Chapter 1: "It's about the relationships that we build": iPad-supported relational pedagogy (Ngā Hononga) with young children

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Abstract

Although iPads have gained much attention and are being increasingly adopted into educational practices, concerns exist as to the suitability and extent of their use with and by young children. This chapter reports on the findings of a qualitative study exploring iPad use in the sustaining and extending of relationships in an early childhood education and care centre in New Zealand. Guided by the notion of a relational pedagogy, espoused in *Te Whāriki*, the New Zealand early childhood curriculum, the research involved collaborations with two early childhood teachers and children at the centre to obtain perspectives of teachers, young children and their parents/caregivers regarding iPad adoption and use. The findings highlight the potential of using iPads to support and further develop young children's relationships with people, places and objects within their immediate contexts, which are underpinned importantly by a clear teacher awareness, adoption of and being informed by a relational pedagogy perspective. This has implications for how teachers can be supported to use the iPad to create meaningful and relevant teaching and learning experiences for and with young children.

Keywords: early childhood education (ECE), affordances, iPads, relational pedagogy, young children, digital smarts

Introduction

Sensational headlines such as "Forget nap time; it's app time" (Evans, 2013), "Techno-toddlers skype their parents" ("Techno-toddlers", 2012), "Is my iPad in my backpack?" (Timmermann, 2010), "The screens that are stealing childhood" (Stevenson, 2012), "iPads helping or hindering infants?" (Miletic, 2012) and "iPads bridge kindy generation gap" (Wade, 2012), just to name a few, abound today as an indication of the increasingly digitally saturated culture that we live in. These articles tout young children's prowess, capability and ease in picking up the skills to use and manage mobile and tablet devices such as iPads as part and parcel of today's digital generation. The iPad's touch screen

properties, mobility, multimodality, connectivity (to the Internet) and interactivity (for example, with various learning applications or apps) allows children to intuitively learn to use it with relatively ease and convenience. Expectations are thus fuelled and imperatives issued for teachers to take up the use of these devices in an attempt to enhance their students' learning (and hopefully provide the sorely needed panacea for a flailing education system). This poses a challenge, however, for the majority of teachers who neither grew up in the digital generation nor are accustomed to using technologies, and who are highly likely to be already stretched for time in their current work roles and responsibilities.

This chapter reports on a study in an early childhood and care centre and is intended to disseminate ideas for iPad-supported innovative practice with young children. The study explored the educational affordances of iPads from the perspectives of teachers and children with a specific focus on supporting relational pedagogy. We describe three examples from the study to illustrate how iPads can be valuable in supporting teachers' enacting of a relational pedagogy within an ECE context. Teachers' meaningful integration of iPads in their teaching and learning context as underpinned by a relational pedagogy therefore constitutes our notion of 'digital smarts' .

Relational pedagogy, as described in New Zealand's early childhood curriculum document, *Te Whāriki* (Ministry of Education [MoE], 1996) values children's learning through interactions with people, places and things, and opportunities for shared sustained thinking. Children's ability, understanding and confidence to use iPads productively is facilitated by their developing a responsive and reciprocal relationship with teachers/others interested in their learning and development. Put another way, teacher awareness of and ability to form responsive and reciprocal relationships with children as a basis for iPad-supported practice to maintain and extend children's learning interests of people, places and things constitutes a vital aspect of relational pedagogy in our view of teacher digital smartness. Such teacher qualities are necessary to identify and seize the opportunities to nurture and extend young children's learning interests and understanding of the world around them. This underpinning will go a long way in the light of the ever-changing and transient technologies that educators face in their practice.

The study is premised on two strands of current trends. Firstly, the ubiquitous and pervasive use of ICTs has exposed the current generation to more digitally mediated learning and recreational experiences. Labels such as digital natives (also 'Net-Geners', 'Gen-Xers' and 'millennials') have been used to characterise a new generation of learners capable of multitasking, imagining and visualising while communicating in multiple modalities in a digitally saturated environment (Prensky, 2001; Zevenbergen, 2007). Current views of young children acknowledge them to be active, competent, knowledgeable and able learners capable of directing attention towards their learning interests and keen to experiment with/draw from multiple resources to inform and help them make sense of their surroundings (Ebrahim, 2011; James & Prout, 1997). Such a view is sympathetic to ICT use in its various forms as an appealing and motivating source for the new generation of digital learners (see Archard & Archard, this volume). Teachers are therefore encouraged to examine this assumption and build their pedagogies to leverage ICTs to support children's learning interests and expectations (Bolstad, 2004; Buckingham & Willett, 2006) by drawing from their unique knowledge, skills and languages typically developed in the home (funds of knowledge) to extend their learning and exploration of their surroundings (Moll, Amanti, Neff, & Gonzalez, 1992).

