can be made available for further reflection and study – the lecture is not lost.
- Students are able to publish their work for easy access by other students.

A comparison of conventional learning and e-learning

Conventional learning	E-learning
Students attend an institution in their local community.	Students participate from a variety of locations and may "attend" multiple learning institutions.
Classes are scheduled according to an institution's hours and timetables.	Students may determine the times when they access e-learning opportunities.
Students are directed to work individually or in groups.	Students can choose to work individually or collaboratively with people who may or may not be in their regular class.
Classes are synchronous. And teachers and students interact in real time.	Classes may be synchronous or asynchronous.
Students are generally enrolled with one institution.	Students may take classes from more than one institution.
Learning objectives are set by the teacher and institution.	Students may set their own objectives and explore their own learning needs and agendas.
Students follow a linear pattern influenced by the needs of other class members and the teacher's planning.	Students can follow a non-linear path at a pace that meets their individual needs at that time, i.e. just-in-time learning. The teacher is facilitating the activity.
Teachers work in one institution.	E-teachers can work in more than one institution.
Dealing with different learning styles is difficult, particularly if the class size is large.	Differing learning styles can be catered for, allowing a greater breadth and depth of learning, better tailored to individual student needs. Similarly, differing teaching styles can easily be adopted and adapted to suit different communities of learners.

Staff training for on-line learning at Massey University

In 1998, Massey University in a report from its Information Technology and Distance Education Taskforce, clarified its vision for On-line Learning and committed to: "*providing more flexible opportunities for students to study, regardless of their campus or mode of study*"(p.5). This statement, together with a key objective of the Strategic Plan stating that the University will: "*Ensure that staff are equipped to teach in a multi-campus, multi-modal environment*", presented a major challenge for the University's Training and Development Unit (TDU) to provide the professional development and support necessary for staff to meet these objectives.

Initially, TDU developed and offered a three-hour module "*An Introduction to Flexible Learning and Teaching*" within its Introduction to Teaching Skills Certificate. However, the demand for more intensive training led to a new programme, "*The Certificate in Flexible Learning and Teaching*", being developed by TDU, in association with Massey's extramural Instructional Design Consultants. This programme was launched in 2000 and consisted of nine three-hour modules with attendance at six qualifying the participant for the Certificate. The uptake was immediate and considerable. In 2000, there were 24 offerings of the modules attended by 456 participants across Massey's three campuses, with 15 staff qualifying for certificates by the end of the year. In 2001 the TDU again delivered 24 modules in the FLT programme. These were attended by more than 300 participants with a further 30 gaining Certificates.

A second staff development strand supporting On-line Learning is the programme to develop pedagogical and technical expertise with Web-CT (Massey's On-line Delivery platform). The Flexible Learning and Teaching module introducing Web-CT is complemented by a series of eleven different one-hour 'hands-on' workshops. This year the consultants supporting on-line teaching have scheduled and run 44 of these workshops attended by more than 250 participants. In addition, 14 departments have requested training in the use and application of Web-CT and this has involved 600 staff participating in a further 75 of the one-hour workshops.

As a third major initiative, TDU has just organised and run Vice-Chancellor's Symposia on On-line Learning on all three of Massey's Campuses. More than 250 participants attended these symposia. Information about the Symposia, together with University policies and strategies and presentations from the workshops may be found on the symposium website at: **http://vcsymposium.massey.ac.nz**

The changing roles of academic staff in a new classroom environment

It needs to be acknowledged that many, if not most, academics have no training in e-teaching. Unfortunately teacher competence in a traditional campus environment does not automatically translate to success as an e-educator in a very different environment.

In this new teaching world educators will be required to take on new roles. They may be challenged to make e-learning an integral part of their campus course or they may be required to create a virtual learning site which students visit electronically.

This transition to an e-learning environment will not be accomplished simply by institutions investing in technology. It is not the tools that will make the difference; it is the communities of educators and students who understand how they can use them.

Perhaps the greatest catalyst for change will lie in the next generation of students. Students' familiarity with technology and their openness to adventurous ways of learning will undoubtedly be a major driver of change in the e-learning area.

In this new environment students will face new challenges. They will have to learn to read and write effectively, with well-developed listening and speaking skills. They must be able to find information, understand and evaluate it, and be able to apply it to take advantage of opportunities. They must have the communication skills to be able to share their ideas with diverse groups.

In a recent report, the OECD identified low literacy and inadequate language skills among students as barriers to Internet use. As much of the content and interaction on the Internet relies heavily on written communication, students will need strong digital and information literacy skills to make the most of web-based learning.

The challenges for educators in meeting these diverse needs of students is formidable. Both-e-educators and e-learners are now part of a much wider and complicated learning community that may demand more of educators than they have been prepared for.

Exploring the role of an e-educator

Teachers themselves vary greatly in their confidence with new technology. There are some who are not at all e-literate and others who use the Internet as part of regular classroom activities.

A number of areas have been identified where academic staff will be required to adopt new roles and approaches in relation to e-teaching. In this new environment, they will be required to:

- Look at the course in a new way and re-think existing course delivery
- Develop skills in designing curricula for web delivery
- Move from being a content provider to a learning facilitator who has a good knowledge of their subject area
- Gain proficiency in using the tools so that they understand both its strengths and its challenges
- Learn to teach in absence of face-to-face interaction – e.g. giving feedback electronically; setting up frequently-asked questions; encouraging student interaction through guided electronic discussions
- Gain an understanding of students' needs and lifestyles in their own communities
- Be flexible in mixing a traditional and e-learning approach
- Develop skills managing the on-line classroom environment and in setting up chat groups, discussions, managing emails and be able to develop these in the learners who are new to this learning environment.

According to the OECD report the ideal instructional mix for educators implementing ICT "will vary according to student age and maturity level but will always include a combination of direct instruction, guided and independent practice, group interaction and individual reflection, search and creation."

Some New Zealand academics already teach in this way and are able to juggle the needs of the institution and the curriculum with the needs of their students. They are confident in integrating a range of technologies into the learning experience for their students.

Mixed media teacher education at the School of Education, University of Waikato

In the mid-1990s, a teacher shortage of significant proportion affected New Zealand primary schools and its impact was felt predominantly in rural and remote areas. These areas depend upon recruiting beginning teachers who have been educated in urban universities, colleges of education and teachers' colleges. However, most of these new teachers are either reluctant to venture to what they consider to be remote areas or if they do, they stay for only a short time. Thus one solution to the teacher shortage is to educate local people who are likely to stay on a more permanent basis.

In response to the teacher shortage in rural districts, the University of Waikato decided to develop an alternative way of offering its teacher education programme to enable prospective teachers to be educated even though they lived in places far away from a campus and were unable to attend face-to-face classes. It was thought that such a programme would use some new information and communication technologies which were in use at that time.

After initial investigations, a decision was made to use an approach which combined traditional approaches to teacher education with the use of a mixed media approach. The result was the Mixed Media Programme [MMP], which began with an initial intake of 54 students in 1997. The elements of the MMP teacher education programme have been:

- the students study full-time, but do most of their study 'at home'
- three one-week block courses held on campus each year
- tasks carried out in local primary schools
- use of information and communication technologies to receive coursework, submit assignments, and take part in group discussion.

E-learning and staff development at the University of Otago

In 1999, the University decided to adopt Blackboard as its primary electronic learning management system. Key factors for consideration in the decision included scalability, reliability, ease of use by students and the provision of a common entry point across the University for all staff and students on all campuses. The platform enables educators to enhance on-campus learning and deliver distance learning that enhances flexibility for students in terms of the time, place and pace of study.

One success factor in the uptake of e-learning at the University has been the provision of free training to staff. The University conducted one-hour demonstrations of the benefits of using e-learning, attended by almost 1000 people and then offered staff at all levels of the University free three-hour hands-on training. About 450 staff attended these sessions.

A CD-ROM and training website are also provided. Additionally, teaching staff are provided with a presentation which they can customise to help students use the system. Staff who are experienced in using the e-learning system are invited to give demonstrations of their teaching to others at university-wide forums.

More than two-thirds of the University's students now access the e-learning system. Academics are using it for more than half of all the papers taught on the campuses. It is also used in the distance learning environment for students located in New Zealand and overseas.

Making sure that this approach is standard practice among all academic staff is the major challenge facing New Zealand's tertiary education system in the e-learning area.

They may need institutions to put in place:

- Software platforms that can be managed by the teacher and will provide a total environment for all interaction, content and the submission of assignments
- Software platforms that are linked to the institutions' administrative systems for enrolment, backup facilities and ongoing development and support
- Helpdesk facility and support for students who are not using the technology within a controlled campus environment
- Systems for tracking submission of student assignments
- Systems for providing technical support for students who are not using the technology within a controlled campus environment
- Systems for supporting staff working from different locations.

Developing strong pedagogical bases for e-learning

As argued earlier in this report, substantial investment in technology will not of itself deliver an effective e-learning environment. The real gains are to be made by teaching and learning communities understanding how to make maximum use of these technologies.

These communities require academic staff who:

- understand what it is like to learn in an e-environment
- are confident working in diverse environments interacting with communities of students and peers they may never see
- are able to locate and publish in a web-based environment
- are provided with technical support which is assisting and not driving e-teaching activity
- are able to focus on the context of the e-teaching activity and not just on the content.

Sustainable e-learning growth in an institution depends on academic staff who can see the promise offered by on-line opportunities and understand the overall landscape which e-learning contributes to. It is important that there is a strategy for developing e-learning initiatives and that e-educators are involved in planning the strategy and assessing its outcomes.

Staff development for Web delivery at The Open Polytechnic

Provision for staff development is an integral part of the Open Polytechnic's decision to offer its degree courses on-line. A priority has been the support of staff in developing their skills for creating an e-learning environment. The principle has been to build on existing good practice from experience culled over time for print delivery. This recognises the asynchronous nature of the distance mode characterised by the Open Polytechnic. While courses were often targeted at specific functional areas, there was a large measure of overlap between these groups due to the need for a complete overview and understanding of the on-line production process.

The Polytechnic's approach was to build on the Course Design Unit's experience and research in instructional design. We began with a small team of three instructional designers who had experience developing on-line learning material and who subsequently mentored others within the Unit. This experience was underpinned by research conducted by both individuals and groups. Academic staff worked alongside instructional designers, honing and crafting course material, identifying where multimedia would best assist learning and selecting topics for on-line discussion groups. Existing capability in multimedia development was increased with the addition of a new staff member and specific software training courses were provided for production staff.

