Information and Communication Technology (ICT)

Te Hangarau Pārongo me te Whakawhitiwhiti

Introduction

The exemplars in this book should be considered in conjunction with the discussion in Book 16. Information and communication technology (ICT) can be defined as "anything which allows us to get information, to communicate with each other or to have an effect on the environment using electronic or digital equipment".[1] The Government's ICT framework for early childhood education states:

> Acknowledging the central position of the ECE curriculum *Te Whāriki* in ECE policy and practice, the vision for ICT use in early childhood education has been directly drawn from *Te Whāriki's* aspiration statement:

> The thoughtful and meaningful use of ICT in early childhood education services can support children "to grow up as competent and confident learners and communicators, healthy in mind, body, and spirit, secure in their sense of belonging and in the knowledge that they make a valued contribution to society".

> What this means for ICT use in early childhood education is that learners in ECE services should have the opportunity to experience:
> • enhanced learning opportunities through the meaningful use of ICT
>
> • which will enable them to enhance their relationships, and
>
> • broaden their horizons by exploring the wider world.[2]

The New Zealand Council for Educational Research compiled a comprehensive literature review of the role and potential of ICT in early childhood education for the Ministry of Education in 2004.[3] This review includes the comment that:

> Most of the literature about ICT in early childhood education strongly supports the view that technology on its own should never drive the process of ICT development in the sector … Rather, all planning for the introduction and use of ICT by children and adults in early childhood education should be grounded in a clear understanding of the purposes, practices, and social context of early childhood education.[4]

The use of ICT will be integrated with the purposes and practices associated with implementing *Te Whāriki*.

The ICT exemplars in this book are viewed through one or more of the three lenses outlined in Book 16:
• a lens that focuses on assessment practices, referring to the definition of assessment as "noticing, recognising, and responding", from Book 1 of *Kei Tua o te Pae;*

• a *Te Whāriki* lens;

• a lens that focuses on the symbol systems and technologies described as "information and communication technology".

A lens focused on assessment practices

He āta titiro ki ngā mahi aromatawai

The principles of *Te Whāriki* apply to both assessment and curriculum, and the assessment of children's participation in ICT keeps this in mind. Assessments provide useful information for teachers, families, and children, enabling and informing pedagogy that will strengthen all dimensions of participation in ICT. Assessments take place in the same contexts of meaningful activities and community practices that have provided the focus for curriculum. Families are included in the assessment and in the evaluation of ICT learning opportunities. Family "voices" are sought, and "funds of knowledge" from home and community are acknowledged and included. ICT is about communication and, therefore, about relationships. Assessment is sited in responsive and reciprocal relationships.

ICT assists teachers with the documentation of children's learning and facilitates the provision of more interesting, authentic, and immediate data for assessments.

> An area of great interest … to us has been how ICT is assisting teachers with documentation … Digital video and still cameras used in conjunction with computers have been pivotal in providing easier access to documentation and the curriculum, especially for children and their families. This applies particularly when a Learning Story contains a series of photos illustrating "work in progress" as opposed to a one-off "tourist shot" of the finished product.[5]

In many of the early childhood settings contributing to this book, a particularly powerful way of building children's identities as learners has been to make those documented narrative assessments that have been developed with digital technology available to the children themselves. In many cases, the children's portfolios have become books that they can "read". In some cases, the children have taken their own digital photographs as part of the assessment record, and they have assisted with downloading them onto the computer. They have dictated the commentary, watching while an adult uses the keyboard to write their words.

A lens based on *Te Whāriki* – He tirohanga mai i *Te Whāriki*

> [A child's identity as a competent and confident learner is] mediated by: competence with artefacts that set up meaning-making devices and bridges between participants in a community; authentic connections to family; opportunities to take responsibility; and routines and conventions that engage children and structure their participation. It is about responsive and reciprocal relationships with people, places and things, empowerment, holistic approaches, and the involvement of family and community … The artefacts in this project were not just those of ICT: computer, computer software, cameras, bookbinder, photocopier, telephones, fax machine, for instance. They also included assessment formats and a published curriculum. But the digital modes of communication were significant for these children and families …[6]

Learning outcomes in *Te Whāriki* that are relevant to the symbol systems and technologies of ICT are woven throughout the strands. The Exploration/Mana Aotūroa strand includes, under Goal 3, the learning outcomes that children develop:

- confidence in using a variety of strategies for exploring and making sense of the world;

- the ability to identify and use information from a range of sources;

- a perception of themselves as "explorers" – competent, confident learners who ask questions and make discoveries;

- the ability to represent their discoveries, using creative and expressive media and the technology associated with them.[7]

The Communication/Mana Reo strand includes, under Goal 3, the learning outcomes that children develop:

- an understanding that symbols can be "read" by others and that thoughts, experiences, and ideas can be represented through words, pictures, print, numbers, sounds, shapes, models, and photographs;

- experience with some of the technology and resources for mathematics, reading, and writing.[8]

The *Te Whāriki* perspective is that children will participate in the symbol systems and technologies of ICT for personal, social, and cultural purposes: for becoming confident and competent in culturally valued enterprises, expressing emotion, making connections across place and time, contributing their own abilities and viewpoints to the community, communicating with others (including appreciating the ways in which the available cultures communicate and represent), and making sense of their worlds.

At the same time, the possible pathways for learning that derive from the four principles in *Te Whāriki* (see Books 10 and 16) can provide a guide for identifying dimensions of strength as children become more interested in and involved with ICT. Learning associated with ICT practices becomes:

- more strongly integrated as recognised patterns, regular events, and social practices over time. In the exemplar "The photographer at work", Nissa observes the everyday practice of teachers documenting interesting episodes of children's learning. She takes the initiative to pick up the camera and document an episode when the children are making pancakes. The teacher comments, "I wanted to take photographs but I couldn't because I was just too busy."