Secondly, we take the view that technology on its own is not the driver of pedagogical change. That is, meaningful and appropriate integration of ICTs directed at enhancing learning occurs when teachers, informed by clear pedagogical frameworks, begin to consider the possibilities of re-imagining their practice in support of extending their students' learning interests and needs. This

requires an examination of teachers' beliefs and practices and adopting technology that aligns with their teaching and assessment beliefs, goals and practices (Blackwell, Lauricella, Wartella, Robb, & Schomburg, 2013; Joyes, 2005/2006).

We begin the chapter by providing an overview of *Te Whāriki*, the New Zealand Early Childhood Curriculum. Attention is given to the principle "Ngā Hononga" or Relationships as it framed and guided the teachers in our study's interaction and assessment for learning with young children. Educational affordances of iPads are described next before the research context and findings from our research are detailed. The chapter concludes with a discussion and implications for ECE practice.

Te Whāriki: Early Childhood Curriculum

Te Whāriki is a curriculum framework designed to support teachers and young children's learning opportunities within a sociocultural context (MoE, 1996). Partnerships between teachers, parents and children are emphasized in the curriculum. Te Whāriki is built on four principles, one of which is Ngā Hononga or Relationships, and five supporting strands. The curriculum recognises that learning is not segmented into discrete parts, domains or topics and that all those aspects of a child's learning and development are integrated, interrelated and interconnected (MoE, 1996).

The notion of relationships in Te Whāriki

The principle Ngā Hononga/Relationships is a key feature of the sociocultural view of teaching and learning in *Te Whāriki*. It recognises the sociocultural and relational nature of learning. Relationships are multifaceted between the individual and his/her peers/teachers/families including environment with a focus on developing communities with a sense of belonging and the freedom to participate through these responsive and reciprocal relationships (Papatheodorou & Moyles, 2009). In ECE settings, this principle is realised through three aspects—children's developing relationships with people, places and things—pivotal to their developing exploration and understanding of the world around them.

Developing relationships with people is established when children start to share their thinking, co-inquire and co-construct knowledge with those around them, be it within the early childhood environment or their family/whānau and even their wider world. It is through developing relationships with others to share ideas in a reciprocal manner that children develop a sense of belonging, a development empowering them to explore further ideas and participate in new and different learning activities. For example, the mobility and flexibility of iPads allow children to become the authors of their own work and to critique and evaluate it with their peers/teachers/families. This joint enterprise approach to learning sits well with the sociocultural philosophy of Te Whāriki (Carr, 2001; MoE, 1996).

Children relating to places around them is evident through events such as visiting the local library, parks and exhibitions and includes their sharing artefacts/significant toys/items from their homes with peers and teachers in the ECE setting. This constitute the multifaceted nature of the relationships between people and place (MoE, 1996). Finally, developing relationships with things is valued as children form different degrees of attachment and understandings with different objects that they come across in their home and centre experiences. Lee, Carr, Soutar and Mitchell (2013) note

that objects in early childhood provision provide props for dramatic play and the taking on of a new identity; blocks, sand tools, books, trees, paintbrushes, computers and pencils enable young children to symbolise, represent, imagine, problem-solve, find out, play and learn. (p. 47)

The authors contend that such objects including photographs, food and even works of art that are brought from home to be shared with others at the centre help to validate children's home experiences such that they "cross boundaries, connecting home and early childhood centre" (p. 47) contexts. Consequently, children mutually benefit from such sharing to contribute to the learning and development of the wider learning community in their centre. Findings ways to assess and document children's learning through relationships with people, places and things to be shared with children's families is made possible through the use of "learning stories" (Carr, 2001) .

Te Whāriki, assessment and ICT use: Teachers and children

Learning Stories is a key approach for assessing New Zealand's children in ECE settings. It was developed in response to Te Whāriki as it became clear that assessment of this curriculum would have to be different to the traditional deficit model of assessment, which did not reflect the inherent view of children as capable and competent learners. Learning Stories is a formative framework that is based on the notion of narratives that capture multiple voices, foreground the value of learning dispositions, acknowledge children's strengths and interests, and make transparent the teacher's actions in teaching contexts (Carr, Hatherly, Lee, & Ramsey, 2003). Teachers began to document learning using narratives and photos in ways that reflected the children's interests, ways of being and ways of knowing. Originally, Polaroid or 35mm cameras were used to capture this learning; however ICT tools such digital cameras, iPods and iPads have become more accessible and responsive means of documenting such episodes today. Digital documentation is now integrated into many teacher's work on a daily basis with both teachers and children documenting learning as it occurs (Carr, 2001, 2002). As a result of these changes to the modes of documentation, the speed of technological advances and young children's involvement with a range of ICTs in their daily lives, there has been a recognition by some teachers of the 'funds of knowledge' about ICT that young children bring with them to their early childhood centre. It is becoming more common for children to use a range of ICTs such as iPods, iPads, digital cameras to document their own learning, direct teachers to capture aspects of their play, revisit their learning, create videos of play, use search engines such as Google to investigate ideas and to connect with the world outside of the centre through the use of Skype or FaceTime (Archard & Archard, 2012; Hatherly, 2009; MoE, 2009).