A number of mechanisms were put in place to prepare teaching staff for on-line delivery. These include optional courses for tutors new to this environment – such as browser use and Internet searching, as well as general navigation of our on-line learning environment. The management of on-line discussion groups is a recognised element of successful e-learning, and all lecturers receive instruction on setting up and running effective discussion groups. The Open Polytechnic has students for whom English is a second language and a training course on meeting the needs of these students in an on-line environment is available for academic staff.

On-line submission of assessments is encouraged, and lecturers are shown how to receive, mark and return assessments electronically. Enhancement of course materials through the use of interactive multimedia elements is an important developmental area and workshops were provided to demonstrate the possibilities. In addition to these core courses, optional advanced courses on on-line editing were offered.

For The Open Polytechnic, web delivery includes on-line services such as enrolments, cross-credits and withdrawals. The project team collaborated with the relevant functional unit to adapt existing processes and develop new ones. Training for staff in those processes was provided by a core group who then trained their colleagues.

Building on teaching strengths

Careful thought needs to be given to teaching possibilities in an Internet environment. Effective teaching does not involve dumping vast amounts of content on the Internet but creating different learning opportunities and experiences. Content must be embedded in a teaching and learning framework which is flexible and accessible in terms of design.

The substance of learning and teaching remains more or less the same but the advances in technology allow new flexibility and responsiveness. It is vital that teachers themselves design learning situations for this environment which are meaningful and motivating for e-learners.

Beyond technological considerations, our use of ICT must be saturated with human ideas, feelings, values and understandings. This is where the real potential of e-learning lies and where e-educators can show their strengths.

Those strengths must be evident both in classroom situations and in a distance learning context. Clearly technology is set to transform our notions of a campus to include our homes and workplaces. Wherever e-learning takes place, the competence and strengths of academic staff in designing effective programmes will be a key to ensuring a successful learning experience.

It is of great importance therefore that the needs of e-educators feature prominently in the development of a New Zealand e-learning strategy. Teacher education institutions will need to meet these new demands and model good e-teaching practice in their programmes. Ongoing support and education for experienced teachers will also be a necessity.

Support for e-teaching

Academics need time, support and room to experiment as they learn to become e-educators. They gain confidence when they have the time and the opportunity to try new things rather than stay with familiar methods. It will be a significant challenge for tertiary education providers to find ways to invest in this critical staff development. There is an added problem in the age range of academics. Many are coming close to retiring age and, if they are not computer literate, may not have the motivation to learn the new skills required.

There is potential for academics to develop their e-teaching skills through on-line team teaching situations that provide peer support and role models. Some teachers have opted to enrol in on-line papers and learn from an experienced e-teacher.

However, we believe the issue is far too important to be left to individuals.

The Advisory Group suggests that institutions provide incentives and support for academic staff to teach in an e-learning environment.

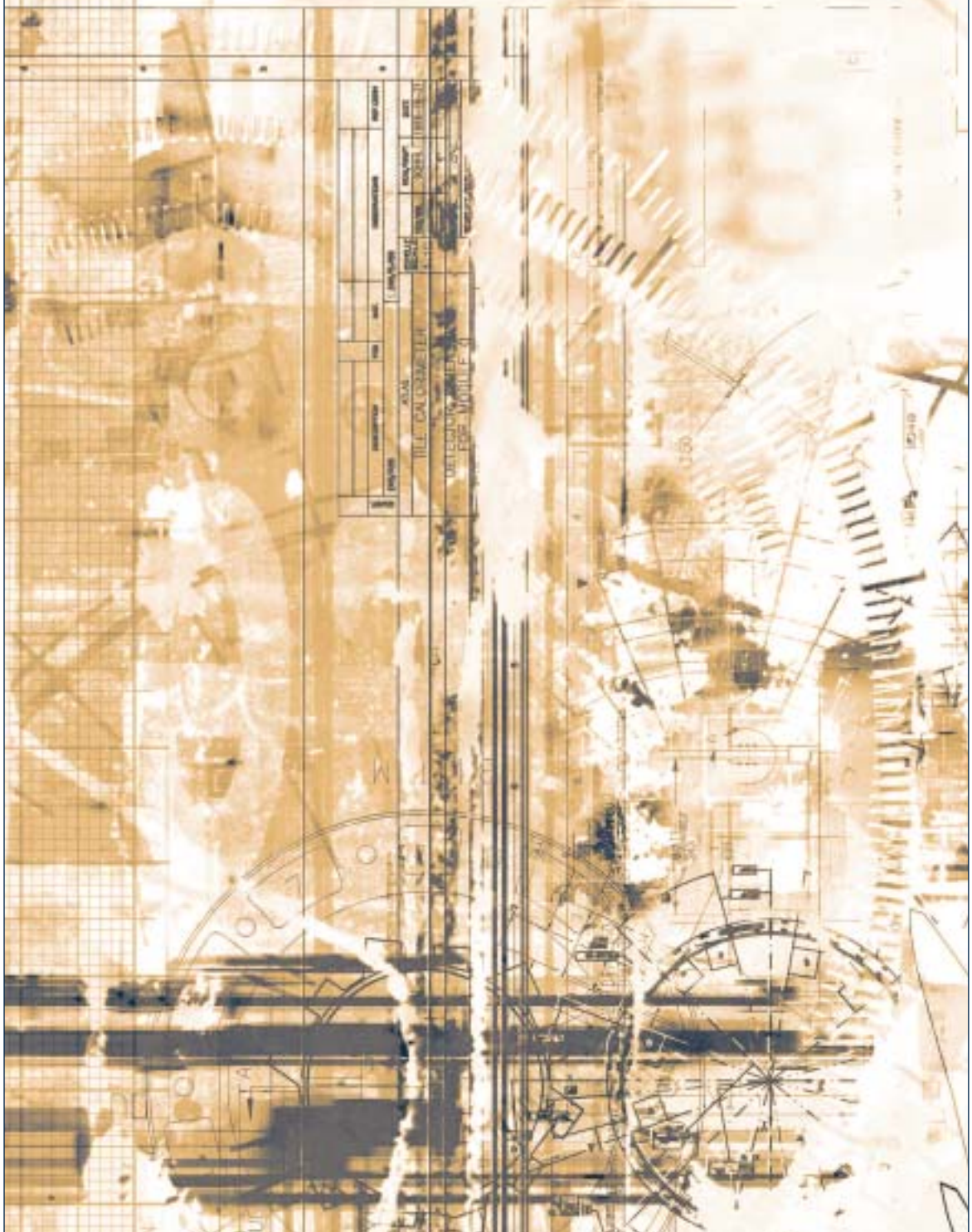
Traditional university and tertiary staff development practices rely on the attendance of academic staff at seminars and workshops focusing on curriculum developments or on the application of alternative teaching strategies. The Advisory Group recognises that this approach, while effective in the past, is inappropriate for e-learning.

Experience demonstrates that on-the-job staff development, directly involving staff in the workplace with e-learning strategies, is a more productive method of improving teaching skills.

The Advisory Group suggests therefore that on-the-job and just-in-time staff development be provided by other academic staff experienced in e-learning.

Chapter Six

The Way Forward – Leadership, Quality and Capability



What are learning objects?

Learning objects are stand-alone packages of information and learning. They can be as simple as a the chapter of a textbook or a map or as sophisticated as a virtual tour of a museum or a library or an interactive learning experience such as a flight simulator.

Learning objects are created and packaged in standard formats and catalogued with standard metadata tags so they can be easily located and used as widely as possible. The creation and use of learning objects are a fundamentally different approach to learning from the current world of proprietary documents.

Earlier in this report, the Advisory Group looked at the possibilities of e-learning in terms of a value chain. The value chain was underpinned by three essential requirements:

- effective leadership and governance
- high standards of quality assurance
- sufficient capability in terms of systems, people and infrastructure.

These three elements are the foundation of a successful educational endeavour.

We have noted earlier that e-learning is simply the use of particular electronic tools to support the learning process. All reputable institutions will in future need to offer some of these options to their students, who will often wish to combine an e-learning experience with being part of the campus community. Others will be seeking a learning experience that does not require their attendance in any particular place at any particular time. Clearly the institutional strategies for e-learning will be different depending on their particular mission and the profile of the institution including the characteristics of the students they seek to serve.

Governance and leadership

It is vital that the regulatory and legislative environment for e-learning provides for effective governance and leadership. Councils of institutions need to have a sound grasp of the issues and develop effective e-learning strategies as part of the system as a whole.

Many institutions have willingly shared their current e-learning strategies. These indicate that across the sector there is significant differentiation.

Massey University's vision is to use the medium to develop learning communities among students and teachers. To support its vision, Massey is challenging every college to plan the development of e-learning in a phased way and to commit to providing e-learning support for all off-campus programmes in the next three years.

Whitireia's vision for e-learning is to increase applied vocational education and training opportunities for people in its communities by offering greater flexibility and individual choice in the diversity of delivery. The focus of UCOL's e-learning strategy is to blend the best of classroom-led and technology-mediated delivery.

The University of Otago's Strategic Direction 2005 specifically encourages the adoption of innovative and flexible learning methods. The University of Waikato has e-learning as one of its strategic goals and has focused on developing cohesive curricula for teaching on-line so that students have a path to a complete qualification. The Open Polytechnic is pursuing a volume-based strategy which seeks a scaleable option to reach many more students studying in their own homes/workplaces/countries. AUT and Auckland University are also pursuing international development as a critical component of their e-learning strategies.

Institutions are clearly developing their e-learning strategies in ways that build on and strengthen their core competencies and comparative advantage. This is what the country needs. The challenge for the TEC will be to foster e-learning and to ensure that institutions are mutually supportive in the emerging e-learning environment. Institutions also need to have an understanding of how their own e-learning strategies fit within national priorities so that chances for collaboration and strategic partnership are enhanced.

The Advisory Group recommends that documentation of an e-learning strategy be part of an institution's Charter and Profile requirements. (Recommendation 1)

Governing bodies and tertiary leaders also need to understand the economics of the strategies they are pursuing. Anecdotal evidence suggests this is not well understood. It would be helpful if TEC took a lead role in developing this information base as suggested earlier. It could also facilitate workshops for chief executives to address this issue. The Advisory Group has been impressed by the strategy being pursued by the University of Southern Queensland and by their understanding of the implications for the university and the resulting way in which the strategy is being operationalised. This is one example where the Advisory Group believes there would be significant benefit for New Zealand CEOs in learning from USQ as part of a structured workshop.

Most New Zealand tertiary education providers are committed to delivering at least some education on-line within the next few years. This will introduce governance and quality challenges that they may never have encountered before. These could relate to investment decisions, intellectual property issues, student and teacher access, course selection as well as security and privacy issues.

