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Democracy through the use of Information and Communication Technology (ICT) in an Early Childhood Setting: A Case Study

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Abstract

ICT is regarded as playing an ever increasing role in the lives of people and this includes young children.

This case study, to be called the research project hereafter, focuses on how Information and Communication Technology (ICT) might facilitate democratic child directed learning. This is defined by examining the ways children, and other people involved in their lives as learners, might use ICT as a tool for directing learning and what other features can support this.

The research project is a case study involving one early childhood centre and draws upon data over a one year period. The data was collected using interviews with teachers at the centre, questionnaires from family whānau of children currently attending the centre and documentation of learning episodes of children that involved ICT. A qualitative methodology was used to capture experiences, attitudes and opinions of the participants and these were analysed by thematic analysis.

The research project identifies the types of uses and purposes that children, their family whānau and their teachers have for ICT. It also identifies and examines the attitudes toward, and impacts of, ICT on the children, family Whānau and teachers taking part in this research project. This is explored by drawing on socio–cultural learning and defined features of democratic education practices.

The project also examines ICT contributions to learning and teaching within the pedagogical and professional commitments of Te Whāriki, the Early childhood curriculum in Aotearoa New Zealand (Ministry of Education, (MoE) 1996).

The findings of the research project clearly identify with the literature and educational policy that recognises ICT as prominent and relevant to peoples lives and that includes young children and their learning. The findings also indicate that ICT in early childhood education is positively received by participants in the research project. There are also clear examples in the findings that affirm democratic features of education and reflect aspects of child initiated and directed learning.

What supports child initiated and directed learning , and importantly its consistency, is identified in the findings and conclusions that consider the need to develop stronger, more informed and more collaborative pedagogical conversations between teachers and family/whānau. Such pedagogical understandings would have to come from teachers engaging in more ICT policy aligned planning and reflective practice on the place of ICT and their understanding of democratic teaching and learning.

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I would like to thank the participants who took part in this research project and who gave of their time and honest thoughts and opinions. I hope I have captured the richness of their ideas and experiences sufficiently.

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Chapter One: Introduction

The focus of this research project is to examine the influences Information and Communication Technology (ICT) has on child initiated and/or directed learning in a particular early childhood education setting (to be known as early childhood centre in this research project). This focuses ultimately upon notions of democracy and democratic practices, and in particular, how these may or may not feature in the educational activity and relationships that are part of the early childhood educational settings for young children. The implications of democratic teaching and learning upon young children are wide reaching, and can affect understandings of who they are as a learner, the relationship between teacher and child, and what this relationship affords them in terms of learning. The recognition that educational activity is relational also poses the need to explore what else may bear influence upon such activity, and contribute to notions of democracy. The early childhood education curriculum for Aotearoa New Zealand, Te Whāriki, (Ministry of Education, MoE, 1996) defines this relational activity taking place between people places and things. This therefore includes the content and process of information and communication technology.

Information and communication technology is being acknowledged as a significant part of many people's lives, and for many children it forms the backdrop to their lives (Plowman, McPake & Stephen, 2008). It is also necessary to recognise ICT practices are being picked up by very young children, and the children that access early childhood sectors , in Aotearoa New Zealand that is 0. Years -school age children, are recipients of the fastest growth area in ICT marketing and products globally (Morgan & Siraj-Blatchford, 2010).

The Purpose of the Research Project

As an early childhood teacher I have had the opportunity and privilege to work with young children, and to notice and recognise the competency and complexity of their learning. I have always passionately challenged notions and displays of inequity and discrimination as a teacher, and previously as a support person with people who have mental health issues and intellectual disabilities. These experiences have helped me recognise the challenges that may exist for people when they are negatively defined,or confined, by the dynamics and structures of what I would deem, institutional activities, such as education or care. In these settings, such as early childhood centres, schools, hospitals and care homes, power relations influence many things, such as the nature and practices of the activities themselves and the social and organisational structures of the setting.

Power, and the nature of relationships between people, can determine the existence, or potency, of things like democracy, and democratic practices, and an exploration of this is a purpose of the research project. In some ways this purpose also to casts a democratic lens upon the activity of learning and teaching. This is undertaken through the examination of a specific type of activity (ICT) and its place in the activities of the early childhood centre in this research project. It considers whether ICT contributes, and if so in what ways, to the equity and voice of the child in determining their own learning, and whether it affects any balance of power in the relational activity of teaching and learning.

The intended purposes of the research project reflected, in many ways, what Brooker (2011) demands needs to happen from educators and researchers in taking children seriously*:*

> *…They must ensure that they pay proper attention not only to individual children, and to children as a social group, but also to the cultural contexts that shape identities and their understanding, and the*

cultural knowledge and skills that they bring with them into their early educational settings (p, 138).

Brookers (2011) comments are also related to what I noticed, in terms of children's ICT uses and purposes in the early childhood centre. The early childhood centre I was working at as a teacher ,and is the centre in this research project, had a range of ICT equipment. The teachers and children were using this equipment in a variety of ways. It was the implementation of a practice that came to be known as 'Computer Detectives' that directed my thoughts and reflections upon the place of ICT, and its possible contribution to responding to children's lived experiences, their expertise on their own realities, and their ability to direct their own interests and learning.

'Computer Detectives', that is discussed in as part of this research project, is a practice that initially invited children to explore further any questions or interests that arose during a session, and could include any topic. The practice often occurred as a result of children initiating their own inquiries. These topics might arise as part of a conversation between an individual child and teacher, or in a group discussion between teacher and children. Initially the teacher might invite a child/ren to be the 'Computer Detective' during a session and to explore, using ICT with a teacher, possible answers to the questions, and share this later on at another group time with all of the children. ICT might also be used to present any findings. As the term and practice 'Computer Detective' became more regular, children started to bring questions and 'curiosities' from home about topics, and requested investigations using the internet. A series of such inquiries were documented by teachers and included in a special 'Computer Detectives' book that was accessible to children and whānau at any time. The interesting aspect of this practice, in particular, is how children were responding to the ICT possibilities, and how they were seeking to use it to direct their own inquiries. Equally, there are indications of other things supporting this, especially some

children's knowledge and ease around ICT capabilities and use. Of significance too was that the teachers at the time also reflected, sometimes as part of team meetings, upon what the practice was creating in terms of learning, their relationships with children and interests.

The questions that emerged from such noticing are questions that underpin this research project. They centered on what things might also support ICT use in children's lives, and what else is required to make teaching and learning relational and democratically based.

The Research Questions and Organisation of this Report

The title of this research project is: Democracy through the use of Information and communication technology (ICT) in an early childhood setting: a case study. The topic was concentrated around two specific research questions: 1) In what ways might children use ICT as a tool to direct their own learning? And, 2) how can children be supported to use ICT as a tool to direct their own learning? This chapter has introduced the development of the research interest in this topic and explored the context and features that underpin it. Most noticeably are the notions of democracy, its contributions to education and the place, and democratic contributions of ICT for young children's learning.

Chapter Two is the literature review undertaken for the research project. This is organised into reviewing literature on two main themes. The first theme reviews literature on aspects of democracy, that include exploring definitions of democracy, and what it means in education, and particularly early childhood education, both internationally and specifically in Aotearoa New Zealand. The second section explores the literature on ICT and its definitions, development and purposes in the lives of children and the teaching and learning of early childhood education.

Chapter Three describes and explains the research methodology undertaken as part of this research project and includes research perspective, design and analysis. It also identifies the important ethical process and protocols needed for establishing validity in this research project.

Chapters Four, Five and Six are the presentation and discussion sections of specific areas of findings obtained from this research project. These three chapters integrate and synthesise discussion and literature contributions in relation to the particular findings, providing analysis and a reflection, especially through a lens of democracy.

Chapter Seven provides an overview of the research project, providing the conclusions and recommendations that have been drawn from it. This includes setting out recommendations for future research in the subject area as a result of the findings of this research project.

Chapter Two: Literature Review

Introduction

This research project focuses on democratic child directed learning and how Information and Communication Technology (ICT) might facilitate it. The literature that situates this research project is presented in two key areas. The first area examines literature on democracy, reviewing the themes of democracy in education, democracy within early childhood education internationally and within the Aotearoa New Zealand context. Democracy is also examined through a socio cultural curriculum lens, specifically Te Whāriki, the Aotearoa New Zealand Early Childhood Curriculum (Ministry of Education (MoE) 1996). The second area examines ICT in education, by firstly examining literature that is focused on the uses of ICT in early childhood settings internationally. This is followed by an examination of the literature on the development and use of ICT in early childhood settings in Aotearoa New Zealand.

Democracy and Education

Democracy in Education

The term democracy in everyday use tends to refer to a notion of people power and has the feature of fairness and justice at its heart (MacNaughton & Williams, 2009). Traditional views on democracy in an educational context have also tended to focus on activities and the preparedness towards 'good citizenship'; being ready to undertake ones 'duty', to meet the obligations of society that result in a sense of belonging, contribution and participation in that society. Such views tend to be placed within, and be greatly defined by, the perspectives and discourses of liberal citizenship (predominantly western), and feature things such as a balance of rights, duties, participation and identity (Burgh, Field & Freakley, 2006). Hyslop-Margison & Thayer (2009) however, view such citizenship as "…*entirely passive where successful citizenship requires virtually complete compliance with prevailing hegemonic norms*" (p.64). Indeed Moss, (2007) views some of the rationality on

traditional notions of democracy as being predominantly one of an "*Anglo-American discourse, a discourse that is instrumental in rationality, technical in practice and inscribed with certain values: individual choice and competitiveness certainty and universality*" (Moss, 2007, p. 7).

In terms of democratic participation, Thomas (2007), defines it as needing to be a social and political relational activity that includes inclusion, opportunities for social connections, as well as challenging power and effecting change. Moss (2007) also describes such democratic participation as being where children and adults can, with others, shape decisions that affect themselves, and where injustice and oppression is challenged. Moss, (2007) also sees a passive compliance to traditional democratic notions as a denial to a true sense of democracy. He sees democracy, and participation within it, as a conscious and intentional action that cannot be haphazard (Moss, 2007). This ties with Friere's notion of democracy being one that has to contain a critical consciousness by its participants (Friere, 1972). These views lead to a notion of participation and diversity that can challenge and change relationships, and ways of being and doing (Moss, 2007; Friere, 1972; Jenlink, 2009).

Critical research positioning, for example in feminist research, also seeks to place such notions of democracy, and its features, within its contributions to, or challenges of, mechanisms and norms that maintain inequalities (Lather, 1992). Such an understanding of democracy in the context of power is pertinent to children and education, as many traditional views of both have shaped inequalities and power relationships over time (Smith, 2007). Dahlberg & Moss (2005) for example, describe such traditional educational activities creating conformity and passivity in quite catastrophic terms,

> *...for if we make the other into the same, if everything is pre-determined, if learning and life are about conforming to the norms, if surprise and uncertainty are programmed out then knowledge is*

endlessly recycled in a process of transmitting pre-fabricated meaning and life stultifies in endless repetition (p, 116).

These points from the literature on democracy are important as they acknowledge the influence of norms and context that have often defined participants and their relationships in society. This is important when exploring the application of democracy in an educational context as it can be influenced by societal expectations, norms, and the ways such participants are viewed, and expected to be (Thomas, 2007). This also contributes to notions such as, what knowledge and learning is, the purpose of education, and who the learner is and their potential (Claxton, 1990; Moss, 2007; Smith, 2007).

This relates well to Thomas' view on participation as he sees it as both a process and an outcome (Thomas, 2007). One key feature of what might be termed 'democratic participation' includes a motivation to participate (Verba,1967). It remains therefore that, for Verba, the opportunity to participate requires degrees of purpose, meaning and reward for the participant that includes, the activity being interesting to the participant, and the participant feeling they have a genuine sense of being listened to and valued in that participation (Verba, 1967). Thomas places many realities of children's participation rights in the same position as Smith (2007), where children lack much of, what Bourdieu's defines as social or cultural capital, and therefore are not taken seriously as participators or decision makers (Bourdieu,1997, Thomas, 2007). Such capitals, for Bourdieu, are commodities that people acquire (and even inherit) and can use to enhance their position, opportunities and agency (Bourdieu, 1997). Moss (2007) espouses the necessity for democratic participation for young children in terms of meeting the requirements for genuine citizenship, and where children and adults can participate together in shaping decisions and challenging the oppressive power of selected groups in society. This again

reverberates to the requisite need for participation to be meaningful and relevant to the realities of children making it truly democratic and purposeful for them.

In the next section of the review some of the key features of democracy are explored. These are participation, diversity and creativity, and notions of active agency. The ideas of two key proponents of progressive education, J. Dewey, and P. Friere, are a valuable starting point in exploring the ideas of democracy in education

Dewey and Friere: Ideas on Democratic Education

Dewey's notions of democracy emanated from many of his fundamental beliefs about education as an activity, and contained views on the human condition and a perspective on the child and learner (Jenlink, 2009). Some of his views relate to aims of moral learning and character development through education that would create democratic citizenship (Hyslop-Margison & Thayer, 2009). For Dewey, the traditional approaches to learning focus on transference of knowledge held within the realms of expertise of the teacher, which are detached and disempowering for the learner (Dewey, 1938). Claxton (1990) describes such knowledge as being *"...like diamonds that are mined, polished and then put on display for ordinary people to gawp at and make notes about"* (p.28). Dewey extends on this transference of knowledge as being something that is more often than not detached, drilled, and unrelated to the student and their experiences, and as a result, the responses engendered from the student can be passive obedience (Dewey 1938). For Dewey, educational experiences have to be social, relational and meaningful and only then would they become democratic, *"Educational practice becomes democratic when it fosters activity rather than demanding passivity"* (Kaplan, 2009, p. 330). It is imperative to Dewey that education develops in ways that are relevant and meaningful to the child. Therefore, the child is educated, by not relying on processes and procedures that soley rest on the adage *"that it has always been done this way"* (Dewey, 1943, p.viii).

Views such as these concur with the notions of democracy being more than participation in a passive and controlled fashion. It means participants being part of a community of inquiry, (Dewey, 1938; MacNaughton & Williams, 2009) which influences an environment of democracy.

Dewey asserts democracy as a life in union with others and a common communicated experience that draws interest from the child and bears meaning and relevance so that their meaning making can occur (Tholin & Thorsby Jansen, 2012.) This links to Kilpatrick's views, at the time of Dewey, in which he states that children cannot be taught democracy, they need to live democracy (Kilpatrick, 1939 cited in Jenlink 2009). Such views relate to contemporary ideas of children's active participation rights where opportunities need to exist to enable them to make real choices and participate in real decisions (Smith, 2007; Rinaldi, 2006; Dahlberg & Moss 2005).

Dewey's contribution to the progressive education movement and perspective on democracy has impacted on education, and notions of teaching and learning (Jenlink, 2009). *"...education, in order to accomplish its ends both for the individual learner and for society, must be based on experience, which is always the actual life experience of some individual"* (Dewey, 1938, p. 89). Such a statement affirms Dewey's view that education has to be an experiential encounter, a social activity at heart (Jenlink, 2009), and is a relationship of connections and communication (Jenlink, 2009; MacNaughton & Williams, 2009).

Paulo Friere (1921-1997) is another key influential contributor on education and democracy who concurs with many of Dewey's ideas. Friere challenged what he described as the traditional 'banking system' model of learning. This model viewed children as empty accounts requiring filling with facts and knowledge (Friere, 1972). Shor's analysis of Friere's ideas affirms the

abiding view that education and learning needs to be relevant and contemporary for the student. That education is not just a place where knowledge is transferred because *"...a classroom dies as intellectual centers when they become delivery systems for lifeless bodies of knowledge"* (Shor, 1993, p.26). Furthermore, Friere's ideas extend into the relational and the contextual nature of education. He asserts that the formation of a critical consciousness about one's own reality must be realised and only then can it be challenged and transformed (Friere, 1972). Shor (1993) sees such a state of being as also adding to a sense of freedom, creativity, and diversity, where myths and biases are challenged and where one is free to pose questions and pose solutions. Friere sees this as a relationship between teachers and students where the former sees the latter as substantial human beings, who will be encouraged to be curious, and be active in their pursuit of knowledge about the world (Friere, 1972). Hyslop-Margison & Thayer (2009) see Friere as the prominent scholar of critical pedagogy, in which, once again the practice of democracy is not something to be taught but something, *"We must be willing to practice in every aspect of our pedagogical approaches"* (Hyslop-Margison & Thayer, 2009, p.119). Such critical pedagogy encourages students to move towards human agency through critical thinking and individual and group social action (Marri, 2005).

A number of common themes about democracy and education can therefore be drawn from the ideas of both Dewey and Friere, and many seem to have been shaped by what they viewed as the failings of traditional educational ideas and practices (MacNaughton & Williams, 2009; Hyslop-Margison & Thayer, 2009).

Firstly, Dewey and Friere identify the necessary relational dynamics needed in democratic learning. This is shaped and applied through a perception, and subsequent treatment, of the learner and the notion of learning. It also creates a perspective on knowledge, teaching and how one teaches. These

perceptions contribute to their views on what might, and could be, the effects of democratic education. These features include practices for the learner of genuine participation, active agency and contribution, and the opportunities and freedom for creativity and diversity. Such features would seem essential in meeting the requirements of the rapidly complex world that continues to unfold in the 21st century (Burgh, Field & Freakley, 2006).

The contributions of both Dewey and Friere have shaped ideas and perspectives echoed by the contemporary contributors on democracy. They have also borne influence on democracy and it's practices in education itself (Schubert, 2008). The meaningful and purposeful educational contexts espoused to by Dewey and Friere allow for well thought out experimentation by children. This enables them to engage in practices of open-ness, adventure, and the exploration of the unknown (Moss & Urban, 2010). This has been a feature of some commentary in early childhood education, especially on the implications for a number of areas that include practices, pedagogy and curriculum (Carr, 2001; Rinaldi, 2006; Dahlberg & Moss, 2005; MacNaughton & Williams, 2009). The following section of this literature review explores this developing commentary on democracy in the early childhood context.

Democracy in an Early Childhood Education Context
> "Democracy and democratic citizens are not just for a later age, they are not something we prepare children to practice and become as they grow older. They are something young children can and should live here and now" (Moss & Urban, 2010. p.49).

Moss and Urban's assertions clearly link to key notions about childhood and learning in democratic education literature. Firstly, in a lot of contemporary early childhood education literature, constructions of childhood and the learner are embedded in the premise that children are active and competent at any age. Carlina Rinaldi (2006), in her conversations about the underlying principles of Reggio Emilia, affirms the child as an active communicator,

participator and contributor who is *"...listening to life in all its shapes and colours"* and who are *"...biologically pre-disposed to communicate, to exist in relation, to live in relation"* (Rinaldi, 2006, p.66). Indeed a body of literature draws directly from the experiences of the Reggio Emilia approach. Reggio Emilia is a locally (Northern Italy region) situated learner centered approach to teaching and learning, free from any nationally defined curriculum or standards (Soler & Miller, 2003). Its principles and beliefs are connected with the views of Dewey, especially in terms of learning as a relational and interactional activity (Dewey 1938, Soler & Miller 2003; Rinaldi, 2006).

Dahlberg and Moss, in their exploration of the ethics of early childhood, further define the child's ability to, and therefore need to operate in, a relational and relevant learning context that makes sense to the child and reflects their reality (Dahlberg & Moss, 2005). These notions align with the required experiential and meaningful features of education set out by Dewey and Friere. One may draw from this that for democracy to exist in early childhood education, it requires a recognition of the reality that children are active and competent participants and contributors to their, and others, learning (Smith, 2007). Smith asserts that 'participant rights' are important within the societal context in which adult authority and power … *"is absolute"* (Smith, 2007, p.149).   Equally, early childhood education needs to be a context responsive to this, a place that is relevant and meaningful to the child and not solely a place for preparing the child for something or sometime else, or, as Moss & Urban define it, *"an apprenticeship for readiness"* (2010. p.70). A notion of such 'readiness' itself can become regimental and disempowering Moss and Urban, 2010).

A view of competence and agency of the child and their participation extends further to features of children as citizens. Rinaldi expands on this idea from the Reggio Emilia approach in which she emphasises the need for a place of encounter (Rinaldi, 2006; Moss & Urban 2010). She describe a conscious

teaching and learning environment that creates a place to experience, enrich, challenge, and collide in learning (Rinaldi, 2006). Moss and Urban (2010) perceive this too, seeing the educational environment as an arena for experimentalism where the unconventional and unpredictable can exist. Equally, it can be a place that invites the notion of openness to the 'other' (Dahlberg & Moss, 2005). Moss expands this idea further by describing such an environment as a 'cultural climate' where things are open ended (avoiding closure), open-minded (welcoming the unexpected), and open hearted (valuing difference) (Moss, 2009, p.31). Such settings would, lend their weight to the development of citizens of a real democracy. Creating teaching and learning practices that include a respect for diversity, recognition of multiple perspectives, a welcoming of curiosity and uncertainty, and where critical thinking skills enable children to experience, are what Moss (2009) sees as, meaningful citizenship values. Indeed, Hyslop-Margison & Thayer (2009) describe these as elements of a substantial thick democracy.

In summary, significant parts of the literature that explore the features of democracy in early childhood contexts affirm the position of seeing the child as a competent person, who can be the expert of their own reality (Smith, 2007; MacNaughton & Williams, 2009). This challenges traditional views of power and status that have been shaped both by societal discourses and educational practices, for example, as stated earlier, through portrayals of the child as needy and dependent (Smith, 2007; Thomas, 2007). At the same time the environments within early childhood education appear to need to be places that enable diversity and creativity to flow through them. This can promote genuine participation and exploration, because they are of relevance and interest to the child (Dahlberg & Moss, 2005; Moss & Urban, 2010; Rinaldi, 2006; Smith, 2007). The following section of this literature review further explores these features of democracy in early childhood education situating them within the context of Aotearoa New Zealand.

Democracy in Early Childhood Education in Aotearoa New Zealand

In Aotearoa New Zealand there are a range of diverse early childhood education and care settings catering for the age ranges of 0-school age years (Merry, 2007). These settings offer choices and reflect some of the characteristics of Aotearoa New Zealand society. Mitchell (2011) identifies most of early childhood provision as arising from *"…grass-roots initiatives within a particular historical and political context"* (Mitchell, 2011, p.218). For example, Te Kohanga reo (Māori tikanga and Te reo centres),Tagata Pasefika (Pacific Island centres), Playcentres (as greater parent/whaanau run services) and community run, publicly or privately run kindergartens and early childhood education and care centres all exist now in a sector under the Ministry of Education umbrella (Stover, 2010).

The development of a national early childhood curriculum ,Te Whāriki, (MoE 1996) sought to incorporate a number of aspirations that reflect, and are responsive to, features of Aotearoa New Zealand society and context. The developers of the curriculum created a framework that implements a bi-cultural perspective that acknowledges both Māori and Western worldviews that are the two heritages of the country (Soler & Miller, 2003). One of the developers, Tilly Reedy, encapsulates the aspirations of the curriculum as being a theoretical framework that is for all people. She asserts that the curriculum is *"…common yet individual, for everyone yet only for one...Te Whāriki teaches us to respect ourselves and ultimately to respect others"*. She continues that *"…it aims to ensure that children are empowered in every way possible, particularly through the development of their mana"* (Reedy, 2003, p.74).

Paki (2007) also draws on features of the Māori worldview for development and learning, including practices of Whakapapa and Whanaungatanga, which contribute values of what can be regarded as positive citizenship. These values include a commitment to others, showing respect and truth to others,

and demonstrating mana. Carr & Lee (2012) assert this feature of mana in the early childhood curriculum as being about *"....authority, prestige, empowerment"* (p,6). For Carr, (2001), this contributes to a 'learner in action' that transforms into participation, and for Reedy it further defines the child as an active competent agent (Reedy, 2003). Smith (2007) also asserts this notion as leading to the child being able to engage in true participation in their own learning. What is of particular interest here, is that as children participate and take ownership of their learning they become experienced, skilled, and competent that further enables them to initiate, take part in, and share responsibility.

The aspirations of curriculum and literature within an Aotearoa New Zealand context have therefore, in many ways, sought to affirm the child as an active learner and contributor to their own learning (MoE 1996; Carr, 2001; Claxton & Carr, 2004; Carr & Lee, 2012). It also affirms Dewey's clear view that the education of children cannot be confined to a singular transmittable method of learning but that it embraces a child who can partake actively in their learning (Dewey, 1943). Such a construction of the child aligns to the key notions of democracy already explored. The early childhood curriculum also reflects and translates learning as a rich and experiential process arising from children's interactions with people places and things (MoE 1996; Soler & Miller, 2003). For example, the nature of formulating a curriculum based on, and within, the social and cultural fabric of the society would extend to children a reality and reflection of their lived experiences, and therefore, would seem to encapsulate the ideas of both Dewey and Friere (Dewey, 1938, Friere, 1972). For example one might see children having the opportunity to understand and use the artifacts, language, and customs of both heritages (Māori and Western). This affirms to children, firstly, their own particular heritage and how it stands alongside the other, and therefore how both lead to defining their own individual, community and society identity in Aotearoa New Zealand.

