



Peer-reviewed paper

## ICT journey in ECE

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This article is a personal narrative of a teacher's journey into utilizing new technologies in a New Zealand early childhood classroom. It is hoped that sharing my personal experiences and discussing some of the challenges I faced with technology with young children will help practitioners and researchers alike to progress with implementing new technologies in early childhood settings.

### **Introduction**

This article is a personal narrative looking at a case study implementing new technology in an early childhood classroom setting. This narrative is intended to take you on my journey and to share the experiences I have experienced with technology as a teaching tool.

I am a male teacher, teaching pre-schoolers, something I kind of stumbled into. Back in Brazil, where I come from originally, I used to be a physical education teacher, mainly teaching high school children. When I arrived in New Zealand, I found myself unable to go back to teaching before completing extra papers through a New Zealand university. While trying to sort out the details I had the opportunity to work as a relief teacher at a local preschool in Christchurch. Initially, I felt a bit lost and overwhelmed when I worked my first shift, but after interacting with a few pre-schoolers, I fell in love with their hunger for knowledge and their interest in the simplest things. When I finally had the chance to study again, I chose to study early childhood education (ECE) and I have not regretted it since.

Technology has always been a part of me. I always liked to have the latest technology available and I am always looking for ways of using that technology. When I bought my first iPad, I was amazed and felt that this device was the one to break through and change many things in many different ways. My interest encouraged me to attend a few workshops on how the iPad could be incorporated into a preschool room. I started using a few Apps such as "Talking Tom" with the pre-schoolers and the results were amazing. Children were so engaged and showed so much interest for that I started to wonder what else I could do.

To begin with I brought a few old laptops into the centre and set them up with a webcam and simple software to facilitate children seeing and hearing themselves on the computer. It was just like a mirror but inside the computer. Children started recording themselves and showing their recordings to the other children and parents. Very quickly, we had a big collection of very funny and informative little videos. From that experience using the iPad Apps, I felt that



computers, iPads and other technological devices had a place in early childhood education.

The literature also suggests that ICT has a place in ECE providing three justifications: (i) ICT reflects on people and the environment that surrounds children; (ii) technologies offer new opportunities to strengthen aspects of ECE practice; and (iii) there is wide support and interest in the whole education sector for the development of ICT (Bolstad, 2004, p. 2).

### ***A new challenge***

Early in 2012, after leaving Christchurch, I started to work at a new centre. The centre had a license for 100 children and at that stage was around 80% capacity. Soon after I started, I noticed that the centre had an iPad that was rarely used by the teachers. I felt it was my opportunity to expand my knowledge on how the iPad could extend children's learning. The iPad was not just the only technological tool I had in mind as I strongly believed in the broader definition of ICT. That definition encompasses anything that allows us to get information and to communicate to each other, or to have an effect on the environment using electronic or digital equipment.

The challenge I faced was to integrate all the devices available, allowing teachers and children to use them in different ways. The integration was the key to this ICT implementation for teaching. All devices working together meant that teachers could have easy and remote access to information, and that information could be shared between different devices: a photo taken with the iPod would instantly show in the iPad, the Apple TV photo stream and the Laptop computer. Gradually as teachers started to make the most of the devices, ICT became a feature of mat times, planning and assessment. With everyone's help and collaboration, two years down the track all the teachers are able to take advantage of the devices we have at hand.

### ***Helpful devices***

This article will continue with the experiences I had in my centre and an explanation of how we use technology.

#### ***iPod***

The iPod offers easy access to the iTunes store, giving teachers the power to easily find and buy songs that are related to children's interest (such as "Let it go" from Frozen). Most recently, we started to use the Pandora internet radio App with the iPod. Pandora offers a huge selection of songs just like a normal radio station, but gives the teachers the power to choose stations and create their own playlists. Currently we have stations that range from classic music, to nursery rhymes, to kids pop, to the Chipmunks. Pandora is free but occasionally you get a short advertisement between songs.

As the iPod can also be synchronised with the Apple TV and the laptop computer using iCloud, we can stream photos, videos, music and YouTube



videos from the iPod to the TV. Once the laptop computer has iCloud installed, all photos taken using the iPod are automatically sent to the computer. This saves the teachers a lot of time in not having to download photos from a camera to the laptop computer.