Authoritative independent advice and guidance is a critical issue, especially for smaller institutions that simply do not have the resources to evaluate options appropriately. Some institutions may be too small to provide comprehensive training for their staff in the range of new skills and knowledge required in an e-learning environment.

The Advisory Group recommends therefore that advice and guidance to institutions on e-learning, strategic and infrastructure issues and options be made available via the tertiary portal. (Recommendation 3)

It would be useful for the consortium contracted by TEC to develop the portal to also have responsibility for creating and maintaining this service which is envisaged as more of a linking function to where expertise resides in the sector than a consultancy function. It may be that the latter is what is advised if the issue requires expertise beyond that available within the sector.

Some of the governance issues are complex and will require careful consideration by TEC Councils. An obvious area is intellectual property and copyright. Our assessment is that there is very poor understanding of the legal environment surrounding intellectual property, copyright, and moral rights, and this is a potential risk if not appropriately managed. This is also an area where there is much to be gained from having a single independent source of advice for institutions.

There is a further current issue. A major problem lies in sending out print material electronically and making it available for copying via digital technology. At present the Copyright Act does not cover the digital realm.

The Advisory Group recommends:

- **That the Government ensure that the review of the Copyright Act 1994 meets the needs of students and educational institutions in a digital environment. (Recommendation 7)**
- **That the Government establish processes to ensure that intellectual property issues and particularly the management of intellectual property rights are understood and appropriately addressed within the tertiary sector. (Recommendation 8)**

Institutions and government will need to ensure that students studying electronically have the same access to materials as contact students do. This means that substantial sections of a work or resource must be able to be copied or cached for study and research purposes. Similarly, learners need to be able to copy material from servers and websites in the course of their studies. A range of options need to be explored to guarantee effective student access.

Overall a balance needs to be struck between protecting the rights of the developer of materials and the public good resulting from widespread access to learning materials. The Copyright Act is currently under review and the outcome of any change in legislation will have significant impact for e-learning.

The issue of intellectual property is important for Māori. Decisions may need to be made concerning the electronic availability of knowledge, skills, attitudes, beliefs and taonga unique to Māori. Ownership and use of te reo and taonga may need to be agreed upon.

Assuring quality

Currently there are two agencies with statutory responsibility for quality assurance in the tertiary sector – the Vice-Chancellors' Committee in the university sector and the New Zealand Qualifications Authority (NZQA) for the remainder of the tertiary sector. In the case of polytechnics and colleges of education, NZQA has delegated responsibility to the Association of Polytechnics New Zealand and the New Zealand Colleges of Education Council. Both agencies are required to address Māori issues in quality assurance.

In order to attract public funding, all tertiary programmes and qualifications must be accredited by one of these bodies and they are also subject to regular review. Currently, in both the University and NZQA environment these quality assurance appraisals are performed against a single set of standards and expectations that apply regardless of delivery medium or mode.

Quality assurance agencies around the world are now moving to develop appropriate guidelines for e-learning, and there is debate about how to apply specific benchmarks to e-learning. It could be argued that virtual education is such a new phenomenon that all stakeholders require greater assurance of its quality than can be provided through the existing quality assurance system. With a growing international market for education, there is also the need to ensure that quality assurance standards have international credibility.

On the other hand, it could be argued that quality standards should be related to core educational processes and outcomes, rather than the mode of delivery. Given the trend to more mixing or blending of modes, this approach seems most appropriate, and the Advisory Group recommends accordingly.

The Advisory Group finds that the current approach of the accreditation and quality assurance agencies in New Zealand has the potential to work well with on-line programmes. The standards do relate to core educational processes and outcomes. The onus is on the institution to provide appropriate evidence for how the standards are met. The major issue is to develop an understanding amongst accreditation and audit panels about the different kinds of evidence that are acceptable.

For example, a traditional requirement has been that institutions demonstrate they have a library with adequate spaces for students, appropriate book stock, and journal subscriptions. Addressing quality in an e-learning environment is in many instances raising questions that refocus the quality standards for all modes of learning. In this instance the primary question that should be able to be answered, irrespective of mode, is "Do students have timely access to the information that is relevant for them to succeed in their course?" This may be provided through Internet access to databases; it may also be found that in the traditional situation, despite the fact that there are books in the library, the students cannot gain access to them in a timely fashion, because there is an insufficient quantity.

The Advisory Group was struck by the potential for the focus on quality for e-learning to raise the stakes in relation to the quality of any learning. That presents an opportunity to address quality issues in a non-threatening way by framing them in a paradigm where everyone is being required to learn new ways of working.

The need for agreed standards

It is clear that developing common standards for learners and educators to create, find, evaluate, reuse and share electronic content will be crucial if New Zealand is to develop e-learning objects that are accessible and valued by learners.

New Zealand needs an e-learning environment where learners can easily search, identify and retrieve content no matter where they are. This means that learners must be able to access learning objects developed by one institution even if they are using different platforms at other institutions.

Achieving universal agreement on how learning objects should be created, stored, retrieved, assembled and delivered is fundamental for creating an e-learning environment which transcends technology and meets the needs of learners.

The bringing together of all these elements and players will require careful co-ordination and effective leadership. The Advisory Group sees that a Consortium for e-learning could play a leading role in this regard.

We must do all we can to ensure the learners are able to seamlessly navigate New Zealand's e-learning environment and receive information of interest to them in ways that are tailored to their needs. Consistency of standards will be an essential in the development of such a system.

Developing a code of practice for e-learning

Educators must also move rapidly to create confidence in the currency of digital content and information available to learners.

The Advisory Group recommends New Zealand institutions develop a voluntary code of practice or quality standard around e-learning content and services. This would assist students to know which were quality providers and thus also assist in branding New Zealand education on the web. It is suggested that NZQA and NZVCC could facilitate a sector group to develop such a code and identify an appropriate way of implementing it. (Recommendation 4)

Steps also need to be taken to protect New Zealand learners from poor quality offshore virtual programmes. The Australian Government, for example, has already moved to provide national protocols for virtual universities, allowing for the possibility of prosecution where students are adversely affected by the actions of providers.

More generally, learners need assistance in sorting out the bewildering array of on-line options so they can determine their relative quality. The Canadian Government has funded the development of a consumer's guide to distance and on-line learning and it is recommended that New Zealand consider producing a similar resource. The guide would cover details such as the mix of media to be used in the learning programme, as well as study and assessment requirements.

Learning from Australia's SOCCI model

Developments in Australia in the schools area under the SOCCI Project provide a useful reference point and a powerful argument in favour of developing standard learning objects. The Australians, for example, have implemented an American model – the Sharable Content Object Reference Model (SCORM) – which provides guidelines and technical specifications to be used by all technology vendors, content owners and users.

The existence of such standards means learning objects can be easily moved or copied from one institution to another and accessed through any system that conforms to the SCORM specification.

The Advisory Group endorses this approach and believes that it offers significant potential benefits for institutions as well as learners. For example there may be significant domestic and international opportunities for New Zealand institutions to expand their markets if they choose to adapt their existing content into suitable learning objects.

Once again, collaboration will be essential to develop a critical mass of learning objects in a way that is timely, avoids duplication of effort and resources and acknowledges the special strengths and expertise of New Zealand educators and institutions.

Capability

There are a number of capability issues that need to be addressed to develop the potential of e-learning in New Zealand. The 2001 report, *E-Commerce: Building the Strategy for New Zealand* identifies the following areas for attention:

- A shortage of management, leadership and entrepreneurial e-commerce skills
- Low levels of understanding of the opportunities afforded by e-commerce and ICT
- Varying levels of computer literacy in the community
- An uneven distribution of technology infrastructure across the country
- Lack of connection to global business networks
- Shortage of technical graduates and the emigration of skilled IT personnel overseas
- Shortage of skilled instructional designers working in the e-learning environment.

Similarly, a Ministry of Education report about ICT in schools identifies some key restraints, including lack of simultaneous access to the Internet and gaps in teacher knowledge. Our own work suggests these also apply in the tertiary sector.

There is no easy way of obtaining information about the capability and/or capacity of the tertiary sector in e-learning. A very quickly-devised questionnaire was sent to TEIs to try to gain a picture of what the current status might be and key findings are highlighted in the sections below. The Advisory Group strongly recommends that the TEC give priority to developing robust information on the 'readiness' of the sector, and that it does this in such a way that the sector can use the information to chart its progress in future. The Advisory Group was impressed with the model used to assess both the readiness of educational institutions and of communities and suggests that this could usefully be adapted and maintained on the web as a very useful development tool. This can be viewed at **http://www.cspp.org/projects/readiness**

Many of the 'people' capabilities have been identified throughout this report. They are required at all levels and across all functions of the value chain. There is need for development of leadership capability that is informed about e-learning and its implications for strategy development and institutional investment. Teaching staff need considerable support to learn new skills and adapt to changing roles. Administrative staff need to learn new skills too as their functions are moved onto electronic bases. There is need for people skilled in new areas – website development; web instructional designers; developers of educational software for simulation, for assessment. And of course, there is need for people with technical capabilities.

Our limited survey of TEIs demonstrates that there is considerable human resource development required for the potential of e-learning to be achieved. Collaboration between tertiary providers will also be a key requirement to build technical and staff capability. Many encouraging examples are already underway, such as the University of Auckland's involvement with UNIVERSITAS 21 and the virtual university U21global which the University of Auckland plans to establish in 2003 with Canada's Thomson Learning.

Such partnerships within New Zealand will also pave the way to enhancing the capability and infrastructure which underlies e-learning success. The Advisory Group sees great potential for gains in time, cost and quality through a collaborative working environment and the sharing of resources in the development of e-learning. This is particularly true in pursuing international opportunities.

The Advisory Group recommends that tertiary funding continue to be provided at the same level regardless of the learning mode. (Recommendation 5)

Infrastructure

In the realm of technical infrastructure, there is a need for urgent action and wide-ranging development to extend access, especially to rural and remote communities. The recent action by the Otago Community Trust to fund broadband Internet access in schools shows a growing awareness of the importance of Internet access and investment in e-learning.

The creation of local 'technology hubs', 'telecentres', or cyber kiosks all represent ways of addressing the needs of small rural communities. It is vital that regions have the digital capability and bandwidth to provide learning opportunities in their area. Open Learning Centres, such as those developed in Australia, provide another model.

Once again, collaboration may offer the best way forward in a country of our size. For example, in the King Country area, the local community is working with the Waikato Institute of Technology and the Ministry of Economic Development to establish a technology hub.

