

Early childhood centres: plugging into ICT *A Manukau perspective*



COMET



MAKING EDUCATION WORK FOR MANUKAU

Information and Communications Technology

The Smart Manukau ICT Project

Introduction

This project arose out of Manukau City Council's Smart Manukau strategy. The City of Manukau Education Trust (COMET) was invited to develop a community project for building ICT skills that involved young children and their families. COMET commissioned an asset stocktaking of the ICT resources that exist in Manukau's early childhood centres. A survey was conducted in May and June, 2005, and a report was presented to the participating centres in early July. A copy of the report was given to Council and is available on COMET's website (www.comet.org.nz). The findings of the report suggested that the early childhood sector required better and more strategic funding for ICT. It also showed how useful ICT could be for supporting children's learning.

At the same time, COMET agreed to support a pilot project with Bairds and Yendarra Kindergartens, through the Auckland Kindergarten Association, to model the ways in which ICT could be used to build family and community engagement in learning, to develop community skills in ICT, and to connect to community resources. The kindergartens reported their findings in September 2005.

An Advisory Group of centre managers and teachers was established. The group helped to identify four key goals to meet the recommendations of the report:

Goal 1: That every early childhood centre in Manukau have a digital camera and a printer by December 2006

Goal 2: That every early childhood centre in Manukau will have a computer for office use and a computer for teaching purposes by December 2006.

Goal 3: That every early childhood centre in Manukau will be broadband (high-speed internet) connected by December 2006.

Goal 4: That every early childhood centre in Manukau will have professional development to use ICT by December 2006.

This document has been prepared as a resource for early childhood centres to use to support the achievement of these goals over the next 12 months. It summarises the research findings from the asset stock take and the learnings from the Bairds and Yendarra Kindergarten pilot.

COMET would like to acknowledge the support of all the early childhood centres who responded to the survey. I would also like to thank Andy Williamson and Ruth de Souza of Wairua Consulting; Ben Thomas; the members of the advisory group (Naomi Tutini of the Ministry of Education and Mihi Toki, Karen Matata, Wendy Grey, Rhonda Barrett, Fou Alene, Michelle Godsiff, Michelle Mildon and Terri Thorpe); Linda Flavell, Elise Tere, Bianca Harper and Kerry Ross of the Auckland Kindergarten Association; Filemoni Timoteo and Hanna Frederick of Manukau City Council. And finally thanks to Kate Sutton for facilitating the project.

Bernardine Vester
CHIEF EXECUTIVE
November 2005

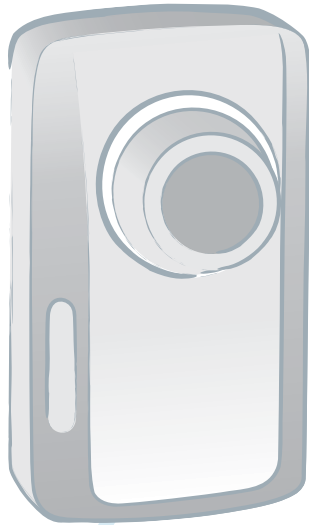
Strategic Goals for early childhood education

The overall goal of the Ministry of Education's early childhood education strategic plan, *Pathways to the Future: Nga Huarahi Arataki*, is that all children develop strong learning foundations. Its strategic goals are:

- Increasing participation in quality ECE services
- Improving quality
- Promoting collaborative relationships

How does ICT support these goals?

This document is about ways of connecting communities and families to learning through ICT.



What Is ICT?

Information Communication Technology (ICT) is defined in the education sector 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."

In early childhood education, ICT could include computer hardware and software. In the last few years, the use of other forms of ICT has become more prevalent, including: digital cameras, digital video, closed circuit television, video-conferencing, and electronic musical instruments.

ICT use in early childhood education (ECE) does not just mean children using computers. It is about children, educators, parents, and families and whanau using information and recording learning experiences to achieve the strategic goals of ECE in Manukau.

How does ICT improve the quality of children's learning?