### ***Apple TV***

The Apple TV is a small device connected to the internet and to the TV. It turns a “dumb” TV into a smart TV and gives teachers access to several internet channels related to different themes. The one we use the most is the YouTube channel. The power of YouTube is enormous, being one of the biggest audio-visual libraries available. By using the YouTube channel, teachers can instantly find resources related to anything children show interest in or anything related to a specific theme/music/story. For example, children might be interested in finding out where the milk they drink comes from and how farmers milk the cows. After we had a *korero* about this subject, we searched YouTube looking to find a video that would show the children the “real deal”, a farmer milking a real cow. We did discover many videos related to the theme we were searching for and decided to watch one called “how to milk a cow”, created by the Fieldman family in America. The children were amazed to be able to watch that video and it enriched our exploration in many different ways.

Another feature of the Apple TV is the *Air Play functionality*. By using the Apple TV, teachers can mirror everything that is on the iPad screen onto the TV. If a child is exploring a specific App, children do not have to gather around the iPad. Instead, they can watch it together on the TV.

### ***iCloud***

iCloud is the Apple cloud system. Every photo or video taken with one device is shared with all other devices that are using the same Apple ID. For example, photos that are taken with the iPod also instantly show on the iPad and vice versa. Teachers can create photo streams using the iPad and can play these on the Apple TV or any photo the teacher chooses to show. Photos taken during the day can thus be played later for the children to revisit or for parents to have an insight into their children’s day.

### ***iPad/Tablets***

An iPad or a tablet is a mini computer with internet, photo and music capability. It is portable and can be taken to where the learning is happening. For example if a child finds a strange bug in the sand pit, teachers can take the iPad to the sand pit and search for the bug, take photos of it and even create a small learning story. There is not much research yet in the use of iPads in the early childhood setting, but Elaine Khoo (2013) from Waikato University gives us a few examples of how teachers are using iPads to enhance children’s exploration.

Khoo’s research was done in Hamilton in an early childhood centre. Four teachers were observed and interviewed after utilising an iPad with the children



with teachers' practice showing different ways to use the iPad to expand children's learning opportunities and enhance the link between home and centre (Khoo, 2013). As Khoo remarked: "Over the four examples teachers used a combination of planned and emergent strategies" (Khoo, 2013, p. 3). In all four examples, there was overlap in the way teachers used the iPad. In two examples, teachers used the internet but it was not used the same way. On one occasion, the teacher used the iPad to strengthen the relationship with the child by acknowledging his interest and sharing it via email with the family. On another occasion the internet was used, to research a topic via Google to add to the children's shared understanding of the topic (Khoo, 2013, p. 16).

Khoo acknowledges that teachers need time to explore and experiment with the iPad's different functionalities and possibilities, so as to be able to develop the skills and confidence to incorporate it into their practice. This aligns with other authors who see pedagogic change as a result of ICT being introduced.

### ***Exploring the App store***

The App Store has more than one million Apps available that cover a wide range of subjects that can arise from children's interest. It pays to explore the store and try the free Apps that sometimes are as good as the ones you buy. Below is a list of Apps that I have used with pre-schoolers. These Apps have worked well in our experience and they are all free.



#### **Phonic Match**

Simple memory game but with a big twist. Children have to match not just words but their phonic sounds. A great little App to be used with nearly at school children.

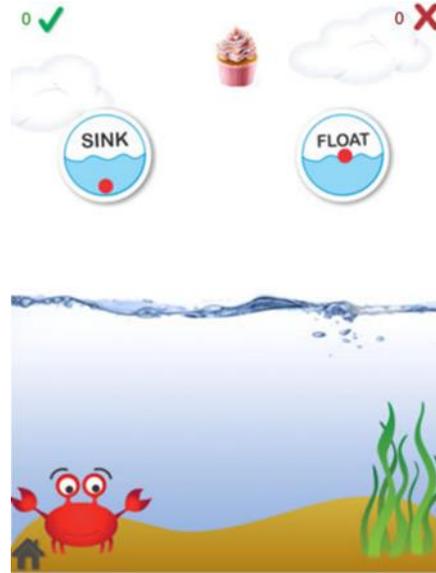
<https://itunes.apple.com/us/app/phonic-match/id597925540?mt=8>



### Sink or Float

Great App to use with children when they are interested in exploring sinking and floating. Children “drop” objects from the top of the screen and watch it either sinking or floating.

<https://itunes.apple.com/us/app/sink-or-float-free-kids-science/id605625765?mt=8>



### Color Mix

Print, colour and see your drawing in beautifully hand-animated 3D worlds!

<https://itunes.apple.com/nz/app/color-mix/id650645305?mt=8>



### **Toca Doctor**

A very colourful and attractive App that explores the human body in a very special way. Children are taken into a journey through the body solving rather simple puzzles in different levels and body parts. A great App for anyone that has children interested in how the body works.

