Supporting Learning in Early Childhood Education through Information and Communication Technologies: a Framework for Development
Enclosed is the CD-Rom

KIMIHIA NGĀ PAE, SEEK THE HORIZONS

This CD-Rom supports Foundations for Discovery. It highlights innovative ways in which technology is being used with and by children, educators and administrators in the New Zealand context.

You are encouraged to view this CD-Rom prior to reading Foundations for Discovery.
MINISTER’S FOREWORD

The foundations of success for lifelong learning are firmly grounded in the early years of education and care. Early childhood education is of fundamental importance to the learning and development of New Zealand’s future generations. Research shows that quality learning experiences in the early years offer significant benefit to children, and that children’s learning can be enhanced by the effective use of information and communication technologies (ICT).

New Zealand’s early childhood education sector is unique within the New Zealand education system – different from both the compulsory sector and the tertiary sector. It is a very diverse sector, reflecting the richness and diversity of the communities and families from which it has emerged. Parents, whānau, communities and the early childhood education sector have the majority interest in the services provided, the quality of the education delivered, and the appropriateness of the service for their children’s needs. Government seeks to support the early childhood education sector, and provides a significant financial investment to enable access to quality early childhood education for all our children and their families.

I’m pleased to launch a framework for ICT use in early childhood education. It is a very significant development because the sector sought guidance in setting a direction for itself, and this framework has been developed through close collaboration between the sector and government. It recognises the importance of rapid increases in knowledge and technology as well as the realities of the world that our children are born into today.

The launch of the framework is both an important and significant step in the implementation of the sector’s ten-year strategic plan – Pathways to the Future: Ngā Huarahi Arataki. This framework directly supports improvements in quality early childhood education and the promotion of collaborative relationships.

I congratulate all those who have contributed to the development of this framework. Your contribution has shaped the future use of ICT to support learning, and management within the early childhood education sector. The enthusiasm and energy of all involved aptly embodies the spirit of those many of you are educating and caring for every day – our New Zealand children.

Please continue the collaboration that has helped progress the development of this framework. This is a world leading development which has been jointly developed. We all have a role in ensuring the future direction of this sector, and over the next four years there will be many opportunities for the sector to be involved in the ongoing development of the framework for ICT in early childhood education.

Hon Trevor Mallard
Minister of Education
1 INTRODUCTION

In New Zealand, our lives are increasingly influenced by information and communication technologies (ICT), which support, facilitate and shape the things that people do and the lives that we lead. The early childhood education (ECE) sector can take advantage of the potential benefits of these technologies to enhance teaching and learning for children and educators, to streamline administrative workloads and to reflect the realities of digital technologies so evident in children’s lives and in the wider world.

“ICT should be seen as a tool that is used in conjunction with many others to empower children to learn and grow. It will not replace the existing mechanisms of learning, such as books and the outdoor environment.” FEEDBACK FROM CONSULTATION

People of all ages use ICT on a daily basis, from mobile telephones, digital cameras, DVDs and the internet, to the less visible ICT in supermarket scanners or remote controls. ICT is transforming our daily lives and the way we learn. It is important that people in ECE services who choose to use ICT, are able to do so in ways that enhance their practices and the learning of infants, toddlers and young children.

In the education sector, ICT (Information and Communication Technologies) is the term used to describe the equipment (hardware) and computer programmes (software) that allow people to capture, access, use and share information electronically.

This ECE ICT Framework is intended to provide guidance to inform effective ICT development, use and investment in the ECE sector. An ECE ICT Framework will help the ECE sector to harness the potential of ICT to support learning and teaching practice, and to make informed decisions about ICT in ECE settings.

ICT use in early childhood education does not mean ‘children using computers’. It is about children, educators, parents and families/whānau using information (for example, sending faxes to people in the community) and recording learning experiences (for example, using digital or video cameras) in ways that enhance children’s learning, including communication about and reflection on that learning.

The Government has developed ICT and e-learning strategies in education and wider government, for example, Digital Horizons in the school sector and the development of a national Digital Strategy. The ECE ICT Framework fits within the context of these wider ICT strategies and provides guidance and support to maximise the benefits of ICT developments in the ECE sector.

The overall goal of the ECE Strategic Plan, Pathways to the Future: Ngā Huarahi Arataki, is that all children develop strong learning foundations. The ECE ICT Framework will support the ECE Strategic Plan’s goals of increasing participation in quality ECE services, improving quality, and promoting collaborative relationships.