A large amount of literature has explored and defined the bi-cultural challenges and responsibilities of both curriculum and early childhood education in Aotearoa New Zealand (Glynn, 1998; Ritchie, 1992; Carr, 1993; Forsyth & Leaf, 2010). This is important to acknowledge and consider in terms of democracy, as historically, Aotearoa New Zealand society has been shaped by inequalities for Māori. In contemporary Aotearoa New Zealand, this has been acknowledged and resulted in a commitment to challenge inequality and inequity for Māori (Ray, 2009). As a consequence the commitment for early childhood education (greatly defined by the focus of its curriculum) has been to take up a mantle of challenging this, and providing equity and participation for all. This point is also reflected by policies that include Pathways to the future: Nga Huarahi Arataki - A ten-year strategic plan for early childhood education (MoE 2002). This strategic plan promotes active participation and collaboration inclusive of all communities of Aotearoa New Zealand, as well as affirming international commitments such as to the United Nations conventions on challenging discrimination and inequality (Carr, 1993). It also enshrines a position of partnership, and for this to occur it is argued that recognition of the reality of each partner must be understood for true collaboration to exist (Forsyth & Leaf 2010). This context would lend to a democratic sense of justice and fairness based on understanding.

Upholding bicultural practices and committing to fairness and equity further enables stronger acceptance and celebration of a diverse multi cultural and multi lingual society (Diaz & Harvey, 2007). Smith (2007) places this within a socio-cultural framework when she sees features such as agency and empowerment for children arising out of social relationships. In Aotearoa New Zealand, in early childhood education, these social relationships are bi-cultural and multi-cultural which accepts and promotes diversity. The spirit and understanding of things being different and diverse (that can come from a consciousness and practiced bicultural and multicultural reality) encapsulate the arguments of writers such as Moss and Urban (2010), Rinaldi (2006), and

Claxton and Carr (2004). These authors see things such as experimentalism, surprising encounters, and diverse ways of learning and thinking, as significant features of democratic education.

The recognition of fairness and justice in early childhood education is also evident in the aspiration of equitable participation. Mitchell (2011) draws on this in her evaluation of Pathways to the Future: Nga Huarahi Arataki (MoE 2002). The document identified three goals and supporting strategies for the continuing development of early childhood education (ECE) in New Zealand. The goals identified were: increased participation in quality ECE services, improved quality of ECE services, and promoting collaborative relationships (MoE, 2002). Strategies within the plan, such as 20 hours government subsidised funding per week for three to five year olds professional development for teachers, and fully qualified teacher teams across the early childhood sector, are intended to improve participation. In addition the policy targeted collaboration strategies with family, whānau and community and to affirm the status and position of early childhood education in line with the United Nations convention on the rights of the child. This demands that all children without discrimination should be able to participate in education and enjoy high quality provision (Mitchell, 2011; United Nations, 1989). However, a Governmental change and subsequent policy shift in 2009 has put at risk the universality of access and quality in early childhood education and Mitchell (2011) suggests that effects of the policy change may be a challenge to the democratic ideals of the country.

In this section of the literature review the historical and contemporary contexts of Aotearoa New Zealand have been explored in relation to early childhood education.   The understanding of these contexts has identified some key democratic ideas. These ideas also relate to notions of democratic education as espoused to by, Dewey and Friere, and contemporary literature on early childhood education. In particular the features of democratic

participation, the agency of the child, diversity and the equitable opportunities for learners have been discussed. In the next section of the literature review the democratic features of learning and teaching are discussed in the context of the early childhood curriculum and its socio-cultural framework.

Democracy within Te Whāriki : A Socio-Cultural Curriculum

 "A curriculum model is a very important determinant of what happens in education. It provides a theoretical basis, goals and philosophies for practice, promotes shared understanding and language and provides a framework through which assessment is carried out" (Smith, 2007, p.155). Traditionally, the content of curriculums have been viewed as a body of knowledge to be transmitted by schools or other educational settings and, in which teachers taught subjects in a topic-by-topic fashion (McGee, 2001). The implications of such a process indicated that pupils (children) were very much in need of just absorbing and retaining knowledge (Soler & Miller, 2003). This notion of curriculum design and application again signifies what Dewey and Friere both challenged in their beliefs and works (Dewey, 1938; Dewey, 1943; Friere, 1972, Jenlink, 2009; MacNaugton & Williams, 2009;).

As previously discussed Te Whāriki, the early childhood curriculum (MoE 1996), has been strongly shaped by features of Aotearoa New Zealand's past, and resulted in the contributions it seeks to make to its future. Smith (2007) describes the theoretical framework of Te Whāriki as arising out of Vygotskian socio-cultural theory. There exists a range of socio-cultural and neo Vygotkskian literature that has contributed to ideas on education, the learning and teaching process, and curriculum (MacNaughton & Williams, 2009). Vygotsky saw learning as not being separate to development, that good learning and development would be advanced by being challenged and extended with the help of others.(Vygotsky, 1978). Te Whāriki expresses that patterns of learning and development are also fluid and can fluctuate for many reasons (MoE 1996). Such an acknowledgement again affirms the notion of the child as unique, while placing them, and their learning within

social and cultural contexts (Smith 2007). This social constructivist process (Rogoff, 1990) is described as the Zone of Proximal development and includes teaching and learning practices of co-construction and scaffolding (Smith 1998; Barker, 2001). The key premise Rogoff (1990) asserts is that children learn through interactions with others and particularly in their own social and cultural contexts. She sees social situations as being places for learning, and where children will use the intellectual tools of their community (Rogoff, 1990). Barker (2001) describes learning as *"....less as an individual activity and more as the product of complex socio-cultural processes"*(p.51).

One significant implication of this understanding of the learning process is that it defines the identify of the learner. Carr (2001) realises this by deeming this process as the child as a 'learner in action'. Smith (2007) also places the child as an active participant, one where their viewpoints and understandings are acknowledged. In Te Whāriki the aspiration is of the child growing as a competent and confident learner and communicator (MoE 1996). Smith (2007) sees this as a political statement about children and their uniqueness and rights. Nuttall (2003) also sees Te Whāriki as signalling a significant shift in how children and early childhood education were viewed in Aotearoa New Zealand.

The further implications of socio-cultural and constructivist notions on the learning and teaching process are also important in terms of relationships, and the power sharing features of democratic learning (Clark & Grey, 2010). As MacNaughton & Williams (2009) clearly express, the nature of socio-cultural learning means children become knowledgeable, and able to make meaning through negotiation and sharing in such meaning making with others. . This social process of learning and teaching invites the child and the other person/s into collaboration and challenges the traditional view of the expert adult (including teacher) and the novice child. It also embraces a pedagogy of listening to the child and their views about their learning

(Dahlberg & Moss, 2005; Rinaldi, 2006). Such a process may well lead to a sharing of power in the process of knowledge forming and includes, for example, the position where the child also determines what they want to know about and explore (Arthur, Beecher, Death, Dockett & Farmer, 2007).

 Te Whāriki places specific provisos on the nature and content of learning. It recognises that learning is dynamic; it can go in many directions and can be complex (MoE 2004). This is reflected in how Te Whāriki recognises learning and embraces the notion of holistic development. It does not see learning as segmented into discrete parts, topics, or domains, but as integrated, inter-related, and interconnected (Nuttall, 2003). This links to the earlier position of socio-cultural learning challenging prescriptive formulas on learning, embracing learning as being fluid in nature. The outcomes of such learning are wider than traditional knowledge acquiring and retention. It extends beyond performance attaining goals, and identifies motivational and learning habits (called learning dispositions) as important and valued in a learning process (Carr, 1991; Smith 2007). This is supported by literature that has sought to promote the nature of how one learns, rather than what one learns (Claxton, 1990; Dweck, 2006). In terms of democracy some of the contributors to curriculum development have highlighted that features such as curiosity, perseverance, and diverse thinking are valid (Carr, 2001) and would, by their very nature, result in a climate and setting for encounter and discovery by children and adults (Smith 2007).

To reflect the holistic, socio-cultural nature of Te Whāriki it has required more than traditional forms of assessment, such as summative checklists, to capture the learning of children (Clark & Grey, 2010). The narrative format of Learning stories has been influential within early childhood settings in Aotearoa New Zealand (Smith 2007; Carr, 2001). Learning stories can create a varied and imaginative way of documenting childrens learning (Smith 2007). The nature of Learning stories seek to embrace, what Carr & Lee see as, a

democratic notion of learning and assessment (2012). The aims also seek to safeguard against a culture of pre-determined and standardised outcomes that Dahlberg & Moss highlight as a danger to democratic practices (Dahlberg & Moss, 2005). The practice of learning stories has continued in early childhood education and supports professional development for teachers in assessment through a series of exemplars (MoE 2004-9). It is still defended with passion by key contributors to Te Whāriki who see such narratives as providing:

> *... the appropriation of a repertoire of learner identities and possible selves: and learning described as inextricably distributed across the child, the family and community, the teachers and the cultural resources available. The possibilities for assessment practice to connect all this together in educational places of interpretation, personalisation, wise practice, dialogue and joy....(Carr & Lee, 2012, pxiv).*

Previously I explored some of the social and cultural contexts that are part of Aotearoa New Zealand, and as a result, how and why they contribute to many features and aspirations of the early childhood curriculum. Te Whāriki is itself a metaphor of a woven mat that draws upon and weaves a series of principles strands and goals (MoE 1996). The principles are empowerment, holistic development, family and community, and relationships, and the strands are wellbeing, belonging, contribution, communication, and exploration (MoE 1996). Within the document itself the term of a Whāriki is affirmed as reflecting its socio and cultural context, *"The whāriki concept recognises the diversity of early childhood education in New Zealand. Different programmes, philosophies structures and environments …"(*MoE, 1996, p.11), and how these are influenced by cultural, community, and social factors (MoE 1996,). This reflects the aspiration of the curriculum as being responsive to the locale and community of an early childhood setting. As a

result it also enables the setting to include and apply local and socio cultural features within learning and teaching, for teachers, children, and that community. It negates what Soler & Miller (2003) perceive as the possible prescriptive centrally defined tones of a national curriculum formula, by being relational and relevant to children. It can enhance the child as a learner (as they learn within relevant and meaningful contexts), and affirms features of their identity (their community/family and whānau being valued and included). Such aspects link the process of learning taking place with people, places, and things, that is defined in the curriculum (MoE 1996; Carr, 2001; Cowie & Carr, 2004).

The features identified in this literature review have provided some definition that relate to the term democracy in education. In particular the term has been explored in relation to the policy and practices of early childhood education in Aotearoa New Zealand. The perspectives and writings of Dewey and Friere have challenged traditional features of education. These were seen as a disconnecting process of learning featuring a passive learner. Where as, Dewey and Friere have recognised and responded to many contributions found within socio-cultural theory. This process places emphasis on a learning and teaching relationship that embraces an active, participating, and often diverse and unique learner. As a result, this scene encapsulates key democratic notions in early childhood education. This section of the literature review has explored democratic notions within the specific context of early childhood education in Aotearoa New Zealand. The following section of the literature review examines the literature on the contribution of Information and communication technology (ICT) to such notions and the democratic landscape of learning and education.

Information and Communication Technology (ICT) and Democracy in Education
ICT in Education

" ICT can be defined as anything that allows us to get information, to communicate with each other, or to have an effect on the environment using electronic or digital equipment" (Bolstad, 2004). One significant point within literature on ICT is that it is regarded, and needs to be regarded, as an important and inevitable part of the educational and global landscape. "Whilst ICT use is certainly not a pre-requisite to surviving in 21st century society it is almost certainly an integral element for thriving in 21st century society" (Selwyn & Facer, 2007, p.10). Dalli, Cherrington, Oldbridge & Green (2009), in their evaluation of early childhood education ICT professional learning programmes, assert the consensus that ICT is influencing children's lives. This view reflects an earlier Aotearoa New Zealand literature review on ICT (Bolstad 2004), that places ICT as an important feature of children's lives and their educational opportunities. Research and literature internationally, and within Aotearoa New Zealand, further demonstrate this (Hatherly, Lee & Ramsey, 2003; Siraj-Blatchford & Whitebread, 2003; Morgan & Siraj-Blatchford, 2010; Stephen & Plowman, 2003 Somekth, 2007).

The 2004 review undertaken for the Ministry of Education (Bolstad 2004) did, however, identify some contrast in literature and studies on ICT and the desirability for such ICT impacts. Some literature focused on the potential harmful effects of ICT for children (Haughland, 1999; Plowman & Stephen, 2005), particularly young children, as well as behavioural and educational limitations of some computer programmes (Bolstad 2004). Such concerns appear to have had strong enduring qualities over time in some areas of society and pop up with regularity in the media. For example in 2012, BBC reporter Jane Wakefield poses the question, *Are smart screens making our children smarter or simply creating a new generation of 'square eyes'?* And as a result, is ICT taking away the joy of traditional books (Wakefield, 2012).

However, in balance, the headline, "The book is dead: long live reading" appears to show ICT as being another way of doing things, and perhaps not the destroyer of such 'healthy' pursuits as book reading (Rumblelow, 2009). Siraj-Blatchford & Whitebread (2003) voice concern in particular against drill and skill programmes and the way they can be used. However, a significant body of literature identifies that with well thought out policy and practices, ICT use can enable positive educational outcomes (Siraj-Blatchford & Whitebread; 2003 MoE, 2009). Marsh (2010) for example, implores educators to examine carefully the online landscape and examine the affordances of ICT for children when they engage in virtual world collaborative programmes.

At this point two features of ICT in education are prevalent. Firstly that ICT is an inevitability and reflects the roles and prominence it has in the wider world. Therefore, it is reflecting a reality of children's lives too important to deny or ignore and hence placing a responsibility on education to respond and employ ICT (Dalli et al, 2009). The second feature is exploring what effective ICT use and its place in education should be. Determining the role, understandings, and pedagogy of ICT in the educational setting, is required to make it effective and meaningful for children's learning (Somekth, 2007) Such features can underpin and align with aspects of democracy and democratic educational practices, explored earlier in this review. The assertions of Dewey and Friere were founded on the need for education to be situated within children's realities and reflect their world, making education and learning a meaningful and relevant activity based in experiences (Dewey, 1938; Friere, 1972). This would match views on ICT as being a relevant part of many children's lives (Plowman, McPake & Stephen, 2008; Morgan & Siraj-Blatchford 2010).

The second feature is how ICT is applied and used in educational settings and whether it complements and/or enhances learning opportunities for

children. In terms of democratic practices what roles does ICT play in children's education, and what aspects of pedagogy are required to promote democracy are the continuing areas of interest in the literature (Morgan & Siraj-Blathford 2010; Siraj-Blatchford & Whitebread, 2003).

Somekth (2007) explores both these areas. She firstly recognises ICT as entering homes and embedding itself within family life. Plowman et al (2008) affirm this in their study in which they recognise the appropriation of ICT in the life of children, and how they make it meaningful in their learning settings. Secondly Somekth identifies the purposes and techniques of ICT in education as transformative, arguing that it not only improves existing ways of doing things, but it creates new ways of doing things (Somekth, 2007). For Siraj-Blatchford & Whitebread (2003) ICT is able to create very active, social, intellectually stimulating, and liberating experiences for children, and opens up new possibilities in a variety of areas. They go on to assert that with clearly identified practices and policy children who play around with technology and explore with it are much more creative, flexible, and confident thinkers, who can be adept in using it to solve problems (Siraj-Blatchford & Whitebread, 2003).

The place for the teacher in this environment is critical to consider and also draws upon features of a democratic educational landscape. For example, Diaz, Beecher & Arthur (2007) recognise how ICT can contribute to children's agency. However, they stress the importance of the place for the educator to scaffold and also engage in critical reflection with children around relationships between texts (such as ICT) and children's social worlds. The positioning of the teacher as expert is also one area that resonates through some of the literature. Prensky's (2001) seminal work on digital natives and immigrants sees the latter group as needing to adapt to the changing digital landscape, and who may find it hard to shake off the old ways of teaching and thinking. The challenge for teachers is identified as being able to view and

use technology as an exciting tool in the learning process and is more about how we use tools rather than should we use them (Haughland, 2000). Somekth (2007) believes that for some teachers, it is the challenge of keeping pace, as well as the shifting ground in the teaching and learning relationship that is the difficulty. She recognises that the identity of the teacher and student can re-form into ones of co-learners and or advisors. In one project it saw students and teachers develop a deepening of exploratory engagement between the two and *"…freed the teacher from having to demonstrate that they knew more than the students"* (Somekth, 2007, p, 60).

Such an impact on educational relationships can draw links with notions of democracy featured earlier within this review. The traditional notion of teaching being the transference of pieces of knowledge to a passive recipient, similar to Friere's (1972) bank account analogy, can be interrupted by the place of ICT and its skilled and confident student users. The other implication is for teachers to recognise the child as the competent partner in exploration and contributor to their own learning. For Lee et al, (2002) it has seen the need for two things, a shift in teacher attitude and pedagogy, and also a support structure of professional development to support teacher skills.

These features are key developments in education as a whole. The next section of this literature review explores ICT development and use in early childhood education specifically.

ICT in Early Childhood Education

As the previous section of this literature review has identified, ICT and the digital age has influenced many beliefs, values and expectations of its participants, including ICT 's influence on practices, and what ICT is used for. In early childhood education a key focus has been to dispel the notion that it is simply 'children using computers' (MoE 2005). In early childhood education the term ICT also includes digital cameras, video cameras, the internet, telecommunication tools, programme tools and many other

electronic or digital devices and resources (Bolstad, 2004). For Hatherly (2009) though, it is important to extend and challenge the notion of ICT just being about use of equipment: *"When we focus on the tools rather than the teach ICTs are no more than jazzy and expensive alternatives to existing resources"* (Hatherly, 2009, p, 9).

These views relate to the construction of early childhood environments and their composition of static and dynamic elements (Clark & Grey, 2010). Despite the availability of ICT equipment being there, which is important, there also needs to be a philosophy, pedagogy, and practices to support its meaningful use by children. As Hatherly's 2009 article title indicates, the 'teachers mind' is essential. This concurs with Bolstad's literature review that sees a focus of literature towards ICT's support in learning and scaffolding techniques (Bolstad, 2004). The review also notes the requirement that things don't just happen and that *"…practitioners must be conscious of the kinds of interactions they would like to occur in the context of ICT use and adopt pedagogical strategies to support these"* (Bolstad, 2004, p, viii).

The Plowman et al (2008) study identified young children having been inculturated with ICT use and meaning in their home and community settings. This has led to not just a competency in the use of ICT , but also many expectations for use by young children. Hatherly sees this as the funds of knowledge young children have coming into their early childhood settings forming part of their identity as a learner (Hatherly, 2009). In essence, it could be viewed as a meeting of two features that capture some of the notions of ICT in early childhood. Firstly, what is required by early childhood services is to create an ICT meaningful environment. Secondly, that 'meaningfulness' has to relate and respond to the expectations of ICT enriched and competent children.

Concerns by some over the challenges of ICT taking away valuable aspects of learning and education (such as socialising and physical activities) have also been part of the early childhood and ICT debate (Brooker, 2003). These reflect some equivalent concerns expressed about ICT in education generally that were explored earlier. Stephen & Plowman (2003) regard some of this as a mixture of panic and nostalgia, that previous technologies in history have also been greeted with fear and hostility to no great justification. Equally, studies in the United Kingdom have identified that ICT provides positive experiences without a challenge to some traditional activities, and has added to outcomes such as enriched linguistic and cognitive development, co-operation, and scaffolding among peers (Brooker, 2003; Siraj-Blatchford & Whitebread, 2003).

However, there have been concerns about the nature of the ICT content itself. Haughland (1999) draws on the example of a USA study in which computer use by the young children was confined to basic drill and instructional games and was limited in its creativity and learning outcomes. Plowman et al (2005) cite examples from their study of software that informed children of wrong answers without explanation and correct response after repeated wrong answers again without explanation. Such programmes may also affirm practices of children being 'occupied' by the computer and teachers 'occupied' elsewhere.

Siraj-Blatchford & Siraj-Blatchford (2006) draw together what they see as the ideal scenario: an approach of ICT use in which there is a balance of free play in ICT (for exploration with innovative programmes), and focused group work involving adult directed instruction in the usage of technology. This would mean programmes, equipment, and access that the children can control, and at other time have opportunities where they can be supported and co-learn with teachers in episodes of sustained shared thinking. Such shared thinking can include joint reflecting on the learning taking place, what

things need to happen to find information or solve a problem, or thinking and discussing the trial and error sequence that may be occurring in the learning episode (Morgan & Siraj-Blatchford, 2010). These ideas and perceptions of ICT in early childhood education relate back to some of the requirements needed to make ICT successful in education in general. Primarily it means identifying features of practice and pedagogy that are going to make ICT meaningful and relevant, Siraj-Blatchford & Siraj-Blatchford capture this in their guide to ICT practice: *"The most appropriate approach of using ICT to support early learning has been an emergent one, where the emphasis has been on the children seeing ICT being used in meaningful contexts and for real purposes"* (2006, p.60). Such sentiments serve as another reminder that ICT is more than computer use and involves digital cameras, microscopes, photocopiers, and printers that can all take their place in supporting moments of relevant learning.

Brooker (2003) and Siraj-Blatchford & Whitebread (2003) draw on a number of features that should exist in supporting ICT in early childhood education settings in terms of policies, particularly on content of computer programmes. These include programming that can be child initiated, exploratory, and open-ended. They also advocate for equipment to be in areas that avoid isolation, and apply use through meaningful and relevant aspects of the curriculum (such as allowing it to support real learning moments in the wider centre setting) (Brooker, 2003; Siraj-Blatchford & Whitebread, 2003). Features should be included that are non-violent and non-stereotyping, and be developmentally and educationally appropriate (such a term varies in literature to include Piagetian and Vygotskian notions (Bolstad, 2004). Policy and practices need to be active and conscious within the practices and practitioners of the centre, particularly in light of the point that computer software aimed at very young children constitutes the fastest growing segment of the overall youth software market, and justifies discretion (Morgan & Siraj-Blatchford, 2010).

In summary, the themes that exist in this literature review on ICT in early childhood education, relate to its integration and place, its content, influence on pedagogy, practitioner competence, and affects on the teaching and learning dynamic. This is set within the context that such technologies are a backdrop to children's lives (Plowman et al, 2008). With that last point in mind, and in relation to democratic practices, Siraj-Blatchford & Whitebread (2003) see the provision of education for technological literacy as a citizenship issue. If the world is driven and developing in such a digital way then children must have the opportunities to develop competencies in such contemporary and ever evolving cultural tools .

> *In early education this begins with children learning about the new technology that is being applied around them, and becoming more aware of the critical technological choices that are being made by adults that are significant to them. It also means being increasingly involved in making these choices themselves (Siraj -Blatchford & Whitebread, 2003.p. 2).*

ICT and Early Childhood Education in Aotearoa New Zealand
In this last section of the literature review we explore ICT as part of early childhood education in Aotearoa New Zealand, and what factors have influenced its place and position in the sector. The policies and underlying principles about ICT in the early childhood education sector acknowledge the realities of the digital age previously identified (Selwyn & Facer, 2007). Predominant is the recognition that ICT is a feature of people's lives and that includes young children's lives too. "In New Zealand, our lives are increasingly influenced by information and communication technologies (ICT) which support, facilitate and shape the things that people do and the lives that we lead" (MoE 2005, p.2). The literature review undertaken for the Ministry of Education (Bolstad, 2004) draws on literature that clearly asserts the view that the development of ICT use in education must come from the purposes,

contributions, and contexts to learning and, not just because of technology advancement.

One key context is the content and philosophy of the Aotearoa New Zealand national early childhood curriculum, Te Whāriki (MoE 1996). Its development during the 1990s signaled the beginning of a significant shift in how children and early childhood education were viewed in Aotearoa New Zealand (Nuttall, 2003). Its fundamental views placed learning into a socio-cultural framework of interactions between people, places, and things, and regarded the child as a competent, and socially and culturally situated learner (Carr, 2001; MoE 1996; Nuttall, 2003). In light of this it perhaps explains the approaches and defining principles of the Ministry of Education policies on ICT in Aotearoa New Zealand, including early childhood education (MoE 2002; MoE 2005; MoE 2009). Examples of this include the Ministry of Education document 'Foundations for discovery' (2005) that recognises ICT having a place for enhancing children's learning, that includes children reflecting on such learning and communicating to others about it. The Ministry of Educations series of exemplars on assessment for learning, Kei tua o te pae,(MoE 2004-2009) explicitly align to the features of the curriculum and see ICT as integrated in its purposes and practices, such as the ability to enable children to *"... broaden their horizons by exploring the wider world* (MoE 2009, p.2).

This series of assessment for learning exemplars (MoE 2004-9) emerged as a result of the 10 Year Early Childhood Strategic Plan, and one of its 3 key outcomes: to improve quality of services (2002). Another initiative that formed part of meeting this outcome of quality was the Centres of Innovation Strategy (2002). This aimed to have collaborative and focused projects, between teachers in identified early childhood centres, and researchers, undertaking action research (MoE, 2002). One project involved Roskill South kindergarten and followed their innovative use of ICT and its integrated approach enabling, children to become curriculum directors of their own

learning (Ramsey, Breen, Sturm, Lee & Carr, 2006). Another centre of innovation as part of the strategy, Wadestown kindergarten, explored how children's use of multiple literacies, including ICT, enabled children to look at self, other people, and the world. Hatherly (2009) also presents some examples of children's widening of the world through ICT, one being of two centres (one in Aotearoa New Zealand and one in Chicago, USA) exchanging information and comparison about their natural worlds in their respective countries. She argues that this integration is meaningful and relevant and no less real as learning even though it might take place within virtual worlds (Hatherly, 2009).

