“Are there differences in the complexity of learning when ICTs are included in imaginary play?”

E-Fellowship Project
2006
Carol Marks
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Introduction / Background

The purpose of this research was to find out what impact ICTs might have on the complexity of learning when introduced into imaginary play. I have been the Head Teacher at Selwyn Kindergarten in Rotorua for several years. Since 2001, the use of ICT has been incorporated into the programme to enhance the pedagogy and to play an increasing role in children furthering their own learning. There are three laptops, which are used, by teachers and children, children also use the digital camera and with help, they use the photocopier, laminator and binder to make books to follow their interests. They are familiar with using Kidpix, a creative software programme to produce their own work. Documentation of the children’s learning is done in a variety of ways, which include ICTs. This enhances the principles of the pre-school curriculum, Te Whāriki and the associated learning dispositions for children (being interested and involved, persisting with difficulty, being engaged, taking responsibility and communicating.) These dispositions are embedded in our assessment framework called Learning Stories.

Pretend play is an important area of learning for the children at Selwyn Kindergarten. It is a particular interest of mine and this project has enabled me to connect two interests: imaginary play and ICT. It focused on the learning that happened through pretend play by a small number of children and the impact that ICTs made on this learning in terms of complexity. Working in a busy play environment does not allow teachers the time to focus on this learning in depth so this project has allowed this to happen. It has increased my understanding of e-learning and enabled me to improve my own practice when I return to it.
Literature Review

Why Imaginative Play?

Imaginary play comes so easily to young children. It is their way of making sense of their world, it is obvious to all that they love to learn through play and exploration in early childhood. For them to learn, the mind and body need to be engaged and to learn through experiences that engage all the senses. Imaginative play allows this to happen.

This was reinforced by research which show that children have the greatest potential to learn through complex, self-directed socio-dramatic play, by re-enacting their own life experiences (hence displaying what they know) and by sharing and negotiating experiences with other children and adults (hence adding new knowledge) (Creaser, 1990)

Pretence also allows children to experiment with relationships and possible interactions, playing an important part in emotional and social development. This in turn leads to development in other areas such as intellectual skills.

“Hence stimulation, encouragement and opportunity to be involved in imaginative play should not be denied to young children.” (Smith, 1988, p 94)

As children develop, they move into co-operative play from three years onwards, and if they want to be part of a group they need to form strategies and abilities to plan these strategies. Consider for example the strategies that children need to have to join in a game with a group of unknown children. The language of negotiation and persuasion, the strategy of who to approach, and when, and the level of involvement to keep everyone happy, not to mention being able to negotiate should conflict arise. What better way to convey these abilities than through play?

Nancy Wiltz and Greta Fein discuss the contributions of Vivian Gussin Paley when writing Evolution of a Narrative Curriculum (1996). They comment on how Paley introduces us to young children as storytellers who guide her into narrative explorations into the magical realm of childhood and a narrative curriculum resulted where children’s stories were acted out every day. The children pick the actors and the actresses for the drama and they become directors of the action.

This storytelling and story acting increases the richness of the dramatic play and they are able to reveal thoughts and feelings as play becomes another mode of expression. Fantasy play allows children the opportunity to develop a role, think about a subject, follow a theme and make sense of their world.

“Fantasy play and storytelling are never far apart”. (Paley 1991 p 8)

This is something I have observed when videoing children involved in imaginary play. Their play tells a story which can be expressed in different ways. Children who are able to plan their imaginary play discuss;

- The roles – who they are going to be, trying out “new selves” for example Mum, sister, Batman, a monster.
- The theme of the play, for example, what they are going to play.
- How the play will unfold, what is going to happen.
The children make creative connections between experiences and imagined situations and characters. Through mature play children learn the very foundational skills that will prepare them for the academic challenges ahead. (Bodrova and Leong 2001)

Pretend play covers all areas of child development, since it involves cognitive development, social interaction, language, communication and gender roles, so it would seem it has far reaching consequences on child development. Highly imaginative children have been found to have more advanced skills in creativity, perspective taking, empathy, impulse control, cooperation, and cognitive development. (Fein 1979)

**Development of Literacy Practices**

One of the important things attributed to imaginary play is the development of literacy practices. Literacy is about so much more than simply being able to read and write. Literacy is a word to describe a whole collection of behaviours, skills, knowledge, processes and attitudes. It has something to do with our ability to use language in our negotiations with the world. (Cambourne,1989)

Pretend play is a valuable part of early literacy development, providing important opportunities to develop language skills. In fact the amount of time that children engage in pretend play is correlated to their performance on language and literacy assessments. (VanScoter J and Boss S; 2002)

This was also reinforced by McGee. “Kindergarteners who have opportunities to learn about themes through field trips and listening to stories and information books and then engage in sociodramatic play, acquire more vocabulary and use more complex sentence structures than children who engage in free play. Adult support during sociodramatic play, such as thematic fantasy play, enhances language development.” (McGee, 2003 p 198)

I believe that young children learn by participating in a range of experiences within their families and in the wider world, so literacy is embedded in their daily events. This includes imaginary play. Popular culture plays a significant role in the lives of many children, so features strongly in their play and by including popular culture texts in early childhood is a way of building on and valuing what children already know. By pretending to be Spiderman, Barbie or re-enacting what happens at home, children include literacy practices such as writing lists, making invitations, recognising symbols and talking about them, making cards and writing stories.

A lot of imaginary play centres around what children see on television. Cartoons, videos and computer games and feature strongly in the interest and knowledge that many children bring to the centre. When toys, comics, advertising flyers are included in play, children’s enthusiasm and passion for their play is obvious. When props such as masks, capes, dresses and other dressups which allow a child to take on a new ‘self’ are used, new dimensions to this learning are also added. This is a way of valuing and building on children’s knowledge and can be used to support and extend literacy practices within their homes and communities.
“Experiences with popular media culture are a strength that many children bring to early childhood settings that can be built on to extend literacy learning.” (Arthur 2001 p 300)

It is obvious to all that young children love to learn through play and exploration and research shows that by being involved in experiences which engage all the senses, fulfills an important need in brain development. By listening to the stories that young children tell through their fantasy play, showing that we value what they have to say, allows them a way to make sense of their world and develop a sense of who they are. Preschoolers who frequently engage in thematic fantasy play (in which children act out stories that have been read aloud to them) have better vocabularies, use more complex language and have better story comprehension than children who only draw or talk about stories. (Pelligrini and Golda 1982: Saltz and Johnson 1974)

Meier (2000) found that helping preschoolers retell their own stories was an important pathway for children’s understanding of text and for seeing themselves as literate. By providing simple props or allowing children to make their own is an open ended and non directive invitation to allow child initiated drama, and may be more intellectually challenging than providing them. Rowe (1998) has suggested that children’s search for objects that can represent characters is important in helping 2 and 3 year olds understand stories and to select objects to represent characters, children had to determine the qualities that defined the characters.

I believe that when sociodramatic play is shared between children and adults, it can provide effective scaffolding for literacy learning in a way that has a lot of meaning for children as this play comes so naturally to them and spontaneous conversations result, impacting on their learning.

This was researched in America when the Tools of the Mind project was implemented, based on the theories of Vygotsky (Vygotsky 1978) This project was set up to support cognitive development of young children by focusing on a number of teaching tools to scaffold early learning. The strategies implemented had a positive effect on literacy achievement in young children. This was done by implementing developmentally appropriate practice (i.e. instruction) that was both age and individually appropriate (Bredekamp and Rosegrant, 1992) The basis of this practice was Vygotsky’s theory of learning and development which highlights the importance of dramatic play as the activity that is most conducive to development in young children. Imaginative play formed the basis of the curriculum, adequate time was allowed for play to develop and to carry through to conclusion, determined by the children. Props were available to enhance play; props that were not too specific and could be used in a variety of ways. For example, a piece of cloth could be a blanket, a table cloth or a bandage. Teachers worked alongside children to build play plans, stories were written, pictures drawn of the possibilities and this had a major impact on learning. Paley reinforced this idea by saying we perform a grave error when we remove fantasy play as the foundation of early childhood education. (Paley, 2004)

There is a lot of written literature about the importance of fantasy play on literacy development but there are also other influences on young children. By re-enacting actual home situations, may allow children to make sense of their lives and to form
their own beliefs and theories about, for instance, being boys and girls. This social
play can be a complex process that involves planning and communication about
themes and roles to be taken by different children. Usually children take on the role of
another person and what might start out to be a simple theme, can become more
diverse as more children join in and further decisions are made as play unfolds.
This becomes serious drama for both boys and girls and a way of teaching each other.
The actors identify themselves and act accordingly. If there is a mother and a baby,
there will be cooking and crying. If there is a super hero, there will be shooting and
running or flying. This is understood by the children and leadership will often go to
the child who gives instructions and is most confident about the meaning of symbols
e.g “I will be the Batman cause I am wearing the cape” There are usually clear ideas
about the roles of boys and girls.
This has been verified by Vivian Gussin Paley when writing about fantasy play in her
centre.

“The children are swift to rationalise any separate sex arrangement. All
opportunities to make oneself distinctly masculine or feminine are seized upon. If I
am doing something only boys do, then I must be a boy”. (Paley 2001 p 63)

This play also allows the development of metacognition. When metacognition occurs,
children are able to solve problems in their heads and thought processes no longer
need to be verbalised. Children become aware of their thinking as they perform a
specific task and then use this awareness to control what they are doing. This process
takes time and children are now able to justify, explain and describe their thoughts
through imaginative play.

These processes come about through “mature play”, at about four years of age.
Mature play demonstrates a transition from reactive and impulsive behaviours
exhibited by young children, to behaviours that are more deliberate and thoughtful.
Children are now planning what they do in play. It is the action of mentally planning
that is the major benefit to the child, and play contains features that Vygotsky
believed were important, those being imaginary situation, roles and rules. If
Vygotsky’s beliefs are part of early childhood practice, children need more than
receiving specific knowledge. Bodrova and Leong (1996) emphasise the need to arm
children with tools that will lead to the development of higher mental functions.
One way this can be done is through scaffolding, the process of transition from
teacher assistance to independence.

Working with the children on this project, using ICTs, offered the opportunity to
scaffold their learning by showing them the possibilities, then withdrawing to see
what the children did with what they had learned.

Newman and Roskos (1992) stress the importance of using settings and objects that
are familiar to the children (this is also stated in Te Whāriki, the pre-school
curriculum) and the importance of this informal peer teaching and learning because it
is “embedded, almost imperceptibly, in the flow of their ongoing play” (p.245)

Through imaginary play children have experiences which demonstrate how being
literate can help them in their own efforts at negotiation which in turn influences their
interactions with people, places and things. This connection with people, places and things is recognised as being of significant importance in the learning of young children, and Te Whāriki, the early childhood curriculum, recognises the importance of making connections between home and the centre as this helps to build a sense of belonging in the child. “For a number of reasons, connecting with families enhances the children’s learning.” (Carr, 2002, p.21) Children’s interests in imaginary play and the introduction of ICTs offers an opportunity to support learning in a sociocultural way, through (relationships with people), places (home and community settings) and things (cultural “tools” such as books, logos, computers, letters)

This is also emphasised in Te Whāriki, “feedback and assessment to children on their learning and development should enhance their sense of themselves as capable and competent learners.” (Te Whāriki p.30)

By building on children’s own special strengths and interests, children are empowered to learn and grow using a “credit” model for assessment. It recognises the wellbeing of children being interdependent with the cultures and wellbeing of families, teachers and local communities.

