ICT Strategic Framework for Education

2006–07

SUPPORTING LEARNING IN A CONNECTED SECTOR THROUGH THE SMART USE OF ICT
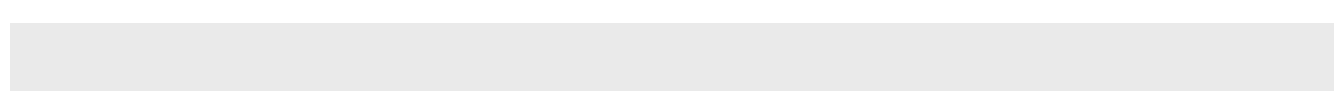
WHY AN ICT STRATEGIC FRAMEWORK FOR EDUCATION?

New Zealand has established goals, priorities and strategies for education. These include:

- Government goals
- Education priorities
- Early childhood education strategy
- Schooling strategy
- Tertiary education strategy.

The integration of learning, teaching, research and administrative practices with information and communication technologies (ICT) will support the implementation and achievement of these goals, priorities and strategies.

Expenditure in ICT across early childhood, schooling, tertiary institutions, education organisations and government education agencies represents a significant investment to the education sector as a whole, and particularly the following central government agencies:

- Career Services
- Education Review Office
- Ministry of Education
- National Library
- New Zealand Qualifications Authority
- New Zealand Teachers Council
- Tertiary Education Commission.

Education organisations and government agencies need to work in partnership if together we are to deliver improved education outcomes. Effective and integrated use of ICT across all parts of the education sector is critical to accomplish this.

The purpose of the ICT Strategic Framework for Education is to provide the mechanism to guide and co-ordinate ICT investment towards the government's vision of improved education outcomes.

The Framework is aligned with, and supports, the government's E-government and National Digital Strategies and provides the foundation for effective (e)learning practices to be integrated into New Zealand educational practices.

VISION

To improve learner achievement in an innovative education sector, fully connected and supported by the smart use of ICT.[1]

GOALS

The ICT Strategic Framework for Education seeks to deliver this vision through:

1 A more learner-centred education system transcending organisational boundaries.

2 More informed decision making within the education sector by learners, teachers, parents, communities, public, businesses, researchers, policy makers, and administrators.

3 Increased ease and opportunity of access and reduced compliance costs for all participants.

4 Increased confidence, capability and capacity from the use of ICT by all participants in the education sector.

5 Greater opportunities for the generation, application and sharing of new ideas and technologies.

6 More effective and efficient investment in ICT by education sector government agencies.

These goals will be achieved through:

- Developing a more learner-centred service culture where education agencies and organisations focus on the outcome rather than the technology;

- Recognising that successful design, development and implementation is as much about people as about technology;

- Interoperability and ease of access to, and between, systems and information where learners can engage as and when required, and decision-making is better informed at all levels;

- Balancing local choice and national direction;

- Coherence through open standards rather than standardisation;

- Achieving greater effectiveness and efficiency in the design, development, implementation and use of ICT in supporting education based on a user-focused approach;

- Establishing and maintaining a cooperative culture and communities that support and nurture innovation, creativity and the sharing of ideas and practices;

- Recognising and accommodating the considerable legacy[2] investment and levels of ICT capability and resource across the Sector.

The ICT Strategic Framework for Education aims to deliver across the following National Digital Strategy components[3]:

Connectivity	Access to a robust national open standards-driven ICT infrastructure for education.
Content	Digital content from a variety of sources, and repositories for many purposes and users to support teaching, learning, research and administration, including support for lifelong learners and preserving New Zealand's digital heritage for future generations of learners.
Confidence & Capability	All New Zealanders have or are developing/acquiring the skills and confidence needed to turn the information into knowledge; collaborative working practices are utilised to deliver education outcomes for all.

Within these components the ICT Strategic Framework for Education will guide deliverables across the following dimensions[4] of education:

- Learning and teaching
- Research
- Administration and support.

The following table maps how ICT will enable each of the dimensions.