The assessment for learning exemplar series, Kei tua o te Pae,(MoE 2004-9) comprises examples of assessment and curriculum through the key narrative tool called Learning stories, (Carr, 2001). The exemplars are aimed as a professional development tool, with one of the books dedicated to ICT (MoE 2009). The understandings reflected in this exemplar book explicitly link with other aspirational and practical features of the early childhood sector in Aotearoa New Zealand by viewing ICT through the lens of Te Whāriki, the early childhood curriculum, and also ICT policy statements in the sector (MoE 2002; MoE 2005). One overriding statement being that technology itself should never drive the process of ICT development in the sector, but the purposes and practices must be drawn from, and applied within the meaningful and real learning of children (MoE 2009).

The development of the relationship between ICT and assessment and curriculum in the early childhood sector is however an interesting and important feature to consider. The principles and notions of what constitute children's learning identified within the curriculum, means that assessment would have to reflect that (Carr, 1991). Traditional summative tools such as checklists or comparing and contrasting tools of children's abilities, sometimes characterised in deficit terms, had to be replaced by a practice

that captured a childs range of learning features, including dispositional and socio cultural aspects. The wide and diverse possibilities of capturing a child's learning is reflected in Te Whāriki's assertion of it's own understanding of curriculum (MoE 1996). *"Curriculum is used in this document to describe the sum total of the experiences activities and events, whether direct or indirect, which occur within an environment designed to foster children's learning and development"* (MoE 1996, p.10).

The learning stories tool is a formative and narrative tool that seeks to capture multiple voices, foregrounds the value of learning dispositions, acknowledges children's strengths and interests, and makes transparent the teacher's actions in teaching contexts (Carr, Hatherly, Lee & Ramsey, 2003). The resulting format enabled teachers (and others) an interpretative lens on the learning and learner, and teachers began to document and capture learning episodes using computers and digital photography. One result has been to involve and inform people within the child's life through the reification of the learning through such stories (Carr & Lee, 2012). One example within the Roskill South project is where families and friends are invited to revisit such stories (and as a result the child's learning) and contribute to them, or add new ones, from home (Ramsey et al, 2006). These benefits have been further argued as including and drawing on multiple perspectives that can add meaning to the documentation (Hatherly & Sands, 2002; Cowie & Carr, 2004). The significant affect is seen by Lee, Hatherly & Carr, (2004) who say that the use of ICT in assessment has facilitated a wider range of motivating approaches to learning and increased interactions with the local community. Dalli et al, (2009) in their literature review, also affirm the use of ICT in assessment as enabling for children to revisit and extend upon their learning, especially through digital images. In many centres portfolio books of an individual child's series of learning stories have extended to involving children taking care of and control of their own documentation (MoE 2009). This has perhaps also seen as a practice and pedagogy shift by some teachers, who

embrace innovative tools to capture a child's dialogue for example (MoE 2009).

Another significant approach to the assessment for learning process is noticing recognising and responding to the learning dispositions or learning places of children (Carr, 2001). Carr describes this practice as the describing, documenting, discussing and deciding in which practitioners, along with others, (especially the child, family and whānau and teaching colleagues) respond to learning in rich and complex ways. This is where the Learning story format can capture such complexity of learning. As noted this has been aided by digital technology changing the ways we communicate about Learning with key stakeholders involved in it (Carr & Lee, 2012). The approach also embraces the sense of flow and connections in learning episodes or features of the child as the learner in action. This continuity in their learning advances a stronger picture of the child, their environment and the sense of relationship and reciprocity that is part of learning (Carr & Lee, 2012). Such notions would also align with the aspirations of Te Whāriki (MoE, 1996) and the child as an active participant in their learning (Smith, 2007)

A noted route of ICT use, and recognition of its contribution and possibilities by teachers in early childhood education in Aotearoa New Zealand, has been through the Learning stories assessment practice (Lee, et al, 2002). It has also seen some teachers move, in some degree, to developing their own practices through ICT use,and also, perhaps, influencing their pedagogy towards ICT too. However, Somekth (2007) places a reality check on such development, *"ICT is likely to be threatening or stimulating to the teachers personal identity and this will be a factor in the level of change they embrace when using ICT in teaching"* (p. 31). The reasons include, for many teachers, a sense of ability and knowledge deficit around ICT and having not accessed professional development opportunities to change this (Makin et al, 2007). For some teachers they have confined their practice to certain ways of using

ICT and not advancing good practice by embracing ICT developments that further enhance collaboration, communication, and creativity with children in emergent ways (Morgan & Siraj-Blatchford 2010). This may well relate to that whole shifting ground, pace (and power) in regards to knowledge and learning that ICT is playing in transforming educational landscapes. Somekth (2007) describes this nicely when she says that *"the wide range of multi - media resources available through the internet and the shifting states of traditional resources such as libraries, disturb learners and teachers established ways of framing knowledge and learning"* (p. 31).

Overview

Effectively the possible challenges by ICT and its implementation is that it is disturbing the notions and ways of learning and development. It is doing it through, what many may see as unrelenting development and innovations, at what seems like rocket speed. This is compounded by some views that have been identified in this literature review. The possibilities of ICT use are many and powerful and have been embraced by some within early childhood education sector. This has been championed by many ICT policy directions,and innovative practices, over time in the Aotearoa New Zealand early childhood sector. Critically, some may view what is also being championed is a curriculum, its views on learning and development, notions of the child, and tools and practices of teaching and assessment. As a result, the curriculum itself can enable ICT's contribution to take place, both philosophically and practically, and vice versa

This literature review has explored key notions of democracy and its relevance and contexts within early childhood education in Aotearoa New Zealand. It has also examined the place and contribution ICT can have in supporting democratic practices. The following chapter presents the methodology of this research project.

Chapter Three: Methodology

Introduction

The focus of the research in this study (to be known hereafter as the 'research project') is how ICT might facilitate and support democratic child directed learning, and what factors of the learning context might contribute to it. The research project was initiated by some examples of children's learning in the early childhood setting involving the use of ICT, which was of interest to the researcher. This chapter contains an overview of research methodology and design that define and determine educational research projects. To appreciate the methodology and design of this research project it is necessary to situate it within the overall context and understandings of educational research. Also included in this chapter are the issues of ethical practice in research, and the particular ethical issues and procedures that needed to be identified and addressed in this research project.

Research Paradigms and Methodology

Paradigms in Educational Research

Research activity can be defined as a process to collect and analyse information in order to increase an understanding of a topic or issue (Creswell, 2005). Indeed, *"the process is a disciplined way of coming to know something about our world and ourselves"* (Bouma, 2000, p.5). Educational research is set within different paradigms; these are ways of looking at the world based on particular beliefs that include ways of determining knowledge and truth (Tolich & Davidson, 2011). Such paradigm definition in a research project is important as it indicates a philosophical positioning of the research, and the methodological approach and tools applied in response to that positioning. Three key paradigms are positivist, interpretive, and critical theory (Cohen, Manion & Morrison, 2000).

The positivist paradigm has been greatly influenced by psychology, and behaviourist psychology in particular (Lather, 1992). Such an approach

emerges as a view that common sense assumptions about the physical and social world are flawed or simply wrong, and as a result, what is required is a need for testings and proof far beyond such assumptions (Tolich & Davidson, 2011). This paradigm greatly allies with the understandings of the natural sciences that seek to discover natural and universal laws of human behaviour (Cohen et al, 2000). One of these laws being *"The field of human action is thought to have distinct,analytically separate, sequential and hierarchical qualities that can be identified, tested and validated"* (Popkewitz, 1986, p.16). For Cohen et al (2000) however, the positivist researcher, as a result of such laws, can regard *"human behaviour as passive, essentially determined and controlled thereby ignoring intention, individualism and freedom"* (P.18).

One key issue in educational research that is common to all of the paradigms is the challenge of obtaining meaningful data that is trustworthy and valid (Cohen et al 2000). The range of paradigms indicates that there is more than one way of obtaining truth and knowledge and the nature of human activity is both rich and varied. This challenge relates to the features of such human activity, and includes facing the challenges of value-laden topics or issues, the transparency and power of such data, and the relationships that feature within research. (Bogdan & Biklen, 1992; Eisenhart, 2006).

Research, and educational research as part of the social sciences, is not a neutral activity (Cohen et al, 2000). People's realities are socially constructed and are influenced by factors such as politics, culture, history, and discourses. These realities exist for the participants of research and the researcher. To acknowledge this means that research activity can be a reflection of the realities it is conducted in. In addition, it also suggests that researchers bring in their own socially constructed realities, including values, experiences and intentions. Indeed, *"...educational research is increasingly construed as a value constituted and value constituting enterprise, no more outside the power /knowledge nexus than any other human creation"* (Lather, 1992, p.91).

Such acknowledgements sit more within the interpretivist paradigm to research. In essence people, their experiences and their realities, can be different and are acknowledged as such. As a result their behaviour can also differ. Therefore, the nature of knowledge from this perspective is both unique and personal, constructed by things such as a person's social reality (Cohen et al, 2000).

A third recognised paradigm is known as critical theory. Its philosophical underpinning has been a focus on a deliberate understanding and critique of ideological and political structures (Cohen 2005). Denzin (2010) identifies such a paradigm comprising of *"…critical pedagogy, critical theorists and feminist analyses fostering struggles for power and cultural capital for the poor, non-whites, women and gays"* (p.20). As part of the interpretivist genre the lens of critical theory identifies with the diverse and radical, including examining issues through racial-ethnic, queer, indigenous, and marginalised positions (Denzin, 2010). The critical theory paradigm evokes involvement and possibly explicit partiality by the researcher, and can be seen as deliberately perverting the traditional beliefs of positivist and quantitative approaches. This is affirmed as the purposes, and sometimes explicit agendas, of critical theory and are often ones advocating for change or reform (Creswell, 2005). The following section further explores the methodologies in educational research and how they fit with the paradigms. This includes aspects of validity in terms of data, and understanding about a situation.

Qualitative, Quantitative and Mixed Methodology
Research methods in educational and social research can be quantitative and/or qualitative, and each has different approaches, values, and epistemological foundations (Creswell, 2005). Tolich & Davidson (2011) assert that *"quantitative and qualitative research each make different assumptions about how the world works and how we can know about the world"* (p31.) In quantitative research methodology the philosophy of science

dominates, mainly because its initial ideas emerged from the physical sciences (Creswell, 2005), and it embraces the features of this such as objectivity, measurability, and hypothesising (Tolich & Davidson, 2011). In the education field such methods that align predominantly with the positivist paradigm, emphasise collecting and analysing numerical information, the designing of experimentation in a scientific framework, or collecting and comparing scores within clearly defined parameters of definition and measurement (Creswell, 2005). As such, researchers using such methods argue that they are applying a much more valid and reliable form of research methodology through this established protocol of formula, testing, and measuring (Mutch, 2005).

In contrast, the methods in a qualitative approach arise from social science research which aligns strongly with both interpretivist and critical theory paradigms, and their assumption of multiple, socially constructed realities (Tolich & Davidson, 2011). One fundamental aspect of such methodology is to seek out and capture what events are really like in lived situations and interactions (Mutch, 2005). The aim of such methodology is to seek to understand and interpret how various social actors construct and exist within their realities (Tolich & Davidson, 2011). The resulting pictures of such experiences can be powerful and vivid (Eisenhart, 2006). This can be particularly pertinent when examined within the context of critical theory in which research and researchers, as noted earlier, approach the study with intentions of participation and advocacy with aims of effecting change (Creswell, 2005).

Purists might suggest the values and intentions that lie within any paradigm offer a strict exclusivity in the research arena, including subsequent methodology. Denzin (2010)explored this in terms of several historical wars between paradigms and research positioning over the years. Such a notion of dichotomy has been challenged however by a view that through a process

such as triangulation (a combination of research methods) (Cohen et al 2005), and a spirit of 'what works', strict demarcations of paradigms are less pronounced (Teddlie & Tashakkori, 2003, as cited in Denzin, 2010, p 48. Creswell,2005). With the common intention being the pursuit of truth and understanding, and the aim of providing quality and validity in the research, one can view research more on a continuum of qualitative and quantitative methodology, with the researcher combining both in a legitimate search of such truths. This is important in terms of educational research as research can have a range of purposes (Creswell, 2005). For example, it can seek to provide detail on an existing subject or phenomenon, endeavour to discover new or collate old facts and experiences, or critically investigate a subject (Menter,Elliot, Hulme, Lewin & Lowden, 2011).

The important thing therefore is to establish the research purpose and any philosophical and practical features of the research. This might include the researcher's belief or actual reality of being immersed within experiences being explored by the research. In qualitative research the purpose tends to be more open-ended (Creswell, 2005), and this can influence the type and design of tools for data collection. For example, the interview or questionnaire may seek to encourage the participants opinions or experiences about a topic, and the information can be broad and diverse, whereas in quantitative methodology a questionnaire might well be seeking counts and patterns clearly defined (or confined) by the tool itself (Creswell, 2005). A mixed method approach enables the researcher to identify the purpose and most effective tools to undertake the research. In terms of paradigm focus and methods of data collection and analysis, the researcher can use a range of different methods that generate different forms of data suited to what the research is seeking to understand. The following sections situate the research for this study, and identify the paradigm and methodological approach employed.

The Research Paradigm and Methodology for this Research Project

To adopt the interpretative paradigm of research in effect entails a nature of inquiry that incorporates experiences and subjectivity leading to understandings of meaning making and contexts of human experience (Lather, 1992). The interpretative approach recognises the features that form the social world, and that the social world can only be understood from the standpoint of the individuals who are part of the ongoing situation (Cohen, et al 2000). These experiences are deeply subjective and complex. As a result the tools of interpretative research seek to capture the insight and experiences from individuals who are part of the research. The tools of methodology that align with the ethos of the interpretative paradigm draw upon the human and individual perspectives of participants, and also recognise and acknowledge its own subjective nature. In many ways the subjectivity itself is portrayed as the strength of the research and its tools.

This research project placed itself within the interpretative paradigm recognising that an understanding of the chosen research question itself can be obtained from the range of people directly involved within the social and educational environment of the study. Specifically, this includes the children, the teachers in the chosen setting, and the parents and whānau of the children attending the setting: an early childhood education centre. The nature of the research questions themselves also indicated and pointed toward the most relevant approach and what tools would be most effective and how. As Menter et al (2011) suggests, the defining of the research questions actually *"...overlaps with the act of designing the process of the research"* (p.41), and can actually dictate whether quantitative, qualitative, or mixed methodology would be the most appropriate and effective.

This research project was defined as a case study and was situated within a specific single early childhood setting and involved children, teachers, and family/whānau within that setting only. The research questions sought to explore the ways children might use ICT to direct their own learning and to

also explore what things may support such learning. The intention was to capture some experiences of children in their early childhood and home settings and to explore whether their uses of ICT contribute to notions of democratic learning. In seeking to understand what features of their world may enable this, the intention was to gain information and understanding from their family/whānau, and their early childhood teachers, including their views on ICT, its place within learning, and their own attitudes and experiences of ICT. Such views indicate a range of possibilities and experiences that are situated within the realities of the participants, and as such, the methodology and the philosophical underpinnings align it within an interpretative paradigm. The intention aligned with the point that researchers *"generate or inductively develop a theory or pattern of meaning"* (Creswell, 2005, p.8), by recognising the realities and attitudes and opinions of the research participants.

Another significant feature of this research project was to acknowledge the intentions and positioning of the researcher. As Lather already indicated, the subjectivity and experience sharing in research can be a strength in the pursuit of meaning making (Lather, 1992). The interest in the research emerges from the practice and experiences noticed by the researchers role as a teacher within the project setting. This included my teaching practices, and relationships with the study participants, children, teachers, and family/whānau. Such a declaration of experience and positioning fits with the qualitative methodology advantages of capturing rich descriptions and full pictures of what events are really like in lived situations and interactions by being immersed in, and part of them (Mutch, 2005), Menter et al (2011) use the term 'practitioner research' (p.2), and recognise the possible intents of such an approach. These include finding out or investigating, and then seeking to share such findings and understandings (Menter, et al, 2011). However, there is a need to distinguish this from an action research approach. This approach may often be undertaken with the research intently seeking to

influence or effect change within the environment during, and as part of, the research that is taking place (Creswell, 2005).

The intent of this project was very much linked to wanting to understand more about the place and use of ICT in the early childhood setting, and the lives of the children attending the centre. It also sought to collect information on the views and experiences of various participants, and whether these may actually influence ICT in the learning and teaching experiences of children. The intention of 'making sense' of the topic from this study is to inform practices, and share such understandings within the particular early childhood setting of this study, and also the wider early childhood sector. This reflects the intention to use research as a sharing activity and reflects its social nature (Menter, et al, 2011). The following section defines the case study method and this study's use of it.

Case Study
The case study method can provide a depth of experiential knowledge through its inquiry (Stake, 2005), but it can also place challenges of validity, relevance, and trustworthiness on the researcher. As such, the approach requires, for example, an ethical rigor to meet such challenges. The case study researcher might perceive themselves very much like a *"...loosely scheduled traveller"* (Bogdan & Biklen, 1992, p.106), who may not have a clearly defined idea and outcome in mind, but still must adopt protocols and planning to affect meaning and validity in the study (Cohen, et al, 2000).

This research project is titled: 'Democracy through the use of Information and Communication Technology (ICT) in an early childhood setting: A Case Study'. From the outset the project identified a focus for the research using the University of Waikato Faculty of Education Research Ethics Committee protocols. This shaped the features of the case study and contributed to its definition. It included the creation of research questions that would initially, (and in an ongoing way), shape the focus of the research and situate it within

the chosen paradigm and methodology. This effectively created the boundary of the case study, but with the recognition that adaptability could take place during it.

A case study approach tends to be a detailed examination of one setting, single subject, person, group, or documenting of event (Bogdan & Bilken, 1992). The single instance is of a bounded system, *"…for example a child, a clique, as class, a school, a community"* (Cohen et al, 2000, p.181). Cases can be in depth when defined by such a boundary (Creswell, 2005). Within a 'boundary' a richness of data can be shaped, focused, and collected with it being defined by such things as a setting, activity, or targeted participants. In this research project the boundary is defined by specific settings that are the homes of children currently attending the chosen early childhood setting, and the early childhood setting itself. The activity within the research project is also boundaried as the use of ICT in the early childhood setting, and the homes of children attending the early childhood setting. The participants in this study were the children, teachers, and family/whānau currently at the early childhood setting. Finally, another boundary was created around the documentation as data. The research project draws upon documentation (Learning stories, planning stories and 'Computer Detectives' examples) during a period of 8 months prior to the start point of the project and during the period of the project. and only included children currently attending the centre at this time.

Case study as a methodological approach may also be applied for differing purposes (Cohen et al, 2000), including, exploratory, and sometimes a pilot probing of an issue or interest, or a systematic examination of procedures or practices within a culture or organisation. Such focus will influence, and often determine the types of tools and types of data required (Cohen et al 2000). In this research project the case study was exploratory in nature, seeking to examine the types of use of ICT by children and other participants in their

centre and home environment, with particular interest centring upon its impacts on learning and teaching in democratic terms.

The research project, under the auspices of the ethics committee, also placed upon the researcher and the project procedures for ethical consideration, confidentiality, validity, and legal issues. This very much links with what Stake (2005) recognises about the nature of case studies. Case study is not a purely haphazard process, and as a result it requires the researcher to establish some protocols and planning to effect meaning and validity from the study (Stake, 2005). This clearly places responsibility on the researcher to identify key interests or links in terms of relationships with others within a study. As part of this research project it was identified and stated by the researcher that the study is being situated within existing working relationships with participants, as a practitioner within the chosen early childhood setting. Specifically this research project was initiated by an interest gained from experiences by the researcher, including the use ICT by children, and conversations with some family/whānau on the topic of ICT use by their children. This 'stand alone' research project is of practice-based interest to the researcher, and is acknowledged by the researcher in terms of motivation, and interpretation of findings. Therefore, one seeks to safeguard against interpreting findings in any distorted way, perhaps, for example, where findings are shown to be more significant than they really are (Cohen et al, 2000). Certain ethical and validity/reliability acknowledgements and procedures seek to minimise such potential distortions and form the content of subsequent sections of this chapter.

Finally another important practice of a case study that situates, and has the researcher immersed in the study, is the need to revisit and reflect upon the purposes and focus of the study. This can keep a check on the meaningfulness of the data collection, and also maintain the focus of the study on what is really being identified and thought about (Bouma, 2000;

Greenbank, 2002). As part of this research project the opportunity to reflect and re-visit was undertaken through regular contact and reflective discussion with the research supervisor. An abiding aim of social research, and the case study approach, is that the researcher and the research suspends any pre-conceptions and existing beliefs, making the research open and allowing themes to emerge. As Tolich & Davidson suggest it means trying to

"…suspend initial ideas, hunches and hypotheses and to enter the research site willing to learn how and why informants think and/or act as they do"
(Tolich & Davidson, 1999, p.17). The case study however, really can capture the dynamics and uniqueness of the research in the particular bounded activity or setting.

For the researcher in this research project, the intention was to understand the particular research topic within the context of current practices in the early childhood setting, and to share the findings to both the local (the particular early childhood setting and its participants), and the wider audience (the early childhood sector). Rogoff, (2003) recognises the dilemma in examining something in a local setting, that makes sense within the context of that localness, but that needs to be purposefully used beyond the local. The case study approach defines the research activity itself within a local context, but enables and invites interpretations that can be taken to a wider audience for meaningful use. By defining the research through clear research questions and placing the project as a case study, the positioning of the subject, participants, and researcher were clarified further, by and within the interpretative paradigm, and qualitative methodology. This in turn provided the type of information being sought and what tools would best provide it. The following section identifies the tools of the research project and why they were chosen.

Data Collection Tools

In this research project three key tools of data collection were used. These tools seek to achieve a key aspect of qualitative research, which is to

establish meaning about the topic and activity of a study from the views and experiences of its participants (Creswell, 2005). This enables *"…the understanding of the social world through an examination of the interpretation of that world by its participants"* (Bryman, 2004, p.266). This research project seeks to capture the views and experiences of ICT by children, teachers, and family whānau in their home, and in the early childhood setting, by using a number of different data collection tools. This approach aligns to the interpretative paradigm as the particular design of the tools, which include interview and questionnaire questions, and documentation through Learning stories (Carr, 2001) draw on the opinions and lived experiences of participants as well as their attitudes and beliefs on the subject of ICT. This research therefore seeks to recognise and report on individual realities, reflecting a *"...knowledge of reality, including the domain of human action that is a social construction by human actors"* (Walsham, 2006, p.320).

Interviews

The interviews undertaken in this research project were with teachers currently working in the early childhood setting and were arranged at convenient times for the participants, in a location that they were comfortable with (Mutch, 2005). Three interviews were undertaken at the actual early childhood centre, and one at the home of a teacher. Prior to the interviews a letter was given to each teacher outlining the purpose of the interview, and a request for consent to participation/opportunity to decline was also provided (see appendix 4). Interviews can range from being highly structured and formal to being quite unstructured and almost conversation like (Tolich & Davidson, 2011). The nature of the interviews was semi-structured, which enabled the participant to talk about the situation and subject, and how they interpreted it by drawing upon their experiences, beliefs, and opinions (Cohen et al, 2000).

Interviews require the development of questions that will elicit the desired data. Questions can be general, specific, direct, or indirect (Cohen, et al

2000), drawing out specific facts or seeking opinion responses. Open-ended questions (Creswell 2005) balance the interview by allowing the opportunity to add fresh and spontaneous questions in the natural dialogue that unfolds, and therefore allows the informal conversation to emerge (Tolich & Davidson, 2011). The questions for the interviews were devised prior to commencement of the interview (see appendix 2). A copy of the questions were given to each participant several days prior to their interview. However, as part of the semi structured nature of the interview they became, in essence, a guide for the meeting. There was opportunity to allow the participant to digress and explore their own thinking, and for the researcher to probe a little further in places (Tolich & Davidson, 1999), and seek clarification and elaboration where necessary.

The semi-structured nature of the interview allowed the participant to share their experiences and/or anecdotes of the subject and draw on examples and even pose questions about the subject themselves. This, in effect, enabled them to construct, clarify, and develop their ideas and stories (Cohen et al, 2000), and allowed the participant to put forward new information that was un-anticipated (Westbrook, 1994). This unexpected information when acknowledged and affirmed by the researcher during the interview could have added to a sense of empowerment for the participant resulting in more data being disclosed. The interviews were recorded on an MP3 device with permission from participants, and additional notes were taken on paper during the interview with the consent of the interviewees. Descriptive field notes provide valuable, reflective, and analytical data, which can aid in the formulation of themes, as well as capture nuances of the interview such as body language (Mutch, 2005). The interviews were transcribed by the researcher.

Each interview participant was a current teacher at the early childhood centre. One of the challenges for this research project was, that as a colleague of the

teachers, the role of researcher may cloud the lines of the this existing relationship. The ethical guidelines in this research project acknowledge the possible obligation that teachers may have felt to contribute to the study, and therefore participate in the interview process. Equally this may have influenced what they said or what they thought the interviewer might want to hear. The reassurances about confidentiality and the invitation to participate, or not, were provided on a strictly voluntary basis, with opportunities to abstain, withdraw, or contact the research supervisor directly with any concerns.