The ECE ICT Framework reflects government’s current role of supporting sector leadership and capability. It is not prescriptive or mandatory, and does not set expectations about what ICT a service should have. It is up to individual providers to invest in ICT as one of their resources, if they so choose.

Discovering, reflecting on and integrating ICT into ECE practice is a journey. This framework provides an opportunity for each ECE service to critically reflect on its philosophy and practice and, based on this, an opportunity to develop ICT-related goals that suit their children and community aspirations. It will provide a guiding framework for all involved in early childhood education, regardless of where people are on that journey.

WHY ICT IN ECE?

**ICT is already part of children’s lives:** New Zealand children interact with ICT every day. Early childhood education builds on the connections to children’s wider life experiences. Since ICT already impacts on the lives of children, it is important that educators consider integrating it into children’s experiences in healthy and safe ways that enhance their learning.

**ICT capability is very variable:** Many ECE services use ICT for a variety of purposes, and others are beginning to introduce ICT into their practices. It is important to consider the most effective and appropriate use of ICT in early childhood education and to establish a framework to guide its uptake and use. The capability of ECE services in using ICT varies greatly across the ECE sector.

**New knowledge about how ICT can enhance teaching and learning:** Research indicates that used well, ICT can enhance children’s learning and encourage purposeful and exploratory play, collaboration, cooperation, discussion, creativity, problem-solving, risk-taking and flexible thinking.

**Developments in other education sectors:** There are already ICT strategies for the school and tertiary sectors, and national level ICT and e-learning strategies are also being developed. The ECE sector needs to participate in these wider developments to ensure that ECE goals are reflected.

**Opportunities arising from the new ECE funding and regulatory systems:** The new funding and regulatory systems provide incentives for enhancing the quality of teaching and learning. They will also facilitate web-based information systems and electronic information and data sharing between services, ECE organisations and the Ministry of Education.

**Decisions about investing in and using ICT need to be well-informed to maximise benefits and minimise risks:** Investment in ICT can be a significant commitment for ECE services, both financially and in terms of the time needed by staff for professional development. There is a broad and growing range of products available in the ICT market, some of which are more useful and appropriate for early childhood education than others. It is important that ECE services have access to guidance to help them make appropriate decisions about ICT equipment, systems and their use.
SHARE\D UNDERSTANDINGS BASED ON TE WHĀRIKI

Across New Zealand’s ECE sector, the levels and types of ICT use differ widely. Some services use ICT extensively to enhance teaching and learning, administration, and communication with parents and whānau. Others have limited investment in and use of ICT.

Discovering, thinking about and integrating ICT into ECE practice is a journey. The ECE ICT Framework provides an opportunity for each ECE service to critically reflect on its philosophy and practice, and to develop ICT-related goals that suit their children, service goals and community aspirations.

There are some shared understandings about the nature of early childhood education in New Zealand on which this framework is based:

A socio-cultural approach: The foundation of this framework is the socio-cultural approach to learning that underpins the ECE curriculum Te Whāriki, with an emphasis on ensuring quality learning experiences for children. This includes encompassing their wider life contexts in their learning experiences.

Supporting children’s learning is paramount: The learning of infants, toddlers and young children is strengthened when children are able to be active learners, and when their learning is embedded in meaningful contexts and connects with their wider worlds of family and community.

ICT is a resource, alongside the many other resources available: ICT represents another resource that ECE educators and managers can draw on to support their practice. It is not an end in itself.

Diversity of services is to be supported: This framework encourages all ECE services to reflect on their philosophy and practice to consider whether ICT can contribute to their goals, and if so, how they could best use ICT in their service and community.
BEING able to take my child’s portfolio overseas has enabled our extended family to develop an understanding about their life at A’oga Fa’a Samoa. Through the learning stories and digital images we were able to share information about our child’s learning and the way in which they are immersed in their Samoan culture.”

PARENT, A’OGA FA’A SAMOA

“OFTEm as children are videoed, educators are also shown working alongside children. This has enabled us to look more closely at our own practice and the way in which we are communicating with children. Through this reflection we are able to refine and enhance our teaching practices.”