ICT is the best means of documenting learning

The Bairds and Yendarra Kindergartens have quickly adopted an array of ICT resources to document children's learning during the Smart Manukau ICT project. Children's learning from day to day is recorded through learning stories which describe what each child has done in the words of their teachers, or the child him or herself.

With the addition a digital camera, images of the children learning can be used as a reference for teachers, parents and pupils. Pictures of learning are communicated to parents in a number of ways. Often learning stories and children's portfolios are printed out for families on each kindergarten's laser printer.

Recently, however the kindergartens are working with multi-media, creating slide-shows of the week's work, and a DVD of a class trip – even a digital video film showing the Bairds children's progress with ICT. Yendarra has a high-speed Internet connection and so can email pictures to some parents.

- Documenting children's learning is vital to quality ECE according to the principles for learning assessment defined in Te Whaariki, the Ministry of Education's Early Childhood Education curriculum. This allows the child to reflect on their experiences with family.
- 90% of early childhood education providers in Manukau City produce written records of children's learning using ICT, but fewer have the resources to follow the examples at the pilot kindergartens.

Children use ICT for interactive learning

Yendarra children Hoki and William didn't know each other well, but when William saw Hoki struggling with the 'Robots' game on the centre's computer, he knew what to do. William "took on the role of a teacher," said head teacher Linda Flavell. He told Hoki where to move the mouse to click it, remembering when he had played the game. Hoki, who had not built many relationships at the centre, took his advice and achieved the desired result.

Increasingly, early childhood educators are using interactive ICT, like digital cameras and computers, directly with children. Educationalists agree that the learning of infants, toddlers and young children is strengthened when children are able to be active learners.

ICT can support children from Manukau's diverse backgrounds

It can be used as a way of bringing children's home culture and experiences into the early childhood education centre.

- Half of Manukau ECE providers use ICT to support a language or cultural aspect of their curriculum, and over half of Pasifika providers. 72% of Kohanga Reo and other Maori EC groups use ICT for these purposes, predominantly through language-based resources.
- Some centres are using ICT to develop language-specific documentation, such as translating songs into a child's native language.

ICT helps teachers' professional development

- Educators can also use ICT to access professional learning and networks, and for accessing and sharing resources and information.
- Recording children's learning also provides opportunities for professional development, since the teaching process is also recorded.
- ICT can improve the use of data and reduce the workload associated with paper-based collection and management of data.

How does ICT help people to work together?

ICT helps ECE centres and the community work together

Since beginning its ICT project, Yendarra and Bairds Kindergartens have become something of a focal point for the community, including parents, to use ICT. Yendarra provides printing for digital pictures and the children's learning stories. Linda Flavell says that more families stay during sessions, to use the computers and printers with their children.

Three quarters of the families at Yendarra do not have the Internet at home. One of the families at the centre has used the broadband Internet connection to establish an e-link with relatives in Tonga.

Bairds and Yendarra Kindergartens loan out their digital camera for families to record special events in their communities or with their whanau. Children are given the camera overnight, and so families become involved in their learning at home.

- Almost all ECE providers in Manukau use ICT to communicate with parents, whanau and the community. Slightly over half use ICT to document the views of parents and whanau on their children's progress.

ICT promotes collaboration between parents and the community

When Yendarra and Bairds decided to take part in the Smart Manukau ICT Project, they held a workshop for parents to involve them in their children's ICT learning, at the Otara Library. Library staff showed parents how to use its on-line database and to browse the Internet.

While around half of parents were already library users with their children, very few had used the library's electronic resources before. They are now equipped to get better value from the full range of services the library has to offer. Parents who were not previous members have had the opportunity to build a relationship with the library and its staff.



ICT in ECE can help redress societal inequalities

At the Otara Library's ICT workshop, the parents were shown how to set up free email accounts. From these accounts they wrote email messages, some for the first time, to their children at the kindergarten. They then returned to the Yendarra Kindergarten, where they opened the emails with their children and read them together.