Questionnaires

A questionnaire is one method of survey. As with interviews, they can have their own characteristics, greatly influenced by the type of data sought and, as such, this is reflected in the types of questions asked. For example, a questionnaire can elicit both qualitative and quantitative data depending on the types of questions posed, and the analysis techniques used (Cohen et al, 2000; Creswell, 2005). In this research project the questions posed were open ended, seeking to encourage a greater freedom of experiences and perceptions from the participants. The aim was to elicit attitudes from the respondent regarding ICT, its uses in early childhood education, and what uses of ICT, if any, did their child have in the family/whānau setting (see appendix 1). The last question in particular invited them to add any further thoughts or experiences about the topic, hopefully encouraging a broad remit, further adding to the richness of the qualitative data (Tolich & Davidson, 2011).

The questionnaire in this research project was posted to all parents/carers of children currently attending the centre at the time of the data collection (November 2011). Along with the questionnaire sheet was a briefing sheet for parents/carers, outlining the nature of the research, consent to participate, actions taken to assure confidentiality, and the process for submitting the completed questionnaire (see appendix 3). One logistical consideration was

the timescale for completion, and a two-week completion date was deemed satisfactory as a defined completion date. Recognition from the researchers own experiences served as a reminder that tasks for school or kindergarten can easily be mislaid in the routines of busy lives of a family/whānau home. In terms of confidentiality and submission of the questionnaire, parents and carers were not required to use any names, and were asked to place their completed questionnaires in an attached envelope and into a sealed box in the early childhood setting office. This process provided parents and carers with a specific place to put their questionnaire, and minimised the possibility of any being mislaid or lost by being 'put in the office'.

Documentation

The actual nature of examining documentation is historical as it is being drawn upon from a time before the study. In such an historical framework it is a *"…reconstruction undertaken in a spirit of critical inquiry designed to achieve a faithful representation of a previous age"* (Cohen, et al, 2000, p.158). As such, the documentation is 'secondary data'. Johnson & Christensen (2012) define secondary or existing data as data that was *"Collected, recorded, or left behind at an earlier time, usually by a different person and often for an entirely different purpose than the current research purpose at hand"* (p. 212). The data in this research project was taken from documentation that was devised predominantly by the teachers in the early childhood setting. It was selected by the researcher through an informal survey that showed children at the centre being involved in the use of, or making reference to, ICT.

The documentation was predominantly in the assessment format of Learning stories (Carr, 2001). Learning stories are the most frequently used assessment tool in early childhood education in Aotearoa New Zealand. This credit based narrative assessment, documents children's learning including interpretations of what things support the child as a learner (Carr, 2001). The narrative reflects and responds to the key concepts of Te Whāriki, the early

childhood curriculum, (MoE 1996), that views learning outcomes as skills, and attitudes, as well as working theories and learning dispositions (Carr et al, 2009). The relevance of this documentation is that it can also capture the socio-cultural nature of a childs learning and indicates influences and contexts of the child's interests or knowledge, such as ICT (Carr, 2001).

Dahlberg, Moss, & Pence (1999) assert that such documentation can be seen as both a content and process. The content is material that records what the children are saying and doing. The process involves the use of that material as a means to reflect upon the pedagogical work, and to do so in a very rigorous, methodical and democratic way. . This links with the aspirations of this research project where the documentation is used as another data source to help answer the research questions. However, it is acknowledged that this is done through the interpretative and selective lens of the research focus and the researcher, which can lead to selectivity of data and results if unchecked. Documentation is never a neutral activity; it always holds our subjective feelings, wishes and values. This is to be recognised as a positive thing as long as it recognised and acknowledged (Dahlberg, et al, 1999). The Learning story format can include multiple perspectives (such as the child and family/whānau, not just the teacher). As an assessment tool, it is more than descriptive of any learning or event, but interpretative of it. Carr (2001) recognises possible challenges to validity for Learning stories, although she prefers the notion of 'accountability' (p.183). The transparency of data being accessible to others to contribute to, with connections between the learner and others, and communicating and reflecting on the interpretative processes, are some of the features of the assessment process that can make this form of assessment accountable (Carr, 2001). In effect, the interpretative nature of this research project is using a tool of data collection that by its nature is interpretative, and this is important to acknowledge.

Ethical Practice and Validity

Research methodology has to include some rigorous processes that can assist in validity, assist in meaningful data generation, and make the study safe for participants and researcher alike. This section discusses these features of educational research with specific regard to this research project. .*"Ethical concerns encountered in educational research in particular can be extremely complex and subtle and can frequently place researchers in moral predicaments which may appear quite unresolveable"* **(**Cohen, et al, 2000, p.49). As previously noted, one of the key challenges to interpretative research is the influence of the researchers own bias and beliefs (Bell, 1999). This remained conscious to the researcher during the process of research design, collection, and analysis in this research project. The researcher recognised themselves in the terms identified by Walsham (2006), as an inside researcher, who is actively involved in the field and who would provide significant feedback to participants, therefore engaging in practices of practitioner research.

One such predicament involves balancing the aims and contributions of the research, and its attempts to be meaningful and valid, with the rights and dignity of subjects who may be part of the project. Problems may arise from 1) the nature of the research project itself, 2) the context for the research 3) the procedures being adopted, 4) the methods of data collection and 5) what the data may be used for (Cohen, et al. 2000).

Researchers therefore, have a professional responsibility not only to investigate their area of interest and contribute to the research community, but, to consider the well-being and dignity of participants in their study (Cohen et al, 2000). The clear justification for this research project was identified in the ethics process undertaken through the University of Waikato, Faculty of Education Research and Ethics committee. The topic of ICT in early childhood education and its position in supporting meaningful and democratic learning is a positive area to explore, extending beyond existing research that

has focused on ICT technical competencies of children. The ethical process also identified that the research project was primarily a Masters of Education thesis, but that data and findings could also positively contribute to the early childhood sector on the topic. This extension of use was clearly indicated to all participants in the research project. To maintain a consistent response to the possible impacts of the research project, and the experiences of the data collection and findings, the researcher had regular reflective meetings with their research supervisor.

Conflict of Interest

Another potential dilemma is where possible conflicts of interest can arise through the relationship between the researcher and participants in the study. In this research project, as already stated, the researcher at the time was also a practising teacher in the setting. As the research design required undertaking interviews with colleagues, and gathering information and views from family/whānau, a number of safeguards to promote open-ness were required. These safeguards informed an environment that was both safe for my participating colleagues, and family/whānau contributors, it also enabled an honest, and therefore meaningful response from them. The responsibility lies with the researcher to balance the obtaining of meaningful and reliable data, while considering the wellbeing and dignity of the participants in the study (Cohen et al, 2000).

As part of this research project two main approaches were applied to pursue an ethically sound and reliable content of data and participation. The first is the application of ethical approval from the project through the auspices of The University of Waikato Faculty of Education research ethics committee. This process identified the potential conflict of interests in this study and obliged the researcher to develop means to convey that participation in it was voluntary, and that participant contributions would remain anonymous and be respected. The opportunity to consult the research supervisor with any concerns or questions at any time during the study was explicitly made

available. The second approach was the regular reflection and consideration of the project with my research supervisor as a critical friend that carried regular reflective discussion. The intentions of such processes are to seek to guard against ethical problems that may arise from both the nature and context of the research. Such a fluid and longitudinal approach can help safeguard the obligations of the researcher to participants (Cohen, et al, 2000). Additionally, such reflexivity (Greenbank, 2002) invites the researcher to continue to never lose sight of their obligations, and further enhance a commitment to respect and dignity to those involved. I was particularly conscious of not sharing my data, such as the interviews with teachers and the family/whānau questionnaires, with colleagues or family/whānau in the course of my teaching practices (such as staff meetings) or informal or social situations. The aim at all times was to protect against a notion of 'betrayal' by being in or creating situations where any participant could be harmed or embarrassed (Cohen, et al, 2000).

Informed Consent
"Consent protects and respects the right of self -determination and places some of the responsibility on the participant should anything go wrong in the research" (Cohen, et al 2000, p.51). As such informed consent can be regarded as another bedrock of ethical procedure (Cohen, et al, 2000). The term informed consent contains the following four main ingredients: competence, voluntarism, full information, and comprehension (Cohen et al, 2000). Voluntarism relates to the participant being able to partake, or equally freely withdraw from the process or parts of a process. The notion of 'comprehension' includes all reasonable steps being taken by the researcher to ensure that participants are aware of their role, contributions, rights and risks within the project. Full information and competence comes from ensuring participants are fully aware of their role so they can present themselves competently and therefore feel safe. The family/whānau and

teacher information sheets detailed the context of the topic and expectations of participants (see appendices 3 and 4).

The key responsibility for me as the researcher was to make the procedures and protocols expected by the participants available and accessible. Such accessibility includes making them understandable (Silverman, 1996). In the invitations to the teachers and the family/whānau partaking in the questionnaires, participants were provided with a briefing sheet that outlined the purpose of the study. It also indicated the focus of the questions, and the type of information being sought (see appendices 3 and 4). Contact details of the researcher and the research supervisor for any questions or concerns that may arise were also given. This provided a protocol of clarification for the research project, and clarified the expectations of the participants.

Confidentiality and Privacy

Tolich & Davidson (1999) define confidentiality as when *"the researcher can identify a certain person's response but promises not to make the connection publicly"* (p.77). The interviews conducted in this research project made the data explicitly attributable to a participant so there was a requirement that the data would not be identifiable to a particular participant. The early childhood education community is quite a small and close linked one in Aotearoa New Zealand. That is why it was even more pressing to ensure the use of pseudonyms in the study (participants and setting). Even though the setting remains anonymous the declaration that the researcher was also a practitioner in the setting does reduce the effectiveness of such anonymity to some extent, however this was necessary when declaring the potential conflicts of interest discussed in the previous section. The questionnaire participants were all informed of the purpose of the study and how they could omit identifiable features in their data. They were invited to create a pseudonym of their choice for their child and also indicate whether, and if so where, they were willing to have this data shared, such as in publications and seminars, whilst still remaining anonymous. The documentation also omitted

any identifying features of the child in the learning story as well as the author (teacher) and other contributors to it.

Trustworthiness (Validity)

Integral to a piece of research is its legitimacy and validity. If our methods of research are poor then the data can be, and the resulting research can be limited. Bryman defines four aspects to the notion of trustworthiness "...credibility, transferability, dependability, and confirmability" (2004, p.273). A key consideration in creating a sense of trustworthiness in the research is to seek willingness and honesty from the participants. The case study approach, as adopted in this research project, draws upon intense personal views and circumstances of its participants (Stake, 2005). Cohen, et al, recognise the potency of qualitative research in how it captures 'multiple realities' and 'socially constructed meanings' of the subject and participants (Cohen, et al, 2000, p.12). The potential, if unchecked, can put at risk participants identification or incur embarrassment to them, undermining their wellbeing. If practices and considerations are ill prepared or ill considered then the potential for effective participation may be undermined, threatening the validity or quality of the data collected. In this research project the designing of data, methods of collection along with considerations for the well being of participants were identified and justified through the application for approval through the University of Waikato Faculty of Education Ethics Committee. To maintain rigour and continuity the study abided by the regulations and guidelines set out in the ethical conduct in human research and related activities regulations (University of Waikato, 2009).

As part of this ethics procedure cultural considerations were identified. There was acknowledgement that a large amount of participants would be similar in social and cultural background to the researcher, but not exclusively, and the researcher needed to be prepared to respond, and be willing to adapt to any requests/changes based on cultural requirements. The researcher also recognised their prior relationships with participants in the study, noted

previously. In this study no one declined to be interviewed, but some people did not complete and submit the questionnaire for whatever reasons. As stated earlier the research protocols were also supported through ongoing reflection and consultation with the research supervisor on such features of validity and trust with participants to ensure that these features were not neglected. Such reflexivity requires the researcher to be aware and sensitive to participants' culture and values, and be respectfully responsive to such things (Guillemin & Gillam, 2004).

The process of triangulation is often used in case study and means the use of two or more methods of data collection (Creswell, 2005). This can enhance the confirmability of a study by drawing upon differing data sets or perspectives. The notion of transferability relates to whether the research and its findings can be regarded as relevant or usable within the educational research field. By providing a detailed definition of the topic, research design, and findings within its specific case study context, one can provide to other researchers an increased accuracy of the research and whether it can be useful to them (Bryman, 2004). It can also guard against sweeping or universal conclusions. The following section details the research process undertaken in this research project, the selection procedures, and the choosing of the method of analysis.

Selection of Participants for this Study: Interview and Questionnaires
The participants invited for interviews were teachers employed in the early childhood setting. Four teachers participated in the interviews. Two were teachers currently working at the setting, one was a teacher who, during the research period, moved from this setting to another one within the same organisation, and the fourth teacher was the owner of the centre who also worked regularly with the teachers and children in the research project setting. The participants of the questionnaire were family and whānau of children who were currently accessing the setting and were undertaken in November 2011. Each family/whānau were posted a questionnaire, consent form and

information sheet, with return envelope, into the individualised 'information/communication pocket' at the early childhood setting. As noted previously some people chose not to submit the forms. 15 questionnaires were completed and returned (approximately a 33% return).

Selection of Documentation

Data was collected in retrospect from a selection of learning stories (Carr, 2001), of children attending the centre, and where ICT may have featured. Data was also taken from stories in the 'Computer detectives' folder held at the centre, and a selection of stories/events that involved ICT were gleaned from the planning cycle documentation that is undertaken at the centre. The planning cycle process is a system that was pertinent to this centre as over the course of a 3 to 4 month period certain topics/themes were identified by the teaching team (and based on areas of children's interests identified prior) and became a planned focus. Learning stories or other records, for example write ups about an activity, group learning stories, and parent contributions, were the resulting documentation from such a cycle of planning.

Data Analysis

It is important to define a purpose of data analysis and ensure that its contribution creates a sense of progress in the research project *"The intention is to move from description to explanation and theory generation"* (Cohen et al, 2000, p.148). It is a process of organising and understanding what participants have said, and then categorising and recognising themes (Cohen et al, 2000). In qualitative research the analysis initially consists of developing a general sense of the data and then moving on to create a description and the themes to develop an understanding of the central phenomenon. Themes are the grouping together of similar codes aggregated together to form a major idea *"They form a major core element in qualitative data analysis"* (Creswell, 2005, p.243). The interpretative nature of such analysis includes a depth of understanding that comes from reading and re-reading accounts and data. The data can also be analysed simultaneously

as it is being collected. As Creswell, (2005) affirms *"Qualitative research is 'interpretative' research in which you make a personal assessment as to a description that fits the situation or themes that capture the major categories of information"* (p.232). The important consideration in this, and any research project, is to ensure that the methods of data analysis reflect, with clarity, what the purpose of the data gathering was, and that it is effective in relation to the tools of data collection used (Cohen et al, 2000). The form of data analysis used in this research project is defined as thematic analysis.

Thematic Analysis

Thematic analysis is *"… a method for identifying, analysing and reporting patterns (themes) within data"* (Braun & Clarke, 2006, p.79), a method that looks for patterns and themes within data (Mutch, 2005). However, despite its wide use, there tends to be little agreement on what it is and how you go about it (Braun & Clarke, 2006). What is key, according to Braun & Clarke, is that a theme must *"...capture something important about the data in relation to the research question and represents some level of patterned response or meaning within the data set"* (p.82). The process of thematic analysis in this study was shaped by both the data collection methods, including the questions designed for the interviews and questionnaires, and the overarching research questions of the research project itself. Development of the themes was drawn from the interviews, questionnaires, and documentation data. The themes were compiled recognising the key purposes of the study, and by having the research questions prominent in the identification of the initial codes of data. In particular, evidence of the purposes and uses of ICT by participants, attitudes and views about ICT, and how they viewed the child, themselves, and ICT in any learning and teaching relationship.

A democratic lens was also being cast upon the uses of ICT in these described relationships, and subsequently this shaped some themes. For example, a theme featured the nature of inquiry taking place between the

teacher/child in learning episodes, and who may have been directing or steering the inquiry. As Braun & Clarke (2006) assert though, the researcher's judgement is also necessary to determine a theme and this was a feature of the research project. However, some flexibility is required, including whether significant prevalence of a finding is needed to define it as a theme. Braun & Clarke define this as being driven by the researchers analytical and theoretical interest in the subject of the study, and is therefore more "analyst driven" (2006, p.84). This is also reflected by the researchers engagement with the literature on the subject prior to analysis. However, as the analysis of the data is undertaken new themes can also be incorporated having emerged from the data codes itself.

Braun & Clarke (2006) challenge the notion of 'emerging' as not being about researchers passively discovering the data and themes. They regard it as a much more interactive process in which the researcher has ideas and notions about the topic and that matching them to the data is an analytical exercise (Braun & Clarke, 2006). In a sense, a strong engagement, along with repeats of re-engagement with the data and the analysis, is required. This took place in this research project with engagements including initial examinations of the data, through to transcribing data, along with several repeated views of the data, and the creation of codings.

In this research project three forms of data were explored with thematic analysis. The interview data was obtained from a semi informal structure of questions, the questionnaires providing written views from open, but pre-determined questions, and individual stories involving children's learning (in which a prior interpretation of that learning, by another teacher, can make up a significant part of a learning story narrative process). The data from the teacher interviews were initially examined in the transcribing process by the researcher, and became an important data familiarising experience in itself, by the researcher (Reissman, 1993). The documentation was initially

analysed by the selection process itself, as the researcher sought appropriate ICT related stories to include.

The organising of the data required it being set out into columned sheets of paper and the placing of some pre-determined data codes at the top of each column. Some codes were created by their relation to the question being asked in both the interview and the questionnaires, and the probable information that would be given as an answer (For example, question: "How does your family use ICT at home?" see appendix: 1). The codes were compiled and defined by aligning key examples, (such as use of ICT), phrases, attitudes/opinions, or concepts from the data relating to a particular aspect of the topic and/or research questions. Documentation codes were constructed initially in relation to the type of information being sought by the researcher and the focuses of the study, as well as descriptions or views about ICT, learning or the child by the stories authors.

As the analysis of the data was undertaken, one or two new codes arose and were added or shaped by the researcher to organise the data more relevantly to aid with the research questions and topic in general. An example of this included who in the learning episode of a learning story may have initiated the learning episode and the use of ICT within it. In a similar vein the analysis also saw some codes 'collapsed' into one if they indicated a similarity/repetitiveness of data. This process added to a shaping of a theme. The data presentation was segments of narratives from questionnaires with family whānau, interviews with teachers and pertinent aspects of a learning story. This required some interpretation by the researcher on whether what was being said indicated a view/experience relating to the code/theme. The data from the documentation also included the researcher interpretation of examples of activity/experiences relating to the defined codes.

The following chapters present the findings of the data collected through the thematic approach method. It also includes analytical narrative (Braun & Clarke, 2006) of the findings in relation to the research questions, drawing on literature on the topic, and the democratic focus of this research project.

The findings of this research project are presented in chapters four, five, and six. Each Chapter title is a major theme identified from the findings. These findings contain smaller themes that are part of each major theme and are organised as sections in each chapter. Each chapter includes a discussion of the findings and analysis of the identified themes, drawing upon aspects of the literature review and, in particular, links to democracy.

Chapter Four: The Purposes and uses of ICT
Findings and discussion

Purposes and Uses of ICT in the Home Setting

Fifteen family/whānau questionnaires (appendix 1) were completed and returned as part of the research project and provided the data for the findings in this section.

ICT Equipment and Resources in use in the Home Settings of Participants in the Research Project

A number of ICT resources, including equipment, were consistently identified as being used within the home settings. They ranged from desktop computers and laptops, to digital cameras, IPhones/mobile phones, and also included television and video/DVD players. Another form of resource is defined as the software or programmes used through such equipment (including sites available through the internet). These include email and other information and communication resources. The most commonly cited ones included Skype, Youtube, and Google. 'Skype' is a service that allows users to communicate with peers by voice, video, and messaging over the Internet. 'Youtube' is an online resource and a video sharing website on which users can upload, view, and share videos. Google is a large search engine that organises and provides access to a multitude of subjects. 'Google Search' is the most-used search engine on the World Wide Web and it receives several hundred million queries each day through its various services. (http://itsalltech.com, 2011). Some families identified a number of educational/recreational games used in their homes, by both the children who attend the centre, and other family members. These included games available through TV websites such as Nickelodean Jnr, or Disney TV and, in one case, resources available through a local school website. A number of educational and recreational programmes were also mentioned as having been purchased in 'CD rom' format for use on computers.

Democratic Purposes and uses of ICT in the Home Setting

The questionnaire obtained information from family/whānau about how ICT was used in general by the family. The uses of ICT identified from the findings best fit within two broad purposes. Firstly, ICT was described as being used for accessing information and communicating, as demonstrated by the following comments:

> " We use it for fun and learning". "Seeing and speaking to family overseas". " Staying in contact with grandparents".

This was further affirmed by another two families who specifically mentioned Skype and indicated its use as almost routine in the life of the family.

> "Generally 'H' does not use ICT a lot but he uses Skype happily every

week".

And:

> "We Skype Nanna and Poppa weekly".

The participants described in the following examples their children being actively in the activity, and not just as observers. 'J's mum describes this feature in her example:

> " We all gather round the computer several times a week and Skype Nana, she'll be having her tea in England and we'll be having our breakfast here and 'J' and 'J' (her older sister) will be nattering away to her and showing her things they have got".

Email, along with texting through mobile phones, were cited as frequent communication methods undertaken by the family although not specifically citing their young child as doing this alone or independently.

The information gathering purpose of ICT was seen as supporting activities at home that also carry an educational focus. One family gave the example of ICT being used to support the child in their homework tasks (the centre in this research project had weekly homework activities that children were invited to voluntarily take part in). Searching for photo's and images or finding information about a topic were the key uses mentioned. Another family activity mentioned was shopping, and looking for things to buy, that included visiting sites on the internet such as shops and

 'Trade me' (an online auction web site). Other examples of their child's uses in particular, include playing computer games and educational games such as ABC and Reader Rabbit sites that enable 'colouring in', numeracy, and literacy games.

The second category could be termed more recreational in nature and includes specific games or pleasure activities. These included using programmes or websites. Two separate families describe a regular activity each:

> *"We look up funny things on you tube. We use it to look at music videos there too".*

> *" They go onto the play station and know how to operate the wii"*
> *(interactive computer programmes).*

Another recreational activity was the listening of music and this was identified as being done, as indicted by the example above, through the internet, (Youtube), and also the use of MP3 and IPods (handheld music storage and listening tools).

One activity that appears to serve both categories was the use of digital camera and videoing. The majority of the family/whānau who completed

questionnaires identified the use of digital photography and cited uses ranging from having fun just taking photo's, to documenting events and communicating them to other family members (by downloading and sending them through the computer and internet).

What is also identified by, and reflected on, by several participants is how they view ICT in terms of its uses and the importance and relevance it has in their family setting and lives. One example of this is described by a participant:

> "It plays a huge role in our day to day lives. It all seems very natural to them" (their children).

Another participant also sees it as:

> "What our kids are growing up with. It is important to use it wherever they are. I think it is great if they get the opportunity to use it at kindy as some children might not be exposed to it".

However, such enthusiasm was not unanimous and some tempered such enthusiasm by guarded views about ICT use. They saw its need, its uses and its relevance of purpose, but seem concerned by its prevalence. As one parent stated:

> "It is a great tool (ICT) but a dangerous one. It needs supervision. They (children) need to have imaginative and outdoor play- a balance is fantastic".

Another parent echoed such a view by stating:

> "I think it is important but only in small doses, it is the way of the future but I see a move away from old fashioned learning by children.....".

In summary, all participants in the family/whānau questionnaire used ICT to varying degrees and for varying uses within their home settings. These uses could be divided into information and communication uses, recreational uses, and educational uses. Some ICT tools, such as digital cameras in particular, are used multi functionally in many of the homes taking part in the research project.

As a result, this research project and the findings indicate that ICT certainly forms the *"backdrop to children's lives"* (Plowman et al 2008). It also shows an alignment with the assertions of educational policy strategies regarding the place of ICT in children's lives, and where it extends far beyond children just using computers (MoE 2005). The uses of ICT, in terms of routines, certainly indicate that for many families the functions are meaningful. Socio-culturally, in many ways, for many of these children and their families ICT, and its uses, are embedded as familiar practices in the homes and are now encompassing their ways of learning and living (MoE 2005, (Rogoff, 2003), This includes children directly using ICT tools to be entertained, well-informed and effective and creative communicators, and learners. This mirrors the findings of Plowman, et al (2008) study in which children were identified as engaging in a wide range of activities at home *"...with many different technologies, with a variety of family members and friends, sometimes for extended periods of time"* (p.314).

Drawing upon these findings, and viewing them through a democratic lens, it is the notions of Dewey (1938) and Friere (1972), as well as socio-cultural constructivism (Vygotsky, 1978; Rogoff, 2003) that resonate here, and have significance. In Particular, education and learning has to bear relevance and meaning to children (Friere, 1972), and where they are able to use the intellectual tools of their community (Rogoff, 1990). The evidence in these findings suggest that ICT is a reality in the lives of many children, and shows that ICT has a legitimate place in learning and educational terms for them.