- distributed or stretched across a widening network of helpful people and enabling resources. In the exemplar "Vinny learns to email", Vinny's competence with ICT becomes distributed across a wider range of resources. He takes photographs, uses WordArt™ computer software, takes the initiative to suggest email, and is keen to use the keyboard to enter his own "text".

- connected to a greater diversity of purposes, places, and social communities. In the exemplar "I wonder what this is?", Leo has previously discovered that websites are available for finding out information. On this occasion, the teacher suggests that they email the curator at the local museum. Leo takes a photograph of the skeleton they want information about, and then they compose an email. The curator replies. The teacher strengthens this understanding that experts are often elsewhere by commenting that she does not know the answer and that Leo's guess has been more accurate than her own (an aspect of mindfulness as well).

- more mindful (as children begin to take responsibility and make up their own minds). In the exemplar "Tori's PowerPoint® story", Tori develops a story about herself and her friend Nina, helps the teacher to scan into the story the pictures she has drawn, types the story (copying the teacher's print), records her voice for each page, and with the teacher's assistance, puts it all together as a PowerPoint® presentation. Tori later assists another teacher to make a PowerPoint® presentation.

A lens focused on the symbol systems and technologies for making meaning: ICT

A repertoire of practices

The following are some aspects of participating in ICT that might be noticed, recognised, responded to, recorded, and revisited. Not all of these aspects are represented in the exemplars, but teachers may be able to locate them in their own settings and write their own exemplars.

In her book *Pedagogy and Learning with ICT*, Bridget Somekh comments:

> The sub-title of this book is "Researching the Art of Innovation" because my interest is in finding ways of assisting the creative, collaborative process of change that combines imagining, experimenting with, and evaluating new practices … [T]he core insight that there is the potential of expanding human capability through integrating ICT into action and co-creating new ICT-mediated practices has remained central to my thinking.[9]

When episodes are documented and revisited, children will be able to recognise their own competence and the way it has developed over time along the four dimensions of strength described in the previous section. Furthermore, children may have participated in using ICT for the documentation. An indicative repertoire of practices is set out here, using the four practices outlined in Book 16 as a framework.[10] These four practices also intersect and interconnect.

Observing and listening in to ICT practices

Observing and listening in to ICT practices includes watching adults and other children using ICT for a range of purposes. In the exemplar "Jason, the boy with the camera", Jason has observed the teachers and children taking digital photographs and recognises that this is what children at his kindergarten do. This observation and his later interest in taking photographs himself contributes to his settling-in process, and to his family's involvement.
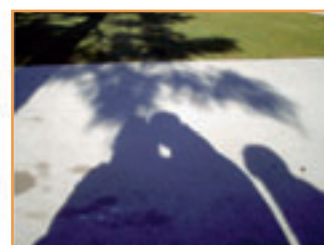
Playing with ICT tools and practices

The first forays into using ICT tools are frequently through play. Children, for instance, play at being a computer user, using the keyboard to "write" text or moving the mouse, as Tiari does in the exemplar "Tiari wants to draw" (see Book 17). In the exemplar "Exploring with iSight®", the children play with a new ICT tool, trying it out to find out what it can do. At the same time, they are learning how to use a new tool for inquiry that will be practical for other explorations.

Using ICT for a purpose

Using ICT for a purpose includes:

- faxing and emailing family and others beyond the early childhood setting to communicate, strengthen reciprocal and responsive relationships, and seek information from experts;

- making copies of work and text so that it can be taken home and shared with family and others;

- making copies of drawings in order to tell a story. ICT that includes visual images and sometimes dictated text and/or music is a valuable tool for storytelling;

- using the computer for social networking and increasing and strengthening interactions with families via email, Skype™, and blogs;

- taking photographs to construct text that the photographer, who cannot read and write in the conventional sense, can read and revisit;

- photographing work and events to document learning in portfolios and displays;

- using the Internet for inquiry, to nurture curiosity and research;

- videoing work in progress, as well as events, so that children can revisit the process and share and discuss it with family and the wider community;

- using a digital microscope to explore the world more closely;

- using web-based programmes for collaboration and discussion with teachers and families;

- assisting transitions and a sense of belonging and well-being by recording early settling experiences and moments of children building relationships;

- providing daily visual records for families and caregivers to use as catalysts for communication and relationships;

- using Skype™ or web cameras to enhance and support transitions between home and centre or between early childhood settings;

- including video from home, and artefacts that include the home language, for children to revisit and make connections with.

All the exemplars in this book illustrate at least one of these aspects of purposeful participation in ICT. This purposeful use of ICT is modelled by the teachers in the exemplar "Infant daily programme sheets", where teachers in an infant centre use the digital camera and the computer to create annotated illustrations of the learning activities undertaken during the day. The purpose of these is to provide opportunities for families and whānau to be included in the day's happenings and for children to revisit the activities at the end of the day with their families.

Critically questioning or redesigning

Critically questioning or redesigning includes critiquing the options for representing, communicating, and making meaning that are available through ICT. It includes choosing the ICT tool for the task at hand (or choosing not to use an ICT tool and suggesting alternatives).

In the exemplar "Charles publishes his stories", the teacher models alternative ways of representing ideas, using ICT. Charles, originally not interested in drawing and writing, is enthusiastic about the new design opportunities provided by combining drawing, story-telling, and ICT.