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Jack's story: A need to know

Sara Archard
sarchard@waikato.ac.nz
Faculty of Education, The University of Waikato, Hamilton, New Zealand.
&
Simon Archard
simona@waikato.ac.nz
The Kids Club 2, private kindergarten, Hamilton, New Zealand.

Abstract

This article examines a recent case study exploring evidence that children in early childhood services can use ICT to direct their own inquiry learning. A qualitative case study involving an interview and the learning story tool of assessment was conducted to describe the experience of one child and his teacher. They engaged in sustained shared thinking using ICT as a tool to facilitate inquiry in an early childhood setting. The findings indicate that children in early childhood settings can use ICT to direct their own inquiry learning. Two key factors are identified that enable this. These factors are the child as an active learner, and a supportive well resourced learning environment. In this article we argue that these factors need to be acknowledged in teaching practice if ICT is to be used in meaningful and purposeful ways.

Introduction

Information communication technology (ICT) can be defined as "anything that allows us to get information, to communicate with each other, or to have an effect on the environment using electronic or digital equipment" (Ministry of Education [MoE], 2004, p. vii). ICT is embedded in many social, economic and cultural practices that occur

within society, community and family constructs (Selwyn & Facer, 2007). It is commonly recognised that a wide range of new technologies are shaping children's interactions and learning (Selwyn & Facer, 2007; Plowman, McPake & Stephen, 2008). Therefore, it is important that early childhood education responds to the place that ICT has in young children's lives.

In early childhood education ICT can include "computer hardware and software, digital cameras and video cameras, the internet, telecommunication tools, programmable tools and many other devices and resources (MoE, 2004, p. vii). Until recently literature frequently focused on the technical use of ICT in early childhood settings. It emphasised the use of software and games aimed at developing children's eye–hand coordination and the technical skills needed to play games. Many of the games that were initially available in early years settings had as their purpose the practice and testing of literacy and numeracy skills (Makin & Diaz, 2002). However games often deny children opportunities to explore, create and manipulate content (Brooker & Siraj-Blatchford, 2002; Plowman & Stephen, 2005).

The contents of a special 2009 issue of *Educational Researcher* on ICT and education focused on high school contexts, but more importantly it highlighted the capacity for ICT to encourage children's dispositions to direct their own learning and to improvise in new contexts (Greenhow, Robelia & Hughes, 2009). In early childhood settings, there is recognition that ICT can and should afford "enhanced learning opportunities through the meaningful use of ICT" (MoE, 2009, p. 2). This recognition aligns with the aspirations of Te Whāriki, the early childhood curriculum, which seeks to support the learner in action (Carr, 2001; MoE, 1996). Siraj-Blatchford and Whitebread emphasise this point when they comment that:

> Children learn to be confident and flexible thinkers when they grow up in an environment which is responsive and consistent and which encourages them to be playful. They need to be in control of their own learning and will learn most powerfully through tackling real and meaningful

> problems in their own ways rather than being 'taught' set procedures. (Siraj-Blatchford & Whitebread, 2003, p. 39)

In order to enable this to happen, the learning environment requires a combination of static and dynamic elements that, when intertwined, meet the expectations of the learners (Cornhill & Grey, 2010). The static environment refers to the "concrete objects that have been placed in the physical environment" (Cornhill & Grey, 2010, p. 73). This can include ICT resources such as computers, digital cameras, software and internet connection. The dynamic environment "reflects the way things are done when people come together in an early childhood centre" (Cornhill & Grey, 2010, p. 74) and refers to the relationships and activities taking place within the static environment. Such dynamic and static elements are of interest in the study reported in this article. This article explores the features of an environment that enable young children to follow their interests and curiosity through inquiry based learning. It was prompted by an instance of one child's inquiry that led to an episode of sustained shared thinking with a teacher. Sustained shared thinking is a process where both the child and the teacher engage in an active collaborative exercise in learning. It involves a notion of mutual engagement and involvement between the child and the adult centred on potentially instructive content (Siraj-Blatchford, 2011; Wood & Attfield, 2005).