		Learning & Teaching	Research	Administration & Support
CONNECTIVITY	*What*	Improved access Shared resources		
	How	Connected networks Appropriate security Access & interoperability standards Shared services		
CONTENT	*What*	Discoverable content in digital repositories		
	How	Open standards-based digital repositories Discovery tools		
	What	Information & knowledge management Lifelong learning		
	How	Information & knowledge management practices Continuity Learner information		
CONFIDENCE & CAPABILITY	*What*	Information literacy skills and competencies Effective, efficient systems		
	How	Coordinated change management Monitoring & compliance Learning, teaching, research and administration systems		
	What	Learners, teachers, researchers, administrators working together & sharing resources Agencies delivering value-for-money		
	How	Online learning Communities Sharing effective research & practice Shared planning & monitoring		

TARGETS

[As technology changes quickly these measures must be reviewed annually.]

We would know we have achieved the goals of the ICT Strategic Framework for Education when:

CONNECTIVITY		
Outcomes (Primary Goals supported)		**By 2010**
What	**Improved access** **(Goals – 3,5)**	**Every education organisation has access to a reliable high-speed internet connection**
How	**Connected networks**	• All ECE, Schools, tertiary & agency networks interconnect efficiently via open standards-based protocols • Every education organisation is able to use their internet connection to interact with each other and government agencies
What	**Shared resources** **(Goals – 2,5,6)**	**Every education organisation has the ability to share ideas and resources electronically**
How	**Appropriate security**	• Appropriate security and privacy mechanisms are in place for education sector services and resources
	Access & interoperability standards	• There are clear interoperability standards for all major collaborative tools and environments • Meeting defined education sector ICT standards[5] will be one of the measures of the quality of an education organisation
	Shared services	• Core shared services are implemented to support collaboration between and amongst agencies and education organisations and are easily accessed and used across the education sector

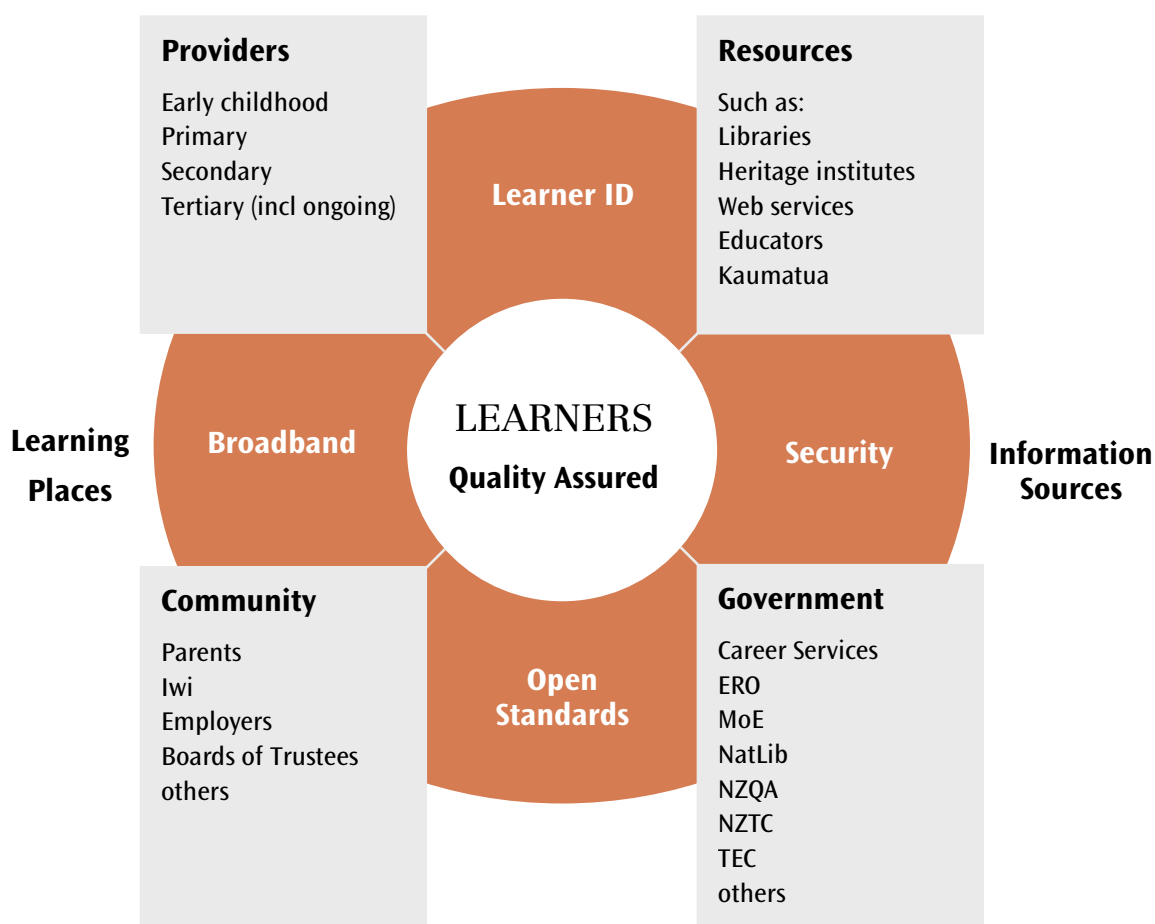| CONTENT		
Outcomes (Primary Goals supported)		**By 2010**
What	**Discoverable content in digital repositories** **(Goals – 1,2,5)**	**Communities of interest are able to easily locate, access and share relevant content hosted in disparate national and international repositories**
How	**Open standards-based digital repositories**	• Targeted resources are held in specialised national standards-based repositories for digital learning, teaching, research, administration and reporting • Attributed, open access and open use licensing of resources is encouraged
How	**Discovery tools**	• Communities of interest are able to locate, access and share digital content hosted in disparate national and international repositories
What	**Information & knowledge management** **(Goals – 2,5,6)**	**All education organisations will be able to utilise information and knowledge held across the sector**
How	**Information & knowledge management practices**	• Education sector agencies have effective information and knowledge management practices for shared sector resources • All education organisations have ongoing access to and use effective information and knowledge management practices
What	**Lifelong learning** **(Goals – 1,2)**	**All learners can acquire and update their abilities, interests, knowledge and qualifications from pre-school years to post-retirement**
How	**Continuity**	• Learners have access to digital learning resources throughout their lives
How	**Learner information**	• Electronic record keeping procedures support seamless participation in learning • Learners will be able to navigate and manage their way through education and tertiary trade training information to have a more comprehensive understanding of their decisions and connections with the labour market