This meaning and purpose is being modeled by the family practices of many who took part in the research project, and where their children are being supported, and largely encouraged, to also take part. This would reflect the significant democratic notion of the child being able to be the 'learner in action' (Carr & Lee, 2012), and where they construct their learning with others in an environment that supports them as a learner and genuine participant (Carr & Lee, 2012; Smith, 2007). An example of this comes from the parents/whānau who took part in the research project in which they identified that their child was an active ICT user, taking an interest in, and being greatly involved with it. Hence many in the family/whānau questionnaires report their child as displaying strong dispositional learning features (Carr, 2001) in their relationship with ICT, in particular a sense of curiosity and interest in what it enables them to do.".

Purposes and uses of ICT in the Early Childhood Centre

Information was collected through semi-structured interviews with four teachers working at the early childhood centre. Information is drawn also from findings in specific ICT related stories from the early childhood centres practice of 'Computer detectives' and Learning stories (Carr, 2001), written by teachers at the centre during the period of the research project. The interviews and documentation were analysed by codes and developed into themes using thematic analysis.

ICT Equipment and Resources in the Early Childhood Centre in this Research Project

At the time of the research project the centre had one desktop computer that children could access at will during the free play periods of the session. This computer had a number of pre-loaded educational type games including numeracy and literacy focused activities (including CD roms like Reader Rabbit, ABC farm, Dinosaur visuals game, The Wiggles, and The Tweenies). The computer was situated in an open plan area of the centre (accessible to all children and visible to teachers from any part of the room), which enabled

up to 3 children at any one time to sit comfortably at the computer. The computer had attached speakers to provide sound. A digital camera was in use in the centre, but the teachers largely managed it. Children's use of it would often arise from teachers offering it to a child, or a child requesting to use it, hence free access to it was not available to children.

Another computer was attached to a large wall mounted TV monitor at the mat time area of the centre (mat-time being a daily time of often teacher led activities that include songs, dances, discussions, and stories with the whole group of children). Children could access this computer, but teachers largely 'govern' its use and time for use, although a mouse and keyboard was accessible to children to use and this was common practice once teachers 'permitted' it. This computer was connected to the Internet, email, and Skype, as well as a digital microscope for examining 'discoveries' such as insects or other curious objects (again requiring the support of the teacher to set up). This computer was often used at mat times and predominantly controlled by the teachers for this use. However, children often utilised the YouTube and ITunes features outside of mat times, to choose music or other entertainment features (an example being a BBC 'Walking with dinosaurs' video). This use by children was frequently monitored by teachers who were present, as part of child/teacher ratios, inside. The centre had a photocopier that was controlled by the teachers although children and teachers would access it together as part of an activity that required it.

In the socio dramatic play areas there were a number of old (disconnected, but real) mobile phones, desk phones, and an old lap-top computer. There were also genuine, but discontinued, EFTPOS machines, and some old cameras. Children have free access to these resources and the children often used them in other areas of play, and in other parts of the centre.

Connecting both Worlds: Teachers Recognising and Responding to Children's Democratic Purposes and Use of ICT in the Home and Early Childhood Education Centre

An interesting theme that emerged from the teacher's interviews which relates with many of the family/whānau views, is the recognition of how ICT is a feature of children's life outside of the centre. As three of the teacher's remarks below indicate, they recognise that ICT forms a significant part of a child's life, and this is also coming in through the centre doors:

> *" A child is showing us what they know when they use ICT".*

> *" M.... (child) was bringing his own stuff in from home and sharing it with the other kids and a bit of a craze took off. He became the 'go to guy' for games on the computer. It really validated his skills and that's a pretty cool thing."*

> *" A child went to the airport with his dad and they made a DVD of the trip. He came into kindy and said I've got a DVD let's watch it".*

These examples further recognise that some of the children that these teachers work with have the language and purposes of ICT within an establishing repertoire of skills and knowledge. This too has been acquired and developed within the context of the wider world, and would reflect the purposes and uses taking place in the home settings previously discussed.

> *" I notice so much of the language (from the children) of Google and IPhone".*

reported one teacher.

This is further captured in some of the documentation that was used in the research project findings. When Oscar and Ben are busily working away in

the sandpit hoping to stop the pipes leaking the teacher's inquiry about what might be happening is responded to with:

> *"It's because the water melts the sand", and "It turns it into mud". "You can see it on Youtube, you can see it on Youtube at my home".*

The recognition of purposes, understanding, and language of ICT in the child's world was at times placed in a context of the teachers own ability and experiences of ICT, and draws upon the relational nature of teaching and learning in some ways. As two of the teachers in the research project remark:

> *" A child using ICT can find better ways of doing things than our own".*

> *" Children need to know that if they want to find something out they can".*

Such comments align with a view that teachers are recognising the need to embrace ICT as a response to a *"digitally attuned generation"* and to respond with effective tools (and knowledge) to enhance children's learning (Lee, et al, 2002, p.10). There is some indication from the data that teachers were willing to shift their responding in light of children's knowledge and experiences of ICT that come through the door of the centre, and be prepared as a result to shift their positioning as a teacher in the teacher/learner relationship (Somekth, 2007). This is necessary, if teachers are going to make those connections with the child's wider world and how ICT can be contributing, to not just the way teaching and learning is taking place, but also who the teacher and learner are. This relates well to socio-cultural learning, and the rich tapestry of learning by children, being complex and diverse (Carr & Lee, 1999; MoE 1996). If this is to be democratic it requires teachers to recognise the influence of ICT and how it is a component, or can be the component that supports some children's learning styles, and how they pursue things such as information, communication, and recreation. To deny this would potentially

disable some children's expectations and methods of learning, and so confine their creativity, agency, and participation which are regarded as vital features of a democratic education landscape (Dahlberg & Moss, 2005; Smith, 2007).

Teachers Experiences and Understandings of the Democratic Purposes and Uses of ICT in the Early Childhood Centre

The views from the teachers regarding their own uses of ICT in the early childhood setting and their teaching practice varied. One teacher focused on the use being predominantly about programmes and CD Roms for children to support and teach aspects of literacy and numeracy in particular. Another teacher clearly identified ICT use in her teaching as being mainly an administrative tool used in assessment, specifically creating Learning stories. Two of the four teachers interviewed did appear to be more open and diverse in their purposes and uses of ICT, and how they viewed its impact on children's and teacher's approaches to learning and teaching. This is reflected in their comments about why ICT needed to be at the centre:

> 'Alot of trial and error is good. Being too precious around ICT can deny exploring with it".

> " If it's (ICT) going to be a part of a centre it needs to be a priority, it can't be on the backburner. Children will lose the normality of it and you will have to start again".

This indicates that half of the teachers working at the centre view the purposes and uses of ICT as particularly valuable for children and learning, and that as a result, ICT needed to be evident in the centre. This also reflected how they, as teachers, positively used ICT and how they saw children using ICT positively too.

A number of centre uses of ICT were specifically identified from the teacher interviews. A range of computer programmes were supported by teachers

and used with children, including entertainment and educational programmes such as ABC farm and Reader Rabbit. The teachers also talked about their role in the uses of ICT and it's place in supporting their teaching:

> *" I see and use it in entertainment ways and also as peer tuition and learning".*

> *"ICT is a broad notion. I've used different programmes with children (CD rom, paint programmes) literacy and numeracy, educational as well as fun".*

These comments are quite varied in terms of purpose, and the two comments above are from the teachers who were less clear on the impacts of the teaching and learning relationship ICT enabled. They tended to view ICT as being a tool promoting a child's independence and competence in the actual use of the tools. It seems that from these comments the programme based and entertainment/educational purposes of ICT are described as an activity in itself and less on what it might enable for a child's learning dispositions or agency. This may strongly influence their views of ICTs role in the centre. This, and the often associated marveling of competence and independence is reflected, in these comments:

> *"The child walked around kindy that day and used the camera. She captured cool pictures of all the shoes ".*

> *" When children know how to do something and are 'up with the play' as such they should use it (ICT) and that's fairer for them".*

These responses suggest a degree of limitation to the role and experiences of ICT use in the centre by two of the teachers. The other two teachers had a stronger recognition and pedagogical focus that ICT can be a useful tool in supporting a child's learning, enabling choice, and supporting the child's

purpose in their learning, be that around information gathering or communication. It also reflects their view that teaching and learning is a relational activity, where ICT can become a tool for sharing and collaborating. This is noted in the following remarks by the two other teachers:

> " G.....(child) interest in weddings meant we worked together. She asked about searching on Youtube and I went along with it….it allowed her own observation and discussion rather than me telling her what's what".

> "It (ICT) gives a child an understanding of the world around them, allowing them, and us, to find things out that they want to know or think is important".

In summary the data has shown the teachers varied in their experiences and views of ICT, as well as its uses in the centre.   Some of their experiences were influenced by how they saw ICT in terms of supporting teaching practice itself. Despite all teachers acknowledging its relevance in the lives of many of the children at the centre, two teachers still held some degree of reservation about ICT purposes, and they tended to use and view ICT in specific ways. Their approach, of encouraging and recognising children using ICT independently (in forms such as using digital cameras or playing games on the computer), or using it at times under a stricter stewardship and direction of the teacher in an activity, reflected a more confined opportunity for children, but perhaps with a stronger focus on children's ability to use ICT tools. For these two teachers their positive view on ICT and celebration of the children's use came from ICT's contribution to enabling some self direction by the children, occupation in games and programmes, or choosing what things they might report on by taking pictures with the digital camera. For the other two teachers in the study, their views were predominantly on how ICT supports their teaching practices and how they recognise and respond to children's

interests. They also recognise how ICT enables their collaboration in co-constructed learning with children.

Both of these approaches are valuable, although the latter would reflect a stronger democratic tone. As Moss and Urban (2010) stress, the notion of democratic learning is a process that enables new thinking through a democratic relationship. Such a relationship requires listening and experimentation between the partners in that relationship, and the teachers who recognise ICT supporting co-constructive learning appear to display this more purposefully. The teachers who may demonstrate a stronger focus and advocacy on the technical competence of the child, or who celebrates independent use may indicate less awareness of the democratic contributions that ICT brings in relational learning and teaching. Particularly the relational and social nature of the learning experience that enables creativity, shared thinking moments, and recognition of the child and their working theories and dispositions being explored with others (Carr, 1991; Carr & Lee, 2012; Rogoff, 1990; Morgan & Siraj-Blatchford 2010).

Purposes and uses of ICT and Democracy Captured in Documentation

Several examples of learning and teaching, using or drawing upon ICT, are examined in this section. Through the learning story assessment format (Carr, 2001), and the particular practice in this early childhood centre of 'Computer detectives', a number of instances of learning were collected and analysed in relation to ICT use. As a result an interpretative approach was applied and data coding and themes identified. As noted in Chapter three, the data contains the teacher's descriptions and interpretations of the learning in that story. Consequently, the findings include either the teacher's own interpretations (as the primary author) and/or the researchers interpretations. The first interesting theme to emerge from the documented learning in this research project is the connecting of inquiry. This also reflects the themes already identified between home and the early childhood centre.

ICT and the Continuity of Inquiry

A number of stories documented the use of ICT as supporting the child's interest or particular area of learning present at that moment. ICT use was either offered to, (by teachers), or requested by, (children), in some of the learning episodes. They did indicate the use of ICT as supporting the child's interest, or knowledge about a subject or event. The following extract reflects Paul's ICT world (mainly from his home setting), where 'Google' is purposeful and useful in his life:

> *This morning Paul you came up and asked about checking out*
> *'Walking with Dinosaurs'. You were then quite specific. "Yeh, can I*
> *look up about flying dinosaurs? We can check it on Google, you can*
> *print them and colour them in" you stated. But that was not it. We*
> *then had to use Youtube by your request and look at the extinction of*
> *dinosaurs. You then explained, " I went to dinosaur hill where*
> *dinosaurs disappeared. A long time ago it was so cold so they tried to*
> *find somewhere warm. So they went into a deep hole but got trapped*
> *there and they disappeared.*

This example reflects Paul's understanding and experience of ICT tools such as Google and Youtube, and how they support and communicate his learning and ideas. It also shows how he crosses settings (knowledge and experiences from home and the centre) with his interests, and how knowledge, learning, and ICT enabled this. Secondly, in this example, the tools become a support for him to explain, and extend on his learning and working theories of the world (Hedges & Jones, 2012). Such an example affirms that ICT is a purposeful and meaningful part of Paul's world, and that the early childhood setting in this example provides continuity for this by allowing him to continue this particular interest.

Other examples of children's interests and learning being supported through ICT emerge from the documentation, and indicate uses of ICT in the centre

align with uses in their world away from the centre. Jaime's building of a wooden birdhouse at the centre saw her take it home and she and her Dad placing it in the tree of her garden. Jaime took photos of her birdhouse and had them uploaded onto a 'stick' (USB device for storing computer data and images such as photographs). The following day Jaime came into the centre giving her 'stick' to the teacher and saying:

"We can put them up and show them on the computer".

Examples from the 'Computer Detective ' practice also indicates the crossing of settings in the pursuit of learning and satisfying of inquiry and curiosity. Questions posed and originating from home and community, and specifically brought in for computer detective investigation included:

'J' wanting to know where the Easter bunny lives,

'H' having had a trip to the local park and finding an unusual fruit on the ground by a tree wanted to know its name and whether it was edible

and

'F' wanting to know how King Arthur died.

ICT as an established tool in the 'Computer Detectives' practice in this centre has added to the legitimising of inquiry by children who raise their own questions about things that are of interest, or curious to them; the knowledge that I am able to pursue things within my centre strengthens my purpose to ask them. Another example from the documentation indicates how ICT is used to connect people, places, and things (MoE, 1996), and shows a continuity of inquiry that is supported through the 'Computer Detective' practice. This Learning story extract captures this:

'Ellie', (child) takes part in the regular kindy practice of taking old paper to the re-cycling bin for collection. She talked about the truck coming and collecting the paper but then asked, "how does paper make new things?". The teacher was unsure and invited 'Ellie' to use the computer to find out. During the morning exploring about what could be made from recycled paper took place. Importantly 'Ellie' wanted to feedback her discoveries at last mat time and placed her name up on the 'newsflash' board (a practice for children to remind the teacher that they had something to share with others that had come up during the session). At last mat time 'Ellie' and the teacher shared the discoveries and took questions from others. However at this time 'Kelly's' mother was waiting and watching ('Kelly' is a new child to the kindy) and she watched as a youtube clip was put up on the centre computer. At the end she came over and said that 'Kellys' s grandmother ran a recycling plant in South Africa. She said that she and 'Kelly' would contact her for information to share with the centre and so she did. Several days later 'Kelly's' grandmother emailed the centre with pictures and information about the plant in South Africa and this led to further discussion on re-cycling and 'Kellys' sharing with us a bit about her family and whānau.

These examples illustrate children using their inquiry and curiosity to inform themselves, and others, and to make sense of things that they find interesting and relevant. ICT as a tool enables and supports this, as well as extending and allowing a continuity of their learning and interests. The centre and its practice of 'Computer Detectives' in particular, provides the opportunity to do this, as well as the knowledge that this can be a place to undertake and extend ones inquiry and learning.

The example of Jaime (with her photographs of her birdhouse), acknowledges both her learning, and her desire to document and report on

her experience and learning (her particular learning style, perhaps). ICT plays its part in this for Jamie as a vehicle for supporting and providing continuity for her learning. By being able to bring in and share their wider world ICT, is enabling children to broaden their horizons by exploring that wider world (MoE 2009). The ability to do this by having some facility and receptiveness within the early childhood centre contributes to a climate where the child is seen as a competent and confident learner, and acknowledges how learning includes the sum total of experiences in the childs life (MoE 1996). The findings indicate a purpose of ICT as supporting children and their learning and this takes place across settings (often home to centre, and vice versa). The consequence perhaps, rather than the intention, is that a continuity of learning by using ICT is taking place which supports and sustains the relevance of the child's area of interest and learning.

In democratic terms the learning is recognised and valued as a rich and experiential process arising from interactions with people places and things (Carr, 2001; Soler & Miller 2003; MoE 1996), and meets the aspirations of the early childhood curriculum. Equally the findings can also signal a shift in the power of the teaching and learning relationship. The child who brings their learning interest and experience into the centre, and uses ICT to promote and extend it, challenges the traditional views of teacher and curriculum authority and dictating. This occurs by allowing the child to instigate inquiry or interests, rather than the planning being defined solely by the teachers. It also enables a diversity of interest and ways of thinking to also exist within the centre, advancing a richness of topic and ideas derived from the children, rather than the dictates of curriculum and teacher planning (Rinaldi, 2006; Dahlberg & Moss 2005).

In 'Ellie ' and 'Kelly's' story of 'recycling' an extention of learning is captured and supported by ICT, and shared between children and whānau through connections to the interest. It is also reflective of other aspects of the Te

Whariki so strongly valued in Aotearoa New Zealand (MoE 1996). The principles of Family and Community, and strands of Well being and Belonging that make up parts of the woven mat metaphor of Te Whāriki (MoE 1996), were extended to 'Kelly' as a result of 'Ellie's' interests and wish to share them with her centre. The opportunity to do this was enhanced by the use of ICT and the connection-making displayed by family and teachers in this example.

ICT Democratising Inquiry

Another finding from the documentation shows that ICT is also a feature of children's learning and inquiry that occurs in either spontaneous or planned, and sometimes teacher directed ways too. This is an interesting aspect of a learning episode and indicates the range of ways that learning and teaching can take place within an early childhood setting. The prominence of particular ways can be influenced by the teaching pedagogies, and practices of individual teachers, the teaching team as a whole, and/or by how the curriculum is interpreted and used by a centre and its philosophy and teaching team.

The findings demonstrate a number of learning moments taking place through naturally occurring or emergent ways, (prompted initially by the child interest or inquiry) within the centre, where ICT plays a part in the episode. It also reflects the use of ICT in supporting and facilitating activities that have been planned, and/or initiated and directed by teachers. The following learning story extract captures child-initiated inquiry;

> 'S' (teacher) "Do you know a singer who has lost his eyes?" "I know one but I don't know how he did that?" inquires 'A' (child). "It is Andrea Bocelli but I don't know how he lost them" says 'A'. The teacher ponders "I don't know, how he did that either, perhaps we can ask Aunty Google" the teacher replies. " Yes also does he have a mum and Dad, where does he live and what happened to his eyes, I think he

may have been hit by a cow or something" 'A' suggests. So off we went together to the computer and we looked up Wikipedia and found a lot of information about him.'A' s mum turns up at Kindy later on to collect her and she was able to share all this newly found knowledge with her.

The next example features a more teacher prompted inquiry:

Last week it started hailing at kindergarten. At mat time we had a bit of a discussion about what hail is, where it comes from and how it's made. Some ideas from the children included "...the thunder makes them, ...they come from the clouds, ...the moon must be made out of water and they land on the clouds"....after our discussion we searched on Google to test our theories and see what we could find out. We also watched some videos on Youtube with some hail the size of golfballs! They are made in clouds called cumulo-nimbus and are often accompanied by thunder and lightning...Great reasoning guys, I could see your brains ticking in overtime as you concoct your theories.

Finally, the next example focuses on the role ICT played in a largely teacher planned and implemented activity at the centre:

We have been talking about the different ways of telling stories. We can make stories with words and we can make our own words to re-tell a story. Children worked at mat times using a power point programme and pictures with 'S' (teacher) to create their own versions of popular children's stories. I typed the children's own words into the computer and we shared the stories with everyone at mat time.

These three examples of learning stories illustrate the different ways ICT can be involved in activities, teaching practices, and ways of learning for children. They not only provide examples of ICT supporting inquiry, they also demonstrate how ICT can be supported in different pedagogical ways. The

purpose and use can be to respond to the child's inquiry, support a general, but teacher initiated, inquiry, or be a tool for creating a literacy activity devised and planned for by a teacher. Several things emerge from this data in terms of pedagogy and democracy too. 'A' displayed her curiosity and interest in the singer with 'no eyes' and extended this to the teacher, who in turn declares her interest as well, along with her lack of knowledge on the subject. This leads to a collaborative exercise of co-constructing knowledge together. ICT played its part purposefully in this pedagogical and learning interaction. The inquiry around hail was largely prompted by the teacher but was embraced by the children involved judging by their speculating about the cause of hail. ICT is supportive in its information about the inquiry and providing some facts on the subject, and it did this in such an immediate and conclusive way for this activity of inquiry.

The third example explored the nature of books and words and came from a planned teacher activity. ICT supports the activity and inquiry that is directed largely by the teacher. ICT provides a resource and method (PowerPoint) that becomes interactive between teacher and children with the teacher writing up their words to create the story. The child's voice is able to come through as the teacher is willing to invite and record the children's own words to each story. In these three examples of documentation ICT plays a role in the different ways of inquiry and learning that took place. In terms of democratic inquiry and learning, it supports the notion of the child as an active and responsive learner (Smith, 1998). This is particularly evident in 'A' s case where the inquiry emerges from the child, but there are a number of things about the learning and teaching interaction that takes place, which support the democratic nature of the episode. Firstly, the teacher actively listens to the child (Dahlberg & Moss,2005, Rinaldi, 2006). Secondly, the teacher honestly declares their lack of knowledge on the subject, and their shared interest in the inquiry, and demonstrates a respect of the child's wish to inquire further to satisfy their curiosity. This indicates that the child is not in

a position of passive compliance (Moss, 2007), but is an active participator, contributor, and communicator (Rinaldi, 2006). Interestingly it still relies on the teacher's actions to recognise and respond, by doing so they are displaying, one could suggest, democratic practice. ICT also enables both the teachers declaration of lacking knowledge on the subject (Somekth, 2007), and the child's curiosity about the subject, to co-exist and facilitate an episode of shared construction of knowledge, sustained shared thinking, and real democratic participation (Morgan & Siraj-Blatchford, 2010, Smith, 2007). In this example ICT positively contributes to the existence of a democratic relationship between the teacher and child.

The other examples are less potent as empowerment of the child in terms of directing their own learning and inquiry, both resulted from teacher initiated discussion or activity. Nonetheless, ICT still plays its part in making collaboration more effective and interesting. The immediacy of ICT in providing information about hail and the format of PowerPoint in enabling children to put their own words together to create a story show opportunities for imagination and inquiry to come through from children, even if they are overseen and 'managed' more by the teacher. All these examples demonstrate the contribution ICT can provide in facilitating greater democratic teaching and learning within the centre. However, it still relies on other things and, in particular, the pedagogy of the teacher, and how ICT is implemented in their teaching practice. The child's voice, and their inclusion in sharing ideas and theories, features and promotes the child as an active participant (MoE, 1996). The purposes of discovery, satisfying curiosity, participating in discussion, and making sense of the world around them, also features strongly (Carr & Lee, 2012; Dahlberg & Moss 2005; Hedges & Jones, 2012; Rinaldi 2006; Smith 2007).

Children's Connecting Worlds through ICT

A particular consequence of ICT, and the role it plays in connecting the worlds of home and centre for children, is the action by some of the children in the research project documentation to share and report on aspects of their life with people (peers and teachers) in their early childhood setting. This includes things they have taken part in, people in their lives, and things they have discovered or encountered that they may have found interesting. For example, the range of photo's collected by 'T' on his trip to Glenbrook railway and Thomas the tank day, 'G' bringing in photos of his new house under construction, and 'Z' sharing pictures of her day with her Koro all add to the identities of the child. They also become an expression of what they find interesting and important in their lives. All these examples came with a story to tell, and the child to tell it (teachers or family/whānau members put the childs comments about their picture on accompanying pieces of paper). This facilitates informal conversations with peers about the photo/s, a one to one chat with a teacher, or an opportunity to present as 'news' at a mat time. The documentation identifies these things taking place, and with the opportunity to place them on the planning wall in the centre for all to see, important recognition for their efforts are afforded to the contributors.

Another medium used with similar purpose was the creating of a DVD from home to share an event or experience. 'D' brought in his experiences at the BMX bike track and the races he was involved in. This was downloaded onto the centre computer for watching at a mat time and also at other times requested directly by children. These examples indicate that the children involved have been able to use ICT to express and share with others aspects of themselves that they feel are important. ICT has also enabled the centre itself to facilitate this, and allow children to communicate and contribute. This is a valuable learning experience for the child and the centre, and the consequences can lead to the child having a stronger sense of mana (Reedy, 2003). ICT in these examples can contribute to the child's expression of

mana that includes a sense of self and place in the world, and who they are and where they belong (Rameka, 2011). For the centre, it enables the teachers to display and uphold the position of a community of rich diversity.

ICT therefore, has been utilised and supported to enable children to share aspects of themselves, and add to their sense of being part of the early childhood centre. ICT has done this in a very visual way in many of the examples, but it has also supported children to display other skills and features about themselves, such as talking about their pictures. When something is of great interest and meaning to the child, providing a means to share and talk about it reflects a genuine platform of purpose, and feeds a sense of meaningful participation (Smith, 2007, Thomas, 2007).