Given that ICTs are already widely incorporated in current ECE contexts in New Zealand, the introduction of iPads is thus an extension of such practices and warrants further investigation to examine the extent to which it can support young children's learning and interests about the wider world.

Educational affordances of iPads in ECE contexts

Some gains have been made in terms of studying the effects and impact of iPad use in teaching and learning contexts to inform current practice (see for example, Burden, Hopkins, Male, Martin, & Trala, 2012; Clark & Luckin, 2013; Cochrane, Narayan, & Oldfield, 2013; Culén & Gasparini, 2011; Falloon, 2013; Heinrich, 2013; Hoover & Valencia, 2011; Nguyen, Barton, & Nguyen, 2014). The

studies reported thus far are limited to the compulsory schooling sectors or post-schooling or tertiary sectors.

Archard and Archard (2012, see also this volume) suggest that when technology is used in ECE settings it can support a combination of informal and formal learning opportunities. This enables learning to take place through a mix of learner-centered and adult-directed activities. They also suggest that teachers' intentions and pedagogical approaches can influence the outcomes of these opportunities along with children's own purposeful use of ICT. Very little has been written specifically about children's use of iPads in early childhood settings; however the current literature contains similar views to those expressed by Archard and Archard (2012).

Emerging evidence for iPad use in supporting and extending learning opportunities for young children have been found, for example, to support children's engagement with drawing (Couse & Chen, 2010) , (digital) play practices (Verenikina & Kervin, 2011), literacy development in tandem with developing emotional competencies (Hatherly & Chapman, 2014) as well as more inclusive home practices for the visually impaired (Fleer, 2014) and to expand teachers' pedagogical practices (Fagan & Coutts, 2012; Khoo, Merry, Nguyen, Bennett, & MacMillan, 2014). Verenikina and Kervin (2011) found that iPad use for digitally mediated play can foster imagination, encourage collaborative play and provide for further opportunities for young children's sustained imaginative play. There is mention of the relational nature of iPads through social interaction between children and adults when using iPads. Fagan and Coutts (2012) describe the educational use of iPads by young children to include opportunities for children to work collaboratively, produce their own stories and engage in digital forms of literacy. They suggest that iPads can also play a role in fostering and developing relationships between the centre, home and children's wider worlds. They indicate that teachers' interactions and pedagogical approaches are more important than the technology itself. Furthermore, they argue for iPad use to be combined with thoughtful teaching strategies to maximise children's learning opportunities. Extending these findings, Khoo et al. (2014) identified four different strategies to ECE teachers' iPad-supported practices to expand children's learning opportunities and foster closer home–centre links: using the iPad as a relational tool, as a communicative tool, as a documentation tool and as an informational tool for supporting child-led learning. A key implication was for teachers to consider the interplay between the opportunities that iPads offered, their own pedagogical views and children's learning needs and contexts. These ideas are further expanded in the study reported next through a focus on teacher enactment of iPad-supported relational pedagogy practices. The study is timely as little has been written about pedagogical frames that might help us better understand how iPads can be the game changer in altering teacher-child relationships and roles in favour of more personalised learning contexts (Fortson, 2013; Woolf, 2010) in ECE settings.

Overall, the studies cited recognise the growing importance of iPads in young children's daily lives, prompting teachers to integrate them into the curriculum. If teachers are to be successful in facilitating the dispositions, skills and attitudes for children to become lifelong learners in a digital generation, they will have to embrace the technologies and understand their educational affordances to create varied and rich learning opportunities for children.

Research context

The research reported in this chapter is based at one of the early childhood education and care centres situated in an urban area within Hamilton city. Campus Creche (Creche) is a large organisation with

five centres that cater for children from 3 months to 5 years of age. Approximately 30 early childhood teachers, a small management and administrative team headed by a director and regular part-time staff are employed so that the children develop familiarity with staff. The curriculum is emergent, as it stems from the interests of individual/groups of children and staff and engagement with the learning environment. Sustained and meaningful learning opportunities are provided and the emotional well-being of each child is supported in every aspect of the programme.