ROSKILL SOUTH KINDERGARTEN

“PUTTING our finances onto computer removed all of the double handling. For example the computer automatically analyses GST and places it in the right columns. This is a much better use of time.”

TE KÖHANGA REO O MANA TAMARIKI

“THE importance of the role of administration is often an area that is overlooked in early childhood education. I have found that if centres have effective systems and processes in place then this provides the support to streamline other areas and ensures that the centre runs smoothly.”

CENTRE FOR EDUCATIONAL DEVELOPMENT, MASSEY UNIVERSITY

“COMPUTERS that can spell check in Mäori and macrons that can be put on at the touch of a button are great for Köhanga reo.”

TE KÖHANGA REO O MANA TAMARIKI

**Benefits of ICT in ECE**

The child – infants, toddlers and young children: Children can use ICT actively to help observe, explain, record and review their world in new ways. Research indicates that ICT has the potential to enhance and transform children’s learning, if it is selected and used appropriately in a healthy and safe way.¹

ICT in early childhood education can provide new opportunities for children to develop skills and attitudes such as communication, collaboration, exploration and reflection, literacy (including visual, digital/technological and information literacy), and relationship skills necessary for effective participation in their current and future lives.

Parents, families, whānau and communities: Parents, caregivers and families can benefit from using ICT to enhance communication with educators and better share the experiences of their children both at home and in the ECE setting.

“It provides a greater and more in-depth link and understanding of what happens in the centre and at home.” FEEDBACK FROM CONSULTATION

The educator – teachers, kaiako, parents, caregivers, parent helpers and kaiawhina: Educators can use ICT to enhance their communication with parents and families/whānau about their children’s learning.

“ICT is invaluable for sharing the documentation of children’s learning with the child and their family.” FEEDBACK FROM CONSULTATION

Educators can also use ICT to access professional learning and networks, and for accessing and sharing resources and information.

The administrator – managers, head teachers, supervisors, team leaders, kaiako, kaiwhakahaere and coordinators: ICT can improve the use of data and reduce the workload associated with paper-based collection and management of data. ICT also provides opportunities for sharing information with others, including other services, schools and government.

Māori whānau, educators and communities: There can be particular learning and development aspirations for tamariki/mokopuna. ICT use has the potential to support greater exposure to and acquisition of te reo Māori.

‘Te manu e kai ana i te miro, nōna te ngahere. Te manu e kai ana i te mātauranga, nōna te ao.’

‘The bird who feeds on the miro berry, to it belongs the forest. The bird who feeds on knowledge, to it belongs the world.’

2 THE FRAMEWORK

The Framework provides guidance on how ICT can be used in a planned and considered way to enhance early childhood education.

VIGNON FOR ICT IN ECE

Acknowledging the central position of Te Whāriki in ECE policy and practice, the vision for the ECE ICT Framework is directly drawn from Te Whāriki’s aspiration statement:

“Through the use of ICT images children can see themselves as capable and confident learners. They have the opportunity to revisit and reflect on their own learning with gains to self esteem, positive learning outcomes and assists them to build relationships.” FEEDBACK FROM CONSULTATION

FRAMEWORK PRINCIPLES

The following principles represent a broad consensus across the ECE sector, other education sectors and government. The use of ICT should:

Take a learner-centred approach
A ‘learner-centred’ approach means focusing on supporting and extending the learning of learners. It means developing strategies, practice and systems to enable the range of diverse learner interests and abilities to be met.

Uphold the principles of Te Whāriki
All ICT developments within early childhood education aim to empower the child to learn and grow, support the holistic way children learn, support the wider world of family and community, and provide for responsive and reciprocal relationships between people, things and places.

Be led by and share good practice and research
All decisions regarding the use of ICT should be informed by the latest knowledge about safe, effective ICT use in early childhood education, and critical reflection on ECE practice.

“Our children live in a world of ICT and need to be exposed and trained in its use, with safety and appropriateness in mind. ICT is such a great tool we should be using it to its full potential, in all aspects of life and that includes teaching young children.”  FEEDBACK FROM CONSULTATION

Maximise opportunities for collaboration and innovation
ICT investment and use should maximise possible areas for collaboration and innovation, both in terms of sharing resources and good practice, and involving parents and whānau.

Encourage sustainability and affordability
It is important the use of ICT is sustainable for those involved in early childhood education, both in terms of the investment of financial resources as well as the human resources of staff time involved in training in and using ICT.