**Learning Dispositions**

The learning outcomes and strands from Te Whāriki include wellbeing, belonging, contribution, communication and exploration and are closely linked with learning dispositions, recognised as valued learning. These dispositions are:

- Taking an interest
- Being involved
- Persisting with difficulty or uncertainty
- Communicating with others
- Taking responsibility

“Learning dispositions can be defined as participation repertoires from which a learner recognises, selects, edits, responds to, resists, searches for and constructs learning opportunities.” Carr (2001, P 10)

“They can be thought of as habits of mind, tendencies to respond to situations in certain ways”. (Katz 1998 P 30)

Learning dispositions are a different type of learning to skills and knowledge, e.g. children may have the knowledge and skill to listen but is different to having the disposition of being a listener.

In early childhood education, these dispositions are used within the Learning Story framework, written assessment used in many early childhood centres. They are linked with Te Whāriki, the pre-school curriculum through the learning outcomes and strands of ‘belonging, well-being, exploration, communication and contribution. These learning stories reflect responsive and reciprocal relationships between the individual and the environment. The domains of these dispositions are being ready, being willing and being able:

“In essence, being ready is about seeing the self as a participating learner, being willing is recognising that this place is (or is not) a place for learning, and being able is having the abilities and funds of knowledge that will contribute to being ready and being willing.” (Carr, 2001)
By documenting children’s experiences of their imaginary play in individual portfolios, allows children the opportunity to revisit these experiences and share their stories with friends, family members and teachers. The narrative and visual documentation is powerful to children and they are more likely to engage in conversation about their learning. It can also inspire them to build on past experiences. Play offers rich potential for practising and experimenting with learning.

“retelling and dramatising stories and information books should be an important part of the early childhood curriculum” McGee (2003 p 170)

One way this can be done is through daily opportunities to build on their pretend play.

**Complexity of Learning and ICTs**

For my research I looked at complexity of learning. Encarta World English dictionary defines complexity as ‘being made up of many interrelated things’. I believe that complexity, or richness in learning is important to capture. In pretend play this may be seen in different ways; negotiation between children, attempting several ways to solve a problem, innovative use of props, and building on experience to mention a few. Allowing children to record their stories and reflect on them and to build on prior experiences would also add to the complexity of learning.

One way to capture children’s stories and their play experiences is to use a wide variety of technologies whereby children can listen to tapes or watch videos of themselves later, enabling children to reflect on the activity and their learning. Video cameras offer children a moving “visual” voice. This is just one example of an ICT that can be used effectively with children. In defining ICT I am referring to resources that communicate information (such as computers, digital cameras, and audio and video equipment) and those that promote interactivity (for instance, electronic activity centres, musical keyboards and programmable toys)

Why use ICT in EC? Young children are born into a digital world and technology already has an effect on the people and the environments that surround young children’s learning so I believe it is important that young children begin to develop “technological literacy”. ICTs offer opportunities to strengthen many aspects of teaching practice but needs to be grounded in a clear understanding of the purposes, practices and social context of early childhood education.

There is a growing focus on teachers using ICT with children or on their own, as a tool to support and scaffold children’s early childhood education experiences from children’s interests or to strengthen relationships between children, families and teachers.

ICTs can be a useful tool for supporting young children’s learning and development. ICTs also provide a variety of ways for children to weave together words, pictures and sounds, providing a range of ways for children to communicate ideas, thoughts and feelings but their use should be consistent with the principles, strands and goals outlined in Te Whāriki.
Reading and writing are changing, we are now in a digital age and there are a variety of ways to create different forms of meaning, by integrating words with images and sounds, music and movement.

ICTs are another literacy but it is “one that is increasingly considered to represent an essential curriculum entitlement in any broad and balanced curriculum for the 21st century.”

(Siraj-Blatchford and Whitehead 2003 Pg 1)

When children use technology within their play, it can offer other learning outcomes. It can offer opportunities for children to be in control of their learning, to be creative with technology, not just consumers. It also offers opportunities for children to work with others, to work with ideas and engage their imaginations. This allows this learning to become meaningful to children.

These outcomes will come about as teachers become more confident in their own use of technology, by exploring the possibilities of what it can offer young children. There has also been a narrow definition of literacy in the past, as including only paper-based texts which has hindered the implementation of using technology in early childhood.

There has been debate in recent years about the appropriateness of ICT use by young children based on the understanding that children’s learning should be happening through play and by using technology, education will become formal and restrictive for the child’s development. This came about through the belief that technology only consisted of desktop computers with restrictive software that only offers ‘drill and skill’ type activities. These concerns are not new, the same concerns were expressed with the proliferation of film, television and video games (Linderoth, Lantz-Anderson, and Linstrom, 2002; Luke 1999)

Siraj-Blatchford and Whitebread consider these concerns have come about, founded on a belief that ICTs encourage children to be passive recipients, that is isolating and that children cannot learn from these kinds of experiences. Evidence is available to support the converse of each of these ideas. (Siraj-Blatchford and Whitebread 2003)

This has changed in recent years with the understanding that children need to be able to play with technology, to experiment with the possibilities and visual animations. Underwood and Underwood (1996) describe this as ‘edutainment’. Children not only are learning to read print, they are learning to read visuals and animations, through technology ‘play’. It is playing an important role in learning. By using technology within the realms of early childhood, children are learning new skills, strategies and insights to read, write and communicate. There is still a need however for early childhood practitioners to safeguard children’s health and development, particularly regarding the use of desktop computers.

Since 1999 when the DATEC (Developmentally Appropriate Technology in Early Childhood) project was formed, guidelines were formed to give educators a clear framework to work with, when integrating ICT into early childhood settings. These guidelines emphasise the important learning outcomes for children and for teachers to consider what is developmentally appropriate for pre-school children. These guidelines are as follows:

1. Applications should be educational
2. Encouraging collaboration
3. Integration and play through ICT
4. The child should be in control
5. Applications should be transparent and intuitive
6. Applications should not contain violence or stereotyping
7. Awareness of health and safety issues
8. The educational involvement of parents

(Siraj-Blatchford and Whitebread 2003)

Siraj-Blatchford and Whitebread (2003) also emphasise learning objectives for a knowledge society and the need for ICT applications to offer opportunities for imagination and creativity and what they offer children in terms of activities and experiences. E.g collaboration and problem solving. Researchers are beginning to learn more about how simple pretending or more elaborate sociodramatic play, can be stimulated by computer software (Brooker and Siraj-Blatchford, 2002)

In 2004 the New Zealand Council for Educational Research conducted a review of New Zealand and international literature researching the role and Potential of ICT in Early Childhood Education. The findings from this review reflected the need for teachers to develop their understanding of ICT in early childhood settings, to use ICTs for purposes other than games and alphabet recognition on computers. The Ministry of Education has also recognised the need for early childhood educators to have good guidance, examples and support for their own professional learning around ICT use.

Case studies and exemplars of the use of ICT in early childhood education settings are available, particularly in publications aimed at practitioner audiences. Much of the New Zealand literature falls into this category e.g. (Jordan,1999; Lee et al; 2002; Patterson, 2004; Kelly,2003).

These case studies may be the most useful kind of literature for early childhood practitioners to extend practice in their centres for a variety of reasons. E.g. “case studies highlight a role for ICT in supporting parent involvement in their child’s learning (Lee, Hatherly, and Ramsey, 2002)

Research has also been conducted by Roskill South Kindergarten, one of the early childhood Centres of Innovation(2004-2006).This research has been “How does the innovative use of ICT in pedagogical practice build community, competence and continuity” Jo Colbert, efellow in 2005 researched “Can the use of ICTs enhance the complexity, connections and continuity of young children’s story telling?”

“Children’s literacy now must be viewed with a multimodal lens one that recognises less traditional forms of literacy” (Colbert 2005)

“New technologies offer teachers additional resources to use as they plan to meet a range of levels, learning styles, and the individual needs of children”(Van Scoter and Boss, 2002 p.10)

This does depend on the skill and knowledge of the practitioner and also the developmental appropriateness of the technologies. However, by following the guidelines from Siraj- Blatchford and Whitebread and using imagination and
enthusiasm, ICTs can be used in exciting and powerful ways to impact on the learning outcomes for children.

If play is considered an important dimension of early childhood education, we need to support different ideas about the role and potential value of ICT in terms of children’s play. Young children should begin to learn about technology (that is, what it is, how it works and the roles it plays in their own and other people’s lives) as well as learning through technology. Play is seen to be an important aspect of both these kinds of learning.

O’Hara (2004) highlights some important themes about high quality practice in ICT use with young children. These include children using ICTs in ‘realistic’ and imaginative socio-dramatic role play; children learning to use different forms of ICTs and activities and vocabularies associated with them e.g. looking up flight times.

**Conclusion**

The literature highlights the importance of imaginative play and the impact it makes to the development of young children. It is a natural part of children’s lives, another way of telling a story and making connections with the things that happen in their daily lives as they interact with people, places and things.

Our pre-school curriculum also emphasises the need for this play to be incorporated, as a way to support children’s learning. This can be done in many ways by building on children’s interests and strengths.

There is increasing documentation about the way ICTs can be used with young children. There is little documentation of imaginative play and ICTs being combined, and the impact it has on learning and this has been valuable research to show how ICTs can be used in a meaningful context with young children. It has enabled me to implement developmentally appropriate practice with technologies, and to use different forms of ICTs and to find out if these ICTs have contributed to a difference in the complexity of learning.
Methodology

Research Question:

“Are there differences in the complexity of learning when ICTs are included in imaginary play?”

The “differences” I studied and compared were differences between what happens when the children used ICTs in their play compared to when ICTs were not involved.

This main question was supported by three sub-questions that were used to analyse the data collected.

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<th>Focus</th>
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<td>Complexity of Language</td>
<td>Statements/expressing ideas</td>
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<td>Are there differences in</td>
<td>Questions</td>
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<tr>
<td>the amount and</td>
<td>Expressing ideas</td>
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<tr>
<td>characteristics of</td>
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<tr>
<td>language for each child?</td>
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<tr>
<td>Complexity of Planning</td>
<td>Suggesting change</td>
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<tr>
<td>Are there differences in</td>
<td>Role identification</td>
</tr>
<tr>
<td>the amount and</td>
<td>Capacity to predict</td>
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<tr>
<td>characteristics of</td>
<td>Reasoning</td>
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<td>planning for each child?</td>
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<tr>
<td>Complexity of Co-operation</td>
<td>Physically helping others</td>
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<tr>
<td>Are there differences in</td>
<td>Offering suggestions</td>
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<td>the amount and</td>
<td>Negotiating</td>
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<td>characteristics of</td>
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<td>co-operation each child</td>
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<td>has within the group and</td>
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<td>outside the group?</td>
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The method I chose to complete my research was ethnographic to the extent that it is a study of people and their activities in their natural settings. Burns (1990) claims there is consensus that ethnography entails ‘writing about people’ and is concerned with the ‘study of a group of people for the purpose of describing their socio-cultural activities and patterns’ (p.223)

I have been a participant researcher for this project working alongside children while conducting my research. This involved case studies of a few children using ICTs to extend their interest in imaginative play. I documented their work, writing learning stories for their portfolios. It provided a valuable opportunity to use ICTs in a meaningful way, to video children at play, to use a digital voice recorder, and to use the digital and video camera for the purposes of documentation. It also gave the children the opportunity to use different forms of ICT hardware and software to build on their own interests.