ICT, Democracy and Play
A number of stories reflected the use of ICT in supporting or being part of play. This took on several guises and indicates further uses of ICT by children and teachers within the centre. The term 'play' is not a frivilous or aimless term or practice in early childhood education. Decades of research affirming the need, and right of children to play has enshrined it as the most effective way for children to learn (Brooker, 2011). Children are regarded as able, confident, and flexible learners, when in an environment that encourages playfulness (Siraj-Blatchford & Whitebread, 2003). ICT has been viewed as being a very active, social, and intellectually stimulating and liberating experience for young children, one that opens up new possibilities for them in a variety of areas. The challenge for teachers is to recognise the exciting ways ICT can spark a rich range of experiences in the learning process (Haugland, 2000). The fact that these experiences were captured by teachers as learning stories, suggests that they were aware of this despite some teachers displaying some limits of focus as discussed earlier. Several examples of using ICT in playful ways were captured, including:

" 'S' (child) was typing away on the laptop (non functioning) this afternoon in the family corner. She was busy writing her and her sisters name. She asked to use my laptop (operational) and she typed her sister and dads name into it. We then got to print these off".

" 'L' (child), spent quite a bit of time at the computer today using her skills of letter sounds and recognition with the Animal farm CD Rom…'L' worked her way through the games and used her knowledge of letters to play".

Other examples included 'E' going around the centre having requested to use a teachers digital camera and capturing the things that caught her interest in the centre, at that moment in time.

'T' had a huge smile on his face as he sat at the computer playing some games along with several peers. He was particularly keen to explain how the games were to be played.

The uses and purposes of ICT in these findings demonstrate a sense of playfulness that emerges in various ways. It includes capturing things that are of interest to them through photography, playing and sharing in games, and also fulfilling an interest in participating in the routines of the centre, for example, mat time. However, this type of ICT engagement may also include degrees of being occupied by games and computer use, with independence skills that align with the interpretations of ICT purposes identified by some teachers discussed in an earlier section of this chapter. A potential danger of ICT use in play is that it is not viewed with the pedagogical thought and understandings about play and that ICT use and purpose can be missed or the value of ICT and play relegated to children simply being seen as using equipment or being 'occupied'. There are a number of purposes and uses identified within the findings of the study. This has led to a number of themes emerging around such purposes and uses, which have been discussed in this

chapter particularly within the context of democracy. It would appear that a key ingredient needs to be associated to the purposes and uses identified in these findings. That ingredient is a recognition, by family/ whānau and teachers of what ICT enables and brings to childrens learning. For teachers in particular it requires the application of pedagogical thought and practice. Such pedagogical thought can be influenced by attitudes and views. Chapter five moves forward to examine the themes that emerge in this study in regard to the attitudes and views about ICT by the participants in the research project.

Chapter Five: Attitudes towards ICT
Findings and Discussion

Introduction

This chapter examines findings drawn from data collected in teacher's interviews, family and whānau questionnaires, and the documentation collected at the centre. The findings are arranged as themes that were drawn from the data findings. Some of the themes were shaped by the questions constructed for the interview with teachers, and that elicited responses relating to attitudes and experiences of using ICT (see appendix 2). Due to the nature of the semi-structured interview, some spontaneous and probing questions added to the data and is also drawn upon. Fifteen Questionnaires were completed and returned from family/whānau in this study. They included information about the home setting and any uses and practices in ICT. Two questions specifically sought opinions about ICT use in society as a whole, and in early childhood education especially (see appendix 1). These two questions enabled specific expressions of attitude, experiences, and opinions on ICT. Findings taken from the documentation at the early childhood centre in this study is shaped and defined through codings that include any comments reflecting the teachers ideas about ICT in the Learning story, or where the child's voice is captured indicating any thoughts or experiences about ICT.

Family Whānau Attitudes and Views of ICT
A Relevance Now and in the Future

Several responses reflected a common view that ICT was part of life and family practices and, in many ways, was a necessary, if not an inevitable one. This aligns with findings in the previous chapter on uses and purposes within the home. The data has shown responses, which are in tandem with the positive effects and presence many participants identified with ICT as contributing to family practices. The following comments drawn from different respondents reflect this:

"It is huge (ICT). So commonplace now for people to be contactable 24/7. We live in an instant world, where people need to know things now. It is great for the ease of information and communication".

"We embrace it as the way of the future, our lives are fully immersed in it".

"It (ICT) is everywhere, just being a normal way of life to our children".

"... it ICT) is integral to daily life".

These views indicate the prevalence and importance ICT has, and how integral it is, in family life for many participants. However, it was also regarded by several participants as being necessary not just in the present, but for the future opportunities and benefits of their children too. This was reflected in some participant's views that their children needed to use, and be aware of ICT for their future development, and participation in society. This is summed up by some of the views of several different participants:

"I think it (ICT) is an important part of education these days as it is widely used in the workforce and community".

"It is needed as a life skill".

"It is needed, the children need to keep up with the technology as society is depending on it more and more".

"ICT plays a dominant role in all our lives and continues to increase".

Effectively, family and whānau appear to use ICT as part of their daily lives, and it contributes to family activities and practices in several ways, (such as

communicating with family members or entertainment activities). However, many recognise its value and importance in the future and this stems from the view that ICT is so prevalent, and progressing at such a vast pace and with such pervasiveness in so many parts of life today. This is confirmed by ICTs position within the globalisation of society, and its contribution to the rapid developments in the cultural, social, political, and economic spheres (Makin, Jones, Diaz & McLachlan, 2007). Clearly some practices in family life, for many participants, have either been enhanced or instigated by ICT. This inculturated use is either being picked up peripherally by children, or encouraged through experimentation or instruction by families. Such playing with, and functional usage by, children within their daily lives endorses Plowman et al's study of ICT being the backdrop of children's lives and being a place to 'pick up' those skills and uses of ICT (Plowman, et al 2008). It is interesting to consider that for many families there may be a pressure or even obligation to respond to society's ICT expectation, and this it self drives the attitudes and practices that take place within the family home. It may in some ways be a recognition to the assertion by Selwyn & Facer that, *"whilst ICT is not a pre-requisite to surviving in 21st century society it is almost certainly an integral element for thriving in 21st century society"* (Selwyn & Facer, 2007, p.10).

A Degree of Caution
One of the interesting views that emerged with a good degree of consistency (7 out of 15 questionnaires containing tones of this) was a reflection of some caution or concern about ICT in society generally, or early childhood education specifically. A typical concern is reflected by the following family questionnaire response:

> *"There is a time and a place (for ICT). But our kids need to be kids and enjoy the outside and the freedom to use their minds and imagination without lights buttons and noise".*

Such comments often accompanied the views about the necessity, inevitability, and importance of ICT that came through in the previous section, but would appear almost as an addition at the end of such positive comments. The caution was tied to ICT being, or becoming, too dominant a feature, which might suppress or replace other important and desirable activities for their children. This is captured in comments made by several different participants in the study:

> "Honestly, I am very undecided and have sought other mums views. I am happy he (son) uses it (ICT) for educational purposes in moderation. I want him to sit and read books and write and draw".

> "I think it is important but only in small doses. This is the future but at the same time I see a move away from 'old fashioned' (participants inverted commas) learning and children not able to imaginary play because they are stimulated by electronic gadgets".
> "Used well ICT can add an amazing world of knowledge to a child's learning.......when used wisely".

> " I feel children desire it (ICT) all too much. There is the idea that we need it or we are left behind".

In regard to ICT's place within education, specifically within the life of early childhood education settings, some similar reservations were expressed by a variety of participants:

> "There is too much reliance on ICT and adapting youth learning. (ie) text language in exams, but it is important though".

> "It is useful but when limited. It should not be relied on too much. It can affect writing."

A possible attitude drawn from these responses is that some may view ICT (or some ICT) uses as unhealthy or undesirable in general, or that too much ICT can be unhealthy and undesirable. Equally, there is a view reflecting ICT's prominence in the world and the potential pressures it creates for families and young children. This concurs with the points from the previous section about the need to stay involved to contend with the world and its ongoing ICT progress. Despite the reality of ICT prevalence in society and many peoples family lives, and that its purposes can, and have been identified as positive, there remains a concern that it can be detrimental in some ways. However, this is tempered somewhat by similar views identified by Brooker (2003), in which concerns remain over ICT replacing valuable features of learning and education (such as socialising and physical activities).

One might consider whether the views provided by the participants in this research project might also contain some elements of panic or nostalgia that Stephen & Plowman noted as a response in their 2003 study. It is worth remembering, that at times there might be factors that may unfortunately aid such concerns. Firstly, the media can add to ideas that ICT may be proving detrimental with examples of consequences of use such as a 'square eyes' generation (Wakefield, 2012). Or, where the realities of the internet are perceived, by some, as blurring facts and fantasies that can enter the home and challenge what we can or should believe (Hayes, 2006). Secondly, there is literature available that identifies possible harmful effects of ICT for children if not checked and thought through (Haughland 1999; Plowman & Stephen, 2005; MoE, 2004). The range of programmes available and the amount of use possible may add to the image that ICT is everywhere, and that children are captured within it. The knowledge surrounding ICT in early childhood education and its policy, purpose, and place may well be limited, and reflected as such, by teachers themselves. This can endorse the opinion that children might simply be 'occupied' by computer use (Plowman, et al, 2005). The need to be able to articulate the place and practices of ICT requires as

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much attention by teachers as they give to the principles of play, numeracy, literacy, and outdoor activities. The following section indicates whether their views on ICT confine, or enhance their ability or willingness to do this.

Experiences and uses of ICT by Teachers

There was a wide range of experience and confidence in the use of ICT, by the teachers interviewed in this study. Interestingly, ICT does feature significantly in the personal lives of all the teachers involved, with mobile phones and computers being cited as valuable assets to them. Equally, the use of computers and digital cameras were cited as actively being used in the centre by them to support their teaching practices, mainly in the capturing of learning episodes and adding to the assessment format of Learning stories. One teacher, in her role as a part time administrator in the centre also cited the use of programmes such as 'First Base' (an administrative programme for organising rolls and attendances, among other things) as one of her key experiences of ICT.

Enthusiasm or Obligation to ICT in the Centre?

> *"It's valuable, it's inevitable".*

This response from one teacher reflects one of the most enthusiastic responses to ICT in early childhood recorded in this research project, with the remaining three teachers also providing generally positive views. This consistent position of optimism and enthusiasm on ICT, and its place in the early childhood centre prevailed across the teaching team, and is seen in the following comments by the other three teachers:

> *"It needs to be in the centre as a priority".*

> *"We have to go with it".*

"It needs to have a place definitely. The whole world is about computers these days and children know more about them than we do sometimes and they can teach us something".

These views reflect elements of enthusiasm regarding how it supports their teaching. This itself varies from being an aid to teaching (their planning, documenting), as well as the more significant democratic reasons, such as enhancing the teacher/learner relationship, or enriching participation and choice for children. It also included, as indicated by one of the comments above, the acknowledgement that ICT was a part of a child's wider world, and therefore important to support in the centre.

Democratic Teaching Practices

"You are not just stuck to one way of finding out about things, there are different possibilities of learning from that".

"Where we have strong parent input and lots of questions and curiosity and we (the teachers) didn't have all the answers".

"It (ICT) can be a level playing field of discovery".

These capture the views by some teachers that ICT plays a valuable part in their teaching and supports it. It also has a part to play within the teaching and learning relationship, and reflects some of the teachers underlying pedagogy.

"If we have a child quite comfortable using ICT they should use it themselves but we can support but not direct it".

"The children having their own direction of learning is quite important".

"Its not just ICT creating independence, it also means being able as a teacher to access things with the child and that might require support even though they initiate that".

"Just as long as teachers are willing to be flexible in their plans and support children's interests then it (ICT) becomes a great tool".

These views came from two of the four teachers involved in the study in particular. This suggests that half of the teachers are valuing the role of ICT in not just their teaching practices, but they are also recognising its place in their pedagogical and philosophical beliefs on teaching and learning. The comments above contain the view that relational, and sharing, in the teaching and learning process is a valued feature of their teaching, as well as ICT enabling some independence for children. One of the teachers however, felt that these practices had once existed in the centre, but had largely reverted to ICT being controlled and used predominantly to support teachers practices and planning only.

"...it has shifted back to the teacher controlling the use of technology . I know its not all teachers. We only provide choice by us only".

Interestingly this teacher felt that there was a danger that teachers could hijack the role of ICT in a centre if that centre, and its teachers, were not conscious of its contribution to children's discovery and curiosity, and didn't hold particularly inclusive and sharing teaching practices. This is reflective of the view that there is greater teacher directed curriculum and planning in the centre noted by this teacher. This teacher strongly declared their limitations of knowledge and confidence on ICT in her interview responses:

"I don't know any programmes (ICT programmes) or range available I am very inexperienced in that…. Teachers confidence in using it (ICT)

I think is defined by a teachers age to some extent. Our younger teachers here would use ICT as a first thought.”

This reflects the data on purposes and uses (Chapter Four) by teachers, in which two out of the four participants were stronger in their views that using ICT to invite the child's participation and contribution in the learning and teaching experience was most important. The other two teachers used it, and valued ICT more, for how it supported their own teaching activities, or recognised that the positive outcomes of ICT were in how it was being used by children in technically competent or independent ways.

ICT: A Challenge or Stimulation to the Teachers and their Practices?
One consistent response from the teachers was that ICT, and children's use and knowledge of it, had impacts for them as teachers. The impact, its interpretation, and degree, reflects how they see themselves as a teacher, or how they view teaching and learning. The comments below are some that show the range of views of the teachers and how they see their teaching relationship with children:

"I've got to be on my game as a result (of children's knowledge of ICT). I can be learning alot from them".

"I'm just amazed at how savvy the children are in that area (ICT). They know more than us".

"It's changing all the time, I struggle to keep up with it (ICT)."

"Children can find better ways (through ICT) of doing things than our own".

"I think we struggle more to adapt than children do. These children see change as good why fight it go with it".

These views are all consistently positive in response to the contribution of ICT, and also how they perceive its impact on the child as a learner. However, the views that one might have to be 'on my game' or 'the struggle to adapt' could be construed as feeling a little challenged by the development of ICT itself, or particularly in how children are adept in its use and purposes. This can be a challenge to how a teacher perceives their authority, reflecting how they regard it in terms of their relationship with children and the teaching and learning practice. A more positive interpretation is that teachers view ICT as enabling for children and something not to be ignored, but embraced as a valuable contribution to rich learning, teaching opportunities and relationships. This can be summed up well by one particular teachers view:

> *"When children know how to do something and are up with the play as such they should be able to use it and this is fairer for them (children) to be able to do that".*

Documentation: Attitudes and Experiences of ICT

The practice of 'Computer Detectives', and the inclusion of comments about ICT in Learning stories assessment, indicate some attitudes and views about ICT from teachers and children. The teacher has included views and ideas about what ICT contributed to in the story, or they have captured and shared the views or experiences of children in the use of ICT. The fact that the teachers themselves have initiated the writing of the stories indicates an interest or enthusiasm about the encounter, and what it might suggest about the child and the aspects of the environment involved (including ICT) in the learning taking place. This can also include interpretation about children's attitudes of, and experience in, ICT, and even a reflection of a teachers pedagogy.

ICT Supporting Early Childhood Education Philosophy:

One example from the documentation follows where the teacher comments on a child's use of the digital camera and her choice of subject matter;

"It is great that you are so comfortable using technology 'E' (child) it is the digital age after all! It is really interesting to see through your eyes the things that you think are important to kindy and what you think is worth capturing."

In another example the same teacher comments about an encounter with another child:

" 'N' (child) asked for my assistance today on the computer. She asked me to put the CD in the computer for her. She knew the programme would not work without it. After we got it up and running 'N' started a conversation about her computers at home...". "Thanks 'N' for sharing something about your home life with me".

Another teacher shares their views on a child's encounter with ICT and how it affords other things. The example reflects this teacher's view that the competence in use of the ICT is the compelling feature of the story. Interestingly, this is one of the two teachers who have identified independent use as a really significant outcome in ICT and the child:

"…your confidence and competence with computers blows me away. ICT is the way of the future and it's great that you are able to have these experiences while still in early childhood education".

The following two examples by different teachers also capture thoughts about how they viewed the child as a learner, and how ICT facilitates this:

" 'F' (child) we had a great little journey this morning. We even got to make a folder where you can keep your information. It was great to have you direct your own interests using the resources at kindy. You

knew you could use the computer to find out the things you wanted to know".

"I love your passion and drive to find out about the unknown and the questioning and reasoning skills you possess 'A' (Child). You want to know things and share that information with others. Good on you 'A'. It was great working with you today as I learnt something new too!".

These examples encompass a number of things. From the teachers narratives, come a number of interpretations and views about what is taking place in the learning episode, and also reflects views about the child too. The positive use of ICT is positioned more in terms of what it affords in the learning experiences that take place. This includes the opportunities for teachers to get to know more about a child and their family life, or the dispositional nature of a child's curiosity and areas of their interest. These are consistent with the attitudes and purposes of ICT that were reflected upon more so by two of the teachers involved in the research project. The varying emphases by teachers in the documentation are consistent with the attitudes that range between the teachers, and reflect their differing pedagogical views on learning. Hence, in these examples, all the teachers gather and place a value upon ICT as a resource that can enable the child to be involved. This ranges from them highlighting the independent or competent ICT user (in playing the ICT game or using the digital camera), to where it enables them to participate more effectively in their interests and curiosities. This does reflect the range of views the teachers in the team have on ICT and its uses and affordances.

ICT: The Child's View

> *"We have two computers, one for mummy and one for daddy. Once I helped daddy play a game on the computer I made it jump like this (she slams her hand down onto the table) it was a Rhinocerous game and i made it jump". "And you (N) laughed and giggled as you shared this story with me".*

This is one example taken from documentation in which 'N' (the child) shares her sense of fun and enjoyment in the use of technology from her home setting. She shares it in the story while playing on the computer in the centre and enjoys playing games on it while chatting to the teacher.

A chance conversation with some children one day is recorded in another story.

> *"Last week we were attempting to use Google search to find information and the computer wasn't responding. We teachers often refer to Google as 'Aunty Google' and the children have adopted this as well. After a few attempts I decided to restart the computer and the children made some interesting comments. 'She's not home' stated 'N' (child) ' she's the one that knows everything' shared 'W' (child). 'She's the one who goes on the computer to tell you everything ' states 'K' (child)."*

Admittedly this view of Google is influenced perhaps by the humanising features given to it by the teachers and adopted by the children, but it also expresses the power and potency that Google possesses in children's eyes, and suggests too that they know what they can use it for, particularly in their search for answers to things. Another example indicates how technology becomes purposeful in several ways for children and displays an attitude towards it:

"The other morning 'R' (child) came in with a really cool picture she had drawn at home. It was very detailed and looked like it had required a lot of effort. 'K' ('R's mum) mentioned 'R' had figured out how to use the photocopier at home and used it heaps. I asked 'R' if she would like to use the one at kindy. Soon we were photocopying anything in sight as well as your picture. 'C' and 'O' (children) came over to see what was happening and got involved in our photocopy mayhem! It was quite a lot of fun and we all took turns playing with the settings and pressing 'print'.

This story indicates an attitude of confidence and playfulness in the use of the ICT, as well as using it for the purpose of copying things. As the teacher remarks in the story, the children appear to use it confidently and without a sense of surprise or wonder. This reflects the children's prior knowledge and experience with photocopiers, but it also enables them to engage in play and socialising through using ICT, something that some commentators (for example, Cordes & Miller 2000 cited in Bolstad 2004) suggest is denied by ICT. This sense of play and fun is another attitude and view towards ICT that children may express in the activity they do.

Discussion

ICT and its use and place within an early childhood setting, may be influenced by, and in turn, may influence a number of things. It can have a strong influence on the teaching and learning practices of children and teachers. It can advance the practices of teachers and children sharing in learning moments where teachers recognise ICT can support the democratic nature of relational learning, and blur the power and traditional practice lines between teacher and learner, thus advancing the notion of ako (Paki, 2007). It can also make it more of an imperative for teachers to up skill, or maintain skills in ICT, so they can collaborate more confidently. The challenge is to make sure such up skilling doesn't just reinforce a notion of 'staying and being in control', but one where teachers are more confident to participate

with children. The teachers responses and views on ICT in this study indicated a range of attitudes and viewpoints on ICT, children, and their teaching pedagogy overall. Two of the four teachers in the study display a stronger focus on children's abilities to use ICT, and celebrate this, whereas the other two highlight how children might use ICT with the teachers, to help their own learning. There was a willingness and recognition that collaborating and inviting children's participation in their own learning is important, and this aligns with stronger ideas about democratic participation (Thomas, 2007; Moss, 2007; Smith 2007).

As noted in the previous chapter, the teachers recognise that ICT is a relevant part of many children's worlds, and that these worlds are colliding in some ways, and bringing such skills and knowledge into their centre. Therefore, a necessity to recognise and respond to this is acknowledged. For parents, whānau, and teachers, there is a degree of inevitability that flows through the attitudes and views towards ICT, for some a resignation or apprehension, but for many, a sense of opportunity and possibility features strongly. This also challenges the participants in some ways but generally in a positive manner, and ties in with the consensus that ICT can enhance children's development and learning (Dalli, et al, 2009). It also links with the notion that ICT is about communication, and therefore relationships, drawing upon family, and community, voices and funds of knowledge (MoE 2009).

In some ways this recognition and acceptance relies on teacher pedagogy. Part of this pedagogy is shaped by recognition that such funds of knowledge and social and cultural capital (Bourdieu, 1997) enhance a sense of agency and power for children, which is a positive thing to support in teaching (Makin et al, 2007). Somekth (2007) describes this as a shifting ground in teaching pedagogy with *"teachers who make innovative use of ICT for teaching and learning, moving beyond uses which merely 'fit in' with their existing practices..."* (p. 29). Her following quote sums up some attitudes and

responses that may well determine teachers use of ICT, and it defines the parameters of attitudes found in this study, *"ICT is likely to be threatening or stimulating to the teachers personal identity and this will be a factor in the level of change they embrace when using ICT in teaching"* (Somekth, 2007, p. 31).

The parameters of attitude and views can also be extended to include those of whānau and family in this study. The findings show that the more positive consequences of ICT being stimulating and purposeful prevails in the findings. To be democratic in such attitudes and views means extending these into practices and pedagogy, where notions such as uncertainty and potential can exist for both the child and the adult, and where teaching practices become truly relational and democratic experiences, *"…ones in which children and families and staff are willing and valued as learners and teachers"* (Carr, Cowie, Gerrity, Jones, Lee & Pohio, 2001, p.35).

Chapter Six contains findings, and provides discussion, on ICT and its contribution to the image of the child as a learner.

Chapter Six: The Child as a Learner:
ICT and its Contribution
Findings and Discussion

Views of the Child and the use of ICT by Children at Home

Participant responses demonstrate a range of ICT tools, purposes, prevalence, and attitudes towards ICT, in both family uses and the early childhood setting. This may influence the practices adopted in ICT use within the home (children having free access, unsupervised/supervised use, and unlimited or limited use). Such a range of practices were featured in the data. Participant views on their child's ability and motivation around ICT use within the home setting were also clearly articulated:

> *"D has unlimited use of the IPad and has educational games and tools on it. He uses the mobile phone to take random photo's".*

> *"Generally he does not use it alot, but he does take photos".*

> *"We allow him to play appropriate games but we do think it should be limited, 'T' (child) likes to play and use the computer alot but knows we don't like it being used alot".*

These responses indicate the various practices participant families have towards their childs access, and use of ICT in the home. The range included a degree of free access and use, to controlled access with a supervised and controlled area of use, for example, educational programmes on the computer.

Featured within responses is the participants views on their child's competency and interests in ICT use:

> *"His use and confidence amazes us".*

"Fairly familiar with the computer, has a game bookmarked she opens and plays. Uses Skype to talk to family and enjoys using the digital camera".

'They know how to take photos on the camera and can use the IPod and knows how to use the computer and play games on it, she clicks onto programmes."

"They definitely grasp the concept of ICT very easily and come up with amazing explanations of what it does".

Despite this recognition of competency and interest, there remained a reservation from one or two responses:

"Rightly or wrongly they know how to operate and play on the playstation and wii machines".

The predominant view of the child from family and whaanau comments focused on the confidence and skills the child displays in the use of the ICT itself. A notion of mastery of such tools captured the attention of several participants.

Children using ICT in the Early Childhood Centre

Another theme that emerged from the semi-structured interviews reflects teacher's views of the child and their use of ICT. The views are constructed from experiences they have had with children and ICT in their teaching and notions formulated from views about children and ICT in society. It also includes teacher interpretations that emerge about the child and learning in the documentation collected and analysed for this research project. Both data collection tools are examined together in this section.

As explored in the previous chapter on attitudes and views, teachers provide some reflection of how they see the child and the learning/teaching that takes place through the use of ICT, and as such ICT provides some messages for teachers about the child as a learner. There appears to be two main constructions of this provided from the interviews.

The Confident ICT User

> *"I'm just amazed how savvy the children are in that area (ICT) they know more than us".*

> *"I think we (adults/teachers) struggle more to adapt than children do."*

> *"Many children are so ICT competent and confident."*

These views by teachers were comments made in the interviews and, even though they are comparative (to the teachers abilities themselves), they endorse a view that children can be very competent users of ICT and the operations of it. This includes knowledge about, and use of, ICT tools (such as equipment and programmes), as well what they can do, and it comes through strongly in several learning stories compiled by the different teachers at the centre:

> *"I am constantly amazed by the theories and concepts that children think up using their prior knowledge and also a bit of logical thinking. Google, and the internet itself is such an abstract idea- an image on a screen, that really can tell you anything. Even as an adult I don't understand the logistics of it. Where does Google live? How does it get to my computer? etc... The children are constantly exploring and pushing the boundaries of their own philosophies....".*

"You took lots of photos of the children being silly at mat time and a few of your friends! They are great photo's I think we have a budding photographer in our midst. It is great 'E' (child) that you are so comfortable with using technology".