CONFIDENCE & CAPABILITY	
Outcomes (Primary Goals supported)	**By 2010**
What **Information literacy skills and competencies (Goals – 1,4)**	**All learners, teachers, researchers, administrators and support staff can utilise their ICT tools and services effectively and efficiently**
How **Coordinated change management (including communications, training & support)**	• Coordinated change management initiatives by education agencies & organisations lead improvement in sector capability and capacity • Coordinated training initiatives support learners, teachers, researchers, administrators and support staff in their ability to use new ICT tools and services • Support structures are integrated into all new ICT initiatives as business-as-usual
How **Monitoring & compliance**	• Capability standards for educational processes using ICT are being met by teachers • ICT literacy skills and competencies are incorporated in standards for the quality assurance of teacher education programmes
What **Effective, efficient systems (Goals – 2,3,6)**	**Learners, teachers, researchers, administrators and support staff have access to effective, efficient systems**

How **Learning, teaching, research and administration systems**	• Learning, teaching, research and administration systems:
	
	  – meet minimum usability standards
	
	  – are developed in line with national and international best practice

What **Learners, teachers, researchers, administrators working together & sharing resources (Goals – 1,2,4,5)**	**Learners, teachers, researchers and administrators use a range of collaborative tools to work together effectively**
How **Online learning communities**	• Online communities of practice are an integral part of professional learning • Collaborative workspaces for subject, institutional and regional groupings are widespread
How **Sharing effective practice & resources**	• Effective practices and resources are shared quickly and effectively within and between education organisations
What **Agencies delivering value-for-money (Goals – 3,6)**	**All annual ICT investment is measured against agreed standards for value-for-money**
How **Shared planning & monitoring**	• Agreed processes for planning and monitoring amongst and by agencies • A co-ordinated process is operating for decisions on ICT expenditure by agencies

APPROACHES

In order to achieve the vision and goals of the ICT Strategic Framework for Education, the following approaches have been identified to inform decision making regarding the implementation and use of ICT-related initiatives within the sector.

1 Learner-centred

A 'learner-centred' approach means striving to meet learners' differing needs rather than offering a 'one-size-fits-all' system. Individual learner needs must be considered when making decisions about the content, structure, teaching methods, learning activities and support provisions associated with any learning activity.