Sampling and Frequency: The research took place at Selwyn Kindergarten where I have worked for many years and I have built up relationships with the children, families, teachers and the wider community. I worked with a group of seven children
originally, but five of these children became my case study children because of their interest in imaginative play. All children attended afternoon session and ranged in age from 3 years 5 months to 4 years 1 month.

Data collection took place mostly in the second term of 2006, original work in their portfolios was taken into account.

Data was gathered as the children’s interests continued. This was on a daily basis but was flexible, taking into account the children’s preference for play on the day.

**Data Collection:** The children contributed to data collection by the stories they told and their perspectives on what they have been doing in their play. Learning stories were written up, this is our form of assessment for the learning taking place, and these were shared with families and teachers.

Parents also shared what was happening at home with the children’s interests, this was sometimes anecdotal and sometimes through Parents Voice. This is a form inviting written feedback from parents about their children’s interests and learning at home.

**Data Analysis:**

Underpinning the indicators for the sub-questions are the following learning dispositions. These show whether children are ready, willing and able (Carr 2001) to find opportunities to learn. I have analysed data using these indicators as well, as they are an important part of our normal assessment procedures.

<table>
<thead>
<tr>
<th>Domain of Learning Dispositions</th>
<th>Being Ready</th>
<th>Being Willing</th>
<th>Being Able</th>
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</thead>
<tbody>
<tr>
<td>Taking An Interest</td>
<td>Children are developing; interests, expectations that people, places and things can be interesting; a view of self as interested and interesting.</td>
<td>Children are developing; a preparedness to recognise, select or construct interests in this place, to make connections between artefacts, activities and social identities across places.</td>
<td>Children are developing; abilities and funds of relevant knowledge That support their interests.</td>
</tr>
<tr>
<td>Being Involved</td>
<td>Children are developing; Readiness to be involved, pay attention, for a sustained length of time; a view of self as someone who gets involved.</td>
<td>Children are developing; Informed judgements about the safety and trustworthiness of the local environment.</td>
<td>Children are developing; Strategies for getting involved and remaining focused.</td>
</tr>
<tr>
<td>Taking Responsibility</td>
<td>Children are developing; A habit of taking responsibility in a range of ways, to</td>
<td>Children are developing; Recognition of construction of opportunities to</td>
<td>Children are developing; Experience of responsibility; making decisions.</td>
</tr>
<tr>
<td>Domain of Learning Disposition</td>
<td>Being Ready Children are developing; Enthusiasm for persisting with difficulty or uncertainty; assumptions about risk and the role of making a mistake in learning; a view of self as someone who persists with difficulty and uncertainty.</td>
<td>Being Willing Children are developing; Sensitivity to places and occasions in which it is worthwhile to tackle difficulty or uncertainty and to resist the routine.</td>
<td>Being Able Children are developing; Problem solving and problem finding knowledge and skills; experience of making mistakes as part of solving a problem.</td>
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<tr>
<td>Persisting With Difficulty or Uncertainty</td>
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<tr>
<td>Communicating with Others</td>
<td>Being Ready Children are developing; The inclination to communicate with others in one or more ‘100 languages’ (Edwards, Gandini and Forman, 1993) to express ideas and feelings; a view of self as a communicator.</td>
<td>Being Willing Children are developing; Responses to a climate in which children have their say and are listened too.</td>
<td>Being Able Children are developing; Facility with one or more languages, widely defined; familiarity with a range of context-specific ‘genres’; script knowledge for familiar events.</td>
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**Ethical Considerations:**

Consent has been gained from the parents / whanau and from the teachers at the Kindergarten. When documenting the children’s work I asked their permission to share it with others, thus gaining their verbal consent. Videoing the children was a shared experience, a decision was made each day by the children as to who was to video for the purpose of making movies. The children often wanted me to do the filming so they could be part of the play so I made a decision that if a child was uncomfortable when being videoed or made it clear that the camera was not welcome, I would stop filming.

Written consent was gained from parents to show samples of their child’s work, photographs, video images for educational purposes, such as ICT professional development web sites, educational magazines, presentations.

Consent was also gained from teachers at Selwyn Kindergarten to use data collected by them and to take part in observations.

**Limitations for the Research**

**Weather**

Working with the children took place mainly in the second term which was cold and wet. Having noisy tigers playing indoors was not always possible so the weather did impact on play.

**Noise**

The play setting was particularly loud which made it difficult to record at times. The office was needed to be used at these times.
**Case Studies**

For my case studies, I recorded the play and interest each child had concerning imaginary play and the way they used ICTs. The information collected was then analysed to determine the learning which had happened for each child and any changes with learning dispositions.

The case study notes I recorded are detailed here, followed by learning stories written for the children’s portfolios. These stories have been modified to be more suitable for a research report.

**Ethan, a case study**

29-3-06 Reflection  Ethan started Kindergarten on 3-12-04 and he is now aged 4 years 1 month. While Ethan is at Kindergarten, he works quietly often by himself and listens and watches the other children around him. Ethan will sometimes come with his face painted, often he is a tiger but his play doesn’t reflect him being a tiger. Dressing up is something he likes to do, he often plays with the superman costume on and one day he had on some bird wings, a necklace, cowboy boots and a painted tiger face. Ethan’s friend is Samantha and learning stories written about their play show Ethan’s interest in imaginative play. He has been a dog on occasion and likes to re-enact home activities, cooking tea and baking. This is done in the family area or in the sandpit. Ethan allows others to join play, once again watching and listening quietly to their suggestions. He appears to avoid confrontation and will walk away if he doesn’t want to disagree with some children. There is a small group that he will play with and it is interesting to note that these children share this common interest of pretend play and he will share his ideas with them. Play will often include this group for periods of time, then they go their separate ways and may re-group later in the session.

Ethan was selected as one of my case study children after talking with other staff members. Ethan was often engaged in pretend play and his profile reflected his sense of humour and his ability to express himself through his artwork and his stories. Would he use ICTs as another tool for self-expression?

Ethan was aged 4 years 1 month and at the start of my research he often made a mask at the start of each session. Often these were made with his Dad on arrival at Kindergarten and sometimes he made them by himself, often to enhance his play as a Super Hero. Most days he would dress up as a Super Hero, even when he went into other areas of play. I had observed that the big blue box in the playground was often a
safe haven for Ethan, a place where he could play and observe the happenings around him. Watching and listening was something Ethan liked to do from this box, with his mask on and if he was a little unsure of the play around him, he would retreat into the box and make a game for himself and his friend Samantha.

The first ICTs I introduced Ethan to were the digital voice recorder and the video camera. I had filmed his play as he and his friends had made ‘beds’ in the sandpit shed and I explained how we could hear our voices as well by using the voice recorder. Ethan was so excited about sharing his story. It was about a cockroach which had entered the shed and been killed. This surprised me, it must have happened after I had stopped filming, but was far more exciting to Ethan than his play! Relationships with people, places and things can come in many forms and have an impact on learning.

Ethan’s first movie he saw was one that Samantha had made of him as Spiderman. When we discussed making another movie, Ethan thought it could be about Spiderman, because he was Spiderman! So he was Spiderman, Samantha was a tiger. When he watched the video Ethan wanted to be a tiger too but Samantha had the tiger hat. I suggested that Ethan might like to make a tiger mask instead (making masks was an interest) This was a good idea and Ethan suggested he photocopy it so Jessie could have one too. “You need to press the green button”, he told me. Ethan had done this before!

Ethan took a lead role in the tiger play, eating and sleeping. “Remember we’re friendly tigers”, he said as he approached Samantha. The next day Ethan had dressed like Barbie to play with Reagan, and then he became a tiger in a dress.

Ethan was competent at using the digital camera, the cameras were available each day for him to use. He always selected the digital still camera and he used this naturally in his play when he was Mum and Samantha was the baby. He also showed Alyssa how to use the camera, baby wasn’t allowed though ‘cause babies don’t know how,” he explained.

The next day Ethan asked if we could make another movie. I overheard him say to his friend at the kai table
“We could make another movie about Batman. I could be Batman and you could be Batman. You know what I’m going to do. I’m going to marry a policeman, a silly policeman”. They did laugh!

Ethan continued to make his masks but the new interest of acting in the tiger movies was a regular activity for him. He liked to watch himself on the computer; he would laugh so much at first then came recall about what had happened.

The next time Ethan was a tiger, he made a cage. “I need somewhere to hide,” he said. Ethan didn’t want to use the video camera but was keen to be part of movies and was happy for Samantha to film him as well as myself. The next day he discussed making a pirate movie with Zeb. “We can both be pirates aye?” he explained. “I’ve got a pirate costume, that’s why we can both be aye?. We have to paint pirate faces. I have to win running to the pirate house, for the pirate party”.

The following day they made their pirate house with boats, using the barrel swings from the shed and the cargo net. I was fascinated that Ethan was wearing the tiger hat for this play; he had put it on when he arrived at kindy. His Dad told me that they had been playing tigers before leaving home, a lot of rough and tumble and fun.

Ethan turned this video footage of pirate play into his own movie, downloading the clips and including his own picture drawn on Kidpix. This turned into a long process as he found such interesting things to do with the software and went off in different tangents (as you do!) Each time he did this, he would lose his original picture as he had clicked the mouse so many times but Ethan never gave up and would start all over again. This happened several times.

The following day Ethan asked if he could change his picture which he did” I need to put green spots for the stars, ’cause it’s dark now”.

Even though Ethan had talked about seagulls being in the pirate movie, these hadn’t appeared during play, but he found a bird on Kidpix which he thought looked like a seagull and put this in. I didn’t want to influence the play if Ethan hadn’t carried out what he said he was going to do, as I wanted the play to unfold naturally and for Ethan to be in control of planning his own work. After working on his picture, Ethan returned once more to pirate play. The following day Ethan used more props, an extra boat, ropes, a steering wheel and he found a pirate picture, which he put up as a flag after nailing it to a stick.
I talked to Ethan about finding out about pirates on the Internet and we downloaded some great pictures to add to his movie. It was exciting. The tiger play and the pirate play were put onto DVDs for Ethan to share with his family.

7-4-06

Dressing up is something that Ethan likes to do. He will sometimes come to Kindergarten with his face painted, often he is a tiger but his play doesn’t reflect him being a tiger. He often plays with the Superman costume on and one day he had on some bird wings, a necklace, cowboy boots and a painted tiger face. Ethan finds different ways to be creative and expressive. Dressing up is one way he can share his imaginative ideas.

18-5-06

Today Samantha, Jessie and Ethan watched a movie. This was a special movie, one that was of Ethan when he was dressed as Spiderman and Samantha had taken photos of him with the digital camera. This sparked a lot of laughter and as the movie played, they recalled the play that had happened the previous day.