<https://itunes.apple.com/nz/app/toca-doctor/id424209938?mt=8>



### **Interactive books**

An unconventional way of reading a book to the children. The story pages are on the iPad screen and as the recording reads out the story children can touch different objects that move around on the screen. Try searching “Tap Tales” and you will find several very popular children’s book titles.

<https://itunes.apple.com/us/app/christmas-tale-hd/id402016391?mt=8>

### ***Wanting to further explore***

Once all these devices were connected and working properly I wanted to understand how they could influence children’s learning and development. I then started to study a Master’s Degree in Education with focus on Technology. It was a great opportunity to research how technology is influencing education not just in New Zealand but around the world. During the course of my study, I had to run a small project involving a technological tool with the children at the centre.



I chose to use an iPad as I had started to wonder how much children were really taking from all that technology we were involving them in at the centre. In the small project I wanted to investigate how children would support each other when interacting with the iPad. In my master's résumé, I observed how much children were learning and how much they were teaching others while involved with the iPad. The project ran for six weeks and involved a small group of 10 children. I used Mercer's quality of talk framework to assess children's talk during their sessions with the iPad.

I could find examples of two different types of talk related to Mercer's (1996) framework: cumulative talk, which is "characterized by repetitions, confirmations and elaborations" (p. 368) and exploratory talk characterized by statements and suggestions for joint consideration. These may be challenged, counter-challenged, and requested for clarification with responses that provide explanations and justifications (p. 367). The project showed that the interactions children had during the iPad sessions suggested they were also contributing to each other's learning. The more technologically capable children were supporting and helping the less capable and both groups could achieve the same outcome.

### ***Teacher training and confidence***

Pedagogical change and curriculum redesign seem to be common topics between early and later research on ICT implementation. According to Livingstone (2012), "these changes pose both opportunity and challenges to schools," (p. 10) and "teachers also need to be willing to change and want to learn" (Hayes, 2007, p. 390). Prestridge (2012) adds that "teachers are more likely to plan and implement practices with technologies that reflect their beliefs about teaching and learning" (p. 450). Khoo's (2013) findings also highlight the necessity of giving teachers more time to investigate the iPad before they are sufficiently confident and able to implement it into their practice.

Hayes' (2007) findings show that teachers need encouragement and support when working with ICT and there is a need for a "fast fix" when digital tools (such as the iPad, WIFIs, and computers) break down (p. 389). Livingstone (2012) argues for a deeper analysis of education: "to embed ICT in the educational infrastructure, teacher training (PD), curriculum structures and materials, classroom practices and modes of assessment must be redesigned at all levels" (p. 10). Prestridge (2012) also argues for change, especially changes in pedagogy.

Prestridge's study shows that "teachers are more likely to plan and implement practices with technology that reflect their beliefs about teaching and learning" (p. 450), but he also concludes that teachers believe that ICT can be used as a learning tool to enhance curriculum and that its use relates to real life practices. What is also interesting from Prestridge's study is that the level of confidence in ICT does not appear to relate to the teacher's pedagogy. Even though teachers' level of ICT knowledge was high, their practice was still within a traditional teacher centre approach (p. 450). Teachers' confidence level has also been highlighted by Livingstone's findings that show teachers' will give more attention to those aspects of ICT where they themselves feel confident ignoring other aspects, software or ideas that they would struggle with.



## **Conclusion**

During these eight years as a preschool teacher in New Zealand my knowledge of ICT and education has evolved and grown. I feel that on the journey undertaken, I and the teachers around me have become confident enough to use the technological tools available. From the iPod (our first device), to the full integration of all devices, we have all learned how to adapt our pedagogy and include them into our day to day teaching. Digital tools are not seen as a substitute to any of the other tools we use with children (books, wooden puzzles, picture cars, drawing). We definitely see the iPod, iPad, Apple TV and computer as an extra tool that offers us different opportunities for exploration to enhance our teaching.

I believe that there is a need for more research in this area so that we can understand how the use of these tools may change our way of teaching. We need to stop closing the door on ICT just because it is difficult to understand or it takes an effort to learn how to use it. As discussed above, there is a need for pedagogical change, before teachers can fully integrate technology into their preschool rooms.

Technology will keep evolving producing more amazing things. Teachers will need to understand these devices and Apps, to be able to see if and how they might have a place in education. I am looking forward to further research to explore how new devices can help children learn and become incorporated into the curriculum. Maybe a framework or practical guidelines could be developed to give teachers ideas and more confidence to further explore technology in ECE.

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Please see the Facebook page I have begun called "ICT in ECE," a page for teachers to share technological ideas, discuss issues and ask questions.

## **References**

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