- Where a family doesn't have access to ICT in its home, being able to access it through the early childhood centre, as a community focus point, becomes more important.
- Whether children have access to ICT in New Zealand is tied up closely with their family's income. Households in some areas of Manukau are less likely to have Internet access at home. In the 2001 Census, 50% of people owning their own homes had Internet access as opposed to only 11% who were living in state or local authority rental housing.
- Providing children at all levels with access to computers has wider societal benefits. Government research has established that the groups least likely to have access to ICT in their lives include Pasifika, low income families and single-parents (Ministry of Economic Development, 1999), many of whom are represented in Manukau City.

ICT promotes collaboration among teachers and other educationalists

ICT can make available valuable professional development resources for teachers. It can be used to:

- search for learning resources;
- seek out new ideas and inspiration; and
- obtain language-based and cultural learning resources.

Computers also make it easier for centres to meet the Ministry of Education's record-keeping requirements, reducing paperwork.

Smart Manukau goals for ICT use in Manukau's ECE sector

Goal 1: That every early childhood centre in Manukau has a digital camera and a printer by December 2006.

Goal 2: That every early childhood centre in Manukau City will have a computer for office use and a computer for teaching purposes by December 2006.

Goal 3: That every early childhood centre in Manukau City will be broadband (high-speed internet) connected by December 2006.

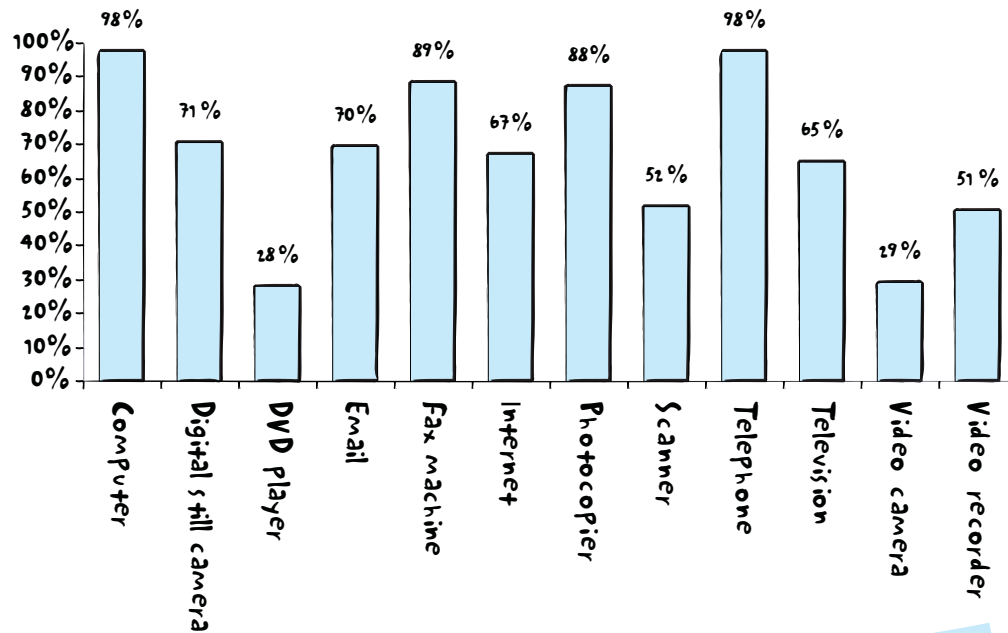
What types of ICT are currently being used in Manukau's ECE centres?

Types of ICT used

Almost all ECE providers in Manukau use ICT of some sort. The most common forms of ICT are telephones and computers. Each of these were reported to be in use by 98% of survey respondents.

The use of digital cameras was significantly high at 71%. Computer-based centre management systems are used at 59% of centres. We did not ask how old the equipment was.

Figure 1: Range of ICTs in use at centres.



As mentioned on page 4, ECE providers often face the barriers to using ICT that reflect those of the communities they serve. That's why extra ICT resources can help not just the children who attend an ECE centre,

but their families who may not have any other links to certain types of information and communication technology, such as the Internet or computers.

Over the page we show what kind of equipment is available in different kinds of early childhood providers.



Table 1: ICT usage by service type.