After watching the movie, we discussed the possibility of making another one. Ethan thought it could be about Spiderman again and Samantha thought there needed to be animals in the movie, some snakes, lions and alligators. They then went their separate ways and before long Samantha came out with the lion hat on, Ethan dressed as Spiderman and after playing with the camera for a short time, they went into their roles.
Zeb joined in too as Batman and he joined in to try and catch the lion. She was a ferocious one though and soon other children arrived to confront the beast.

It was interesting to note the enjoyment that the children were getting, from seeing themselves on these movies and wanting to build on story lines. They were sharing their ideas and play unfolded. At this stage I am still filming them, maybe one of them would like to be the film maker.
I wondered what would eventuate when they watched this movie?

22-5-06

Today Ethan, was a tiger. This came about after watching a movie of Samantha, being a tiger the day before.

There was one problem though. The children all wanted the same tiger hat. I suggested that tiger masks might do instead. Ethan was keen to do this, making masks has been an interest for him over a long period of time. He drew his mask, with whiskers, mouth and nose, then decided to photocopy it so Jessie could have one too. It was obvious Ethan had done this before as he told me “you have to press the green button to make it go”

With his mask on, Ethan became a tiger, contributing his ideas and having a say if he disagreed with the way the play was unfolding.

Future Possibilities?

I wondered if Ethan had seen real tigers moving, maybe to download some videos of real tigers could be of interest to him

The next day we downloaded some short video clips of real tigers. They were playing and walking through long grass. There was even a close up movie of a puma, you could see him blinking!

Ethan seemed to like this, he was dressed up to play Barbie games with Reagan until this happened and then he was suddenly a tiger again.
Later in the afternoon Ethan helped to make a farm, complete with wild animals, including a tiger.

Watching video footage of his play makes the Ethan keen to do more and to add to it in new ways. I will let Ethan have a turn at using the video camera as well, he might like to make his own movie.

26-5-06

Ethan was eating his kai today when I overheard him say to his friends

"We could make another movie about Batman. I could be Batman and you could be Batman. You know what I’m going to do. I’m going to marry a policeman, a silly policeman".

They did laugh!

20-6-06

Ethan and Zeb were discussing what they could make a movie about. “I know, Pirates! said Ethan. We can both be pirates aye? I’ve got a pirate costume, that’s why we can be both aye?
We have to paint pirates faces. I have to win, running to the pirate house for a pirate party. We could have seagulls, like tigers catching seagulls and put the seagulls on the fence. We could draw them and colour them in white, cause they are white.
Zeb said "I will be a pirate and I will go aargh, aargh!"

Tiger play continued for Zeb and Ethan today. This is what Ethan said as he played. “I was a tiger as well aye? Do you want to see my face, well, there it is, I turned it into black. Can we make another one on? (a door for the house) This is our home aye and we have all the blankets like this aye, covered in snow aye, cold aye? We lie on top, not under, on top. There’s no door, we can put this here for the door and climb out the window. We can be really tigers.
Push it, help me, now get out of my way, you have to be on this side. We’re making this for the door. Tigers can’t get out Carol.
We can climb out here like that aye?"
23-6-06

Today Ethan made his pirate movie. I showed him how the movie could be made using software called imovie. Ethan downloaded the clips into the movie tray and I explained that he could add to the movie by drawing pictures in Kidpix which could be included and we could add photos and sound effects. Ethan wanted to draw a pirate for the movie.

Controlling the mouse and trying out new applications was difficult for Ethan but he was determined to finish his work. He discovered that he could put bugs on his picture and decided to put them all around, "not on the face though". Then he discovered you could put lollies on the screen. Well, this was fun! “I’ll put bugs on so the bugs can eat them. I think they gonna get sick. I want them to get fat. How come they talk?” (sound effects of lollies) yum, yum, yum

Soon the screen was covered in lollies and bugs so Ethan decided to start again so I showed him how he could spray the screen to get rid of his picture. This time when Ethan worked he used some pictures he found that he thought looked like pirates and painted his own picture with it. “This is the pirate picture. Can I go back to the paint brush so I can paint the sky? It looks like a crocodile doesn’t it. It’s got a crocodile mouth and crocodile hair”.
Ethan continued to play with the tools on Kidpix and I showed him what to do if he made a mistake and how he could erase it before moving on. Jessie came to have a look at what he was doing and they realised that there was a sound effect which changed each time you erased something. They did laugh as they practised it again and again. But oops! When Ethan tried to get back to his original picture, he had put on a background picture which he didn’t want. Ethan began his picture again, he ended up doing this 4 times before saving the picture to work on it next time. What perseverance!

Reflection: Having fun with ICT and having time to play with it is giving Ethan the opportunity and another way to express his ideas and to learn what he can do with it.
This software enables Ethan to be creative and to work collaboratively with Jessie and to learn from mistakes as well.

The next day Ethan finished his picture to include in the movie. After this he went outdoors and pirate play continued, this time with Samantha and Jessie as Zeb was away.

This is Ethan’s picture. Pirates down the bottom and can you see the storm coming?
**Jessie: a case study**

Jessie was 3 years 11 months at the start of my research and he was included for his love of imaginative play. He liked to re-enact home situations, he was often “bubba” or “son” and was frequently in the family area, cooking and dressing up, taking babies outdoors and caring for them.

I introduced Jessie to the video and digital cameras. He had a real interest in these, he was keen to experiment and took photos as he walked around. Being able to have instant replay by pressing a button and talking to his friends about the photos he had taken of them made Jessie aware of the whole process of taking photos and what he needed to do to make his photos clearer.

The next day Samantha was watching her tiger movie and I invited Jessie to watch as he had been so interested in the cameras the day before. Jessie enjoyed watching this but when the children discussed making another movie Jessie left to play elsewhere.

The following day Jessie watched the tiger movie again and this time he wanted to be in a movie with the others. All 3 of them wanted to be tigers. Ethan made a mask for Jessie and he took an active role in play.
A few days later Jessie was having difficulty making a mask and after working through this I said he could also draw a mask by using Kidpix, if he would like to. Jessie is always keen to use Kidpix, he had been using it for some time so he was familiar with it. Not only did he draw a mask but he went on to draw a tiger as well. He doesn’t often draw pictures so this was something new for him. Jessie was keen to include his picture in the tiger movie.

The following day Jessie met me at the gate and said “I want to see my tiger”. Once again we looked at his tiger in the movie and I read him the learning story I had written and we put it in his folder.

Jessie was proud of his work, it gave him a sense of achievement and he shared it with his friends.

Once again Jessie used the digital camera to take photos of Reagan as they played. The following photos are some of Jessie’s, he was getting so competent at using the camera. They are delightful.

A few days went by and once again Jessie greeted me at the gate and asked to see his tiger. I asked him if he knew where his profile was. He ran to get it and I read him his learning story. This visual documentation is empowering for Jessie and he said “I could do another one”. This time Jessie experimented with Kidpix, enjoying all the great things he could do with it.

Jessie continued using the cameras in his play. Family play continued to be a strong interest for him and the cameras were included with the telephones and other props.
Having the chance to practice with them and knowing that he could do something with his photos gave Jessie a new way to express his ideas.

It was interesting to notice that often Jessie’s play stopped when there was technology to use. These were tools to be used and required thought and time and pretend play unfolded later.

22-5-06

Today, Jessie was a tiger. This came about after watching a movie of Samantha, being a tiger the day before.

There was one problem though. The children all wanted the same tiger hat. I suggested that 2 of them had tiger masks which Ethan was keen to make. As a result, Samantha wore the hat again and Ethan photocopied his mask so Jessie could have one too.

Jessie was a great tiger, he was sleeping, scratching, eating and climbing, following the lead of others.

It had been interesting to notice the change of roles in Jessie’s play over the past few days. Since Angel had gone, he was no longer Son or bubba and was keen to join with the play around him, to be accepted as part of the group involved with pretend play.

The pre-school curriculum Te Whāriki documents the importance for children to experience an environment where they are affirmed as individuals, developing their place in the wider world of relationships, and the ways in which these are valued.
Today Jessie made a mask of his own after watching Ethan make his. This was what he wanted to do so he could continue with his tiger game. After Jessie had made his paper mask, I explained that he could make one on the computer as well as draw pictures. Jessie was keen to do this and not only did he draw a mask, he drew a tiger as well.

As Jessie worked, the digital voice recorder picked up the conversation.

Carol- “What else does he need?”
Jessie- “A head, where does the head go?”
Jessie drew the head.
Carol- “How does that look?”
Jessie- “Good”
Carol-“Does he need stripes because he is a tiger?”
Jessie- “Yes, and a body”
        A nose! An eye, another eye.
        An ear, do you know where the other ear can go?,
        That’s my big fat ear”
Carol- “Where will his legs go?””
Jessie- “Here”
Carol- “How many legs has a tiger got?”
Jessie- 2, 3. He needs a tail, a funny, funny tail. That’s his
        stripes, that’s like a big tail.
        He’s finished. I’ll put the mouse back.
        We need to print this out.”

Jessie doesn’t spend much time drawing pictures so it was rewarding to see the involvement and interest he took drawing his tiger on Kidpix. Even though he asked questions about his drawing as he worked, he continued, and had the confidence to draw the tiger as he wanted. Jessie is great at expressing his ideas verbally as well.
7-6-06

What fun Jessie has, when he plays with Angel, Kolio, and Zeb. Today he was “son” and he helped to look after “bubba”, making sure he wasn’t woken up by the other children. The next day he was “bubba” and I heard him crying after being woken up by the others. Angel made sure he was okay and growled the others for waking “bubba” up. Play then centred in the sandpit shed. This was the house and play involved preparing food for the family and making beds to sleep on. Once again Jessie, was “son”.

Taking “bubba” in the trucks was a feature of Jessie’s play as well. He put his pram carefully on the back of the trucks and Zeb and Joel helped to take him to where he wanted to go.

Learning happens for young children when they are interacting with people, places and things and by being involved in imaginary play, they can be helped to make sense of what is happening in their real world. Through Jessie’s play, he is building relationships with his friends and it is helping him to express his ideas and feelings.

15-6-06

Jessie likes to take photos of the other children. Today he was playing in the family area with Reagan, who likes to be Barbie. After cooking dinner and dressing up to go out, Jessie then used the digital camera to take photos of his friend. She posed for him and with each new pose, Jessie had it captured on film. After this he went on to take photos of the things on the dough table which he was keen to show Reagan. I was filming the children’s play with a video camera and I showed this to Jessie. He helped to download his photos of Reagan and added them to the short movie, using imovie. “That was fun” he said, “can we do some more tomorrow?”.
Reagan: a case study

Reagan was chosen as another case study for her interest in learning through her imaginary play. She was aged 4 years at the start of my research. On most days Reagan dresses up in the purple dress, she likes to be like Barbie but when the dress comes off, she will be a polar bear, a dog or whatever she needs to be to join in play. The first time I filmed Reagan she was Lava Girl, an action packed adventure unravelled with Zeb and Samuel.

The following day Reagan was dressed as Barbie. There was very little interaction with other children but a lot of walking in high heels looking serene and beautiful.

The following day Ethan put a dress on to play Barbie with Reagan but he soon became a tiger as he watched some video clips of tigers on the Internet.