Our research is based at one of Creche's centres - Preschool Centre (Preschool from here on) - which has a typical enrolment of 35-40 children. The staff to child ratio at Preschool is one staff to nine children in attendance. In mid-2011, two of the teachers, Tim and Nadine (the teachers agreed to their real names being used), initiated bringing their personal iPads for the children to explore and use. This generated much interest from the children. Use of the iPads was informal and children took turns exploring different apps and activities that they were interested in with other children watching within a group. Either Tim or Nadine was always present to help and guide the children's use. This experience was limited by the teachers' availability to use the iPad with the children, which was determined in part by the daily routines already established at Preschool. Tim and Nadine were both keen to participate in further research to explore and extend the possibilities of iPad use with the children.

In collaboration with Tim and Nadine, we explored the educational affordances of iPads for engaging children's interest and learning. This chapter focuses on one aspect of our findings—what it might mean to use iPads to support a relational pedagogy with children developing relationships with people, places and things as part of their learning and exploration of the world.

A qualitative interpretive methodology framed the research design (Maykut & Morehouse, 1994). Data was collected through teacher interviews, observations (video, audio recordings and photos) of teacher interactions with children using the iPad, and copies of children's artefacts produced as part of the teaching and learning process using the iPad. Interviews with both Tim and Nadine were conducted prior to and on completion of the study to ascertain changes to their perspectives on and extent of iPad use in their teaching and learning explorations. A total of eight observations (each lasting between an hour to two hours) were conducted with both teachers. Each observation session concluded with a teacher-researcher debriefing of the session with negotiated planning for further exploration or refinement of iPad use for the next session. The project obtained human ethics approval from the University of Waikato and all participants participated on a voluntary basis.

The data collected was analysed based on sociocultural theory, which directed attention to the interaction between people, the tools they use to achieve particular purposes and the settings in which the interactions occur (Wertsch, 1998). Within-case and cross-case analyses of the case studies of the teachers and children were developed (Merriam, 2002). Emergent themes were identified through a process of inductive reasoning (Braun & Clarke, 2006). A process of collaborative data analysis (Armstrong & Curran, 2006; Hennessy & Deaney, 2009) between the teachers and research team was also established to share the emerging findings with the teacher participants and provided them with opportunities to contribute to refining the analyses. This included the teachers viewing and responding to a short video compilation of highlights from the thematised initial findings from the data collected with a focus on the different ways they had engaged and interacted with the children and children's interactions amongst their peers while using the iPad. This process added rigour and credibility to the analysis and allowed the teachers to take an active and central part in the meaning-making process (Lincoln & Guba, 1985).

The participants in this study represent a convenient purposive sample of teachers and young children in one early childhood educational setting. Although the findings will not necessarily be generalisable to a wider population, the text-based data are sufficiently detailed to inform similar ECE contexts. We intend that by proving "rich thick descriptions" (Lincoln & Guba, 1985) of the study setting the findings can also contribute nuanced insights into issues and practices relating to the teaching and learning of young children in relation to iPad adoption and use.

Findings

In our findings, we describe three examples of iPad-supported relational pedagogy as illustrations of teacher digital smartness as they play out in the study setting. They are drawn from contextualized interpretations and participant excerpts to illustrate what these ideas might mean to young children's developing interests and learning about their immediate and wider contexts

Episode 1: Establishing an understanding of the child as a person

This first episode is based on Nadine's intent on understanding each child as a person with different ideas and interests or funds of knowledge that they bring with them to Preschool. In her interactions with the children, Nadine observed the potential for using the iPad to access information and for relationship building in the way that it allows for children's voices to be heard.

In this episode, Nadine used the iPad when she became alerted to a child's keen interest in a video camera at Preschool. The child, Zach (pseudonyms are used for the children), was fascinated by the researcher's video camera, which had been set up in an unobtrusive corner of the main play area. Zach was turning the swivel handle and peering into the viewing area of the camera to try and figure out how it worked. Nadine captured Zach's actions using the camera on the iPad. She used these photos as a provocation to encourage Zach to share his interest and ideas on what/how he thought the video camera might work. While reviewing the photos with Nadine, Zach pointed to them, sliding different ones across the screen and explaining what he was doing with the camera. From this initial interest in reviewing his photos, Zach asked to explore other apps on the iPad. He initiated working on an app about shapes. Nadine guided his exploration, explaining the different buttons to push on the screen to allow his further engagement with the app. Children who gathered around them to watch cheered and supported Zach as he successfully navigated the different tasks to learn about shapes. This newfound confidence and skill in using the iPad led Zach to explore a drawing app in which he selected the different options available to draw and colour his picture. Keen to share this with his family, Nadine guided him on how to save the picture and print as well as email it to his parents.