" 'L' (child) spent quite a while at the computer this morning using her skills of letter sounds and recognition and was really persevering with and developing her mouse control. 'L' was confident with what she was doing and how to play different alphabet games. Fantastic independent learning 'L' ! … Well done my computer friend!!".

These findings focus on the technical abilities and mastery (and confidence associated with such ability) of children in using technology. This affirms that such children in these findings have degrees of knowledge, and confidence and skills in using the actual ICT equipment.

The Confident Learner using ICT

This section looks at children using ICT from a lens to support their learning, and where it might add to the construction of the child as a director or initiator of their own learning, or where the child uses it purposefully for their own interests, inquiry, and curiosity. This too draws upon the views and experiences of teachers and children, either in the interviews or through the actual events of the learning story or interpretation of events by the teacher/author of the stories.

"The children having their own direction of learning is quite important".

"They are not just stuck to one way of finding out about things. There are different possibilities of learning from that".

"The child who had an interest in weddings. She asked about searching on Youtube and I (teacher went along with it. It allowed her own observation and discussion rather than me telling her what's what".

The last example in particular captures an experience in which the child instigates the use of ICT to support her inquiry, and the teacher recognises this and responds. The other two examples are common with the views and attitudes to ICT that have been explored in Chapter Five, but would seem to reflect a pedagogical stance of children being able as directors of their own learning, and where ICT can become a vehicle to achieve this. children displaying either an awareness of ICT and it's potential, and reality, to contribute to their inquiry and learning is reflected here. It also shows their willingness/awareness to collaborate/use ICT with the teacher in their learning and this features from several of the Learning stories used in this research project. They embark on uses that include gathering information to answer questions, support or create activities they find interesting and stimulating, and also to share and communicate things they are interested in or want to share with others;

" 'G' (child) brought in some photos to share with us at mat time news about his new house. After news he added the photos to the planning wall as 'hot news' (a section of wall for any news children want to show/share)".

'This is me with my mum, my brother and my koro. I like this photo because there is sunflowers in it and we have been learning about sunflowers at kindy".

The following example captures the child using ICT to support her interest in organising a mat time at the centre:

"The other day you (the child) took one of the mat times with me. You really involved the children in the activities and asked them lots of questions. Well today we were exploring the letter 'b' and to prepare an activity you and 'N' (another child) took off with the digital camera and took photos of things that start with 'b'. At mat time you both showed the pictures and the children got involved spotting the things in the photos. 'S' (the child) it was wonderful how you like to get involved in the 'goings on' of the centre and show such confidence in talking, sharing and exploring things with others".

As discussed in previous chapters, the practice of 'Computer Detectives' has also launched a inquiries at the instigation of the child. Examples include as previously mentioned 'Where does the Easter Bunny comes from?". It also includes further rich and diverse thoughts and ideas such as "Can ducks hear?" and "What is that stuff coming out of the tree?".

That these questions may well have existed with, or without ICT, is not in question. Fortunately, children's curiosity has always existed!, The practice of 'Computer Detectives' by its very existence,and its modelling within the centre, has contributed to a climate where children know that asking such questions is reasonable and can be followed. It also appears to have a degree of pedagogical understanding applied to it and its purpose. This can be advanced in some ways by the very nature of ICT, and is captured in one view by a teacher at the centre:

"ICT is also so instant, you don't have to wait, delay or drag out the interest or answers".

Such a feature of ICT, along with its other appealing features is part of why learning and inquiry can take place, and is promoting children's inquiry. ICT,

by its very nature is defending the practices of children pursuing or initiating their own inquiry and interests.

Discussion

Firstly, the findings in this chapter supports previous chapter's findings that recognise that ICT has entered people's homes and lives and embedded itself in varying degrees in family life (Somekth, 2007; Plowman, et al, 2008). In particular, regarding many responses by family/whānau, ICT use entails quite a broad range of equipment and purposes. These purposes are adding positive elements to family life itself, including supporting relationships. The use of Skype in particular indicated routines of communicating with extended family and friends on a regular basis, and equally suggests that this is an expected activity for some children. Somekth (2007) affirms that ICT is not just improving the way we do some things but it is also creating new ways of doing things. There is also the reflection by some family/whānau participants in this study that the use by their children is acceptable, inevitable and important because ICT allows new ways of doing things. This ties with the review conducted by Dalli, et al (2009) that sees ICT as an inevitable feature of children's lives, one too important to deny or ignore. This is a view shared by many family/whānau participants in the questionnaire.

Despite some reservations by some participants, findings show many children are readily and competently accessing the use of ICT in their family/home settings. This is being affirmed by its meaningfulness and purposefulness, which shapes the expectations of children using, and being able to use, ICT in their lives. Obviously this is not taking place in every family, and so not every child will have the interest/skill/expectation in ICT as a result. Equally, as discovered in these findings, the sense of reservation and degree of moderating ICT by some families also exists. The opportunity to use and partake in ICT by children, for those who do have it as a significant part of their life, indicates that they use it for a number of reasons and purposes. These include, pleasure and entertainment, information, and communication.

The consequences of these activities are shaping an image of the child for the bystanders and collaborators of ICT, such as family/whānau. For some family/whānau and teachers it was evident that ICT use, and experimenting with it with degrees of regularity and confidence by the child, was being noticed along with their subsequent competency. By being able to make choices, develop skills and apply ICT usefully it possibly adds to the child's own sense of self worth and mana.. This is being further strengthened by the plaudits bestowed upon them by significant numbers of family/whānau and by the teachers in this research project.

In terms of credit-based assessment, and the opportunities that ICT has afforded in creating these views, the consequences are largely valuable. They could however be set within a confining position of what ICT provides, and how the child is seen as a learner. As the MoE strategy documents and other literature assert, it is much more than children using computers and displaying degrees of technological know how, no matter how impressive this might be. However, such technological mastery at least adds to the positive views of family/whānau and teachers, that many children are competent and confident users of ICT tools. This narrower view of the ICT competent child is also valuable if it also advances the notions of the early childhood curriculum (MoE 1996) that a child is able to be a competent and active learner. What is more significant is that ICT use may be affecting the ways children go about their learning and may endorse the valued features of the child being a contemporary and flexible 21st century learner (Selwyn & Facer 2007). ICT and the competency for this is a more democratic and empowering outcome in this respect. It also adds to the democratising of the teacher/learner relationship, and the recognition that a child has skills and adaptability that are valuable and meaningful, even being able to support the adult in some areas of inquiry and resource use.

This democratising of learning is more effectively recognised and responded to when children are using ICT to direct and initiate their own inquiry. Here, ICT acts as a vehicle for enabling such learning, and its directorship and purposeful use by the child. The other consequence from the findings is that the democracy of such learning allows diversity and originality to come through from the child. As shown in the findings the questions, particularly through the 'legitimatised' practice of 'computer detectives' ICT not only validates democratic participation by the child where they are invited and able to investigate things that are important to them (Smith, 2007; Thomas, 2007), but it also allows the rich variety of curiosity to come through, avoiding the dull predictability of traditional curriculum activity (Dahlberg & Moss, 2005; Rinaldi, 2006).

The following chapter draws together an overview and series of conclusions that have been compiled using the findings, literature and research methodology in this research project.

Chapter Seven: Conclusion

Overview of Research Project

The research in this project focused on Information and communication technology (ICT) and how it contributes to, or facilitates democratic child directed learning. The research project is a case study undertaken in one early childhood centre. It was undertaken using the interpretative paradigm, and qualitative methodology was applied using the data collection tools of interviews, questionnaires, and existing documentation of children's learning (primarily through Learning stories). The participants in this research project include teachers working at the centre and family /whānau of children attending the centre during the time of the research project. The organisation and analysis of data was undertaken using a thematic analysis.

This research project has proven to be a positive experience for me as a researcher, mainly because it has allowed me to explore and identify what democracy and democratic features in education might involve. As an early childhood teacher I am passionate about promoting children as the powerful learners that they are, learners who have understandings and expertise of their own realities. I also recognise some of the social and philosophical discourses that still influence the position of the child, in relation to adults and notions of power, and how this can be oppressively exerted, potentially, within some areas of an institutionalised activity such as education (Dahlberg & Moss 2005; Smith, 2007).

By shining a democratic light upon things such as interactions, attitudes, and the learning episodes of children in this early childhood centre it has firstly allowed an examination of the relational nature of teaching and learning. Secondly the analysis of learning episodes, whether they are planned or spontaneous, has enabled an examination of what influences such episodes, especially the democratic components in them. The opportunity to examine a rich collection of Learning stories, often reflecting the diversity and curiosity of

children, along with family/whānau, and teacher attitudes and experiences has, in my view, 'brought to life' the learning, teaching, and family life that are the realities of the children, and the other participants, in this research project. The research project is therefore a snap-shot of the exciting and complex world of early childhood learning.

This research project has provided, the opportunity to reflect upon the place and status of ICT in early childhood education. By seeking out the attitudes, experiences, and practices of family/ whānau and teachers in this early childhood centre, this research was able to explore whether these things have influence, or even determine, ICT's place, or type of place, in learning there. More interestingly though, is whether children themselves, with their experiences and skills in ICT use often seen by whānau and teachers, and their own recognition and expectations of ICT's worth in supporting their own learning, are also driving forces in shaping adults attitudes and experiences towards ICT. As a result, this in it self, can be an instigating factor in creating appreciative and responsive attitudes, and practices, by family/whānau and teachers towards supporting the child's learning, and how they also perceive the child as a learner. If this is the case then children themselves, through the vehicle of ICT, and perhaps against some odds, are able to challenge and change their own learning environment, which is a significant democratic outcome.

Conclusion

In some ways the place for, and practices in, ICT use by the teachers and children at this early childhood centre could be seen as ad hoc. There is a lot of anecdotal comments on ICT experiences with children, by the teachers at the centre. Often there were individual views by teachers about the place of ICT within the setting, suggesting no collective philosophy, pedagogy, or practices. This may account for some of the differences in how the teachers viewed and applied ICT in their own practices. Two teachers also identified

ICT competence of children in terms of independent technical abilities and pursuits, while the other two tended more towards children's competence in what ICT could be used for in their learning.

It is unfortunate that this research project did not specifically probe teachers understandings of ICT policies and professional development programmes available in the early childhood sector (MoE 2005; MoE 2009; Dalli, et al, 2009). This would have provided a clearer picture around teacher's individual and collective understandings of ICT in early childhood education, and how they respond in their practices directly in relation to such understandings. There was no comment by any of the teachers on how they, as a team, approach ICT practices in the centre and no direct references made to centre ICT policies. There was, however, some comments, by one teacher in particular, that suggested there is a limited/no team discussion and coherence to ICT use at the centre. Other comments by teachers were limited to affirming the need for equipment to be working, and that using ICT is not just a topic, but requires 'a culture'.

Nonetheless, from the findings, ICT equipment, and a variety uses of it, existed in this centre, and were celebrated in stories by, and in the interviews with, the teachers. The cause of such celebration varied between teachers noticing and recognising a child's technical competence in ICT, to recognising, at times, the child's agency and how it supported their interests or curiosity. This itself suggests the differing pedagogical notions of ICT by teachers. Some documented episodes, analysed through the thematic analysis, certainly indicated features of democratic practices that include co-construction (MacNaughton & Williams, 2009), and sustained shared thinking (Morgan & Siraj Blatchford, 2010) between children and teachers. Finally, the practice of 'Computer detectives' offers significant potential for ICT to play an investigative and explorative role in children's learning in this centre. It was noticeable that neither family/whānau, nor any of the teachers specifically

talked about the 'Computer detectives' practice, despite some using it. One could speculate on how much use or pedagogical implications of it are being valued, or understood at the centre during the research project period.

One question that could be posed is whether there needs to be an explicit coherent practice and pedagogically defined policy of ICT competence within a teaching team. Somekth (2007) suggests that teachers may well find ICT either challenging or stimulating and the levels of experience and use of ICT may influence that. She also suggests that the learning climate is now being disrupted by ICT and its impact on the teaching and learning relationship (2007). If this is the case, then a danger to avoid is any reversion to teacher control and authority that can deny children's agency and realities of ICT. Without a 'culture of ICT' being valued, it could slip off the agenda and 'radar' of the centre. All it might require is the profile of a team (or even just the team manager) to become non, or anti - ICT and its place could be jeopardised.

Without clarity, supportiveness, and clear communication in teaching teams, along with a commitment to ICT policies, and professional development, there may be room for inconsistency, ambiguity, or even indifference toward ICT to prevail. The reason why this must not happen is that, as we have seen in this research project, it is children themselves who are, at times, trying to drive ICT use in a range of ways through their own expectations, experience, and ways of using ICT purposefully. This was evident in the stories, and observations by family/whānau, and the teachers. This itself, as discovered, at times prompted the early childhood centre and teachers to respond. If this is therefore denied or confined by a setting with less commitment or appreciation of ICT in learning, the realities of many young children and their learning styles, that are created and supported through ICT, may be curtailed and that, in democratic terms, is truly unfair and unjust. It would also undermine findings from many family/whānau in this research project who recognised that ICT is a relevant and important feature of their children's lives,

and consistency is needed because of what it means for their children in the future. To have that disrupted by changing early childhood centre practices or personalities would be undermining of many family/whānau socio-cultural practices and expectations.

This conclusion also reflects a number of the perspectives from literature in the literature review on the roles of ICT in early childhood education conducted at different time periods (Bolstad 2004; Dalli, et al, 2009). Firstly, Dalli, et al, clearly assert that teachers practices in ICT need to be informed by contemporary learning theories, and their ICT knowledge has to be a balance of technical know how, a pedagogical understanding of ICT, and the teaching and learning relationship (Dalli, et al 2009). As a result, recommended professional development should be 'on site', 'hands on', and relevant to the curriculum (Dalli, et al, 2009). Bolstad's earlier review (2004), identified the need for ICT to be grounded in a clear understanding of the purposes, practices, and social contexts of early childhood education. One of these is that Te Whāriki, the Early Childhood Curriculum (MoE, 1996) does not align itself to traditional subject boundaries, and as such ICT should not be bounded simply as a subject. It also asserts the place of play as the key proponent of children's learning and that 'playing' with ICT also requires pedagogical underpinnings, which helps guard against a 'child being occupied with the computer' scenario. Literature strongly supports the view that technology on its own should never drive the process of ICT development in the sector (Bolstad, 2004). This suggests that some of the focus on children's displays of ICT technical competence, as seen in this research project, is insufficient and that;

> "…practitioners must be conscious of the kinds of learning interactions they would like to occur in the context of ICT use and adopt pedagogical strategies to support these" (Bolstad, 2004, p.viii).

This also reflects Hatherly's assertion that for effective and meaningful ICT experiences to exist in early childhood settings it requires the teacher's particular mindset to be involved, along with children and others, that provides ICT with meaningful pedagogical value (Hatherly, 2009).

The realities, purposes and uses of ICT by children are strongly identified in this research project. Family and whānau reported regular, and almost routine, uses of ICT in the family home and community settings. These functional uses by the family/whānau included participation and degrees of independent use by, and with, their young child/ren. Such uses included gathering information and supporting inquiry, communicating with others, and educationally specific resources (such as literacy and numeracy programmes). This was certainly supported by the attitudes and practices of a number of family/whānau that, despite some reservations about the impact of ICT by some, it is largely recognised that ICT has relevance in the practices of the family and wider society. This relevance extended into it's contribution and potential for the long term goals of career and social opportunities of their children. This clearly affirmed the overall family/whānau perceptions in the questionnaires that ICT is not temporary or some sort of fad for their children or society. The reservations on use, or that ICT may undermine other activities, did come through to some degree in the research project, by both teachers and family/whānau. This may have reflected, in a previous study's findings by Stephen & Plowman (2005), a little of the anxiety or responding to scaremongering about ICT that can feature in media and other circles at times. It was interesting that the reservations declared by the families/whānau in this research project were not accompanied by any specific experiences or examples of their children having experienced detrimental effects from ICT use, or where ICT was experientially dictating or replacing other activities of their child.

As stated, and relating to the previous point, are the limitations of any pedagogical and policy awareness on ICT in this teaching team. A potential consequence to such limited pedagogical clarity and purposes of ICT by the teaching team could contribute to less effective consultation and collaboration between educators and family/whānau about ICT in education, and their child's learning. Perhaps access to, and discussion of, documentation such as Foundations for discovery (MoE, 2005) and Kei tua o te pae (2009), in conjunction with teachers professional development, may provide a stronger understanding and practice of ICT across the teaching and family/whānau settings. This could further strengthen the access and uses of ICT for children, whānau, and teachers in a truly collaborative fashion, aspired to by the early childhood strategic plan (MoE 2002). Such a collaborative, and more informed, response might even alleviate reservations that family/whānau may hold on the place for ICT in early childhood education, and re-assure them about the practices of their children at home.

Some might argue that ICT is not so freely available, or affordable, to all family/whānau lifestyles and perhaps having it accessible and active within a centre may discriminate, in learning terms, against the less ICT rich or active family/whānau. I would suggest it has a different effect, and that a rich ICT early childhood centre enables children to experiment and develop skills with others whatever their amount of experience elsewhere. In fact, early childhood education in Aotearoa is greatly defined by constructivist theory (MoE, 1996; Soler & Miller, 2003). This is equally defined in the key Māori learning styles of tuakana teina and ako (Glynn, 1998; Hohepa & McNaughton 2007) that also underpin the curriculum. This recognises the relationship of the more experienced peer or adult supporting the less experienced, and scaffolded learning as effective in teaching and learning (MacNaughton & Williams, 2009). Just because children do not have something within their home environment, should not automatically determine whether it should exist in an early childhood setting either. I do not know of

too many families with a sandpit at home for example. The opportunity for children to explore and develop ICT skills comes from that natural curiosity that children possess (Rinaldi, 2006) coupled with the support and access provided by the centre itself. The practice of 'Computer detectives', when modeled and promoted consistently, is a positive example of children being able to legitimise their experiences or curiosity using ICT, and using the facilities of the early childhood centre to support their learning further.

This is a significant point also with regard to the aspirations and implementation of the largely socio-culturally defined (Reedy, 2003) early childhood curriculum (MoE 1996). The findings indicated that for a number of children ICT is a prominent feature, and for some ICT was inculturated into their family life. To deny its place in an early childhood setting, would therefore deny the socio-cultural ethos of the curriculum for these children too. For those who may not access ICT so much in their family lives, the opportunities to access it in their early childhood setting enables encounters with their more experienced peers, driving greater collaborative practices between children.

The features of democratic learning and teaching in education that were identified for this research project defined an actual lens of democracy, which is used in analysing and determining the themes, and findings of it. The three major features of democracy that were defined and explored in this research project were democratic participation, children's agency, and the openness to children's diverse ways of thinking, understandings, and interests. Some significant examples were discovered in this research project that, when applying a democratic light upon them, demonstrate some of these democratic features, and indicate how the use, realities, and attitudes towards ICT may have contributed to this happening.

The particular example of 'A' and her interest in the singer with 'no eyes' was one where her interest and curiosity prompted the exploration for answers and information about the person. This was done collaboratively with the teacher and ICT played a prominent role from both the child and teachers perspective. It was interesting that ICT played a pivotal role in enabling the child's inquiry to co-exist with the teacher's lack of answers to the child's questions. In effect it allowed a leveling of power between the teacher and the child in which the former embarked on a joint inquiry with the child, comfortably using ICT as a means of solution, finding, and feeling safe to declare that she was not in receipt of 'the answer'. This example is one that encapsulates features of democratic practice by the teacher in a relational interaction with the child. The child is able to pose her thoughts and needs and the teacher listens, perhaps with greater confidence and interest, and suggests ICT as a responding support to meeting the child's needs.

Rinaldi, in particular, emphasises the critically important practice of pedagogy of listening (Rinaldi, 2006), and in this example ICT is the supporter of this practice. At the same time the interaction becomes collaborative, and is sustained in a relational inquiry (Morgan & Siraj Blatchford 2010). It significantly challenges the traditional premis of the child as an empty vessel and the teacher as the dominant transmitter of knowledge, a notion Friere saw, and challenged, in his 'banking account' analogy (Friere, 1972). In effect, the teacher and child do not find themselves in, what Moss calls, 'passive compliance' (Moss 2007) where the teacher controls the knowledge, or shuts down opportunity because of their own lack of knowledge, and the child displays, what Dewey calls, 'passive obedience' (Dewey, 1938). ICT enables both to go forward together to explore and discover.

The second example of note is where 'S' (child) uses ICT (digital photographs) to construct a mat time activity, an activity that she wanted to lead. This story reflected how ICT is able to support 'S' in creating an activity

that she wanted to do and share with others. The opportunity to do this did rely on the teacher be willing to let this happen, perhaps even 'permitting it', but the child's use, skill, and creativity in using ICT to develop her 'mat time' may have been the factor that made the teacher 'notice, recognise, and respond' to this child in this episode. Such a process is significant in the assessment for learning rationale that underpins the assessment and learning practices in early childhood education in Aotearoa New Zealand (Carr, 2001; Carr & Lee, 2012; MoE, 1996). In this story the teacher is able to reflect on the interests and resourcefulness of the child, and their strengthening confidence in social interactions, along with her creativity in using ICT.

The third example involved Paul and his knowledge and experience of using 'Google' and 'Youtube' to support or even drive his interests in dinosaurs. This example reflected some of the interesting themes in the research project. In particular, it illustrated how ICT can contribute to a notion of continuity of inquiry, and how it enables children to cross settings with their experience, expectations, and uses of ICT. Paul was an active user of ICT in his home setting and 'Googling it' was reportedly a common strategy, according to Paul's father. Paul brought this strategy and his interest in 'walking with dinosaurs', (A BBC television series and exhibition), into the early childhood centre. He was able to explain and suggest what things he wanted to explore and also took the opportunity to explain his understandings and working theories (Hedges & Jones, 2012) about the lives of dinosaurs. Admittedly, once again, Paul being able to pursue his inquiry is dependent upon a number of things, including teacher willingness and attitudes to children's inquiry, and supporting them in or through ICT use. However, ICT again becomes the vehicle to display the child's agency, ability, curiosity, and intent in their inquiry that accordingly prompts the teacher to 'notice, recognise, and respond'. On this occasion it also indicates to the teacher, the wider world occupied by Paul, and where ICT is a meaningful part of it.

These three examples indicate that ICT may not only capture the significant features of a child's agency, participation, and diverse interests and curiosities, but, that because of ICT these things become more noticeable, meaningful, or do-able for the teacher and others involved. If this is the case, then ICT is playing its part in supporting the assessment and teaching practices of early childhood education in Aotearoa New Zealand, and in particular the practices of noticing recognising, and responding. It is also supporting the reality that situated learning is both relational and complex (Carr, 2001; Carr, et al, 2009; MoE, 1996). The effects of this are potentially powerful in terms of enabling the child to pursue their own learning, with others. in ways that reflect their existing experiences and skills, or in new ways, through ICT. It allows the positive image of the child, as a capable and competent learner, especially through the Learning story format, to shine through. It also enables teachers and others connected with the child's world, a further understanding of the interests and ways of being and thinking of the child. This in itself can affirm ICT as a contributor to the child as an active agent, participator, and divergent thinker, all the features of democratic learning defined in this research project.

What is also significant about these three examples of children's learning and ICT is that, despite the teaching teams varied understandings and experiences of ICT and a less than conscious pedagogical approach, these episodes of learning still took place and reflect ICT use and children's agency and inquiry in several different, but equally important ways. At times they also provoke the teacher to reflect on the learning, and even the power relationship of the learning. Effectively, each of these three examples expresses the child's own inquiry, curiosity, and reality, and this drives the response to the episode and the teacher's participation and reflection on it. Despite the teaching teams limited collective practices there are examples of positive elements of democratic teaching. What is necessary, and already stated, is the consciousness toward democratic practice identified in much of

the literature explored in this research project (Dalhberg & Moss 2005; Dewey, 1938; Friere, 1972; Rinaldi, 2006,). Notably, the practice of 'Computer Detectives', despite its possibly more ad hoc application by teachers than before, certainly contains pedagogical strengths. Another valuable pedagogical practice would be a regular reflection upon all of this in the teaching team.

Recommendations for Future Research

It was unfortunate, for the reasons already outlined, the research project did not explore, within the interviews especially, whether the teachers draw, or have drawn, upon any early childhood education, or education in general, policies, such as Digital Horizons, (2002), Foundations for discovery (MoE, 2005), or the exemplars series, Kei Tua o te Pae (2004-09) to inform and shape their knowledge, pedagogy and practices as both an individual teacher or as a team. No reference was made by any teacher to any ICT policies that apply to the early childhood sector, neither did any teacher mention any Professional development opportunities or programmes they knew of yet alone accessed. Further research could investigate the availability and accessibility of ICT policies and professional development opportunities for teachers in early childhood education. It could even explore any, or prompt testing of, collaborative professional development programmes on ICT for teachers and family/whānau together in centres. This would allow for a comparative examination of attitudes and practices to ICT that could precede, and follow on from such training and collaboration.