Type of ICT	Education & care centre	Home-based	Kindergarten	Pacific Islands EC group	Play centre	Te Kohanga Reo/Maori EC group
Computer	100%	100%	100%	96%	0%	100%
Digital still camera	72%	100%	94%	58%	0%	67%
DVD player	44%	0%	17%	23%	0%	28%
Email	52%	100%	67%	69%	0%	94%
Fax machine	80%	100%	100%	88%	0%	94%
Internet	52%	100%	61%	69%	0%	94%
Photocopier	84%	100%	100%	88%	0%	83%
Scanner	44%	0%	56%	42%	0%	78%
Telephone	92%	100%	100%	100%	100%	100%
Television	68%	0%	44%	69%	0%	83%
Video camera	28%	0%	28%	23%	0%	44%
Video recorder	48%	0%	22%	62%	0%	72%

ICT case study - digital cameras

Digital cameras are an increasingly important part of children's learning in early childhood. Educationalists say they are the 'killer' ICT application available in the sector, because they can be used to contribute to each one of its identified goals, both educationally and in the community.

The Smart Manukau ICT Project allowed Yendarra and Bairds Kindergartens to each purchase new digital cameras.

The teachers at Yendarra and Bairds use the digital camera to record children's learning visually. The pictures of children learning, playing, and doing activities are then incorporated into learning stories, where the teacher can describe what the child is doing for future assessment.

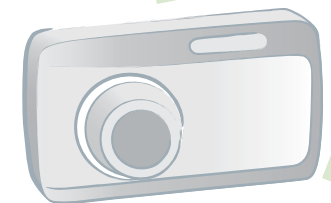
This could be as simple as a photograph of the child drawing. Or it could be more sophisticated; Bairds Kindergarten took pictures of their field trip to the 'Body Odyssey' exhibition at the Pacific Events Centre and later created a slide-show of the visit and a DVD for parents.

The children can write their own learning stories to describe what they are seeing themselves do on screen or in photos. The digital camera is a springboard into other ICT use. Taine was photographed showing other children how to use the "Kid-Pix" graphics program on the kindergarten's computer. He could then manipulate the image to insert text directly onto the picture to describe what was happening as it was taken.

The digital camera also allows students to self-direct the type of things they want to learn about. Head teacher Linda Flavell says she was intrigued that when the children were given the freedom to photograph whatever they wanted, what they found most interesting was themselves and each other.

Bairds Kindergarten encourages learning outside the centre by having the children take the digital camera home to identify children's interests or pursue areas of learning started at the centre.

A student at Bairds Kindergarten, who had been identified as shy, started to share more with her teacher, Elise, after she was asked to create a book of photographs of her pets which she took at home with the school's digital camera. Now she is working on a book for pictures of family and friends.



In the Community

Digital cameras have helped strengthen the kindergartens' ties with the families of children. The visual learning records have made their children's education more accessible to parents.

Yendarra produces a slide-show of digital images taken during the week, which it projects onto the screen at the end of the day. Head teacher Linda Flavell says that some parents who used to wait outside, and were shy when they came into the centre to collect their children, now come in to see the slide show.

Flavell says that since pictures of students were put on their portfolios, the number of times parents are accessing their children's portfolios has increased.

It's not just that the parents are more curious about seeing their children's work when it's that much more immediate, she says – children are more eager to show them.

Bairds Kindergarten loans out its digital camera to parents if there is a special family event they wish to capture on film, and the kindergarten provides its facilities for printing and processing the pictures they have taken. Very few of the families in Yendarra's or Bairds' communities have

access to photographic technology (digital or film) in their homes. It is enabling them to take part in much more interactive ICT use.

In Manukau...

- 71% of the ECE providers in Manukau have a digital camera. Every centre that owns a digital camera also has at least one computer.
- 66% of ECE providers document children's learning through digital photographs.
- In 31% of centres, children are using the digital cameras to take pictures themselves. **(This is more common where the centre has more than one camera.)**
- 90% of centres still produce written records of student's development; however, actually presenting images of children actively participating in learning has benefits for parents and whanau, and encourages them to get involved.
- Only 40% of Pasifika providers have digital cameras to document children's learning **(as compared with 63% of Kohanga Reo, 76% of education and care centres, and 94% of kindergartens).**

Digital cameras can be used to record children in the act of learning. Teachers and children can each write accompanying narratives to go in their portfolios.