The research context

This study arose from a wider research project titled "Digital citizens in action". This project was initiated by a collaborative partnership between the authors. Their interest in this topic came from conversations about how children might use ICT to support and direct their own learning and the possible implications of this for teaching practice. As a consequence of these conversations they invited three children and their family/whānau to participate in a research project. The children and whānau were selected on the basis that they had shown interest in exploring with ICT in the early childhood centre. The research question underpinning the project was "How might ICT support children in directing their own learning through the curriculum?". This article analyses the

experiences of one child and his teacher as they engaged in sustained shared thinking using ICT as a tool to facilitate inquiry in their early childhood setting.

The setting is a private kindergarten in a large city catering for children aged three-and-a-half to five years old. There is a teaching team of four early childhood qualified teachers and a roll of 30 children per session. Children may attend for three-hour morning or afternoon sessions or a 7½-hour full school day.

The research design

A case study approach was used as a means of providing an opportunity for in-depth study of a particular issue in a particular instance – setting, person or group, or event (Bell, 1999; Bogden & Biklen, 1992). A case study seeks to provide a picture of the richness and depth of a situation and a construction of the reality of the participants' lived experiences within a bounded system (Cohen, Manion & Morrison, 2000; Cresswell, 2005). An interpretivist epistemological orientation was adopted. This approach acknowledges and emphasises the importance of participants' voices, perspectives and experiences in cultural and social contexts. Using this approach it was possible to capture the voice of the child and his mother and explore their perceptions of how ICT might support child-directed learning.

The data was collected using two methods. The first was a Learning Story (Carr, 2001; Carr & Lee, 2012). Learning stories are the most frequently used assessment tool in early childhood education. Learning stories are a credit-based narrative assessment that documents children's learning in terms of what they have done and their approach to learning. They are often carried out in everyday meaningful contexts. They inform interactive teaching and provide opportunities for noticing, recognising and responding to children's learning (MoE, 2004). The narrative reflects and responds to the key concepts of Te Whāriki (the early childhood curriculum) which sees learning outcomes as knowledge, skills and attitudes along with working theories and learning dispositions (Carr, Smith, Duncan, Jones, Lee & Marshall, 2009). Learning dispositions are attitudes that support thinking, doing and being. Examples are curiosity, persistence and taking

an interest (Carr et al, 2009). Working theories can be seen as "… evolving ideas and understandings formulated by children as they participate in their family, community and cultural lives and engage with others" (Hedges & Jones, 2012, p. 38). Te Whāriki is underpinned by socio-cultural theory that asserts that learning takes place through interactions with people, places and things (MoE, 1996). In line with the curriculum, learning stories employ a socio-cultural framework that acknowledge children's and adults' social and cultural influences in their learning and development (Tagoilelagi-Leota, 2010). They highlight the dynamic, ongoing and evolving process of children's learning. Learning stories are often compiled into portfolios and can include other voices such as the child, whānau and other teachers. Learning stories are often written by the teacher and capture an episode of a child's learning. They tend to be written on a computer and have images of the learning episode embedded within them. Learning stories contribute to an individual portfolio that documents each child's learning. They are used to plan for and extend learning and development of the child.

The second method of data collection was a semi-structured interview with the child's mother. This included both open-ended and closed questions about the child's interests and use of ICT in the home environment (Cresswell, 2005).

The participants in this study were Jack (aged four years), Jack's mother (Cushla) and Simon (a teacher). Participants were invited to use pseudonyms but did not choose this option. They wanted to use their real names. Other children's names that appear in the learning story have had their names changed. Human ethical approval for this research was sought and granted through the University of Waikato Faculty of Education research ethics committee.

Findings

The findings are presented in two sections. The first section draws on interview data and considers Jack as a learner. The second section analyses Jack's learning story and identifies his use of ICT to support his learning.