Figure 1: Nadine working with Zach

Reflecting on this episode, Nadine commented on the need for attending to and valuing the ideas that children bring with them to Preschool as a basis for relationship building:

> There is so much more than who they [the children] are at the centre. This [act of children sharing their funds of knowledge with their peers on the iPads] builds up relationships with their peers and teachers, sharing with their peers and teachers what they know.

Nadine was cognisant that relationships were important for children to develop trust and to take risk in engaging with new learning experiences. She sees the iPad as an enabler in this process as children were generally keen and interested to use iPads:

> It comes back to the relationships and relationships we build with the children that are the most important aspect of my job. Relationship building is about the trust for the children to take risks and try new things and be brave. They need to trust the people that they are with. That's why relationships are important. The iPad offers more possibilities to build those relationships.

This valuing of relationships is consistent with how Nadine sees her role as a co-explorer with the children, offering different possibilities to help them develop their learning interests:

> [My role is as] an Explorer … there's still lots of things we haven't explored and lots of ways that can go terribly wrong and all of that stuff which we are going to find out about but we will be doing it together. It's not teacher-led anymore. It's about co-exploring and it's not even about facilitating but about offering possibilities and ideas. They have their own ideas and they run with it once I show them. I think that lots of children are really competent and guiding their own learning and they know what they want to do and don't need assistance in getting there. So this [the iPad] is another vehicle for them to do that. It's also there for the children that haven't developed those skills yet and it doesn't need to be me that's guiding them, it can be their peers. For children that are unsure what to do

next, they might want to be holding the iPad but don't actually have any idea about what to do with it.

In this episode, use of the iPad was integrated into Nadine's teaching practice. It enabled the recording and documenting of Zach's work and the sharing of his work with his family. It allowed for more seamless connections between home and centre learning such that Zach's parents can view and have input into this learning episode. Nadine knew that Zach had some familiarity with his family's iPhone at home and was therefore aware of some of the basic functions of touch technologies such as swiping his finger to move from screen to screen, holding an app icon down to open it up and going into iTunes to listen to music. The fact Nadine was alert and aware of Zach's interest and encouraged his exploration in using the iPad to foster further interests contributed to his sense of belonging at Preschool and was fundamental in this process. Use of iPads was not teacher dictated but was a shared tool for both teacher and child to co-explore—the teacher in finding out about and supporting Zach's interest and guiding him to work out how apps that suited his interest worked, and, for Zach, in enabling him to find and explore an app that supported his drawing interests. This process was not without its challenges as some apps were new to both teacher and child and at times both had to undertake trial-and-error strategies together to ascertain how a particular app worked.

At other times, some functionalities had to be turned off or ignored (for example, pop-up advertisements). In all this, Zach by being supported by his teacher and peers, feel valued and affirmed and developed further confidence to use the iPad to create and share his creations with those who mattered and had interests in his learning and development. The episode with Zach reflects Nadine's relational pedagogy as an example of her being digitally smart in tapping into the relationship between teacher-child and technology. Nadine's relationship with Zach, and her understanding of the affordances of the iPad, ensured that the focus, which could have become teacher dominated, shifted to one that placed Zach in control his own learning. The immediacy that the iPad affords meant Zach could create, edit and share his work with his peers without leaving the context, reflecting the natural workings of a teacher and child learning together.

Episode 2: Allowing for children's voices in co-constructing a learning story

In this second example, as part of his assessment practice, Tim opted to take photos of children pursuing their learning interests. He used the camera on the iPad to take photos of the different children playing and interacting in the outdoor play area. The children gathered around him when he later sat and reviewed the photos with them. A child, Fred, was interested to view the photos taken of him. Fred had never used an iPad before and was eager to do so. Tim proceeded by guiding Fred to slide his fingers to review and select the photos he would like to talk more about. Fred was prompted to explain his actions in the selected photos. Tim then explained that Fred can share the interesting events indicated in the photos with his family in the form of a learning story. He firstly asked Fred for a title that encapsulated the event then prompted him on the details he'd like to include.

Tim: What do you want to say about that? Do you want to say how you found the aeroplane? (Both look over the photos taken on the iPad.)

Figure 2: Fred working with Tim to co-document and construct a learning story

Fred was keen to include his full name and went on to share some phrases to explain his photos to his family. Tim guided Fred to type his name and the title of his learning story. He then took over and added in the phrases that Fred had shared earlier. Fred was able to make other suggestions when Tim prompted him to do so. After the learning story was completed and Fred was happy it accurately reflected his earlier outdoor play interests, Tim saved his work to incorporate it later in Fred's learning portfolios. It was also possible to email a copy to Fred's parents.