Reagan was left on her own so I chatted with her about Barbie and suggested she draw a picture of Barbie, photograph it and we could make a story, which she did. Reagan appeared to enjoy this interaction and to share what is obviously an interest for her. I had noticed she carried a fan with her as she played and asked her about this.

“It has power, to get the kids!”

Reagan was able to use the cameras each day, taking photos of other children at play and chatting to Jessie about this was something they had in common. She liked to pose for Jessie as he filmed, especially when she was dressed up in her favourite dresses.

I showed Reagan how she could draw on Kidpix as well and this became another way for her to express her ideas. She became quite skilled at navigating her way around the programme and told me “when you press on the rubber, the bomb comes”.

Over the next few days the children had been painting their faces, Reagan included. This changed her play. She was now a monster. She saw herself on video as part of the tiger video and asked if she could use Kidpix again. Not to draw Barbie but a monster this time, “a red monster with four feet”.

As time went on Reagan continued to use Kidpix, this was her preferred way of drawing her pictures, and I think she enjoyed the interaction with me. It was someone to talk to about Barbie and share her interest, we looked on the Internet to find some pictures of Barbie and Reagan incorporated these into her work.
Reagan likes to dress up in her Barbie dress. When she wears this dress, it means she plays quietly in the family area, cooking or walking quietly around outdoors, sometimes talking to others but being quite serene so “the look” isn’t spoiled.

Today there wasn’t much interaction with other children so I asked her to share her interest in Barbie. She told me about the dresses she wears and I suggested we could find some Barbie dresses on the internet and she could help to do this. This is what we found.

I asked Reagan if she had drawn a picture of Barbie before but she said she didn’t think she could. I suggested she have a try and she could take a photo of it to put alongside the other Barbie pictures. Reagan was keen to have a go and this is the photo she took of her drawing, which she downloaded on the computer. After doing this Reagan then drew another picture. This time she used Kidpix, creative software for young children.

Sharing this interest of Barbie, with Reagan, has enabled her to share her ideas and initiate conversation. It is a real interest for her and using different technologies has enabled this interest to be fostered and built on. When we discovered the pictures of Barbie on the internet, I realised what a wealth of knowledge Reagan has about her and the fact that there were pictures available made Reagan very excited.

I looked forward to learning more about Barbie from Reagan.

Te Whāriki documents the need for young children to experience an environment where they learn strategies for active exploration, thinking, and reasoning and to develop the ability to represent their discoveries, using creative and expressive media and the technology associated with them.
22-5-06

I have noticed Reagan likes to dress up and play pretend play with her friends. One day she was a polar bear, the next day she was a cat and she likes to be Barbie as well. Yesterday she played a game with Zeb and Samuel and she was Lava Girl, they were Superhero and Shark Boy. Reagan shared her ideas with her friends, she was able to play with many different children while deciding for herself what role she wanted to play in the games.

Pretend play plays such a big role in the lives of young children. It allows them to develop their oral language which impacts on their future literacy practices. Joining in socially and being able to co-operate and share ideas and to plan what you are going to do are such important skills to have and Reagan has shown that she can become involved and communicate her ideas and feelings through her play.

19-6-06

Last Friday Reagan joined in play with the other children. Once again it was pretend play but this time she had a painted face. The other children were playing their tiger game for their movie, they were sleeping together in their cage, also with painted faces. Reagan played a lot by herself but would join in from time to time with the rest of the group.

Today I asked Reagan if she would like to see the movie with herself in it. She was keen and after watching it she said, “I was a monster and I scared everyone”

![Image of Reagan with painted face]

After watching the movie Reagan asked if she could draw another picture on the computer like the Barbie one she had done previously. This is what she drew.

![Diagram drawn by Reagan]

“This is a monster with heaps of eyes, with four legs”.

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It was great to see Reagan expressing herself in different ways. Using different forms of ICT was encouraging her to do this. Young children are born into a digital world and she is enthusiastic to try new ways to support her learning. This monster role was one I hadn’t seen before. Will it continue after seeing herself on video, or will there be a new role in the future?

29-6-06 Teacher: Carol

“That’s me, Australia and Chinese supposed to do. They supposed to do that, hold their hands like that. Sometimes I let other people wear it (the dress). I play hide and seek. I pretend to be Barbie. She plays on the slide, she plays hide and seek, she does handstands, then rollie pollies. ‘Cause I saw some Barbies at the beach and one rollie pollied and then she rollie pollied into the sea but she wasn’t drowning”.

This was Reagan’s story she told me when watching her pictures on the computer. The photos formed the background to kidpix which she recognized and she then asked if she could change them. “I want to put flowers on, can I do that, that is cool” This is Reagans picture

Next Reagan decided to change one of the photos. “I need pink and purple, she will have purple eyes”. Holy! Look at what I just done”.

Reagan had painted her face again today. As she was working I asked her about her painted face. Her reply was “I’m a lion, a quiet lion, a very quiet lion”.
Reagan’s confidence and ability in using this technology was growing, by being able to experiment and play with it in ways that are meaningful to her. It is providing another way for her to be able to share her stories and to illustrate them as well. I was enjoying sharing these learning moments with Reagan.

When Jessie and Reagan played in the family area, Reagan was once again Barbie. She jumped at the opportunity to pose for Jessie, she knew what having your photo taken was all about.

These modern cameras are great! If you don’t like the photos, you can delete them and start again. These children are capable and confident users of technology.
**Samantha: a case study**

Samantha was aged 3 years 8 months when I began my research. Her profile showed her interest in pretend play and it was clear that she liked to take on new ‘roles’, a mother, a cat or a dog. She was also a close friend of Ethan’s and imaginative play was a common interest. To start my research findings with Samantha I videoed her at play before using ICTs. Samantha had been playing with Ethan and play would unfold with both children stepping into their roles with often an unspoken understanding between them. The first day I videoed Samantha she was a tiger. She had put on the ‘lion hat’ and crawled around outdoors roaring and threatening others with her claws if they got too close.

I showed Samantha the video camera and explained what it could do. She was keen to use it and filmed familiar things within the kindergarten, watching what she had filmed on replay.

The next day Samantha used the camera again and also the digital camera, taking photos of her friend when he was Spiderman. Samantha made this into a short movie using imovie software and shared this with him.

Samantha watched the video footage of her being a tiger with her friends. I had the digital voice recorder going which recorded such laughter and excitement. We talked together about making another movie and Samantha thought there should be animals; lions, alligators and snakes. As she said this, the talk stopped. Samantha wanted to play and immediately went into her role as a tiger again. I did the filming as Samantha was so intent on her play but she was aware that the camera was filming her. The following day Samantha watched the video with her friends and they decided to make another tiger movie, this time with 3 tigers. As the play unfolded Samantha was now eating, sleeping, and climbing. Samantha wanted to edit this video herself so I showed her how to download the clips into the clip pane.

I suggested that we could have a look on the internet to find video clips of real tigers and maybe tiger noises and she could include these in her movie. She was keen to do this and we did this in the playroom so the other children who were interested in this tiger play could join in. This was linking with the important strand of Mana Whenua (belonging) from the pre-school curriculum Te Whāriki.
Also on this day Samantha was a baby and her friend was the Mum. A digital camera was used in their play but when Samantha asked for a turn, Mum told her “babies don’t know how”. If only she knew how competent this baby was!

As the days go by, Samantha’s tiger play continues. The first thing she does is put on her tiger hat. Her movie was watched each day, she was now using kidpix to draw tigers. Using this creative software was a new way to combine her interest in tigers and her increasing ability to use technology. Using the mouse, dragging and dropping were being done with ease and giving Samantha a sense of Whakamana as her work continued.

I burnt her movie onto a DVD so she could share this with family and friends building this important relationship between home and the centre. Samantha also continued to use the digital camera to photograph her work. She wasn’t so keen to use the video camera, control of this she found difficult but was always keen for me to film her tiger play and then she would use the software afterwards.

Her tiger play was following new paths as well. Samantha made a tiger from a cardboard carton, painted it and added a tail. Ethan tried to cut the tail saying it was too long but Samantha said “No, tigers have long tails”.

Watching the tiger movie again with her friends brought a new response. The first times it was watched, there was a lot of excited laughter. Now Samantha was quiet and recalling the play with her friends, discussing what had happened. Going back to play they needed a cave to live in.

Samantha would also revisit her learning which was portrayed in her portfolio. Discussing her learning stories with her friends was a chance to build on past experiences and the visual documentation was another prop for her to use when returning to play.

Samantha is continuing to use the digital camera to document play of other children. I videoed this happening. She took several photos of Ethan and I helped her to make a slideshow of her photos. Samantha watched this 5 times. “Ethan is a kangaroo”, she explained.
By building on her interest in tiger play by using technology as a tool, Samantha is demonstrating what a confident and capable child she is.

Her Mum wrote in Samantha’s profile after watching her movie. “It was very good. She did well with other children playing as tigers”.

22-5-06

Today Samantha was a tiger. This was the second day she had been a tiger and was sparked after watching herself be a tiger on a video. She was a brave tiger, she confronted Super Heroes and chased them away and then stole their rope so they couldn’t tie her up. This was after she bit the rope like a real tiger would do, when they surrounded her.

Today there was one problem though. Samantha and her friends all wanted the same tiger hat. Ethan decided to make a mask for himself and Jessie, so Samantha was able to wear the tiger hat again.

Samantha was a great tiger today. She was sleeping, scratching, eating and climbing. We had a talk about the first tiger movie that she was in and I suggested we look on the Internet to find pictures of real tigers and maybe some tiger noises to add to the movie. Samantha was keen to do this and also to make a movie herself.

The next day we downloaded some short video clips of real tigers. They were playing and walking through long grass. There was even a close up movie of a puma, you could see him blinking!

Later in the afternoon Samantha helped to make a farm, complete with wild animals, including a tiger. She shared her ideas and co-operated with her friends allowing play to continue for a long period of time.

Watching video footage of their play made the children keen for tiger play and to add to it in new ways. I would like the children to use the video camera as well. I wondered if Samantha would be keen to do this?
When Samantha came to Kindergarten today, she went straight to work. She made a tiger! She made it from a box, it had stripes, a tail and she drew its face onto a piece of wood that she glued to the box. Ethan thought it’s tail was too long and tried to cut it off but Samantha said she wanted it to have a long tail because that is what tigers look like.

It was great to see Samantha expressing her imaginative ideas through her work and also to be able to tell Ethan what she was doing and why she wanted her tiger to be that way. She was able to persevere with her work for long periods of time as well. Samantha is experiencing an environment at Kindergarten where she can discover and develop different ways to be creative and expressive. Making this tiger has shown that she can build on her pretend play in ways that are important to her, using her own initiative and persevering when problems may arise.

Here is Samantha with her tiger hat on. She is watching video clips of real tigers with her friends. This has inspired Samantha’s imaginative play and she is keen to make a movie of her own.
Today Samantha looked at the tiger movie again. She had seen the movie clips of real tigers which had been downloaded from the internet and today there were the sounds of real tigers to listen too. I explained to Samantha that we could add to the tiger movie by adding pictures and sounds. She was keen to do this and drew her own picture to add and also we “grabbed” some photos from the video clips and put them in too. Adding the sounds made it more real for Samantha and she wanted to put photos in the movie of the tiger she had made from a box.