Digital images can also capture the objects which are being learned about.

Digital images add value to the ECE provider's communication with its community.

Digital images can be used to relate children's learning to parents who may otherwise struggle to follow their progress because of language difficulties. One example of this is in a multi-cultural community.

Photos can explain where words may not. Visual records can overcome language barriers within the kindergarten, and encourage cross-cultural interaction between children.

Digital images allow children to re-visit, and so reinforce, their activities.

Children are very keen to have their accomplishments recorded.

Where cameras can be taken home, they extend children's learning beyond the centre and build stronger connections with parents and whanau, who may not have these resources themselves.



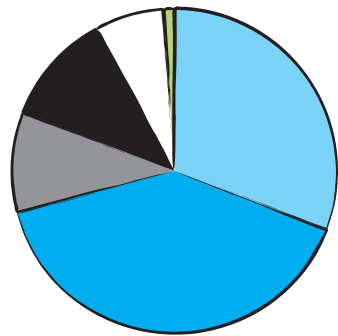
Case study - Computers and the Internet

Computers are the most used ICT resource among Manukau ECE providers, along with telephones. 98% of centres have at least one computer. However, despite the benefits of using computers directly in children's learning, the single most common use of computers in ECE is for administration. We did not ask how old the computers were.

76% of providers use computers to keep records of children for internal use or to satisfy Ministry of Education requirements.

Only 34% of providers directly interact with children using computers. One reason given for this is that the lack of computers means it is difficult if not impossible to schedule one on one or small group time on the computer for children and teachers. Fewer than half of centres have computers in areas that are used by children (43% have computers in both the children's area and in either a teaching only or administration only area).

Figure 2: Number of computers at ECE centres.



- One computer
- Two computers
- Three computers
- Four of five computers
- Six or more computers
- No computers

This problem is associated with the cost of computer equipment. 58% of providers identified cost as the biggest problem associated with computer use in ECE, and 67% reported money as a reason which prevented them from making greater use of ICT.

If all centres could have dedicated computers for learning purposes, they would be able to get greater benefits from ICT.

This doesn't take into account other costs related to ICT use. Another barrier to using computers more is the cost of the consumables for making learning resources. That is, the cost of printer paper for newsletters and learning records, ink for printers (particularly colour cartridges for capturing children's photographs) and laminating learning stories.



Table 2: Computer ownership by type of service.

Type of service	Children per computer		Number of computers	
	Mean	Median	Mean	Median
Te Kohanga Reo/				
Maori EC group	12	11	2.8	2.0
Pacific Islands EC group	14	16	5.6	2.0
Kindergarten	37	30	2.8	3.0
Education & care centre	29	25	3.0	3.0

Internet Access

The Internet has become an important tool for teachers to acquire new resources, and is increasingly important for peer networking and professional development.

The Ministry of Education has already identified broadband (high speed) Internet access as an educational priority for children. The Ministry has dedicated \$48.3 million to extend broadband access to every primary and secondary school in the country.

The early childhood education sector is not centrally planned like the later stages of schooling, and so government will not centrally fund all ECE providers directly. The government has announced a contestable fund for ICT in early childhood education. Because ECE centres are run autonomously, by their communities, the communities have to lead the call for funding in their areas.

Around three-quarters of early childhood centres education providers in Manukau have Internet access. The majority access the Internet through a dial-up connection (47% of all providers). Only around one in six providers use broadband Internet connections.

A broadband Internet connection can help providers achieve outcomes in each of the strategic areas of early childhood education.

Centres in Manukau use the Internet to improve the quality of ECE provision through professional development of teachers:

- 64% use it to search for learning resources.
- 58% use it to find about a specific topic.
- 52% use it to seek out new ideas and inspiration.
- The Internet is used as a resource to obtain language-based and cultural learning resources.