Recognise and address issues of safety and appropriateness
All ICT use should take into consideration the range of risks including exposure to inappropriate use of online information and material, protecting children’s privacy, health and safety issues, appropriateness of ICT resources and use for children and other ethical concerns (e.g. informed consent).
Strategic Focus Areas

This framework will assist ECE services to harness the potential of ICT in a considered and planned way with a primary focus on enhancing the learning of the child. How this happens in each service will depend on the philosophy of the service and the aspirations of their community.

Five Strategic Focus Areas (SFAs) have been identified to focus sector developments and address issues raised through consultation and from research. The focus areas apply to all the people within ECE services: children, educators, administrators, parents, families/whānau, communities and government. Government actions in these focus areas are intended to provide a basis for services to embark on their ICT journeys when, and if, they are ready to do so.

SFA 1: Working in Partnership and Collaboration

**GOAL:** ECE services work in collaboration and partnership with parents and families/whānau, other ECE and education services, and the wider community to share knowledge

By its very nature, ICT provides a range of opportunities for collaborative approaches and innovation. Collaborative arrangements can reduce costs and duplication of effort in the use of ICT resources and infrastructure. ICT also provides opportunities for discussion and networking between ECE educators.

"Teachers can network with other teachers. Teachers can get instant feedback." FEEDBACK FROM CONSULTATION

"ICT can be a gateway for parents to become more involved in early childhood education." FEEDBACK FROM CONSULTATION

GOVERNMENT SUPPORT

- developing standards and guidelines for compatibility of systems
- assisting the establishment of ECE networks by:
  - supporting ‘clustering’ of services for professional development
  - establishing a stronger ECE web presence that supports and encourages the development and sharing of ICT knowledge

SECTOR OPPORTUNITIES

- Actively participating in online communities of practice
- Exchanging information electronically with the Ministry and others
- Using ICT to make better connections with other services and schools
- Using ICT to better communicate with parents and families/whānau
SFA 2: Developing Professional Learning and Capability

GOAL: ECE educators become confident and capable users of ICT to enhance children’s learning and their own practice and professional learning

The value that ICT can add to young children’s learning depends on the beliefs and motivation of educators and their decisions about which ICT tools to select, and when and how to use these safely and effectively. Research indicates that developing professional capability is the most important factor in improving ICT use in early childhood education.

ICT can provide for effective professional development experiences for educators to enhance their practice. Case studies suggest that having the opportunity to share experiences with other ECE educators through ICT is a key factor in helping educators to develop high-quality practice.

"It is extending our professionalism as educators to keep up with current practices and continue to provide even more quality education for our tamariki."

FEEDBACK FROM CONSULTATION

SECTOR OPPORTUNITIES

- funding regional professional development workshops
- encouraging and supporting ECE ICT clusters
- providing guidance to educators to help them make informed choices about the quality and appropriateness of ECE ICT resources
- providing an online web presence that supports and encourages the development and sharing of ICT knowledge

GOVERNMENT SUPPORT
SFA 3: Using Research and Good Practice

**GOAL:** New knowledge about the effective use of ICT in ECE services is developed and promulgated so it can be used by ECE services to inform their decisions about, and use of, ICT

ICT use in early childhood education needs to be informed and guided by recent research findings and the experiences of services across New Zealand if it is to build good practice. Encouraging and supporting further work in this area is important.

“Any resource that allows greater knowledge has to be invaluable. In order to promote appropriate practice and to keep abreast of research into early childhood education, ICT would appear to be the perfect tool.” FEEDBACK FROM CONSULTATION
SFA 4: Supporting ICT Resources, Curriculum Materials and Exemplars

**GOAL:** ECE services can use ICT effectively to meet their goals by accessing a range of resources appropriate to their needs that will support the goals and principles of the ECE ICT Framework and of early learning in New Zealand.

To enable ECE services to use ICT appropriately and also support the principles and strands of *Te Whāriki*, resources and curriculum materials need to be developed for educators. This will include resources developed in te reo Māori. During consultation on the draft ECE ICT Framework many comments were made about the need for new educational resources to be both culturally appropriate and available in te reo Māori. Opportunities also exist to provide ICT to support other languages, such as Pasifika languages, through ECE services that promote these languages.