Providers
Early childhood
Primary
Secondary
Tertiary (incl ongoing)

Learner ID

Resources
Such as:
Libraries
Heritage institutes
Web services
Educators
Kaumatua

Learning Places

Broadband

LEARNERS
Quality Assured

Security

Information Sources

Community
Parents
Iwi
Employers
Boards of Trustees
others

Open Standards

Government
Career Services
ERO
MoE
NatLib
NZQA
NZTC
TEC
others

2   Sector wide collaboration

Collaboration means sharing strategies, plans, ambitions, aspirations and information openly:

• between and within organisations;

• between New Zealand and appropriate international partners.

Collaboration includes:

• Interagency governance and management of education sector ICT projects;

• Establishing agency and sector facing hosting of key infrastructure and support;

• The development of a virtual education agency (i.e. all government education agencies working seamlessly together in the delivery of education outcomes).

3 Services oriented approach

A services oriented approach allows systems/applications to be developed as modules (and exposed as services via standards-based interfaces) which can be reused by other systems/applications.

4 International endorsed practice

Regular engagement with and monitoring of national and international organisations and strategic groups will ensure alignment with endorsed 'best' practice.

Membership of selected groups and organisations will be important here to ensure that New Zealand is both contributing to, as well as drawing from, this pool of knowledge.

Experience and practice is communicated within and between national and international organisations.

5 End-user perspective

All initiatives will be tested against the end-users' perspective to provide assurance of quality, usefulness, timeliness, sustainability and security of resulting information and services.

6 Exhibit these key characteristics

Agility	Encourage flexible, rapid innovation within a framework of open standards
Diversity	Promote platform-independent solutions that support the diversity of sector ICT
Inclusiveness	Use the internet as the dominant medium to access information, services and processes
Innovation	Make use of innovative approaches and technologies to continuously improve outcomes
Integrity	Customers can trust the data/information they receive
Interdependence	Communicate, collaborate and co-operate to build stronger inter-agency relationships
Interoperability	Ensure systems talk to one another using open standards for data exchange and services
Custodianship	Establish clear ownership of and accountability for data shared across the sector
Privacy	Ensure the integrity, security and confidentiality of customers' data
Reuse	Collect data once and share it for a multiplicity of agreed purposes; Modularise and reuse application modules
Secure Access	Make data available in a form customers can use, when and where they need it in an appropriately secure environment
Simplicity	Make it easier for customers to supply data to and get information from central agencies
Value	Provide information products and services to the Crown and customers at the best value
Internet-based	Ensure that appropriate information is able to be accessed and distributed via internet/web/XML technologies

GLOSSARY

TERM	DEFINITION	SOURCE
Education organisations	Any organisation in the education sector including early childhood centres, schools, tertiary education organisations & agencies.	
Information and Communication Technologies (ICT)	Includes any communication device or application, encompassing: radio, television, cellular phones, computer and network hardware and software, satellite systems and so on, as well as the various services and applications associated with them, such as videoconferencing and distance learning.	New Zealand E-government
Information Literacy	Information literacy is a process of acquiring the skills, attitudes and values for effectively navigating and using the information landscape, including the internet.	ERO Report on Student Learning in the Information Landscape, June 2005
Lifelong learning	All learning activity undertaken throughout life, with the aim of improving knowledge, skills and competence, within a personal, civic, social and/or employment-related perspective.	European Commission
Open standards	Standards which are endorsed by a standards registration body and which are used to ensure interoperability (connectivity) between applications. Open standards used in New Zealand must be aligned with the e-Government Interoperability Framework (e-GIF).	
Specifications	Specifications from which standards can be registered. Education ICT specifications are developed by IMS Global working groups.	

NOTES

[1] The ICT Strategic Framework for Education will contribute to the goals, and in particular the Education Goal, of government's National Digital Strategy.

[2] While new systems will need to work alongside legacy systems in the short to medium term, it is envisaged that legacy systems will (over time) be replaced or redeveloped in line with the ICT Strategic Framework for Education.

[3] The National Digital Strategy was developed around the components of Connection, Content and Confidence (which includes Capability).

[4] New Zealand is working with the Joint Information Systems Committee (JISC, higher education ICT, UK) and the Australian Department of Education, Science and Training on an international e-Framework for Education & Research. The New Zealand ICT Strategic Framework for Education has been developed to align with the dimensions of Learning and Teaching, Research and Administration.

[5] New Zealand interoperability standards will be managed by the Education Sector ICT Standing Committee.