The tiger interest has been continuing for some time now for Samantha. Today she took a photo of her picture herself to add to the movie and with help she was able to put it in the movie herself too. Using technology is helping Samantha to build on this interest by seeing digital images of her work and sharing these with other people. Samantha is keen to share this movie with her Mum so I will burn this onto a DVD for her.

One of the learning outcomes within the pre-school curriculum is Contribution. This is visible in Samantha’s work as she is able to contribute her own special strengths and interest in her tiger play and she is discovering new ways to be creative and also to find new ways to seek knowledge.
7-6-06

After watching the latest tiger movie today, starring Ethan and Samantha!, Samantha went straight into play again. This was after discussing the movie with Ethan and recalling what had happened. This time Samantha wanted somewhere to live, a cave, and Ethan wanted something to hide in. Other children came and wanted to join in and instead of scaring them away, Samantha was quite happy for them to be tigers as well. She talked with these children a lot and told them what she wanted, if they wanted to stay and play. Sometimes they wouldn’t listen and she had to growl at them like real tigers to frighten them away. That worked!

Samantha’s play shows that she can make her own choices and determine what she want to do. She and Ethan are both showing tolerance towards others and are working out ways to deal with change and surprises. Their pretend play is encouraging them to work with and alongside others.

26-6-06

Today Samantha came to Kindergarten and the first thing she got was the lion (or tiger) hat. She told me she was going to be a tiger again today and sure enough she was. When she saw the other children using kidpix she asked to use it as well and she drew a lion today. “It doesn’t need stripes cause it is a lion”

Samantha’s interest continues. She is getting better control of the mouse now and after trying new things like background pictures for her lion, she said she just wanted the lion by himself.

It is great to see Samantha make her own decisions to further her interest in tiger play. She knows that using the computer is another way she can use to express her ideas and use it as a tool to build on her interest in the way she wants.
**Zeb: a case study**

When I first started my data collection, Zeb was aged 3 years 5 months. It was clear that Zeb spent a lot of his time engaged in pretend play, often by himself when he played with trucks and toys in the sandpit or in the block area. At these times he would pretend to be the driver, using a gruff voice to be in character. When playing with other children, he chose the moment to join in play and was always accepted by the group. He would choose his own role that he would act out, often the play was moving along a new path but Zeb would go along happily doing his own thing but accepted by the group.

I was interested to see if using technology would impact on the way Zeb played. Would he continue to drift in and out of play or would it give him more focus and contribute more to decision making. I was going to use the video and digital camera for this project and was keen for Zeb to become familiar with these. Over the next few weeks Zeb was able to use the camera himself to record his own interests and to become familiar with being videoed while he played.

After watching the video of play with the other children, we discussed making a movie. Zeb joined in the conversation and thought he could be Batman. Batman he was and there was a lot of interaction with the lions, Spiderman and snakes that eventuated during play.

Watching the movie with his friends made Zeb very excited and he wanted to return to build on this play.

Being a Super Hero was Zeb’s main role when he took on another identity and this was a feature of his pretend play before I started my research.

This role continued for Zeb and when the other children became tigers, he would go off with the Batman cape.

I introduced Zeb to Kidpix and showed him how to make a slideshow using the photos he had taken and how he could use them as a background and decorate them in his own way.

This was exciting for Zeb and he was keen to be part of the group of children using the cameras. The original tiger movie had been added to by Ethan and Jessie and Zeb watched it keenly. For the next 3 weeks, Zeb joined in tiger play, he would paint his face, he was now making decisions in play and had a real focus. He would help to get resources and set up a cave for the tigers to live, he would sleep and eat like a tiger.
Zeb was there when I downloaded video clips of real tigers and tiger growls, from the internet. This helped to impact on his play, he was now part of the group of tigers. Tiger play continued for Zeb. Watching himself on the movie led to this interest being continued every day. He was practising using the camera as well, but he wants to be part of the movie, to be a tiger.

Zeb and Ethan talked about making another movie and Ethan said he would like it to be about pirates. Zeb liked this idea and said “I will go aargh, aargh,aargh”.

The pirate movie was made by Ethan but Zeb offered suggestions and talked about his play.

These movies were then made into DVDs so Zeb could share his play with his family and friends. Building relationships with families is an important link within our curriculum so this has been exciting for Zeb.

7-3-06

Zeb has been joining in imaginary play recently. When a group of children played in the “car” Zeb joined in, watching and listening. He followed Jessie’s suggestions and agreed with his ideas. Zeb was on the fringes of the play and came and went as he pleased. At one stage he said “I drive, you guys sleep”.

The group then got larger and Zeb just accepted them being there and took his role "I’m a big kid aye?"

Two days later Zeb joined Joel and his friends in the sandpit and once again he fitted into this small group with ease.

It was interesting to notice Zeb’s progression into imaginary play. Already he was forming strategies to join in a game that had already formed, knowing who to approach and when, and the level of involvement to keep everyone happy. At this stage Zeb wasn’t making major verbal decisions in play, it would be interesting to see if this develops.

29-3-06  Zeb’s mother shared this story with me today about Zeb’s play at home.

“Zeb has recently played a game which lasted about 3-4 days. He popped up a play house tent and told everyone in the house it was a rubbish bin (skip) and then began picking up all the rubbish around the house (this was anything he could put his hands on, books, magazines, clothes, toys, blocks) He would walk with a swagger and toss everything in his “bin” then he changed the way he loaded his rubbish and was a
wheelie bin truck, he would back up and raise the rubbish above his head and toss it
over his head, all the while making noises like the truck. He would even shake both
arms like the truck to get the last bits of rubbish out of the bins. Zeb also would not
allow anyone to put anything in the bin unless we followed his instructions and acted
like rubbish men or trucks”!

25-5-06

Zeb likes to be a super hero at kindergarten. The last few days he has been Batman
and interacts with different children as he plays this role. “C’mon Robin”, he said, in
a gruff voice, “it is time to go to our house”. Keanu was Robin today.

Today he made a mask of his own, to add to his play. He has been watching Ethan
make masks most days. As he drew lines on the mask, he explained that “these are the
things that go up”.

He has also been Shark Boy too, playing with Samuel and Reagan. They were Lava
Girl and Super Hero

22-6-06

Today Ethan and Zeb made a pirate house for the pirate movie that they had planned
previously. Ethan wore the tiger hat as he worked.

This play included such a lot. First they had to set the house up and they needed boats.
The barrel swings were decided on for this.
They went sailing, they went fishing, they had to climb the net to get out of the boa
They had a race. They had to organise “Fix it Men”. They had to secure their house
with ropes against intruders who might want to put their boats in the house.

: This play came about through previous talk about making a new movie. Ethan and
Zeb had both wanted to be pirates. Other ideas came up about tigers chasing seagulls
and painting faces but this did not eventuate today.
It was interesting to note that Ethan wore the tiger hat throughout this play. Does the
fact that he has seen himself in movies as a tiger influence this and encourage him to
start his day this way, even when play goes onto something else?

It was apparent that Zeb and Ethan were both keen to build on previous play
experiences, to come up with new ideas which could be changed according to
circumstances.

Language is the foundation of all literacy and it was great to see Ethan and Zeb’s
language grow and develop in meaningful contexts, today through their pirate play.

How Have ICTs Impacted On This Play?

For Zeb, seeing himself in movies and being able to have a say about appearing in a
pirate movie with Ethan has given him a boost in confidence. He has seen himself in
movies as having an equal contribution in play, he can decide on a role and have this
respected.
It has given him an opportunity to reflect on his learning and re-visit it, to build on
what has happened.
Using cameras and software has allowed Zeb to work collaboratively with others, he
can be in control and have his say while playing with ICTs. This has led to Zeb
developing greater confidence and even for such a young child, he demonstrates that
he is capable and increasingly confident.
Data Analysis

To analyse the data I opted to identify patterns and themes within the play described in the case studies, recurring ideas or language. I analysed the five child case studies using a dispositional framework from the assessment framework known as Learning Stories (Carr2001) that is the assessment method I use in my teaching. These learning stories were written in a narrative style to document learning and enhances the principles of Te Whāriki by emphasising participation and relationships. Teacher, child and parent all contributed to assessment, which reflected children’s interests and strengths as well as the progress being made.

Embedded in the learning story framework are the dispositions of taking and Interest, Being Involved, Persisting with Difficulty, Communicating and Taking Responsibility (Carr 2001, P21) and rather than focusing on acquisition of skills, emphasis was on social practices which fit a socio-cultural framework more appropriately. The learning story framework “presupposes that developing these dispositions is at the heart of wise practice in early childhood education and therefore most worthy of assessment” (Hatherly and Sands, 2002,p.11)

I used two main lenses to look at Carr’s framework in relation to my case study children. I looked at an ICT lens and imaginative play by analysing the data to review the three sub-questions of my research:

- Are there differences in the amount and characteristics of language?
- Are there differences in the amount and characteristics of co-operation?
- Are there differences in the amount and characteristics of planning?

This will then lead me to determine whether there are differences in the complexity of learning when ICTs are included in imaginary play.

**ICT Lens**

<table>
<thead>
<tr>
<th>Domain of Learning Dispositions</th>
<th>Being Ready</th>
<th>Being Willing</th>
<th>Being Able</th>
</tr>
</thead>
<tbody>
<tr>
<td>Taking an Interest</td>
<td>Children are developing; interests,expectations that people,places and things can be interesting;a view of self as interested and interesting</td>
<td>Children are developing; a preparedness to recognise, select or construct interests in this place, to make connections between artefacts, activities and social identities across places.</td>
<td>Children are developing; abilities and funds of relevant knowledge that support their interests</td>
</tr>
</tbody>
</table>
Taking an Interest - All five case study children had a strong interest in imaginative play and an interest in ICTs developed over the time of the research. Jessie clearly had an interest in using the cameras, taking photos, making short movies, using Kidpix and inserting pictures into word documents. Ethan could use a digital still camera with confidence, he was able to incorporate this into his play but was more interested in using Kidpix and imovie software to make his pirate movie. He was familiar with using the photocopier. Samantha, Zeb and Reagan used the cameras, they liked using the computer and software and all children showed a keen interest in working with me to be shown what the ICTs can do.

<table>
<thead>
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<th>Being Ready</th>
<th>Being Willing</th>
<th>Being Able</th>
</tr>
</thead>
<tbody>
<tr>
<td>Taking Responsibility</td>
<td>Children are developing; A habit of taking responsibility in a range of ways, to take another point of view, to recognise</td>
<td>Children are developing; Recognition of construction of opportunities to take responsibility</td>
<td>Strategies for getting involved and remaining focused</td>
</tr>
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Being Involved – Planning

When Samantha knew that film footage could be made into movies, she decided to make a movie about Spiderman. She and Ethan planned this between them. Ethan was Spiderman, and Samantha did the filming. Both children made movies, which they worked on over time and they liked to watch them several days in a row. Ethan asked if he could change his pirate picture on Kidpix the next day “I need to put green spots for the stars ‘cause it’s dark now” he explained.

After looking at his tiger he had drawn on Kidpix which was in his portfolio, Jessie said, “I could do another one”, which he did.

Reagan planning centred around her interest in Barbie, and using Kidpix to draw pictures about her play, pictures of Barbie and a monster.