Technology decisions

Many hardware and software companies offering their products and services now target educational institutions. A key issue for institutions is to identify which products and services will provide the most effective support for their e-learning strategy.

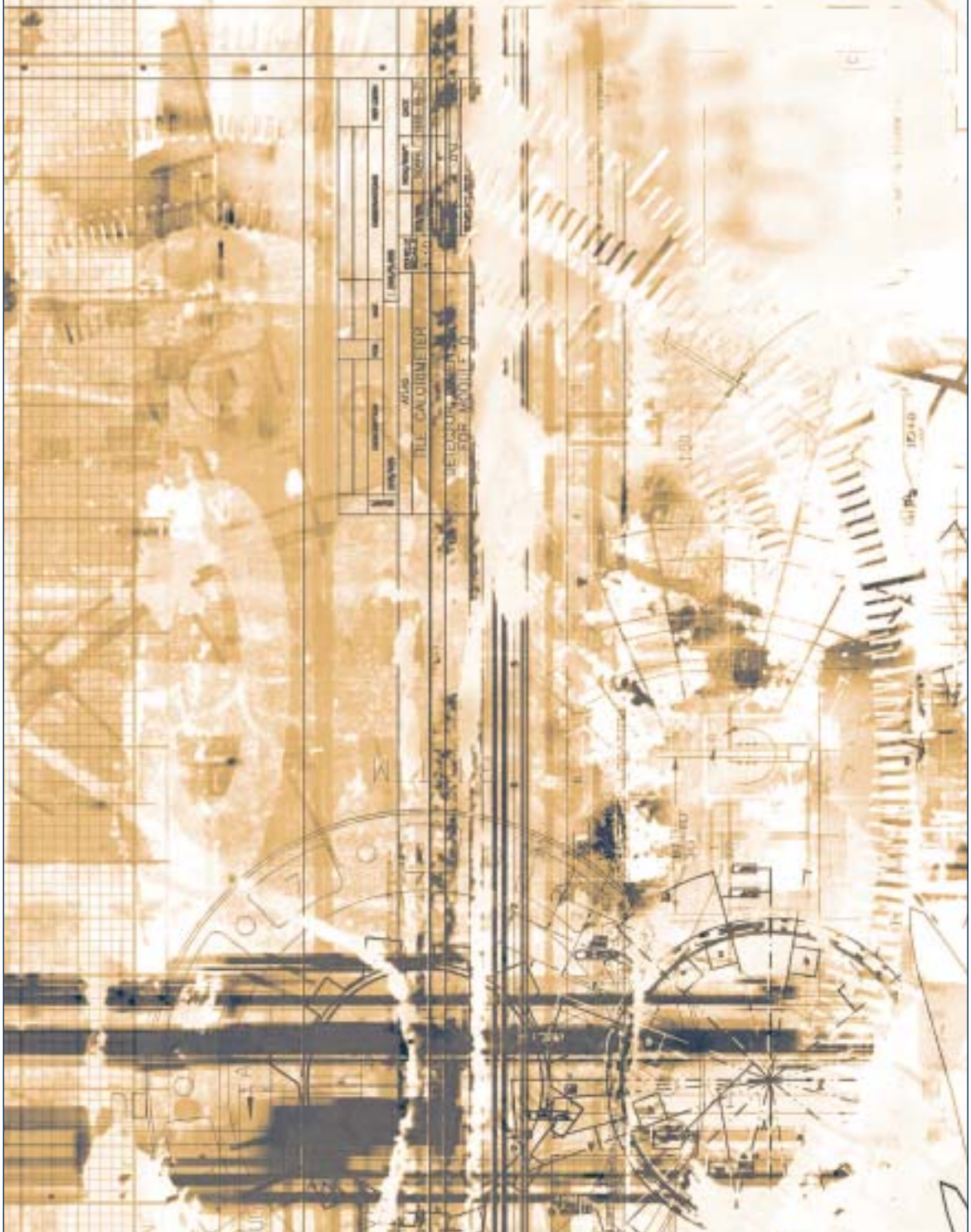
At present gaining independent, accurate information about relevant technologies can be difficult. Concepts of scalability and commercial sustainability remain to be explored in assessing the value of e-learning software and support.

It is important, therefore, to harness the commercial expertise that already exists in the sector to identify the most cost-effective solutions. Care must also be taken to ensure that a commitment to specific technologies does not limit the potential for collaboration with others, or access for learners.

In this new environment it is imperative that tertiary institutions see how their strategies contribute to national tertiary goals and to international opportunities. These need to be differentiated and complementary. Recognising and building on institutional strengths and collaborating to achieve goals will bring much better returns both educationally and financially.

Chapter Seven

Future Directions: E-Learning and the Education Process



In an earlier chapter, the Advisory Group discussed the possibilities of e-learning in terms of a value chain. The value chain comprises the key activities undertaken by participants in the educational process. These key activities are:

- Market analysis
- Curriculum design
- Course development
- Marketing and enrolments
- Delivery
- Assessment and Credentialling.

In this chapter, we will look at each of these functions and see how they can be enhanced by the use of new technologies and an e-learning environment. Benefits inherent in this new mode of education extend both to students and academic staff.

If New Zealand is to become a knowledge-based society, it is vital that we achieve greater efficiencies in our educational system and are open to greater collaboration at each phase of the educational process.

Market analysis

Key to success here is work to determine what markets we want to be in. This is important for both international and domestic markets. At an institutional level, this is critical if there is to be sensible investment in infrastructure that will support e-learning for those chosen markets.

Campus-based institutions, for example, may choose to invest in serving students only within the controlled technical environment of the campus. This would require significant investment in staff development to ensure they can teach using web support, but may not require investment in the development of on-line learning resources.

If the choice is to go after international markets, then there are significant 'supply-side' investments that must be made if students are to be appropriately supported, such as the need for in-country partners to provide 24 hour, 7 day technical help-desk support and English for Speakers of Other Languages assistance.

As has already been noted, there are many alternative strategies that can be chosen. The focus here is on highlighting the critical importance of taking a market perspective first. Which markets do we want to serve? What is the scale and size of those markets? What are the 'supply-side' requirements to service them? Can we develop the capability and capacity to meet those demands? Although Education New Zealand can assist in relation to work on the international opportunities here, it is up to each institution to determine the particular markets they will serve and then to ensure they have the capability and capacity to serve them.

Education providers need to be offering the right courses for students for them to consider enrolling. Research is required into the needs and wants of students, the type of courses required, modes of delivery and key factors that influence student choice. This will assist in identifying appropriate assumptions for developing business models for investment. For example, at this stage most students prefer web-supported study rather than fully on-line options. This may change over time and institutional planning will need good market analysis to inform it.

Curriculum design

There are major opportunities for tertiary providers to collaborate in the design of common curricula, as in the suggestion of a Science On-line project where the sector is encouraged to work together to offer a common first-year science programme which can be delivered, or at least strongly supported, by on-line media.

While there are advantages and efficiencies for providers in designing a common curriculum, the greatest advantages are for students. Opportunities for students to cross-credit between providers are greatly enhanced when different institutions are working to a common curriculum. Clearly this needs to be balanced with the need to encourage innovation and to support academic freedom.

Collaboration in the curriculum area is an important step forward in making our tertiary education system more flexible and responsive to the lifelong learning needs of students.

Science On-line – a potential case study in collaboration

New Zealand tertiary institutions might consider a project that would see them collaborate to offer the first year of a generic undergraduate science degree by e-learning. This programme would be targeted at offshore students and would enable students to complete their first year of study at home before coming to New Zealand to complete their degree by conventional study. Participating institutions would agree to provide full credit to students enrolling through this programme.

There are three factors which combine to present both a community of interest for this project and a strong market opportunity. Firstly, many New Zealand tertiary institutions have spare capacity in their undergraduate science programmes and are strongly motivated to accept international students in those programmes. Secondly, the Government has identified the importance of science education in developing the knowledge economy. And thirdly, a common first-year science curriculum provides the opportunity for a high level of cooperation across the sector.

Every New Zealand university, and a small number of the larger polytechnics, offer undergraduate degrees in science. These degrees meet common standards which allows a high level of credit transfer across institutions. With some minor exceptions, New Zealand tertiary institutions have a common first-year curriculum for science and applied science degrees. This common curriculum enables students to undertake the professional 'intermediate' year at their local university before moving elsewhere to undertake an applied science degree. This common first-year programme could provide an opportunity for tertiary institutions to collaborate in offering a joint first-year programme to the international student market.

Member institutions would offer full credit for this programme and allow students who successfully complete the course to be admitted direct to the second year of their science programmes. Member institutions would collaborate in delivering, supporting and assessing this programme.

A key issue in implementing any such project is to target the particular international markets and ensure that in-country support is available for students as part of their enrolment package. While it is possible to offer courses without such support and clearly this is cheaper, the group is of the view that such an approach should only be taken when there's been prior assessment to determine that students are capable of completing the study alone.

Course development

Increased collaboration between providers has the potential to reduce costs as well as improve the quality of course development. Key to sound work is the importance of instructional design. In most traditional tertiary education, academics are not trained teachers, and in some instances the design of courses is of variable quality. Separating course development out as a specific function allows much greater quality control over content, level of learning and amount of student work expected. Appropriateness of assessment can be quality controlled too. It also allows economies of scale when the same course can be supported for hundreds or thousands of learners. It is not a viable model when class sizes are small.

The creation of digital learning objects has the potential to greatly enhance learning for students, whether they are distance learners or studying on campus. Virtual chemistry laboratories, interactive on-line language laboratories, virtual field trips for geography, specialist teaching for medicine – all are made possible through well-designed digital learning objects.

This is perhaps one of the most obvious areas where advances in technology can enrich a student's overall educational experience. Tertiary institutions with limited resources stand to benefit substantially from developing common courses and sharing digital objects.

The costs and expertise associated with the development of these on-line learning objects and packages make it essential that institutions are encouraged to collaborate in their development.

The expertise required for development of web-based learning resources for use in industry can be a sound commercial opportunity. This work also feeds back into better options for developing courseware for students and into further developing both the capability of staff and the institution's links with industry.

Marketing and enrolments

While institutions will continue to brand and market their own programmes in many ways, there is considerable scope for adopting a collaborative approach to providing information about their programmes, products and services. It is anticipated that shared information would be a key feature of the e-learning portal, which would provide an electronic one-stop-shop for all those seeking information and services from the sector.