Jack as a learner through his mother's eyes

In an interview, Jack's mother Cushla identified Jack as a curious, persistent learner. She commented that he saw many learning opportunities in everyday things and that he often pursued his interests with great enthusiasm. This is demonstrated by her comment in which she describes how Jack considers the possibilities for what a chicken bone could become:

> The other night Jace (Jack's father) was cutting up the chicken for dinner and Jack thought the bones could be like a dinosaur. He kept a bone, he washed it and the first thing he did the next day was to make a dinosaur trophy sellotaping it all up.

The interview with Cushla highlighted that not only is Jack always looking for new things to know about but also he uses a range of tools to help him achieve this. Jack uses a repertoire of resources to find answers such as his parents, computers and books as Cushla explains:

> Something always leads to something else. Every day there is just something different. He has a memory like an elephant. Books are a big part of his life – he loves his books.

At home Jack is able to access the computer whenever he wants. Jack and his father, Jason, often work together at the computer to find interesting websites. These websites can be educational or recreational. Cushla reported that Jack had been confident to navigate websites in pursuit of his interests from the age of two and a half:

> Since the age of two and a half he can navigate websites. He goes into favourites and goes around.

She highlighted that Jack initiates his own investigations using the computer: "He initiates [a request of] 'Can we Google that?' if our answers don't satisfy him".

From Cushla's perspective Jack also appears to know how to cross boundaries from home to the kindergarten, to find a satisfactory answer to his questions:

> He doesn't tell us a lot about what happens at kindergarten, however if our answers don't satisfy him he will say I'll look on the computer or he says I'll ask at kindy tomorrow.

Cushla emphasised the diversity of Jack's interests and commented that he will often be aware of, and wanting to know more about, current issues. She commented:

> The things that catch him have included the Pike River mine disaster, earthquakes and the tsunami. He has a thirst for knowledge on these things.

Jack as a learner as represented in a learning story

The following learning story, written by Simon, contributes further insight into Jack as a learner who makes active use of ICT to support his learning dispositions of curiosity and persistence.

> Morning tea outside was winding up. Suddenly Jack took a look at the tree trunk. "Simon [teacher], what's that sticky stuff coming out of the tree?" you asked. Joe and Vince [other children] came up for a closer look.
>
> "Well, I'm not really sure what it is," I answered. Then Joe and Vince came up for a closer look.
> "It's the blood of the tree," said Joe.
> Jack replied: "It's tree slime."
> Vince said, "It's tree sap." "Oh, I've heard of that," I replied.
> Then Jack turned around and said, "Hey, why don't we go and check the computer and look at what it is?" The other boys went off but Jack, you

> really seemed keen to pursue your inquiry. I suggested you could grab a photo of it and so off you went and took some ‘snaps of the sap’.
>
> Then it was off to investigate a little further. We talked about the question you had asked and decided what to type into the computer on Google. Now, you were really clear that you wanted to type the question in so I called out the letters. We had many suggestions as to what to look at and we chose a couple.
> “I can print those can’t I?” you asked.
> “Absolutely,” I replied.
> You took yourself off to the printer in the resource room and waited for it to come through. You then wanted a copy for home and you saw to that too.
>
> Jack, you certainly had your ‘spotting eyes’ on this morning. And as always, your curiosity and inquiry comes out. What I also noticed, once again, is how you take control of your own learning and this time you knew what and how to use the resources at The Kids Club 2 to find out what you wanted to know. I really like the way you used the computer and were quite clear about the question we had to ask. It was interesting that you went beyond what the ‘stuff’ was called to wanting to find out what it actually was.
>
> Jack this is just another example of you being a great questioner and inquirer. Without a doubt, a great explorer!!

Jack was the first to notice the sap on the tree. He pursued an inquiry into what it was through discussion with others (two peers and teacher) and then turned to Google to check the answer. Jack was very clear about the question he wanted to ask and he and the teacher shared in his inquiry. Jack used a digital camera to visually document the sap coming out of the tree. He then uploaded the picture onto a computer and printed it

off to take home. At the kindergarten Jack was persistent in his inquiry into the nature of the substance. He requested that he and his teacher use the computer to find some answers to his questions about what the sap was made of. This action was congruent with practices that Jack's mother indicated he had established at home with his parents.