The Internet is used to directly support children's learning:

- Children at 17% of centres use the Internet to research a subject.
- Children at 7% of centres write and send e-mails.
- Internet use is seen as a natural progression from using digital cameras and other ICT. Children can send pictures to whanau.

Providers are also using the Internet to increase collaboration within the ECE sector:

- 55% use it to communicate with professional organisations and colleagues.
- 49% use it for their own learning.
- 43% use it to find out about courses and conferences.

The Internet can increase the collaboration between ECE centres and their communities:

Teachers report using the Internet to explore the different languages and cultures among their children, to increase knowledge about the range of cultural groups at centres.



Staff need to be confident users of ICT themselves

Goal 4: Every early childhood teacher in Manukau will have professional development to use ICT by December 2006.

Staff have to be confident users and learners, in order to be able to harness the full potential of ICT.

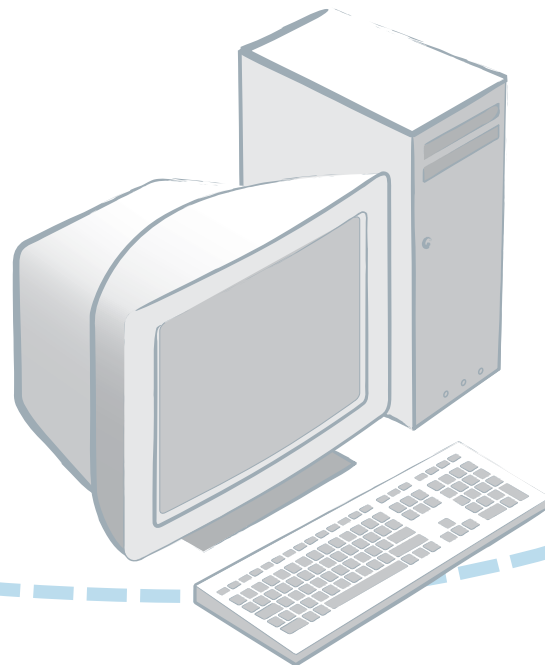
ICT is not an end in itself. It has to be used appropriately in order to provide benefits for the early childhood education sector. Research indicates that developing professional capacity is the most important factor in improving ICT use in early childhood education.

At the same time as beginning the Smart Manukau ICT Project, staff at Yendarra and Bairds took part in professional development with Ian Newson, a computer consultant (from the Auckland Kindergarten Association). This didn't just mean they were more comfortable using their new ICT, but that they discovered how to use resources they already had. Yendarra Kindergarten produced a learning movie, 'Fireman George', starring the centre's children, which it made with software that had been sitting unused on their old computer (and with their new digital camera).

In the same way that children and their families have different backgrounds in ICT, so do early childhood educators. Linda Flavell said that previously teachers at Yendarra and Bairds had developed their ICT skills and methods for documenting children's learning in an ad hoc way. Much had to be accomplished through trial and error, or by picking the brains of their colleagues.

Elise, a head teacher at Bairds Kindergarten, didn't have any experience using ICT herself, and was nervous about the ICT Project. "No doubt we will experience moments of frustration, however the benefits we will experience as a community of learners will be priceless," she said at the time. Now she is confidently showing students and parents how to use the kindergarten's ICT resources.

Only one in every 30 early childhood education providers in Manukau City think they are using ICT enough. Money is the single most cited impediment to wider, and better, use but close behind are a cluster of barriers which relate to staff's ability to use ICT with confidence.



When Manukau ECE providers were asked to identify any problems associated with using computers...

- 53% suggested not having enough knowledge about computers.
- 45% said they faced problems with the related issue of lacking confidence in using computers.
- 30% struggled with a lack of technical support, 29% with a lack of training resources, and 21% with the general unreliability of computers (which, again, is a support issue).
- Among private providers, lack of support and training in ICT were the biggest barriers to greater ICT use.
- Over half (56%) of providers said patchy knowledge about ICT was preventing them from using it more. 38% said they would be using ICT more but for lack of training.
- Pasifika providers are more likely to be dependent on their teachers' own learning. 68% of Pacific Islands early childhood centres use this method and 64% rely solely on it.