The Tertiary Education Advisory Commission has already identified the need for more comprehensive and up-to-date information for students about tertiary education options. The development and marketing of a portal, with a multitude of links to other sites, will give students ready access to the on-line offerings of all New Zealand tertiary institutions. As well as course information, the portal could consolidate information on enrolments, scholarships and student loans. In this way it would complement the career and employment information which is localised in the KiwiCareers website.

Because of its benefits to students, staff, institutions and to Government, this is a significant and important project that needs to be funded as a critical building block in portal development.

Another significant opportunity is the development of central enrolment options. This could be done by groups of institutions who see benefit in this, or it could be done in particular disciplines. Benefits for students include only having to make one application which specifies their ranking of institutions in terms of their preference for acceptance. Benefits for institutions include knowing that they are putting effort into selection processes only for those students who are likely to enrol with them and in getting better market information as the total application data is available to all institutions. Benefits to Government lie in having access to market information and in enrolment patterns in institutions.

A number of jurisdictions have implemented such central systems and are using the advantages of the web to enhance them. In the UK, UCAS provides an example of a 'clearing house' approach to enrolments and is a provider of statistical and information services. **http://www.ucas.ac.uk.**

Delivery

The Internet offers exciting potential for the speedy and efficient distribution of learning materials associated with courses for both distance and on-campus students. It also offers new ways of supporting students at various stages of their learning experience and according to their various needs. For students with special needs there is room for the tailoring of learning using web-based technology.

As with more traditional distance education, there are opportunities, too, for delivery to be separated from the development of the courseware. The Internet offers options for the tyranny of the classroom to be overcome by enabling more students to be supported within a course, while still having a high-quality learning experience. Learning resources instructionally designed into web-based courses need only be developed once and they can be supported by teachers whose role becomes that of learning coach and assessor. As we've said on many occasions, this model is not likely to replace more traditional teaching. However, it is an option that has more scaleability and will increasingly be used to service particular student markets – the part-time student; the workplace student; and many international students.

The ability to offer the different components of the education process as separate services has also begun to bring a wider diversity in learning venues - that is the places where learning is delivered.

Local e-learning centres

The growth of learning centres, the ability to use the infrastructure already being established in the school sector in non-school hours, the development of marae-based cyber-centres – all these offer exciting potential. The Commonwealth of Learning Report, *The Changing Faces of Virtual Education*, highlights the changing nature of learning venues as one of the most significant emerging trends in education.

Government has already indicated its support for the development of local e-learning centres. Such centres can provide access to a range of on-line courses from providers with web courses. The types of learning centres would vary from community initiatives in local schools and community centres to more sophisticated learning centres based in tertiary institutions.

Living in Bermuda, Learning in New Zealand

Todd Olson is using e-learning to continue his studies while travelling overseas. Todd, who works for a sail-making company in Bermuda, races yachts in his spare time and is studying the Diploma in Information Systems and Technology for Business through Open Mind On-line, The Open Polytechnic's new on-line course service.

The 27-year-old and his wife made the move to Bermuda for a change in lifestyle and as a base for exploring other countries. Study was also part of the plan. "I was working in the IT industry in New Zealand as an Intranet webmaster before moving to Bermuda so it was important for me to have a relevant qualification for the IT industry. The diploma also allows me to gain knowledge in other areas of business that will be invaluable."

"I intend to return to New Zealand one day and resume my career in the IT industry. I think by completing this qualification by the time I return home I will have more chances of finding a better job."

On-line distance learning suits Todd's study style and he says he has not encountered any difficulties studying overseas. He uses the on-line learning guide and says the support systems are excellent.

The on-line service could be restricted to course material alone with local tutorial support, or it could be more comprehensive and include specialist tutorial support, assessment and access to library services. A learning centre could act as a broker, helping students to access on-line courses and providing a supportive learning environment and non-subject-specific tutorial staff. It is envisaged that students would also be able to access other campus facilities and courses provided by the local tertiary institution.

Such centres would increase access for students to a broader range of courses and help local communities to retain their learners and institutions. It would enable access to e-learning for learners without personal access to the web – a key issue in bridging the digital divide.

The Advisory Group agrees with the Government's support for learning centres. It also notes that the "hub and spoke model" outlined in the TEAC Report (2001) can be significantly enhanced through use of e-learning opportunities. (Recommendation 6)

Extending the reach of local institutions

In this model academic staff at an institution could prepare their courses for on-line teaching. This would extend their reach nationally and internationally and provide opportunities for academics who are leaders in their fields. It is envisaged that the local institution would retain the accreditation within the current guidelines. Associated student support services (enquiries, enrolment, library, moderation and assessment) could either continue to be provided by the institution concerned or shared among several.

This approach makes better use of specialist academic staff and clearly differentiates regional institutions. It improves access to specialist courses and strengthens local institutions, enhancing their viability.

Enhancing school/tertiary links

Consideration of the links between schools and the tertiary sector in terms of e-learning is essential if we are to meet the needs of the learners of the future.

ICT-aware school-leavers will not only expect that e-learning opportunities will continue to be available to them but they may well make choices about their future learning places based on the availability of the range of learning opportunities. As schools prepare students to live and work in a digital age, tertiary learning opportunities need to not only build on this base of experience but continue to provide an engaging learner-centred environment.

The ICT Lead Schools model currently operating in primary and secondary schools has involved groups of schools forming clusters and working together to engage and support their teaching staff to become confident and competent users of a range of technologies. Resources and experience are shared outside the school and make available new opportunities for professional development that may not have been available in individual schools.

Tertiary institutions, iwi and other key stakeholders including private enterprise, forming clusters to assist the professional development of teaching staff could learn much from the ICT Lead Schools model.

As schools have more bandwidth available to them this opens up possibilities for members of their communities to utilise these enhanced bandwidth opportunities. Schools could well become one of a variety of community e-learning centres and provide a bridge between the school, tertiary and workplace needs and opportunities.

The Advisory Group recommends building on bandwidth developments in New Zealand's school system and encouraging the Tertiary Education Commission and the Ministry of Education to achieve closer links between the school and tertiary sectors in e-learning initiatives. (Recommendation 6)

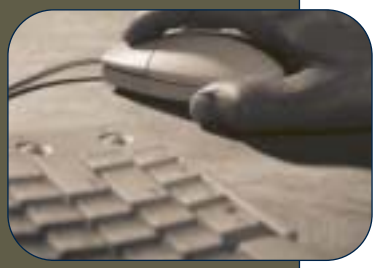
The development of Te Kete Ipurangi (TKI), the national portal for schools, offers a model which can inform the development of the tertiary e-learning portal. Use of TKI by school students and teachers could well extend to the tertiary portal providing a seamless national e-learning experience.

Accessing library services

The Internet is a very valuable tool for students in accessing library materials and obtaining the support they might need in any aspect of their studies.

In delivering library services, local institutions could contract one institutional library to provide their students with a range of library services. Here are three options for how this could be done.

Local institutions could contract another library for back-up services to increase the range and quality of what it can offer students. Secondly, library services could be integrated within an e-learning centre to provide library services for learners who do not have access to a local library. Finally a centralised service could be established and accessed via free-phone or the web. In this way students could gain access to a full range of library services without any local library presence.



The Waitomo E-Commerce Centre

The Waikato Institute of Technology, the Waikato District Chamber of Commerce and Industry New Zealand are working to develop the Waitomo E-Commerce Centre.

The E-commerce Centre will be an enhancement of the existing Waitomo Learning Centre established in the 1990s. The concept is similar to the notion of Telecentres, TeleCottages or Community Technology centres, but placed in a commercial and tertiary education setting. It will provide:

- Access for opportunities to use advanced computers and telecommunications equipment
- Training in the application of new and existing technologies
- Connection with global information and broad band communication networks
- Opportunities for local commercial groups to partake in global industry and this includes web-based opportunities for data packaging for the rural sector (i.e. information on agricultural production and markets)
- Pursue other advantages offered by broadband access in businesses connected to information sharing, broadening business scope and research and development
- A social environment in which to interact and develop new business ideas.

The Centre will help local people gain access to tertiary education, allow for rural-based industry to develop and help retain people in the region. The Centre therefore provides a technology focus to regional capability building.

E-Learning and tertiary libraries – trends and issues

University Libraries

At present, university libraries offer both electronic and hard copy resources for campus-based learners and for those accessing content on-line. Feedback from the Council of New Zealand University Librarians indicates that they are committed to both types of content and customer and are not seeking to replace physical resources with the virtual.

All university libraries have websites and/or portals to give entitled students, irrespective of geographic location, direct pathways into their resources and services. Five of the eight university libraries are now in a joint project to scope and implement a common computer library management system. One of the goals of this project is to create a platform for the strategic enhancement of each library's ability to leverage maximum opportunity from the fast-changing marketplace of electronic publishing and of e-based teaching and learning.

The role of academic libraries is to make accessible to both staff and students the accumulated resource of published knowledge – adding value to teaching, learning and research. Expansion of e-learning will need to ensure that this academic added-value is maintained and developed if the quality of the learning experience is to be assured. This means:

- continued refreshment, updating and development of the knowledge resource base
- systems and pathways which enable the learner to explore beyond the course materials to discover alternative perspectives or further data
- professional staff with the skills and incentives to "discover, describe and deliver" relevant material from the overall accumulated resource of published knowledge.

The Council has also identified several risks and barriers associated with e-learning. The first is the perception that the only worthwhile information is digital. A great deal of published knowledge is likely to remain accessible only in hard-copy (print) formats and academic libraries are specifically organised to ensure that access systems to this are maintained. There is a need to ensure that students have real access to a wide range of material, and not just to the "canned" content inserted into a course package which could well be provided by just one publisher.

Issues of electronic content licenses and digital copyright also pose enormous challenges. The ability to digitise content is central to e-learning and the risks of the present severe restrictions flowing from New Zealand law need to be addressed. The work done for the Ministry of Economic Development's current review of digital copyright will help inform this issue.

Polytechnics

Polytechnic libraries were also surveyed for this report. Six reported that their institutions offered e-learning and all libraries are involved in e-learning developments in some way. Most have chosen to use their websites as the platform to deliver electronic resources to their clients, irrespective of time or place. They are helping to shape e-learning content and providing on-line and face-to-face support and instruction in library skills.

Most polytechnic libraries are actively promoting the provision of web-based resources through the library's website, whether or not their institution is providing e-learning. These include on-line catalogues, subscriptions to on-line journals and links to other websites. Some provide e-reserve for heavily-used material. Most also provide access to material to support e-learning and are looking to integrate e-learning platforms and existing library resources. Possibilities here include the ability for lecturers to create and customise links to library resources and websites.