Zeb liked to take photos of his trucks and he did this over time, in the sandpit and the block corner and was often seen showing his photos to his friends.

Ethan also inserted a seagull into his pirate picture when using Kidpix; this was something he had mentioned previously when discussing making a pirate movie.

All children became more involved in planning what sort of and how they used the technology, as their expertise increased and along with this, their confidence.

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<tbody>
<tr>
<td>Taking Responsibility</td>
<td>Children are developing; A habit of taking responsibility in a range of ways, to take another point of view, to recognise</td>
<td>Children are developing; Recognition of construction of opportunities to take responsibility</td>
<td>Experience of responsibility, making decisions. Being consulted, an understanding of</td>
</tr>
</tbody>
</table>
Taking Responsibility - Leadership

All children took a leadership role in that they worked collaboratively with others and shared their knowledge about how to use ICTs. Jessie said, “There’s the button over there” for the sound on Kidpix.

When using the digital camera Ethan said “You press that button, no not that button, that button, explaining to Alyssa.

Ethan made a mask, which he photocopied, for Jessie. Samantha made the decision that she would make a movie of Ethan.

All children set their own personal standards for their work. “I don’t want that one,” said Reagan, deleting her work from the computer.

Persisting with Difficulty

When Ethan’s drawing disappeared after clicking the mouse too many times, he would start again. Four times, he did this. Technology can be frustrating as well as useful!

Control of the mouse was a challenge for all the children to start with but they had increasing control as time went on.

Control of the video camera was difficult. Jessie and Samantha used the camera to experiment and practice with. Playing and practice helped children to become familiar
with the equipment and to build up confidence in the users, they seemed to need this
time to practice and play with no purpose in mind.
Reagan was interested in changing her Barbie pictures and explored different ways to
do this.

<table>
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<th>Being Ready</th>
<th>Being Willing</th>
<th>Being Able</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communicating with others</td>
<td>Children are developing;</td>
<td>Children are developing;</td>
<td>Children are developing;</td>
</tr>
<tr>
<td></td>
<td>The inclination to communicate with others in one or more of ‘100 languages’ (Edwards, Gandini and Forman, 1993) to express ideas and feelings; a view of self as a communicator.</td>
<td>Responses to a climate in which children have their say and are listened to.</td>
<td>Facility with one or more languages, widely defined; familiarity with a range of context-specific ‘genres’; script knowledge for familiar events.</td>
</tr>
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</table>

**Communication- Expressing Ideas or Feelings**

A variety of language was used in different contexts when using ICTs.

When Ethan was drawing his pirate picture, he said “Can I go back to the paint brush so I can paint the sky? It looks like a crocodile doesn’t it? It’s got a crocodile mouth and crocodile hair.

Making movies lead to children discussing their work and play while involved in other activities. Ethan was overheard saying, “We could make another movie about Batman. I could be Batman and you could be Batman. You know what I am going to do? I’m going to marry a policeman, a silly policeman.

Reagan said “Holy, look at what I just done” when drawing her Barbie picture. She also had increased understanding of using software, “If you press the rubber, the bomb comes” to erase her pictures.

When Jessie was drawing his tiger, he said, “He needs a tail, a funny, funny tail. That’s his stripes. That’s like a big tail. He’s finished. I’ll put the mouse back, we need to print this out”. He also liked to talk about his work with his friends, looking through his portfolio together.

**Imaginative Play Lens**

**Taking an Interest – Participation**

All children had a strong interest in pretend play and acted out different roles over the course of the term.

Ethan was Spiderman, Superman, Batman, dog, pirate, tiger, Mum.

Jessie was son, bubba and a tiger.

Samantha was a cat, pirate, tiger, and baby.

Reagan was Barbie, a monster, polar bear, dog, Lava Girl.

Zeb was a tiger, pirate, truck driver, Batman
The interest that young children have in popular culture was obvious with their superhero play and Barbie.

All children participated in ways that were meaningful to them and demonstrated that they could co-operate with others and participate to keep play developing.

Zeb tried to catch the tiger with a rope; he was Batman at the time. Jessie often followed Ethan’s lead jumping off the box when he was ‘shot at’ and joined the tigers under the table.

It was noticeable that Ethan’s confidence grew as he played. Often in the past if others confronted him, he would walk away, but now he would confront them and be assertive, this may have been because he saw tigers and pirates as fearless creatures when he was in role, or it may have been from renewed confidence in himself. He was also making many decisions in play that were respected by the other children.

Samantha would also allow others to join in, if she chose to. Once, other children joined her in the cage, she just went to sleep in her cave and ignored them. If she didn’t want them to join in she would tell them.

Reagan had the ability to be in role and enjoy solitary play; this was when she was Barbie. She also had the ability to join groups if she wanted to, when she was Lava Girl and when she was a monster, she joined the tigers in their cage.

**Being Involved- Planning/ Building on Play**

All children extended their play in various ways and to varying degrees after using ICTs. Zeb, Jessie and Ethan all made masks at different times and all children kept play continuing by making decisions and suggestions, Whether this would have happened anyway is debatable but the roles they were in before ICTs were introduced were not repeated during the time I was collecting data, except for Zeb who was Batman before and after data collection.

Ethan built on play in different ways, he built beds in the sandpit shed on the shelves, he helped make a farm in the block corner, he would run away from the tiger and then become one.

Jessie and Reagan followed the lead of others, R was the only Barbie and the only monster when she played, her decision-making and participation may have been greater if other children were in the same role.

This also applied to Jessie, he liked to be ‘son’ or ‘bubba’ but his friend who was ‘sister’ or ‘mumma’ had left kindergarten so that play stopped and he wasn’t a decision maker in tiger play.

All children used props to further play. Dressing up was part of being in role and they would frequently paint their faces to be in role as well.

Reagan used a fan when she was Barbie “for power, to get the kids” she explained.

Samantha got an extra boat and a hose for petrol, Ethan put up a flag on the pirate house. Zeb used ropes, mats and tyres.

**Taking Responsibility- Taking and Giving away Leadership**

Jessie was a child who appeared to follow the lead of others but when he was involved in family plat and re-enacting home situations, he made more decisions and directed play.

Ethan was a leader in both action and with his assertive language. “There’s not enough room in there”, he said, when others tried to join in and he told Zeb to get
some blankets for the cage. Ethan would also check with Zeb, “Is that alright Zeb?”, showing that he valued his opinion and showing an ethic of care.

Zeb was able to see when he could help and he often did this without talking, as he did when he helped untangle the ropes for the boat. He could also be assertive. When Ethan asked for the rope he said, “No, we save this for tomorrow. I’ll hide it”.

Samantha showed leadership by acting out her role. As a tiger, she bit the rope when others tried to catch her, then took the rope and ran off with it.

When she was told “you died” she chased her attackers.

**Persisting With Difficulty**

This was evident when the children had to deal with children outside the group such as the ‘Fix It’ man who wanted to fix the pirate ship. He was very persistent so Ethan told him to do it over there; this was still the boat but away from where he and Zeb were playing. Zeb also told others to be careful so they wouldn’t break the house.

Having to accept that someone else may be using the ropes, the tiger hat or other props was sometimes trying, especially when they were keen to continue play but the case study children went about this in different ways. Jessie would ask with confidence, the others would continue their play and make alternative arrangements and bide their time until the equipment was available, Samantha would often state that she needed it and would get it, especially when the tiger hat was concerned. When she was a tiger she would attack if threatened by intruders; using claws, showing her teeth and a loud roar to accompany them.

**Communication**

Pretend play impacted on descriptive language over time and this was dependent on the children’s level of involvement and the role they played. When Samantha was a baby, there was no talking, but as the Mum, Ethan said, “I’ll get the spoon for her. Baby, listen! It’s your sister. Listen, I’ll smack your bum!"

On a cold morning with a heavy frost, Ethan the tiger said, “I’ve got cold claws”. Reagan said, “I’m a lion, a quiet lion, a very quiet lion”.

Co-operation was often expressed through language. “We’re tigers, this is where we sleep aye? We’re all friendly tigers, remember”.

Watching themselves on video recalled play, this resulted in discussion and laughter that led to further discussion around planning. For instance “We have to paint pirate faces. I have to win, running to the pirate house for a pirate party. We could have seagulls, like tigers catching seagulls and put the seagulls on the fence. We could draw them and colour them in white, cause they are white.”

Humour was evident. “Let’s make another movie about Batman. I could be Batman and you could be Batman. Do you know what I will do. I’ll marry a policeman, a silly policeman” They did laugh.
My Findings and Thoughts about Learning Dispositions When ICTs Were Included With Imaginary Play.

Taking an Interest – This is such an important disposition, it enables children to become participants in a learning place (Carr 2001) through motivation, and reciprocal relationships. Opportunities for participation also impact on the messages children receive about themselves as learners and have an enduring effect on their capacities to learn in later years. These children coped with changing situations, they were developing a perception of themselves as learners, not only with ICTs but as “possible selves”, belonging to the kindergarten community.

Being Involved- Involvement and wellbeing are closely linked and this became obvious as the children’s enthusiasm, happiness and involvement in play and using ICTs increased. This helped to create understanding and imagination

Persisting With Difficulty – This was noticeable in different ways, sometimes dealing with difficult people or persevering when using cameras or software. Already at four years of age children will choose whether to tackle difficulty and risk getting it wrong or making a mistake. At Selwyn Kindergarten we have learning goals, where children strive to increase their competence, to understand or master something new. This is opposed to performance goals, where children strive to gain favourable judgements or avoid negative judgements of their competence, so these children were seen to persist with difficulty.

Communication- This disposition was obvious in my research, communication with others both verbally and non-verbally. Imaginative play and ICTs allow children to learn as described in the literature review, ways to communicate which is embedded in practice.

Taking Responsibility- The case study children took responsibility by contributing to shared activities, through play and using ICTs, they collaborated, they shared their understanding, they problem solved. Taking responsibility is also about social justice and fair play (Carr 2001) and this was observed as interaction took place and more children were included in play and children expressed their ideas quite strongly to others.

Are There Differences in the Amount and Characteristics of Language?

To answer this question I analysed the video footage in 10 minute sequences before and after the children were involved in making movies, and looked at the trends that were occurring for each child with regard to the impact on the complexity of language, co-operation and planning.
Once again I compared differences before children used ICTs in their play and after ICTs were introduced.

**Zeb’s Language**
Before ICTs were introduced into Zeb’s play, his language consisted of making statements.
For one ten minute period of play, Zeb spoke three times, all of these were statements.
After ICTs, Zeb spoke sixteen times, this included six statements, one explanation, four times when he expressed ideas, three times describing what he was doing and three directives. His sentence structure was longer too. Altogether Zeb’s use of language increased there was an increase in descriptive language and an increase in his expression of ideas.

**Ethan’s Language**
Before ICTs Ethan used descriptive language and was able to express ideas, give directions and explanations. After ICTs the amount of language increased, resulting in increased expression of ideas, directions and explanations.

**Samantha’s Language**
Samantha used mainly statements in her play which didn’t change after ICTs were included. She did express her ideas through body language and facial expression which increased, for example, roaring at others, refusing food and hiding her face under the blanket so she wouldn’t have to eat.
There was no change in the amount and characteristics of Samantha’s oral language before and after ICTs.
Body language and non verbal communication increased.