**SECTOR OPPORTUNITIES**
- Making existing materials available online
- Preparing new online curriculum resources including Māori language resources

**GOVERNMENT SUPPORT**
- Improving access to online systems to enable staff and families to access the ECE web presence
- Participating in professional online networks and accessing online information
- Further developing an understanding of how to critique ICT resources
SFA 5: Building Infrastructure, Systems and Standards

**Goal:** ECE services are able to use ICT to transform the ways they do things by introducing new and innovative systems and practices that enhance early childhood education

Making the most of the opportunities provided by ICT relies on services and organisations developing their ICT infrastructure and related support. A key element of implementing the ECE ICT Framework will be supporting services as they build ICT infrastructure and, where appropriate, effective and efficient e-administration systems. Standards for ICT use in early childhood education will also need to be developed.

“ICT has improved our data management and reporting systems in 2004.” FEEDBACK FROM CONSULTATION

“Being more efficient in our admin work must be good as it enables our organisation to function better.” FEEDBACK FROM CONSULTATION

**SECTOR OPPORTUNITIES**

- developing the new resourcing system, *EdInfo*, which will reduce manual data entry
- providing guidelines to inform ECE services’ decisions in the areas of:
  - health and safety, including Internet Cybersafety
  - management systems
  - the selection of ICT equipment
- establishing a national Helpdesk providing independent advice on ICT
- developing standards (e.g., cabling, standards for hardware)
- facilitating access to cost-effective systems and software

**GOVERNMENT SUPPORT**
The ECE ICT Framework is intended as a guide for sector and government actions. It provides a consistent and informed basis for ECE services’ own decisions about their use of and investment in ICT, when they are ready.

The ECE ICT Framework is not a detailed plan of what services must do to build on their use of and investment in ICT, nor is it an action plan with particular timelines for initiatives. An important task for ECE services is to reflect on where they are on the ICT journey and identify where they might want to go, taking into consideration the collective vision the service has for ICT and early childhood education.

The ECE ICT Framework is not static, and will be monitored and revised inline with ICT and ECE sector developments. Data will be gathered on ICT use in ECE services to monitor the uptake of ICT opportunities within the sector.

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**THE** digital images used alongside the learning stories often create heartfelt responses from family and whānau and this is often the only motivation that teachers need to continue on with their ICT journeys in early childhood education. 

*Wendy Lee, Professional Development Director*

**As professionals we are constantly articulating our own practice and look for new and exciting ways to teach. Technology allows us to do that because there are always new things happening with technology.**

*Greerton Early Childhood Centre*
APPENDIX:

GLOSSARY

Compatibility (or interoperability)
The ability of information systems to operate in conjunction with each other encompassing communication protocols, hardware, software, application, and data compatibility layers.

Digital literacy
The ability to use digital technology, communication tools, and/or networks to locate, evaluate, use and create information (see also: information literacy). Learners need to gain the confidence, skills, and discrimination to adopt ICT in appropriate ways. Digital literacy is seen as a ‘life skill’ in the same way as literacy and numeracy.

E-Learning
Structured and managed learning experiences using ICT resources, tools, and applications, for example, the internet, CD-roms, software, other media, and telecommunications. E-learning typically involves some form of interactivity, for example, online interaction between the learner and their teacher or peers.

Information and Communication Technologies (ICT)
In the education sector, Information and Communication Technologies (ICT) is the term used to describe the items of equipment (hardware) and computer programmes (software) that allow us to access, retrieve, store, organise, manipulate, share and present information electronically.

Information literacy (see also: digital literacy)
The ability to locate, evaluate, manipulate, manage, create and communicate information from different sources. As learners become increasingly information-literate, they develop skills in discrimination, interpretation, and critical analysis. ICT offers opportunities for higher-order thinking and creativity in processing, constructing, and conveying knowledge.

Online learning
E-learning that uses the internet and associated web-based applications as the delivery medium for the learning experience.

Philosophy
Shared understanding and beliefs in the direction to which the ECE service is aspiring.

Student Management System (SMS)
A computer software application that holds and manipulates data relating to a student or learner, including enrolment, attendance, administrative and teaching and learning information.

Visual literacy
Making meaning from visual material, including reading pictorial signs to follow a process and recalling past experiences through the use of photos and videos.

Web-based information systems
Systems of data collection and sharing that enable users to provide data to others through the internet.