Key challenges identified include lack of training for library staff to support the advent of e-learning, lack of technical support and the pressure of adding new resources and services without additional funding. Libraries report that an increasing proportion of their budget is being spent on electronic resources – anywhere from 16% to 33% of budget.

Some degree of on-line library service would undoubtedly bring benefits through improved access, particularly for those in regional New Zealand, and result in economies of scale. There are also considerable benefits to be derived from libraries working collaboratively in licensing of databases and in delivering assistance in e-information access for students.

Such initiatives will enhance the viability of local institutions and increase local educational opportunities.

Assessment and credentialling

New assessment methods using the considerable benefits of the Internet environment are currently being developed and this area is one of the 'emerging markets' in the world of education. It can be very successfully 'unbundled' from the education process and provided as a separate service with benefits for students, academics and institutions.

Credentials are increasingly important in the world of lifelong learning. Students want to be assessed on their current competence and receive credentials without paying for further study if they reach required standards. They also want to be able to practise and to be assessed when they feel they are ready – not only when an examination cycle happens to occur.

There are many overseas models of on-line assessment that can be investigated. Internationally, the University of Durham incorporates software to assess its first-year Geography students. A number of universities in the United Kingdom are also involved in a collaborative project to ascertain which learning outcomes can best be assessed using technology. The aim is to develop generic computer-based assessment systems. US academics have developed software that marks essays more reliably than groups of academics.

There is considerable potential for collaboration locally in this area. For example, there is interest from the TANZ Polytechnic group in collaborating on a pilot project to develop on-line assessment. The aim would be to learn from that project before expanding it to other shared qualifications. Expected benefits include improving and ensuring national consistency in quality; a better service for students and a reduction in time spent on assessments by academics that would enable them to concentrate more on teaching and research.

Assessment is an area ripe for cooperative work with software developers – an area of New Zealand strength. There are companies specialising in development of simulations, for example, which can be incorporated into educational assessments. Educators and the developers working together could better maximise opportunities, particularly in the international market.

It will be important to evaluate electronic assessment options to ensure that they meet comparable quality standards to conventional methods. A further issue from an administrative point of view is that of security. There is a need to identify and verify the person undertaking the electronic assessment. A user name and password would be insufficient. The security of the assessment site itself must also be safeguarded.

However, the Advisory Group sees that on-line assessment, either as part of the enrolment package or as a stand-alone service, may bring a number of benefits. Although initial investment costs are high, staff are freed up to spend more time on teaching and research. Students benefit from being able to undertake assessment when they feel ready. The Advisory Group suggests that pilot projects, involving consortia, be funded with support from the Strategic Development fund, or within funding for research into e-learning. These will provide lessons about this emerging market that will be useful for the whole sector.

In an e-learning environment it is important to reiterate that credentialling will remain the responsibility of providers. Learners want the assurance that their credentials will be valued nationally and internationally. It is also important for the development of New Zealand's knowledge society that e-learners have their learning formally recognised with credentials from an accredited education provider.

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Glossary

APEC

Asia-Pacific Economic Co-operation.

Asynchronous Content Development

Refers to the process where various aspects of content are developed and delivered in isolation from each other, or intermittently (e.g. email or material accessible on-line).

Bandwidth

The transmission capacity of an electronic line such as a communications network or computer bus. It can be expressed in bits per second, bytes per second or in Hertz (cycles per second).

Broadband

High-speed transmission. The term is commonly used to refer to communications lines or services at T1 rates (1.544 Mbps) and above.

Colleges of Education

Colleges of Education are specialist institutions that provide teaching and research programmes to support the development of pedagogy and teaching practice and associated social and educational service roles. Whilst specialising in teacher education, a college of education may also offer other courses.

Colleges of Education are required to exhibit one or more of the following characteristics:

- To be primarily concerned with more advanced learning, the principal aim being to develop intellectual independence;
- To undertake research and teaching that is closely interdependent, with most teaching being done by persons active in advancing knowledge;
- To meet international standards of research and training;
- To be a repository of knowledge and expertise; and
- To accept a role as critic and conscience of society.

Courseware

Any type of instructional or educational software programmes.

Digital Learning Objects

Electronic "stand-alone" information and learning packages which can be combined to provide a variety of learning oppportunities. The learning objects may be as simple as some pages of text or as sophisticated as a virtual tour of a museum.

Digital Divide

The term "digital divide" has been coined to describe the gap between those who can access information and communication technology and those who cannot.

Distance Learning

Any type of educational situation in which the teachers and students are separated by time, location or both.

E-Education

E-Education involves e-teaching and e-learning along with the various administrative and strategic resources needed to support teaching and learning in an Internet environment. It will incorporate a local, regional, national and international view of education.

E-Educators

E-educators are the new generation of academic staff who work in an Internet environment in both regular and virtual learning situations.

E-Learning

Learning that takes place in the context of using the Internet and associated web-based applications as the delivery medium for the learning experience.

Export Education

A transaction across borders involving the provision of education services in exchange for financial consideration. Cross-border supply, including distance education and e-learning, may be provided across borders but without the movement internationally of either students or teachers.

GATTS

General Agreement on Trade Tarriffs in Services.

ICT

Information and Communications Technology.

Kaupapa Māori

Refers to processes where Māori beliefs and culture perspectives inform the development of initiatives.

Learning Object

Any entity, digital or non-digital, that can be used, re-used or referenced during technology-supported learning. Examples of learning objects include multimedia content, instructional context, instructional software and software tools that are referenced during technology-supported learning.

Learnware

New media learning tools consisting of computer software and courseware, including multimedia and interactive programmes used in on-line learning.

On-line Learning

What occurs when education and training (typically credit but also non-credit) are delivered and supported by networks such as the Internet or intranets. Learning may be synchronous or asynchronous. Learners are able to learn any time and any place.

Polytechnics

Polytechnics or "institutes of technology" are state-owned autonomous institutions that offer a wide diversity of courses, including vocational training. Polytechnics also promote research, particularly applied and technological research.

As defined under the Education Act 1989, polytechnics must exhibit one or more of the following characteristics:

- To be primarily concerned with more advanced learning, the principal aim being to develop intellectual independence;
- To undertake research and teaching that is closely interdependent, with most teaching being done by persons active in advancing knowledge;
- To meet international standards of research and teaching;
- To be a repository of knowledge and expertise; and
- To accept a role as critics and conscience of society.

Portal

A website that acts as a 'doorway' to the Internet or a portion of the Internet, matching a person's needs to available offerings.

SOCCI

Schools On-line Curriculum Content Initiative – an Australian initiative to develop school curriculum content.

Synchronous Content Development

Refers to a process where various aspects of content are developed and delivered in relationship with each other, or concurrently (e.g. group workshops, telephone calls or on-line chat).

TEAC

Tertiary Education Advisory Commission.

TEC

Tertiary Education Commission.

Tertiary Education

Tertiary education comprises all involvement in post-school learning activities and includes industry training and Adult and Community Education.

Tertiary Education Providers

Tertiary education providers are all the institutions and organisations that provide tertiary education. These include public tertiary education institutions (TEIs), private training establishments (PTEs), other providers (OTEPs) and government training establishments (GTEs).

Tertiary Education Institutions

Tertiary education institutions (TEIs) are institutions that deliver higher educational programmes to students. They are Crown entities and thus required to follow public sector financial accountability processes. There are four kinds defined in the Education Act 1989; universities, polytechnics, colleges of education and wānanga. Each tertiary education institution is governed by its own council.

Universities

Universities are state-owned autonomous institutions characterised by their engagement in a wide diversity of teaching and research, especially at a higher level. Under the Education Act 1989, universities are required to have all the following characteristics:

- To be primarily concerned with more advanced learning, the principal aim being to develop intellectual independence;
- To undertake research and teaching that are closely interdependent, with most teaching done by persons active in advancing knowledge;
- To meet international standards of research and teaching;
- To be a repository of knowledge and expertise; and
- To accept a role as critic and conscience of society.

Wānanga

As defined in the Education Amendment Act 1990, Section S162 (b)IV, wānanga are characterised by teaching and research that maintains, advances, disseminates and assists the application of knowledge regarding ahua Māori according to tikanga Māori.

Appendices

Appendix 1: E-Learning Developments in New Zealand Tertiary Education Institutions

Massey University

Massey University has approached the challenge of e-learning from its experience as a 'dual-mode' institution offering its degrees and diplomas both through face-to-face study on its three campuses and through its large extramural (distance education) programme. Massey wants teaching staff to retain the central role of programme design, development, delivery and assessment in their use of the e-learning mode. Massey also wants to employ e-learning to support and transform all its study modes.

Massey's vision for e-learning is to use the medium to develop learning communities among students and teachers. To support this vision, Massey is challenging every college to plan their development of e-learning in a phased way, to commit to providing e-learning support for all off-campus programmes within the next three years, and to use the medium to support campus-based study wherever appropriate. Massey has adopted a standard development platform (WebCT) and is providing a range of central infrastructure and support services. The central role in planning, developing and delivering e-learning programmes will continue to rest with colleges and academic teams.

A good example of this strategy in action is the Early Delivery Option (EDO) of the Bachelor of Teaching degree. First introduced four years ago, the EDO option is supported by a combination of print-based study materials, and web-based communications activities. These students, scattered throughout New Zealand, interact with each other in both structured and unstructured communication exercises several times each week. They only ever meet as a group when they graduate, but their sense of group commitment is as strong as if they were attending classes together each day. The programme does not transmit a lot of sophisticated multimedia material on-line, and the print medium is generally better suited for the one-way transmission of text material. Students and staff use the web where it counts, for establishing learning communities.

In 2001 some 300 courses at Massey were web-delivered or web-supported, and over 15,000 students were registered users of WebCT.

The Open Polytechnic of New Zealand

E-learning is part of the Polytechnic's mission and vision to be first choice in open learning. The Polytechnic aims to be a dual mode provider offering both print-based and on-line course programmes. The Open Polytechnic aims to build organisational competence (people, systems, courses/programmes and culture) in e-learning to achieve its vision to support students to study wherever and whenever they choose to study, and to provide a total student learning experience along the value chain of its delivery system, from pre-enrolment, enrolment, to teaching and assessments.

Just as print-based teaching is underpinned by an effective and efficient seamless infrastructure that can support a large volume of students who study at their own place and pace, the strategy adopted for e-learning development is also based on the same philosophy of supporting a customised mass market.