Figure 3: Provision of staff training (percentages).

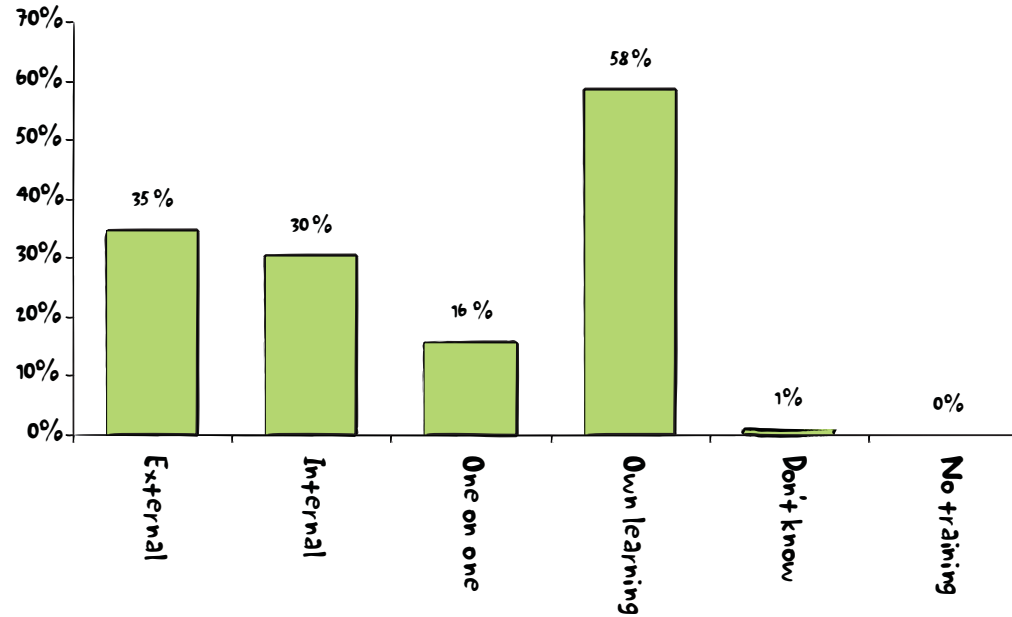


Table 3: Percentage of services relying solely on their staff's own learning.

Service type	External	Internal	One on one	Own learning	Don't know	No training
Education & care centre	32%	20%	24%	76%	0%	0%
Home-based	0%	100%	0%	100%	0%	0%
Kindergarten	61%	33%	17%	50%	0%	0%
Pacific Islands EC group	20%	12%	12%	68%	4%	0%
Play centre	0%	0%	0%	100%	0%	0%
Te Kohanga Reo/Maori EC group	37%	63%	11%	26%	0%	0%

Conclusion

This document is intended for centre committees, management groups or owners to use in discussing their budgets and ICT needs.

The document can also be used to support a centre's funding applications for assets or consumables; or for promoting the use of ICT among staff, parents, or managers. It is intended to support your arguments about why the purchase of ICT assets or computer consumables adds value to learning for young children.

This document is accompanied by a brochure for use with parents to explain how ICT can be used to support learning in your centre. We hope anyone associated with early childhood centres in Manukau will be able to use either this document or the brochure to

stimulate a conversation about how ICT can be used in your centre; or use it to apply for funds.

It is very apparent to the project Advisory Group that the use of ICT in early childhood centres and in the community can only be useful if staff are themselves confident in its use. Participation in professional development, therefore, is critical to the success of any centre's ICT development plan. COMET is working with the Ministry of Education and others to ensure that Goal 4 can be delivered in the next 12 months.