In this episode, the iPad afforded instantaneous capture and recording of the children's play and learning interests in action and was important in supporting Tim's assessment practice:

> It's handy that it's [iPad] got a camera on the back, it's not a very good quality camera but it does mean that we can take photos and insert those photos straight into a learning story on the go. And everything's there, you've got the keyboard and the photos and everything's already there on the screen. You don't need to get things from the office to do it. You just need the iPad and you might see something happening so you can take some photos and then those children can be involved in their assessment for learning.

Tim explained the possibilities for including children's voice for assessment using the iPad:

> The children would be interested in seeing their photos and being able to move their photos where they wanted to in their learning story and then they can tell me what they were thinking at that time of each photo so we can make captions under each photo or they can dictate a story to me and I can type it up. It won't be very common for a child to type up their own story but they can certainly dictate and we can type as they talk … The whole point is to make assessment for learning exciting so that they can be empowered to be part of that process.

This episode highlights how teachers can make use of the iPad's affordances to capture, record and document children's interest in action. Children's voice in the form of their ideas, explanation, questions and elaborations could be incorporated immediately on-site and recorded for sharing with

their parents/family at home. Both teacher and child worked together to co-construct the learning story but importantly the child was empowered to be involved in the entire process of selecting, documenting and editing the story. Put another way, Tim's relational pedagogy, exemplifying his digital smartness, considered it important that the child was given ownership and agency to act in the moment rather than the story being written solely from the teacher's perspective at a later time, as is typical in current early childhood and care practices. Agency is an important element in relationships. The principle of Ngā Hononga/Relationships contains notions of agency and identity based on trust. Trusting the people, the place and the things we do are fundamental aspects that contribute to learning (Carr & Lee, 2012). Assessments which include the child's voice can be influenced by the relationship between the teacher and the child. Shared interactions based on positive relationships contribute to the child's agency; this is evident in the episode with Fred and is a good example of a child co-authoring and self-assessing as he and Tim documented his learning together. Fred trusts that his contribution to his assessment is valued in this place. including his developing sense of identity as a person who has a contribution to make to the assessment of his own learning.

Episode 3: Enabling children to communicate and share their interests

In this last example, Tim made use of the FaceTime app on the iPad (an app that allows for synchronous video communication) to allow for children at Preschool to communicate with younger children from one of the other centres within Creche. Younger children will eventually transition to Preschool as they grow older. Although they can physically visit Preschool, this opportunity is limited by the availability of teachers and the suitability of timing as both centres have different routines and activities in place. By providing this opportunity for the children at both centres to communicate, Tim intended for the younger children to become familiar with the available activities and environment at Preschool and for the children at Preschool to share their knowledge and communicate events of interests to their younger audience. Some of the children at Preschool had transitioned from those other centres, hence their sharing and communicating with the younger children would be affirming for them and would also connect them with past teachers who had interests in their learning. Tim had pre-arranged with staff at the other centre to communicate via FaceTime on a staff member's iPad.

Tim set up the FaceTime communication with the other centre and started speaking with staff there. Children gathered around him with apparent curiosity. Four girls in particular became quite interested in the activity. One of them, Rosy, had transitioned from that centre not long ago and was keen to talk to younger peers and teachers, one of whom was her parent, there. The children greeted staff and children (who were captured in the frame of the iPad camera) from the other centre, waved and shared the events and activities of that day. Rosy had brought along her doll. The doll was meaningful for Rosy as it had been a gift from her uncle overseas and it came with a special doll care kit. Rosy first spoke to her parent, showed her doll and, affirmed by her parent, started sharing different aspects about her doll and how it was special to her with the younger girls at the other centre. Rosy's peers at Preschool, who had gathered around her, were also curious and asked questions and prompted her to elaborate on her sharing. The episode was empowering for Rosy, who was able to share an interest with an especially personal meaning with her peers, a younger but still curious audience and adults (teachers and parent) who had an interest in their learning.