It also recognises the importance of the development of the international market, to provide financial resources to sustain the domestic market, and to further build The Open Polytechnic's credibility in open learning globally. To support this vision The Open Polytechnic:

- aims to progressively develop a range of e-learning support for all print-based courses;
- aims to progressively develop and deliver Bachelor of Business and Batchelor of Applied Science on-line – fully web-based courses;

- adopted a standard Blackboard platform in the delivery of fully web based courses;
- aims to provide an integrated seamless platform for all e-learning services;
- aims to integrate the development of people, competencies and culture to develop on-line courses and to support students on-line as part of an integrated human resource strategy;
- adopted a systemic approach to evaluating student and staff feedback for ongoing improvement.

A good example of an activity is the progressive development and delivery of our Bachelor of Business and Applied Science on-line. Commenced in late 2000, to date there are around 19 courses on-line and available for domestic and international students. This development is managed as a strategic project to ensure resources are available, and to facilitate the establishment of organisational systems, policies and processes for on-line delivery as part of core business. Currently the Open Polytechnic has 226 courses, which are web supported. In total these courses attract 21,114 enrolments.

Universal College of Learning

Over the last decade, UCOL has been sponsoring the development of flexible delivery across the entire portfolio of its programmes. Since 1997, e-learning has been an important part of this initiative and has been applied in a range of ways from on-line support to a resource for use in face-to-face delivery. By blending the best of face-to-face delivery with these information and communication tools, it aims to build more effective learning opportunities for a wider range of students.

UCOL currently have approximately 30 staff actively involved in e-learning across a range of programmes. It is planned that all major programmes will have e-learning support sites by the beginning of the 2002 academic year. UCOL is currently undertaking pilot programmes in Photography, Nursing, Information Systems, Adult Education and Veterinary Nursing to learn more about the production of re-usable learning objects, simulations and other e-learning approaches. All these courses are a blend of classroom and on-line activity.

The focus of UCOL's e-learning strategy is to blend the best of classroom-led and technology-mediated delivery. To support this, UCOL established an e-Campus Initiative staffed by experienced staff drawn from a range of disciplines. With it's TANZ partners, UCOL has adopted the Blackboard Learning Management System as its prime e-learning platform, whilst continuing to monitor this rapidly-developing marketplace. Reusability and sharing of e-learning resources is seen as a critical factor for success in e-learning development. UCOL is committed to the support of collaborative organisations such as TANZ and the APNZ.

One example of this new strategy in action is an Advanced Nursing course which uses the Blackboard system to provide a focal point for students and staff. Students based across the region now collaborate on group assignments and topic-centric discussions in preparation for their face-to-face sessions. In this way students are better prepared for their classes and this adds value to their time with the lecturers.

Waikato Institute of Technology

The Waikato Institute of Technology's interest in flexible delivery of learning dates back to the early 1990s with the development of distance education courses, the use of video conferencing and mobile 'classrooms'.

In 2001 the Waikato Institute of Technology opened its Centre for Learning Technologies (CLT) with staff and facilities to support a rapid expansion of the e-learning study mode. This move followed a successful 36-month strategy to develop the Institution's technical and staff capability to support on-line learning and teaching. The Centre provides expert instructional design and technical support for staff working on the design and delivery of mixed-mode courses. A standard development platform (WebCT) is used. Project planning and quality assurance monitoring are also provided by the Centre's staff, as is institutional research activity into e-learning effectiveness. Such research activity clusters together staff from Faculty and Corporate sections in pursuit of a common research agenda. Library services and learning support services work closely with the Centre to provide an integrated capability to support Faculty development and industry clients.

In 1999, the Waikato Institute of Technology introduced the Graduate Diploma of Information Technology in Education (GDITE). This programme provides the opportunity for teachers to improve their understanding of how information and communication technology can be integrated across the curriculum. GDITE students are scattered in many different parts of New Zealand and learn by a mixture of on-line and face-to-face options.

By October 2001, 100 courses at the Waikato Institute of Technology were web-delivered or web-supported, over 1700 students were registered as WebCT users and over 200 staff had been trained in the use of WebCT to course design and student support.

Whitireia Polytechnic

Whitireia uses e-learning for targeted programmes where it has real knowledge and expertise in reaching and supporting traditionally under-represented groups in our communities. For example, e-learning provides flexibility and on-going support for second-chance learners, enhancing their on-campus learning experience.

To support this vision, every school at the polytechnic has a strategic objective in e-learning that covers the continuum of on-line learning enhancements for classroom-based courses, through to fully interactive web-based programmes.

Whitireia has developed a multi-disciplinary team approach to e-learning design. With curriculum expertise from the school, the polytechnic provides a team of people with instructional design, graphics and technical skills to support each development.

Three examples of activities that illustrate the diversity of Whitireia's strategic approach are the Postgraduate Certificate in Forensic Psychiatric Care, the NZ Diploma in Business and the Information Literacy modules.

The Postgraduate Certificate in Forensic Psychiatric Care is delivered completely by distance learning with on-line and print-based materials to support workplace training. This has been delivered for the past six years to students in supervised clinical settings across New Zealand. The on-line delivery ensures a cost-effective delivery of a quality programme in a highly-specialised area of work.

For the NZ Diploma in Business, on-line materials enhance students' on-campus learning in core papers as part of a standard programme.

A specialist Information Literacy module developed by the Library staff in consultation with academic staff has been delivered in two schools and will be available to all Whitireia students via the intranet in 2002.

In 2001, approximately 30 students enrolled in the two web-based e-learning programmes that are available fully on-line. Approximately 200 students accessed the growing range of web-based modules and a larger number again (300+) accessed on-line materials, via the intranet, to support their learning.

Twenty-five academic staff have been actively involved with e-learning course development and delivery activities and Whitireia has three centralised resource staff supporting the developments.

Christchurch Polytechnic Institute of Technology

In July 2001 the Christchurch Polytechnic Institute of Technology (CPIT) established an e-learning and Web Support team. The role of this team is to assist in the development of on-line programme proposals and business cases and to then work with the CPIT Management Team in determining on-line programme priorities. Once courses have been scoped in terms of such things as timelines and resource demand and approved for development, the unit then works with content developers and facilitators in the educational design, web development and coaching tutor/facilitators in the delivery of courses.

The polytechnic's move into developing courses that will be delivered, all or in part, using Internet-based technology is driven by several factors. Among the most important of these factors is the change in the profile of students due to such things as:

- student loans and the need to work part-time to support their education
- changes in work practices preventing some people accessing traditional classroom-centred education – even on a part-time basis
- the needs of adult learners wishing to upgrade their skills and qualifications while still in employment and who would otherwise not undertake tertiary education
- people, outside the CPIT's immediate catchment, needing access to tertiary qualifications and skills
- the ubiquity of Internet-based technology and the expectations it raises for anytime, anywhere access to information and knowledge.

E-Learning is being developed in the following ways:

- CPIT has invested in Blackboard, a Course Management System and is using this as the prime delivery platform for fully or partly on-line courses and course materials and resources for onsite students
- e-learning and Web Support team established and resourced
- contestable financial resources allocated for on-line course development
- Strategic Development Funds earmarked for tutor relief to free tutors from normal workload to develop content and deliver courses
- staff training in on-line learning and use of Blackboard CMS
- 25 on-line projects currently in development
- goal of 40 full or partly on-line courses by 2003.

There are currently six courses being delivered fully on-line by CPIT and a further eight courses that are part delivered on-line. 216 students are enrolled in on-line courses and 25 tutors have course creation/facilitation accounts, however, some of these are involved in course development.

One example is the Graduate Diploma in Technical Communication (GDTC). This was developed several years ago in association with the University of Western Sydney. From the beginning it was envisaged as an on-line delivered course. This year, GDTC is being delivered using Blackboard and from a small student base in the first couple of years, this course has caught a wave of rapidly-increasing international demand and the student numbers have increased five-fold in the last year.

Te Whare Wānanga o Waikato

The University of Waikato has approached e-learning in an organic manner assisting staff and students to adapt to the new medium and share best practice. Waikato established its first formal web-based teaching in 1996. The first cohort of New Zealand students to complete a full degree programme on the Web completed their degrees in 1999. In 2001 more than 800 papers were e-supported or e-delivered with some 100 fully on-line. All 13,000 students are registered to use the on-line environment and more than 5,000 ACTIVE on-line students. There are more than 100 academic staff teaching on-line.

The University of Waikato approach emphasises the individual and is based on the development of a community of learners and teachers to distinguish it from content-based deliverers of e-education. Waikato has focused on developing cohesive curricula for teaching on-line so that students have a path to a complete qualification. The University is also bringing together research efforts relating to ICT and e-education so that they contribute to a coherent overall strategy. A teaching support plan has been developed which includes a mentoring programme, visitor and seminar programme and a web-based support resource. Support includes raising staff awareness of the particular needs of on-line students.

While the Waikato approach is organic and bottom-up, there is also a top-down focus. E-education is one of the five key strategies of the university and e-learning sections are required in all business plans. A multi-year investment programme has been run to develop e-education throughout the Schools of Study. This investment has included the establishment of the WICeD Team (Waikato Innovation Centre for e-Education). This group includes 15 staff committed to innovation, research and the development of e-education.

This long-term investment in support of e-education focused on research, pedagogy and support of the teacher rather than content and the technology of delivery has resulted in teaching staff accepting the imperatives of e-education and has resulted in a rapid scaling up of e-education programmes. It is creating a cultural change where e-education is seen as just one tool for teachers and is resulting in high completion rates and acceptance by students.

Auckland University of Technology

AUT established its first formal web-based course in 1997 in conjunction with its TV and Open Learning activities. Due to the success of the course, which included 200 enrolments in its first semester, the institute continued to develop further on-line courses. On-line courses are now components of AUT Graduate Diplomas and Certificates. The Faculty of Health are currently completing a Master in Health Science on-line, and the Faculty of Business supports all its teaching with on-line resources.

To assist with the management of the resources and to create a user-friendly environment for the students, AUT went on to develop its own learning platform called LearnOn-line.

AUT recently completed an evaluation of e-learning platforms to take the University into its next phase of development. The chosen platform is Prometheus, which is a new product developed by George Washington University.

Teaching staff at AUT are supported by a Learning Technology Centre and by ICT specialists within the larger faculties. The University is taking a strategic approach to the use of the Internet for teaching and learning, and is now ensuring that resources are made available to support new developments.

AUT is a member of the Global Universities Alliance. This alliance is made up of nine universities who are pursuing new markets with on-line programmes.