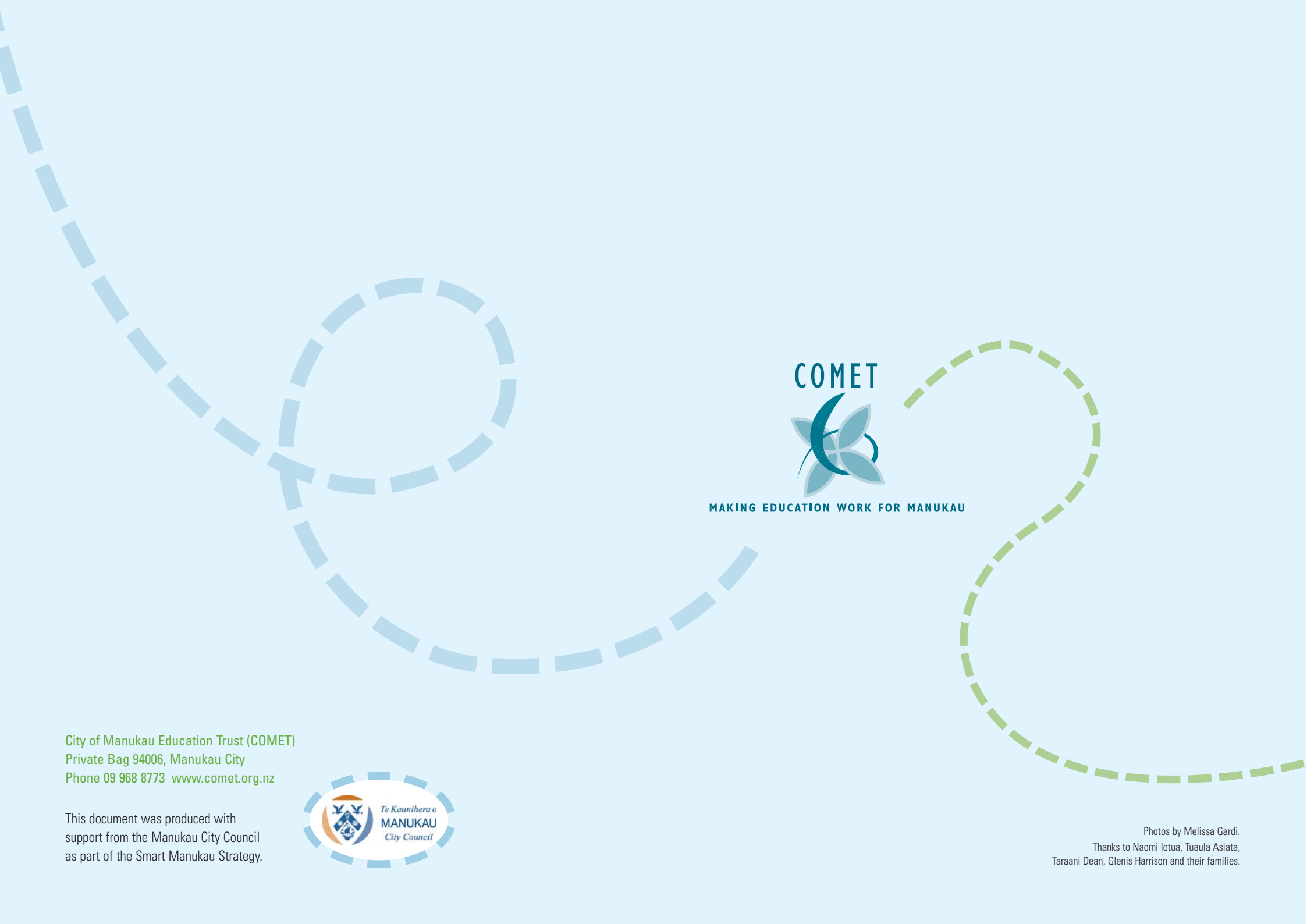
We thought it might be useful to help centres to identify what costs might be involved in order to make a funding application for assets. A sample funding application letter can be found on our website at www.comet.org.nz/advocacy/earlychildhood. The page also has some

suggestions about where centres might be able to apply for funds to support an ICT development plan.

For more information about the Ministry of Education's ICT strategic plan for early childhood education, go to <http://www.ecd.govt.nz/ict.html>. Copies of the plan, called Foundations for Discovery, have been distributed to all centres. Hard copies are available from:

Learning Media, Ministry of Education
Publications Customer Services
Phone: 0800 800 565 (8am to 5pm weekdays), Fax: 0800 800 570,
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