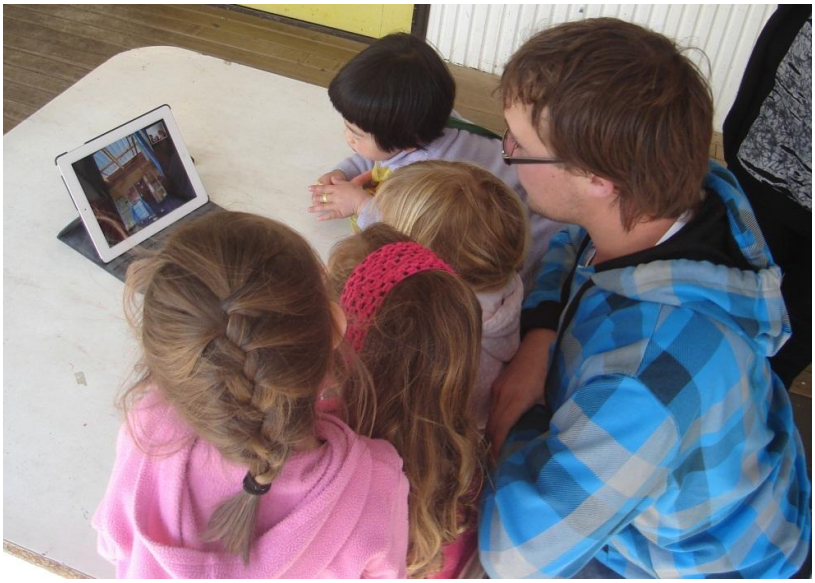

Figure 3: Children communicating on FaceTime with children at other centres (Tim is guiding them and looking on)

Tim thought that the FaceTime activity worked well to establish communication between the different centres. He highlighted that the children at Preschool who were mostly interested in the activity were those who had transitioned from the centre or had younger siblings there. He explained:

> We can FaceTime other children around the centre which we did on Friday last week and that's quite neat for them to see other children at another place at the same time.

In this episode, the iPad afforded children's exploration of a different form of communicating, sharing and contributing of ideas, events and objects (toys) meaningful to them from within a comfortable and familiar context , helping to establish a sense of belonging and worth at Preschool. Children were able to develop and sustain valued relationships with their younger peers as well as become aware of and able to make connections with the wider world through this experience.

As with the second example, this episode reflects Tim's perspective on iPad and ICT use in general in support of his teaching belief and practice where ICT use was a means to achieve particular teaching and learning goals and, through this, offer the children a broader range of learning experiences:

> I see ICT as a part of early childhood and not early childhood as a whole. I'm quite a naturalist as well, so I'm not wouldn't like to see ICT as taking over early childhood … We are actually getting people saying maybe we should be having nature as the early childhood but actually ICT has a part in it as well. The two are not mutually exclusive but they are not the same either. I think we need to have a broader range of experiences available for children.

Episode 3 is an example of the three key elements of relationships with people, places and things. Teachers being digitally smart in this episode recognised that a practical and social gap existed for the children at Preschool. They addressed these by providing opportunities for the children to experiment

with FaceTime on the iPad to connect, share interests and build relationships with other children and staff across spaces without leaving their own contexts. This sits well within the Ngā Hononga/Relationships curriculum principle. This example also served a practical consideration; that is, it supported relationships across spaces with the other centres as a supplement to the teachers having to organise staff coverage to be able to take the children physically to each centre. FaceTime enabled Rosy to share something that was of interest to her with other children across a virtual space whilst remaining in her own context. This allowed her to reconnect with her friends in the centre that she had recently transitioned from, thus supporting the relationships she had developed there. Through FaceTime, Rosy could share her immediate interest rather than suspending it until an opportunity arose to physically revisit her previous centre. She was able to communicate in the 'here and now' rather than at a later date when her interest may have shifted.

Discussion and conclusion

We began this chapter by asking what iPad-supported relational pedagogy might look like in early childhood education and care settings where teachers have the aim of developing and extending children's learning and exploration of the world around them based on the notion of building relationships with people, places and things. In all episodes, iPad use was appropriately integrated into children's sociocultural context and supported rich meaningful interactions between teachers and peers rather than in isolated and disconnected ways. In the examples provided, each instance was child-led and teacher-guided based on children's interest and focused on what was meaningful, important and accessible to them and how they could communicate this with their peers, teachers and family/caregivers, those who had personal interests in their learning and development. In the first example, Zach's initial interest with the researcher's equipment eventually developed into his further exploration, documenting and sharing of his work on the iPad with his family. In the second, Fred's interest in outdoor play and his ability to navigate through the play equipment successfully was co-constructed and documented for further sharing with his family. Finally, Rosy was able to share and communicate her interest and knowledge about dolls with her peers and a younger audience and her parent based at one of the other centres.

These examples illustrate the fostering of strong connections between home and centre learning, allowing children to share personal interests and knowledge that are valued and extended at Preschool. These experiences are then shared with children's families/caregivers, who can act on and extend on them. In all this, children experience a process that is affirming of their value as individuals within the context of their cultural and social contribution to their own and other children's learning and exploration of the world around them.