Finally, it is acknowledged that the research in this project was confined to one early childhood centre over one particular period of time (and therefore included findings from this particular teaching team, family/whānau, and children at a particular point in time). This however does not suggest that the views, experiences, and practices expressed and analysed in this project are not insightful in any way. They do provide some interesting understandings and responses to ICT, learning, and children as learners. The project did

focus on one particular age group as well, 3.5 to 5 year old children, and it could be interesting to pursue further investigations on the uses, attitudes, and experiences of ICT involving other age groups that are accessing early childhood education. This would also be interesting to do comparatively, and this research project might prove useful as a comparative for other studies with other age groups.

References

Arthur, L. Beecher, B. Death, E. Dockett, S & Farmer, S. (2007) *Programming and planning in Early childhood settings.* (4th ed) North Shore, New Zealand: Cengage Learning New Zealand.

Barker,M, (2001) How do people learn? Understanding the learning process. In, *The professional practice of teaching.* (2nd ed) McGee, C & Fraser, D (eds) (pp 35-66). Palmerston North , New Zealand: Dunmore press Ltd.

Bell, J. (1999). *Doing your research project.* (3rd Ed). Buckingham, England: Open University Press.

Bishop, R. (1997, June). Interviewing as collaborative storying. *Education Research and Perspectives,* 24(1), 28-47.

Bogdan, R & Biklen,S.(1992). *Qualitative research for education* (2nd Ed) USA: Allyn & Bacon.

Bolstad, R. (2004). *The role and potential of ICT in early childhood education. A review of New Zealand and international literature.* Wellington New Zealand: NZCER.

Bouma, G.D. (2000). *The Research process.* (4th edition). South Melbourne, Australia: Oxford University Press.

Bourdieu, P. (1997). The forms of capital. In, A.H Halsey,H,Lauder, P,Brown & A,S Wells (Eds), Education,culture, economy and society (pp 46-58). Oxford: Oxford University Press.

Braun, V & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative research in Psychology*. 3. (pp 77-101)

Brooker, L. (2003). Integrating new technologies in UK classrooms: Lessons for teachers and early years practitioners. *Childhood education*. Vol.79.(5) (pp 261-267)

Brooker, L. (2011). Taking children seriously: An alternative agenda for research? *Journal of Early Childhood research.* 9(2) (p, 137-149)

Bryman, A. (2004). *Social research methods* (2nd ed) USA: Oxford University Press.

Burgh, G, Field, T & Freakley, M. (2006). *Ethics and the community of inquiry:Education for deliberative democracy.* South Melbourne, Victoria, Australia: Thomson Social Science Press.

Carr,M. (1993). *Biculturalism position paper*. In, M Carr & H,May (eds) Te Whaariki: Curriculum papers. (pp 107-116) Hamilton: University of Waikato: Early childhood curriculum project.

Carr, M. (2001). *Assessment in Early childhood settings. Learning stories*. London: Paul Chapman Publishing.

Carr, M. (2004). Keeping it credible. *Assessment in early childhood education*. (pp,31-47). Wellington: Te Tari Puna Ora o Aotearoa/New Zealand Childcare association.

Carr, M. Cowie, B. Gerrity, R Jones,C. Lee, W & Pohio, L. (2001) Democratic Learning and Teaching communities in Early Childhood: Can Assessment play a Role?. *Early childhood Education Learning and*

assessment Exemplar project. School of Education: University of
Waikato.

Carr, M & Lee,W (2012). *Learning stories. Constructing Learner identities in
Early Education.* London: Sage publications Ltd.

Carr, M. Smith, A.B. Duncan, J. Jones, C. Lee, W & Marshall, K. (2009).
Learning in the making. Disposition and Design in Early Education.
Rotterdam, The Netherlands: Sense publishers.

Clark, B & Grey, A. (2010). *Perspectives on early childhood education. Ata
Kitea Te pae-scanning the horizon.* B, Clark & A, Grey (Eds). North
Shore New Zealand: Pearson New Zealand Ltd.

Claxton, G. (1990). Implicit theories about learning. *Teaching to learn* (pp 29-
31) London: Cassell.

Claxton G & Carr, M (2004). A framework for teaching learning: the
dynamics of disposition. In, *Early years*, Vol.24, No1, March 2004.

Cohen, L., Manion, L., & Morrison, K. (2000). *Research methods in education.*
(5th edition). London: Routledge Falmer.

Cowie, B & Carr, M. (2004). The consequences of socio-cultural assessment.
In, A, Anning, J,Cullen & M, Fleer (Eds) *Early childhood education:
Society and culture,* (pp 95-106) London: Sage

Creswell, J. (2005). *Educational research. Planning, conducting, and
evaluating Quantitative and Qualitative research.* New Jersey, USA:
Pearson Prentice Hall.

Dalli, C. Cherrington, S. Oldbridge, L & Green, V. (2009) *Evaluation of the Early Childhood Education Information and Communication Technology Professional Learning Programme. Literature Review.* Wellington New Zealand:Jessie Hetherington Centre For Educational Research. Te Puna Rangahau ki Ako Pai.

Dahlberg, G & Moss, P. (2005). *Ethics and politics in Early childhood education*. Abingdon, UK: Routledge Farmer.

Dahlberg,G, Moss, P, & Pence, A. (1999). *Beyond Quality in Early childhood education and care. Postmodern perspectives,* London: Routledge Farmer.

Denkin, N. (2010). *The Qualitative Manifesto. A call to arms*. Walnut Creek CA. USA : Left coast Press INC.

Dewey, J. (1938). *Experience and education*.New York USA: Touchstone.

Dewey, J. (1943). *The Child and the curriculum. The school and society*. Chicago,USA: The University of Chicago Press.

Diaz,C J. Beecher, B & Arthur, L. (2007) Children's worlds: globalisation and critical literacy. Chapter Six in, *Literacies in Childhood: Changing Views, Challenging practice.* (2nd Ed) L, Makin, C,J, Jones & C, McLachlan.(Eds).. Marrickville, NSW, Australia: MacLennan & Petty.

Dweck, C.S. (2006). *Mindset: The New Psychology of succes*s. New York:Random House.

Eisenhart, M. (2006) Representing qualitative data. In Judith L Green,Gregory Camilli & Patricia B Elmore (eds). *Handbook of complementary research*

methods in education research. (pp 567-581). Washington: American educational research association.

http://itsalltech.com; **2011.** googles-new-record-1-billion-visitors-in-may) retrieved: 11th October 2012. University of Waikato.

Forsyth, H & Leaf, G. (2010) Te tiriti o Waitangi and bi-culturalism in early childhood education. In, *Perspectives on early childhood education: Ata kitea Te pae-scanning the horizon*. Clark, B & grey, A (Eds) . (pp 23-36). North Shore, New Zealand: Pearson.

Friere, P. (1972) *Pedagogy of the oppressed*. Harmondsworth, UK: Penguin books.

Glynn, T. (1998) Bicultural challenges for educational professionals in Aotearoa. *Waikato journal of education*. 4, 3-8.

Gordon, A & Williams -Browne,K (2011) *Beginnings and Beyond. Foundations in Early childhood education.* Belmont, CA. USA: Wadsworth, Cengage Learning.

Greenbank, P. (2002) The Role of values in educational research: The case for Reflexivity. *British Educational Research Journal,* 29 (6), (pp 791-801)

Guillemin, M & Gillam, L. (2004). Ethics, reflexivity and "ethically important" moments in research. *Qualitative Inquiry.* 10 (2) (pp, 261-280).

Hatherly, A & Sands L. (2002) So what is different about Learning stories? *The first years: New Zealand journal of infant and toddler education-Nga Tau Tuatahi,* 4 (1) 8-12.

Hatherly, A. (2009) ICT and the greatest technology: A teacher's mind. In, *Early Childhood Folio* (13) (pp, 7-11)

Harasim, L (2012) *Learning theory and online technologies.* New York,USA: Routledge.

Haugland, S (1999) What role should technology play in young children's learning? Young children. November 1999. (p. 26-31)

Haugland, S. (2000) Early childhood classrooms in the 21st century: Using computers to maximise learning. In, *Young children.* January 200. (p, 12-18)

Hayes, M. (2006) What do the children have to say? In, *ICT in the early years.* M,Hayes & D, Whitebread (eds). Maidenhead UK: Open University Press.

Hedges, H & Jones, S. (2012) Children's working theories. *Early childhood Folio.*16 (1), (pp, 34-39).

Hohepa, M & McNaughton,S.(2007). Doing it 'proper': the case for Maaori literacy. In, *Literacies in childhood. Changing views, challenging practice.*(2nd edition) Makin,L Jones Diaz,C & McLachlan,C (Eds). (pp, 217-229)

Hyslop-Margison, E J. & Thayer, J. (2009) T*eaching democracy . citizenship education as critical pedagogy.* Rotterdam The Netherlands: Sense publishers

Jenlink, P. (2009) Introduction, Dewey's democracy and Education revisited. (pp.1-20) In, *Dewey's Democracy and education revisited*. P.Jenlink (ed). Plymouth, UK: Rowman & Littlefield education.

.

Johnson, B & Christensen, L. (2012) *Educational research: Quantitative, qualitative, and mixed approaches*. (4th ed) Thousand Oaks,CA:Sage.

Kaplan, A. (2009) Creating democratic relationships. Chapter 14, In, *Dewey's Democracy and education revisited* P.Jenlink (ed). Plymouth, UK: Rowman & Littlefield education.

Lather, P. (1992) Critical frames in Educational research : Feminist and Post structural perspectives. *Theory into practice*, Volume XXXI, number 2, Spring 1992

Lee, W. Hatherly, A & Ramsey, K. (2002). Using ICT to document children's learning. *Early Childhood Folio*, 6, (pp 10-16)

MacNaughton,G & Williams G. (2009) Techniques for teaching young children. Choices for theory and practice. 3rd edition. Australia: Pearson Education.

Makin, L, Jones Diaz, C & McLachlan, C. (2007) *Literacies in Childhood. Changing views, challenging practice*. (2nd Ed). Marrickville, NSW. Australia: MacLennan & Petty.

Marri, A. (2005) Educational technology as a tool for Multicultural Democratic Education: The case of one US history teacher in an underresourced High school. *Contemporary Issues in Technology and Teacher Education*, 4 (4), (pp, 395-409)

Marsh, J. (2010) Young children's play in online virtual worlds. *Early Childhood Research*. Vol,8 (1). (pp,23-39)

Menter, I. Elliot, D. Hulme, M. Lewin, J. & Lowden, K. (2011). *A guide to practitioner research in education.* London: Sage publications Ltd.

Merry, R (2007) The construction of different identities within an early childhood centre: a case study. In, *Informing transitions in the early years.* A.W. Dunlop & H. Fabian.(eds) Maidenhead, UK: Open University press.

Ministry of Education (MoE) (1996) *Te Whaariki. He Whaariki Maaturaunga mo nga Mokopuna o Aotearoa. Early childhood curriculum.* Wellington: Learning Media.

Ministry of Education (MoE) (2002). *Pathways to the future/Nga huarahi arataki.* Wellington: Learning Media.

Ministry of Education. (MoE) (2004-2009) *Kei tua o te Pae. Assessment for Learning: Early childhood Exemplars* series.Wellington, New Zealand: Learning Media.

Ministry of Education (MoE) (2003) *Digital Horizons: learning through ICT.* Wellington: Learning Media.

Ministry of Education.(MoE) (2005) *Foundations for discovery. Supporting learning in early childhood education through information and communication technologies: A framework for development.* Wellington: Ministry of education.

Ministry of Education.(MoE) (2009) *Kei Tua o te Pae Assessment for Learning: Early childhood exemplars. Information and Communication Technology (ICT).* Wellington: Learning Media.

Mitchell, L. (2011) Enquirying teachers and democratic politics: transformations in New Zealand's early childhood education landscape. *Early years.*Vol.31, No3, October 2011. pp,217-228.

Morgan, A & Siraj-Blatchford, J. (2010) Using ICT in the early years. Australia: Teaching solutions.

Moss, P. (2007) Bringing politics into the nursery: early childhood education as a democratic practice. European early childhood education research journal. Vol.15, No 1, March 2007. pp, 5-20

Moss, P. (2009). There are alternatives! Markets and democratic experimentalism in early childhood education and care. In, *Early childhood education and care.working paper 53.* July 2009. The Hague, The Netherlands:Bernard van Leer Foundation & Bertelsmann stiftung.

Moss, P.& Urban. M.(2010) *Democracy and experimentation: two fundamental values for education.* Guetersloh, Germany: bertelsmann-stiftung.

Mutch, C. (2005) *Doing educational research: A practitioners guide to getting started.* Wellington: NZCER Press.

Nuttall, J. (2003). Exploring the role of the teacher within Te Whaariki: Some possibilities and constraints. In, J Nuttall (Ed). *Weaving Te Whaariki: Aotearoa New Zealand's early childhood curriculum document in theory*

and practice. (pp 161-186) Wellington: New Zealand Council for Educational Research.

Paki, V. (2007). Kimihia, rangahaua nga tikanga heke iho, he taonga huahua e riro mai- exploring whakapapa as a tool towards a kaupapa Maaori assessment framework in early childhood education. Unpublished master's thesis, University of Waikato, Hamilton, New Zealand. (pp, 29-39)

Plowman,L & Stephen, C. (2005). Children, play and computers in pre-school education. *British journal of educational technology.* Vol 36. No2. 2005. (p, 145- 157)

Plowman,L, McPake, J & Stephen,C. (2008). Just picking it up? Young children learning with technology at home. *Cambridge Journal of Education.* Vol.38. No 3. September 2008. (pp 303-319)

Prensky, M. (2001). Digital natives, digital immigrants, On the Horizon, 9:5. Sept-Oct 2001 - http://wwww.marcprensky.com/writing/Prensky- Digital natives, Digital immigrants.- Part1.pdf

Rameka, L. (2011). Being māori: culturally relevant assessment in early childhood education. In, *Early years. An international journal of Research and Development.* Vol.31. (3) (pp 245-256)

Ramsey, K., Breen, J., Sturm, J., Lee, W. & Carr, M. (2006). *Strengthening learning and teaching using ICT: Roskill South kindergarten centre of innovation 2003-2006. Final research report.* Hamilton :Wilf Malcolm Institute of Educational Research.

Ray, S (2009). New Zealand education in the twentieth century. In, *Introduction to the history of New Zealand education.* (E, Rata & R, Sullivan, Eds) (pp, 16-30) North Shore, New Zealand: Pearson.

Reedy, T. (2003). Toku Rangatiratanga na te mana-matauranga. "Knowledge and power set me free...." In, J Nuttall (Ed). *Weaving Te Whaariki: Aotearoa New Zealand's early childhood curriculum document in theory and practice.* pp 51-77)Wellington: New Zealand Council for Educational Research.

Reissman, C.K. (1993). *Narrative analysis.* UK: Sage.

Rinaldi, C. (2006). *In Dialogue with Reggio Emilia. Listening researching and learning.* Abingdon, UK: Routledge.

Ritchie, J. (1992). Bi-cultural responsibilties. *Becoming bi-cultural.* Wellington: Huia/Daphne Brassell.

Rogoff, B. (1990). *Apprenticeship in thinking. Cognitive development in social context*. New York, USA: Oxford University Press.

Rogoff, B (2003). *The cultural nature of human development*. Oxford, England: Oxford University Press.

Rumblelow, H. (2009). *The book is dead: long live reading*. article. *Waikato Times.* (p. D1)

Schubert, W, H. (2008). Perspectives on the pedagogy of democracy. *Curriculum and teaching dialogue*. 10 (1&2) (pp, 157-164)

Selwyn, N & Facer, K. (2007). Beyond the digital divide. Rethinking digital inclusion for the 21st century. Bristol, UK: Futurelab.

Shor, I. (1993). Education is politics: Paulo Friere's critical pedagogy. In, *Paulo Friere, A critical encounter.* P, Mclaren & P Leonard. (eds) pp 25-36) London: Routledge.

Silverman, D (1996). *Interpreting qualitative data: methods for analysing talk, text and interaction*.(3rd ed) Thousand Oaks, Ca. USA.: SAGE publications.

Siraj-Blatchford, J & Whitebread, D (2003). *Supporting Information and communications Technology in the Early years.* Maidenhead, UK: Open University Press.

Siraj-Blatchford, I & Siraj-Blatchford, J (2006). Towards a future Early years curriculum. In, *ICT in the Early years. (M,* Hayes and D, Whitebread, eds). Maidenhead UK: Open University Press.

Smith, A. (1998). *Understanding Children's development.* (4th edition) Wellington New Zealand: Bridget Williams Books. Ltd.

Smith, A. (2007). Children and young people's Participation rights in education. *International journal of children's rights.* 15 (2007) 147-164.

Soler, J. & Miller, L. (2003). The struggle for early Childhood curricula: a comparison of the English Foundation Stage Curriculum, Te Whaariki and Reggio Emilia. *International Journal of early years education.* 11.(1).

Somekth, B. (2007). *Pedagogy and Learning with ICT. Researching the art of innovation.* Abingdon.UK: Routledge.

Stake, R. (2005.) Qualitative case studies. In, N.K Denzin & Y.S Lincoln, (Eds) *The Sage handbook of qualitative research.* (3rd ed) (pp 443-466) Thousand Oaks, CA, USA : Sage Publications.

Stephen, C & Plowman, L. (2003). ICT in Pre-school settings. Benign addition or playroom revolution? *Early childhood folio* 7. (p, 33-38)

Stover, S. (2010). A rapid history of early childhood education in Aotearoa New Zealand. In, *Perspectives on early childhood education. Ata Kitea Te pae-scanning the horizon.* B, Clark & A, Grey (Eds). North Shore New Zealand: Pearson New Zealand Ltd.

Tholin, K & Jansen, T (2012). Something to talk about: does the language use of pre-school teachers invite children to participate in democratic conversation? *European Early Childhood Education Research Journal.* Vol.20 (1) (pp, 35-46).

Thomas, N (2007). Towards a theory of children's participation. *International journal of children's rights.* 15. (p 199-218)

Tolich, M. & Davidson, C. (1999). *Starting fieldwork. An introduction to qualitative research in New Zealand.* Auckland: Oxford University Press.

Tolich,M. & Davidson, C. (2011). *An introduction to research methods. Getting started.* Auckland, New Zealand: Pearson.

United Nations. (1989). *Conventions on the rights of the child.* Geneva, Switzerland: United Nations.

University of Waikato. (2009). *Ethical conduct in human research and related activities regulations.* University of Waikato.New Zealand.

Verba, S (1967). Democratic participation. *Annals of the American academy of political and social science*. Vol.373. September.

Vygotsky, L. (1978). *Mind in society*. Cambridge, MA. USA: Harvard University Press.

Wakefield, J. (2012)." are smart screens making our children smarter or simply creating a new generation of 'square eyes'?" *BBC.co.uk*. 2012.

Walsham, G. (2006). Doing interpretive research. *European journal of information systems.* 15. (pp, 320-330).

Westbrook, L. (1994). Qualitative research methods: A review of major stages, data analysis techniques and quality controls. *Library and information science research* 16(3), 241-254.

Appendices

Appendix 1

1) What is your view on Information and communication Technology (ICT) and the role it plays in our lives today?

2) How does your family use ICT in your home?

3) In what ways does you child/ren participate in the use of ICT in your home?

4) What are your thoughts on the role ICT plays in early childhood education today?

5) Is there anything else you would like to add ?

Appendix 2

Teachers interview questions.

1) What are your thoughts or experiences of the use of Information and communication technology (ICT) in early childhood education?

2) Thinking about the notion of democracy, how do you think it might look in learning and teaching with young children?

3) How do you think ICT might contribute to democracy in the teaching and learning with young children?

4) In what ways do you see children in this setting using ICT to support their learning?

5) What do you think are some of the key things that are needed to support ICT as a tool for democratic learning?

6) Is there anything else you would like to add ?

Appendix 3

Invitation to participate in a questionnaire: Family/whānau.

Kia ora ……………

I am currently studying for my Master of Education at The University of Waikato. The working title for my study is 'Democracy through the use of Information and Communication Technology (ICT) in an early childhood setting. A case Study.' This research will focus on how ICT might facilitate democratic child directed learning. The intention of this research is to explore what features might support this in a democratic manner.

I am inviting you to participate in a short questionnaire. I anticipate it taking approximately 30 minutes to complete. The focus of the questionnaire will be to seek your opinion and experiences of ICT and it's possible place in your child's learning.

The questionnaire would be distributed to you via your child's correspondence pocket at Kindergarten. An envelope addressed to me will be included for you to return it to *The centre* A sealed drop off box will be placed in the office for completed questionnaires. Only myself will access the content of all questionnaires.

All participants in this research will remain anonymous. Data will be treated confidentially and stored securely. Participants can decline to answer any part of the questionnaire.

Participants can withdraw from the study at any time up until I have returned their questionnaire summaries for checking. The primary use of the data will be to contribute to my Masters of Education. Data may also be used in

seminars and/or conference presentations, publications and research and teaching periodicals. Any reports of this research will employ pseudonyms to retain confidentiality.

I hope that you will be interested in participating and have attached a copy of the questionnaire and returning envelope.

If you are willing to complete the enclosed questionnaire please ensure you sign the consent form on the back of this letter and return it with the completed questionnaire by:

Date:

Simon Archard

Home phone   07 853 8493

Email: Email twicky @orcon.net.nz

If you have further queries please contact Rosina Merry from The University of Waikato.

Phone: Work 8384466 exn: 7807

Email: **rosinam@waikato.ac**

Informed consent

I have read the above information and consent to participate in the study under the conditions outlined in this introductory letter.

Signed: …………………………………..

Name: …………………………………

Date: …………………………………..

Appendix 4

<u>Letter of invitation to teachers to participate in interview.</u>

Dear ……………

As you are aware I am currently studying for my Master of Education at The University of Waikato. The working title for my study is 'Democracy through the use of Information and Communication Technology (ICT) in an early childhood setting. A case Study.' This research will focus on how ICT might facilitate democratic child directed learning. The intention of this research is to explore what features might support this in a democratic manner.

I am approaching you to invite you to participate an interview. The focus of the interview will be to seek your opinion on what role ICT should play in initial teacher education. The interview would take place at a time and place that is convenient to you. I anticipate that the interview will last up to 45 minutes.

All participants in this research will remain anonymous. Data will be treated confidentially and stored securely. Participants can decline to answer interview questions and withdraw from the interview at any time.

Participants can withdraw from the study at any time up until I have returned their interview summaries for checking. The primary use of the data will be to contribute to my Masters of Education. Data may also be used in seminars and/or conference presentations, publications and research and teaching

periodicals. Any reports of this research will employ pseudonyms to retain confidentiality

I hope that you will be interested in participating and I have attached a copy of the general research questions for your interest.

Simon Archard

Home phone   07 853 8493

Email: Email twicky @orcon.net.nz

If you have further queries please contact Rosina Merry from The University of Waikato.

Phone: Work 8384466 exn: 7807

Email: **rosinam@waikato.ac**

Informed consent

I have read the above information and give my consent to participate in the study under the conditions outlined in this introductory letter.

Signed: …………………………………..

Name: …………………………………

Date: …………………………………..

Appendix 5

<u>Requesting permission from the owner of the centre to undertake research.</u>

Dear A……..

As you are aware I am currently studying for my Master of Education at The University of Waikato. The working title for my study is 'Democracy through the use of Information and Communication Technology (ICT) in an early childhood setting. A case Study.' This research will focus on how ICT might facilitate democratic child directed learning. The intention of this research is to explore what features might support this in a democratic manner.

I would like to invite you to participate in this research and seek your consent to work with the teaching staff and currently enrolled family/whānau at *The centre*.

Your involvement would include a 45 minute interview and access to documentation of children's' learning that you have been involved in.

I would also like to interview the individual teaching team members about their views of ICT and it's role in democratic teaching and learning. These 45-minute interviews will be conducted in a location convenient to them and they can decline to answer interview questions and withdraw from the interview at any time.

In addition I would like to invite family/whānau to participate in a short questionnaire. I anticipate it taking approximately 30 minutes to complete.

The focus of the questionnaire will be to seek their opinion and experiences of ICT and it's possible place in their child's learning.

All participants will remain anonymous. Data will be treated confidentially and stored securely. Participants can withdraw from the study at any time up until I have returned their interview summaries for checking. The primary use of the data will be to contribute to my Masters of Education.

Data may also be used in seminars and/or conference presentations, publications and research and teaching periodicals. Any reports of this research will employ pseudonyms to retain confidentiality.

I hope that you will be interested in participating and I have attached a consent form and a copy of the general research questions.

If you have any queries please contact me.

Yours sincerely

Simon Archard

Home phone   07 853 8493

Email: Email twicky @orcon.net.nz

If you have further queries please contact Rosina Merry from The University of Waikato.

Phone: Work 8384466 exn: 7807

Email: **rosinam@waikato.ac**

Informed consent

I have read the above information and consent for you to invite staff and family/whānau to participate in the study under the conditions outlined in this introductory letter. I also consent to my own contribution in this study as outlined in the introductory letter.

Signed: ……………………………………..

Name: …………………………………………

Date: …………………………………………..