**Reagan’s Language**
Reagan’s language depended on the role she was playing. If she was Barbie, her language stayed the same in play, but in more active roles, her language increased. This also may have been because more children were involved in play. The use of ICT enabled Reagan to build on these interests and there was an increase in her language when discussing Barbie.

**Jessie’s Language**
Jessie’s amount of language increased only slightly when playing but increased greatly when using technology himself. Jessie’s language before ICTs consisted of short sentences and often one word utterances when playing

“This is how we get into the water to catch our fish aye? I’m just climbing up out of my boat, we sleep in our boats”.
Zeb

“Get out of my way, I’m the driver. Put our boats out of the cave, push your boat out (to Zeb) and we’re going to have a race aye? I won! ‘Cause we changed sides aye, we came out the same end and I was asleep aye because it was night time. Yeah, and I was Batman aye?”
Ethan

“I play hide and seek. I pretend to be Barbie. She plays on the slide, she plays hide and seek, she does handstands, then rollie pollies. ‘Cause I saw some Barbies at the beach and one rollie pollied and then she rollie pollied into the sea but she wasn’t drowning”.
Reagan

“Mummy, Daddy, I’m not bubba”
Jessie
After ICTs his sentence structure increased to four words at the most during pretend play.

The amount and characteristics of language in play not only changed with the introduction of ICTs for most of the case study children but was also influenced by the level of interest they had in play. Samantha was the only child who had a strong interest in play but whose language didn’t change. I believe that this was due to factors outside of the kindergarten setting. Jessie’s interest in imaginative play changed after his friend moved to Hamilton. Their play centred around family play where Jessie was son or bubba and when she left, he joined in other imaginative play but it wasn’t a strong interest where he joined in decision making and shared in ideas. His language did increase though when using technology, a strong interest for Jessie.

Are There Differences in The Amount and Characteristics of Planning?

Zeb’s Planning
Before ICTs, Zeb joined in play with different groups of children but would have his own role and didn’t influence the direction of play. After ICTs his confidence increased, he now made decisions and he stayed in role for longer periods of time. He helped to plan pirate play and his roles included Batman, tiger, pirate, truck driver.

Ethan’s Planning
After ICTs Ethan’s network of friends increased. He became bolder in his planning, directing pirate play and used equipment in innovative ways, making his own movie and predicting the outcome of play. His roles included Batman, Superman, Spiderman, dog, pirate, tiger, Mum. Making masks to strengthen his interests was a popular activity for Ethan.
Samantha’s Planning
Samantha took a lead role in planning although this was usually non-verbal. She would get the resources needed and set them up, making decisions often with a single word “No”. She would lead with her actions. Her roles included cat, pirate, baby, tiger. She had a clear idea of what she wanted in her movies and would plan this as she worked on the computer.

Reagan’s Planning
Reagan’s play was often solitary when she was in role, she liked to be a monster by herself and play alongside tigers. She was a lone Barbie to start with but after using ICTs to strengthen this interest, her story telling increased and she invited Ethan and Jessie to join her play. She even encouraged Ethan to wear a Barbie dress so he could be in role as well. Reagan’s roles included Barbie, monster, Lava Girl polar bear, dog.

Jessie’s Planning
Jessie planned his play by making a mask, painting his face, making a tiger to add to the movie. He used cameras to enhance his interest in family play and to photograph other children, enjoying showing them his photos. Jessie’s interest in technology led to him planning to use these as part of his day’s work. For example, using Kidpix, making a slides how or filming others. His roles included son, bubba, tiger

Are There Differences in the Amount and Characteristics of Co-operation

Zeb’s Co-operation
Before ICTs, Zeb often joined play without adding to decision making. As the movie making continued, Zeb would help to build tiger cages and pirate houses. This meant getting mats or barrel swings from the shed. These were heavy so Zeb physically helped. He offered suggestions

Ethan’s Co-operation
Ethan was a leader in play but as play and movie making continued, there was an increase in his co-operation with others. He allowed more children to join in play and asked for their opinions. Before ICTs he often would walk away from some play but his increased confidence made it possible for him to discuss issues with other children.
Samantha’s Co-operation
Samantha allowed more children to become involved in her play after using ICTs. Prior to this she would play with Ethan almost exclusively but as more children became interested in her movie and her lead role as a tiger, she was happy to have there company. Samantha physically helped others to get resources as well.

Reagan’s Co-operation
Reagan’s co-operation came about mainly with her family play, but was not often seen with her pretend play with others. This was often because she was in a separate role to them. She did help to set up the tiger house even though she was a monster, on one occasion. Posing for photos was another occasion when Reagan was happy to co-operate!

Jessie’s Co-operation
Jessie showed Zeb how to use the camera and liked to take photos of other children. He followed the lead of others in play but was actively involved in getting resources and building on play.

What Processes Have Contributed to ICTs Contributing to More Complex Imaginative Play?
At the start of the research, some of the children were familiar with using kidpix and using the computer. They have been working alongside others for some time; this informal peer teaching enabled them to have a better understanding of Kidpix when it was their turn. Through the case studies, all children gained a deeper understanding of Kidpix, although Samantha was more interested in making movies and only used Kidpix once, to draw a lion.

The cameras were available each day for the children to use as and when they wanted. All children used the cameras regularly. Samantha, Reagan and Jessie used the video camera as well as the digital still camera but Ethan and Zeb preferred the still camera. The children found control of the video camera difficult but interest led to perseverance and experimentation. I worked with the children to download video clips of real tigers and tiger noises from the Internet. This was exciting for the children and attracted others who shared in discussion that then led to more involved play, building on what they had done previously.
Watching themselves on film led to new decisions being made “we can have 3 tigers”, “Lets make a pirate movie. I will be a pirate and go aargh, aargh, aargh. Language became more expressive.
When the software was first used, I was the one using it the most to guide the children, but increasingly they were able to use imovie and insert photos as well. Putting photos in, as a background to Kidpix was a new skill for me as well so we learnt together.
Learning from each other was apparent all the way through, listening and watching was a great way to learn what to do, and Ethan and Jessie were always there to tell the others! Being able to use photos and video was another way to tell stories and the slideshow on Kidpix enabled Zeb to put his photos together like a movie. When this was exported to imovie, Zeb could tell his own story about his photos, another example of multi modal literacy.

Working with the children and scaffolding their interest has been very important for this research. Having an adult who can share knowledge of ICTs and also build on the children’s interests is so important in early childhood settings. Young children only know about ICTs from what they have already experienced or from watching others. By being able to use the cameras and the software increased their confidence and ability to have a go on their own. This in turn increased the capability of the children and a desire to build on play and retell their stories to each other as they watched the replay.
Are There Differences in the Complexity of Learning
When ICTs Are Included in Imaginary Play?

As the children were shown the uses and purposes of ICTs the more complex their understandings became. Having a teacher scaffold their learning and share knowledge with them was crucial in developing their own understandings of ICTs and allowed complexity to happen. Also having time and opportunity to play and experiment with applications and hardware was an important factor as well. Having the opportunity to share their imaginative play through collaboration, story telling and making movies led to more complex learning.

• They looked playfully at different ways to do things.
• There was more involvement of children over time.
• There was increased collaboration.
• Children tried new ways to be creative.
• There was more descriptive language used over time.
• Children were more focused and stayed in roles for longer periods of time.
Discussion:

Imaginative play is part of children’s natural learning, it is something they do to make sense of the world they live in and the lives they lead. It impacts so much on all areas of their development and this is recognised within early childhood settings by allowing time and resources to be available to encourage this play. It is also documented by teachers, through assessment. At Selwyn, this assessment is done through the writing of learning stories which children can take ownership of, re-visit and build on previous play experiences.

ICTs enhanced the imaginative play of the case study children at my Kindergarten. Being able to watch themselves in movies and experiment with the cameras and software inspired the children to introduce new ideas and props into their play and to listen and accept ideas from other children. They stayed in roles for longer periods of time, ideas became more complex as they created new stories for their play which in turn impacted on the amount and characteristics of language, planning and co-operation.

What the children ended up with were digital stories, including video footage, photographs, images found on the internet, the children’s own voices and popular culture. These stories were multimodal and digital and had wide appeal with the children. By watching themselves on video and listening to themselves as they played, offered the children an opportunity to revise their story, to add more details, more props.

“the immediacy of digital and audio replay and playback offers students control and choice” (Van Scoter,J and Boss, S 2002).

Technology can support and extend learning in valuable ways when used appropriately by skilled teachers but should not replace tools already available to children but be added to them so children can explore, create and communicate. There was a period of time when ICTs were not included by the children in their play and at the time I wondered if it was because the cameras were real and the children may have been reluctant to use them because of this fact, they may not be allowed to use them at home.

I purchased two realistic toy cameras to see if they would be used more often. Jessie, who liked technology said “these are the new ones (the toy cameras) and these are the old ones. (the real cameras) I realised then that this wasn’t a barrier, it was just that for the play at that time, technology was not a tool that was needed by them. Children also have different interests around technology, some like to use cameras, some like to use software.

Young children only learn about ICTs from their peers or from interested adults who can show them the possibilities. As their emergent technology teachers we need to be mindful of the role we set in using ICTs, do we value them?

Wise practice around ICT use, will see teachers scaffolding and supporting children’s interests, incorporating ICTs into play experiences.

With many teachers still learning about ICTs themselves, the opportunity can be there for children to be the ‘teachers’ as well.
Technology provided an extra ‘prop’ to enhance the children’s socio-dramatic play and the research I carried out with these children has given me a clearer understanding of how technology can be used to support children’s learning through imaginative play. It also highlighted and captured what the literature tells us, how language, social and learning skills are developed through imaginative play.

I believe I integrated Siraj-Blatchford and Whitebreads (2003) principles for determining the appropriateness of ICT in the early years, successfully, and this is something that other teachers can consider when using technology in their centres.

1. Applications should be educational
2. Encouraging collaboration
3. Integration and play through ICT
4. The child should be in control
5. Applications should be transparent and intuitive
6. Applications should not contain violence or stereotyping
7. Awareness of health and safety issues
8. The educational involvement of parents.

This research project has provided an opportunity for the children’s voices to be heard through their play, to have their imaginative play valued for the learning it brings and has led to a deeper understanding around the use of ICTs for young children.
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Acknowledgements

Through the support of many people I have been able to share with you aspects of my learning that I hope will challenge and provoke discussion with your colleagues about values, beliefs and learning for young children.

- Thank you to Professor Margaret Carr and Wendy Lee for the wonderful guidance and support as my professional partners.

- Thank you to Vince, Ann, Sandra, Michael, Claire from CORE Education for your commitment, support and friendship to the e-fellow group

- Thank you to Maureen Lambert from the Ministry of Education for your support and vision and provoking conversations!

- Thank you to the children, families and staff from Selwyn Kindergarten who understand that learning is fun and rewarding when you learn beside others that you respect.

- Thank you to the other efellows, Gill, Elaine, Brian, Jan-Marie, David, Paul, Liz, Faithe, Kerry for being such a fun group to work with. I know our friendship will continue past this year.

- Thank you to Noel for his support at home, who realised that this year was to be different to others.

Please feel free to email me with comments and feedback once you have finished reading my report. I would love to continue this discussion.
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