In each instance, iPad use on its own was not the main focus. Tim and Nadine used the iPads as part of their repertoire of teaching tools to engage, sustain and extend children's interests further. Realising the iPad's potential was possible when the teachers had a clear pedagogical frame and purpose for its use. In this case the teachers were guided by a relational pedagogical perspective. Put another way, the teachers adopted a relational perspective to encapsulate what it might mean to use iPads to engage young children's interests and learning. Although the iPad afforded particular opportunities for teaching and learning that would not have been possible before, iPad use on its own would not have brought about the types of interesting, productive interactions and learning

experiences reported in our examples. Tim and Nadine had to carefully consider the opportunities iPads opened up in supporting their relational pedagogy teaching belief and to integrate these opportunities into practice to bring about productive learning experiences for the children. Our examples demonstrate the ways iPads can be seamlessly embedded into and expand teachers' and children's teaching and learning experiences where the focus is on developing and sustaining relationships valuable to learning, supporting how educators can take advantage of the affordances of technology by teaching with and through it as part of their social practices (Carr, 2001). As a result, children feel their knowledge and contributions are valued and affirmed, developing trusting relationships with those who had interests in their learning as a basis for further learning and exploration. From this they become empowered to share and contribute to their peers' learning, in a reciprocal manner, thus mutually enriching each other's learning and awareness of the world around them.

Three implications emerge from these findings for ECE practices. Firstly, being guided by a relational pedagogy view (Ngā Hononga) implies teachers valuing the ideas, interests and dispositions that children bring from home (Hedges & Cullen, 2011; Papatheodorou & Moyles, 2009). Awareness of children's funds of knowledge and locating children's interests through everyday ordinary experiences, events and incidents that are meaningful and accessible (be it in outdoor play, dolls or video cameras) is imperative. This can then serve as a basis for teachers to then consider the affordances of iPads in supporting and extending children's sharing, co-constructing and communicating of ideas with peers and families.

Secondly, teachers need to recognise the affordances that iPads can offer to their practice. For this, they will need "sandpit" time (Otrel-Cass, Cowie, & Khoo, 2011) to explore and experiment with the device's different functionalities and possibilities in order to develop the skills and confidence to incorporate iPads in their practice. As our examples have shown, iPad use can complement and expand current teaching and assessment practice. Professional development in the form of collegial sharing and dissemination of innovative practice (either through face-to-face sharing or through virtual communities of practice) will be beneficial to this process. Teachers are thus encouraged to examine their pedagogical beliefs, reimagine and adapt their practices to leverage the affordances of the iPad to support and create meaningful teaching and learning aims and purposes. Teacher awareness of the physical care of and appropriate guidelines (including limits) necessary to engage young children productively with iPads is necessary. They need to be able to model and guide the children in these aspects. We agree with current analyses that teacher excitement and beliefs in any ICT uptake context is essential to enable learners to participate equitably and adequately in teaching and learning processes (Blackwell et al., 2013; Woolf, 2010). Young children will need the skills to use the iPad appropriately. Our study indicated that although children tend to find iPad uptake less challenging than other ICT forms, teacher guidance was still necessary to help them become aware of its care and appropriate use to support and expand their learning interests.

Thirdly, using iPads is appealing, motivating and interesting for children. They find iPads easy to use and the range of multimodal apps and resources appealing for playing a variety of games (educational or recreational). When asked what makes the iPad special, one of the children cited that "the iPad can't break" referring to its ease of functionality and access to different applications in comparison to clunkier point and click desktop/computer systems. Nadine elaborated on how a child who was shy to draw on paper experimented with a drawing app on the iPad that allowed him to create and erase his mistakes easily multiple times. This experience developed his confidence and helped him transfer that confidence and skill to paper-based drawing. IPads therefore constitute a part

of the wide repertoire of ICTs available to today's young children to access resources to inform their and their peers' learning and to share, communicate and express their ideas in multimodal ways that are appealing and meaningful to them. Teacher recognition and taking advantage of this observation can leverage iPad use for supporting children's learning and exploration in early childhood and early primary school contexts.

In conclusion, our definition of teacher digital smartness at the beginning of this chapter signals and celebrate the important role ECE teachers play in supporting and preparing today's digital learners for a world where ICTs, including mobile and tablet technologies, are becoming increasingly central and pivotal in almost every sphere of life. We encourage teachers to boldly take up this challenge and forge new and different exciting possibilities for teaching and learning in their own contexts. We hope this study has illustrated such possibilities in informing ECE iPad-supported practice for and with young children and opened further avenues for scholarship in this area.

Acknowledgements
The authors gratefully acknowledge funding support from the Wilf Malcolm Institute of Education, the University of Waikato, Hamilton, New Zealand. Our deepest gratitude and thanks also to the staff, parents/caregivers and children involved in our study who devoted their time and effort. This project would not have been possible without their participation and contribution.

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