Appendix 2

The E-Learning Questionnaire

Introduction

The E-Learning Questionnaire was distributed by the Ministry of Education on the behalf of the E-Learning Advisory Group to public tertiary education institutions (wananga, universities, colleges of education and polytechnics) in order to obtain a synopsis of the e-learning activity in the tertiary sector. The questionnaire focussed on the present and potential e-learning capacity of individual institutions.

For this report the results have been compiled in a brief summary. There would be some advantage to be gained if this questionnaire was to be repeated at a later date.

Thirty-three out of thirty-six institutions responded to the questionnaire.

Respondents

Aoraki Polytechnic, Auckland College of Education, Auckland University of Technology, Bay of Plenty Polytechnic, Christchurch College of Education, Christchurch Polytechnic Institute of Technology, Dunedin College of Education, Eastern Institute of Technology, Lincoln University, Manukau Institute of Technology, Massey University, Nelson Marlborough Institute of Technology, Northland Polytechnic, Open Polytechnic of New Zealand, Otago Polytechnic, Southern Institute of Technology, Tai Poutini Polytechnic, Tairawhiti Polytechnic, Te Wananga O Aotearoa, Te Whare Wananga O Awanuiarangi, Telford Rural Polytechnic, UNITEC Institute of Technology, Universal College of Learning, University of Auckland, University of Canterbury, University of Otago, University of Waikato, Victoria University of Wellington, Waikato Institute of Technology, Wanganui Regional Community Polytechnic, Wellington College of Education, Western Institute of Technology at Taranaki and Whitireia Community Polytechnic.

Higher Level Synopsis

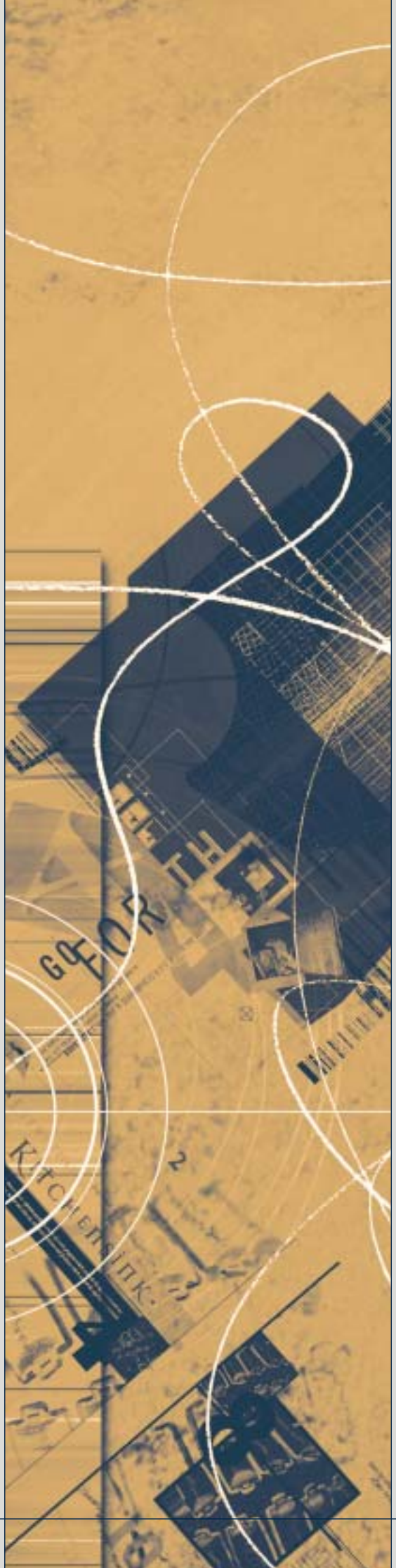
- 74% of respondents have a strategy to develop e-learning capability;
- 65% of respondents have a programme in place to develop on-line course material;
- 68% of respondents have a designated person responsible for driving the e-learning strategy;
- 77% of respondents have programmes to upgrade staff skills in IT literacy;
- 63% of the respondents have programmes to upgrade staff skills in the area of providing online teaching and support for students;
- 59% of respondents have a programme(s) to upgrade staff skills in the areas of development of on-line learning objects;
- 69% of students have 24 hour access to their institution's e-learning site;
- 45% of staff have 24 hour 7 day off-site access to their institution's computer system;
- 41% of respondents have collaborative arrangements (concerning e-learning) with other providers nationally;
- 39% of respondents have collaborative arrangements (concerning e-learning) with other providers internationally;
- In general, institutions offered more papers or modules with courses nationally than internationally;
- There are few full qualifications available to New Zealand and international students online;

Of the 23 respondents who have a learning management system:

- 91% of respondents provide an information service for prospective students;
- 26% of respondents take enrolments on-line; and
- 13% of respondents allow students to pay fees on-line.

76% of the respondents provide for on-line delivery of educational programmes. Some examples of the nature of these educational programmes are as follows:

- selected courses within teacher training;
- ICT supports classroom based programmes in a blended form;
- Diploma, Bachelor and Masters degrees;
- technical courses, for example carpentry;
- Māori Language Immersion Teaching programme for adult learners;
- Bachelor of Māori Education; and
- Certificate in Grape and Wine



Respondents accessed advice on developing their e-learning strategies and tools from: (*Please note the following are samples and are not in order of preference*)

- the experience of staff;
- employing people with expertise in the field;
- advice from domestic and overseas specialists;
- site visits;
- research;
- consulted with partner or other institutions;
- community networks; and
- iwi links.

The main software packages the respondents used on-line included:

- Learn OnLine;
- PowerPoint;
- Blackboard;
- P2Pacademia;
- WebCT;
- ClassForum; and
- customised web-based systems.

There was diversity among software packages respondents used for developing course materials. Examples include:

- Word;
- PowerPoint;
- FrontPage;
- PhotoShop;
- Acrobat;
- Notepad;
- Final Cut Pro;
- WebCT;
- HTML; and
- custom made systems.

Appendix 3

Digital Copyright – abridged from a paper by NZVCC

There are two major elements emerging in the New Zealand context about copyright. The first is the impact of the World Intellectual Property Organisation in the digital environment. The second is the increasing awareness of intellectual property developers of their legal and moral rights as they are affected by New Zealand's employment laws.

The importance of the first element is to bring New Zealand, as a net importer of intellectual property, into new international agreements in the legislative environment. The importance of the second is to find solutions to issues about creating a climate that fosters the development of intellectual property in a context balancing personal and institutional rewards.

International situation

The NZVCC fully supports the stated aims of the Copyright Act 1994 and the discussion paper to ensure "a balance" between the interests of copyright owners and users which is conducive to the promotion of an inclusive, innovative New Zealand economy. As educators, authors and students, members of the university community value knowledge and share the belief that all New Zealanders should benefit from the opportunities that a knowledge society offers. This means that a commitment to ensuring equal access to information and educational resources is even more significant as we enter the digital age. The principle of balance must serve to safeguard the right of all members of our society to be active lifelong learners.

In 1994, the balance that had existed between the rights of copyright owners and users was substantially changed in favour of owners with the passing of the present Copyright Act. The educational provisions in that legislation did not meet the needs of tertiary institutions or the education sector in general. The Copyright Act 1994 imposed significant new and costly compliance requirements that frequently impede the implementation of best educational practice.

Overseas experience with digital copyright legislation shows tertiary institutions are subject to an ever-increasing financial and administrative burden, whilst their rights and entitlements as educators are progressively removed.

Tertiary institutions are particularly concerned that restrictive rights of communication, if included in future legislation, will further shift the balance towards the copyright owner.

A right of communication, if not contained within clear parameters, has the potential to infringe upon the basic right to circulate and share knowledge for the benefit of the wider community. The law of copyright, in seeking to protect the economic interests of copyright owners, must not seek to control the movement of information by restricting access to those with the ability to pay for copyright materials. Just as we may browse in a library, lend a book to a friend, or research privately, a technologically-neutral copyright scheme must ensure that such basic rights are protected in the digital environment.

The encroachment of contract law into the field of copyright, particularly the use of standard form "shrink-wrap" or "click-wrap" contracts, frequently denies users the right to exercise their fair dealing rights or legitimately carry out a permitted act. This development threatens to undermine any balance achieved by carefully-drafted legislation and can render the most fundamental public rights impotent.

Along with the rise of the digital age, there has been a paradigm shift in the provision of education towards more flexible learning. Students' needs are changing dramatically. In today's environment, where lifelong learning is increasingly necessary for all, students must manage work, family, financial and education commitments. Flexible learning is about meeting the needs of these students, and about providing educational opportunities to those who previously had no such opportunities. E-learning is a vital component of flexible learning, and the development of a knowledge economy requires us to embrace the new possibilities of digital technology and to facilitate flexible learning and electronic resource systems through supportive legislation. For this reason, education must be at the heart of far-sighted economic policy, and thus argues for clear and explicit educational exemptions associated with any new digital provisions in the legislation.

The role of contracts

Increasingly, digital works are sold or licensed pursuant to standard form contracts that restrict the ways in which they can be used. In this way, copyright owners use contract law to deny users the right to exercise the fair dealing rights and other permitted acts provided for in the Copyright Act. There is need for laws that render ineffective any agreement that purports to exclude or limit the exercise of any of the permitted acts expressly provided for in the Copyright Act.

International Issues

As a net importer of copyright works, New Zealand must provide a level of protection to copyright that is commensurate with its trading partners, and must demonstrate good faith to the international community by supporting its commitments with action. Acceding to the World Intellectual Property Organisation (WIPO) treaties will help New Zealand to do this. However, also as a net importer, when New Zealand accedes to international copyright agreements it risks restricting local access to copyright only to the benefit of offshore interests.

Internationally, states have found that digital copyright reforms have tipped the balance in favour of copyright owners. This is not a necessary consequence of reforming copyright law to adhere to the WIPO Internet treaties. The WIPO treaties provide a minimum standard of protection and give individual countries enough discretion to interpret the treaties in a manner that allows individual countries to strike the necessary balance between copyright owners and users. There is a danger, however, that offshore interests or strong lobby groups' interpretations of the treaties will endanger New Zealand's ability to strike a balance that is appropriate to our domestic needs.

As stated in paragraph above, acceding to the WIPO treaties would be beneficial, but the treaties must be implemented only in a way that serves New Zealand's interests. Overseas experience with reform of copyright law to accommodate digital technology is that the balance tends to be shifted in favour of copyright owners and away from copyright users. This is apparent in the US Digital Millennium Copyright Act 1998, the EU Draft Directive on Harmonisation of Copyright and the Australian Copyright Amendment (Digital Agenda) Act 2000. A shift in balance towards owner rights is not in New Zealand's interest, especially if it wishes to sustain a 'knowledge economy'.

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