Discussion and implications for practice

This paper details a specific case of ICT use in one child's learning. There are a number of factors within the case that appear to have been valuable in Jack being an active learner. These were: 1) Jack's own initiative as curious and persistent learner, and 2) supportive well-resourced learning environments. Each of these factors is now discussed.

Jack as a curious and persistent learner

Te Whāriki, the early childhood curriculum, has at its core the aspiration that children are "confident and competent learners" (MoE, 1996, p. 9). In Jack's case, this was reflected particularly in his learning dispositions of curiosity and persistence around his 'need to know' at home and at the kindergarten. In the context of working theories of children this 'need to know' can be motivated by a child's desire to understand and make sense of the world that is driven by intellectual curiosity (Hedges & Jones, 2012). However, Jack also brought the experience of, and interest in, a range of tools to support his inquiries including the use of books, computers, digital cameras, the internet and a printer. Importantly, ICT use was a skill that he was able to transfer between home and kindergarten to blend with and inform the other methods of inquiry he uses. Jack demonstrated the inclination and capacity to identify and find the right tool for his purpose. He had a clear understanding of how to use the requisite tool and who might help him with this. This flexibility and adaptability in both thinking and the use of tools to get information certainly seems to fit with the image of someone who is a discerning 21st century learner (Selwyn & Facer, 2007).

Supportive, well-resourced learning environments

Te Whāriki, the early childhood curriculum states, "children learn though responsive and reciprocal relationships with people, places and things" (MoE, 1996, p. 46). Learning environments are not just places. They are "a complex weaving of elements resulting from values, beliefs and aspirations for children" (Cornhill & Grey, 2010, p. 73). Effective learning environments include resources and afford opportunities for children to take an active role in their own learning. Such environments can be described as having static and dynamic aspects (Cornhill and Grey, 2010). These aspects are interrelated and greatly influenced by the teacher's pedagogy. Jack's story highlights the interconnectedness of these two aspects and the importance of synergy between them. The static aspect of the home and kindergarten environment provided Jack access to a range of ICT tools to support the way his inquiries and to present the results of his inquiry to himself and others. For example, he was able to access a digital camera to take a photograph of the sap that he then uploaded to a computer before using a printer to create a physical artefact he could take home. He was able to use 'Google', a resource familiar to him, to research answers to his questions. The dynamic aspect comprised the interactions he had at home with his parents and at the kindergarten with his teachers. Significantly, the kindergarten setting encouraged a combination of informal and formal learning practices (Plowman & Stephen, 2005). This enabled learning to take place through a mix of learner-centered and adult-directed activities. The progress of the inquiry Jack initiated was reliant on the pedagogical approach and response of his teacher. The teacher was aware of and responsive to Jack's interest, curiosity and need to know. So too were Jack's playmates. Their actions indicated they shared his interest in the tree sap even though they did not appear to be interested in finding out more about it. Jack's inquiry progressed through the techniques of sustained shared thinking with his teacher using the resources available within the static and dynamic environment, Sustained shared thinking involves mutual engagement and involvement between a child and an adult (Siraj-Blatchford, 2011). The inquiry was driven by Jack's interests and not hijacked by the teacher into a formal moment of teaching. It is an example of a child affirming his agency in learning (Plowman et al,

2008). An experience such as this may well set the scene for a dynamic creative pattern for Jack as an active learner in a more formal educational setting.

Conclusion

This paper describes the case of one child in a particular home and early childhood setting. It portrays this child as a competent inquirer who is able to direct his own learning through the use of a range of tools. One of these tools is ICT. ICT use was an expectation and familiar experience for this child. The early childhood learning environment supported and developed his skills and dispositions from home through a combination of static and dynamic aspects that had relational, technical and pedagogical elements. Each of these aspect and elements needs to be considered and accommodated by teachers who are interested in developing a learning environment that fosters a culture of inquiry for all children.

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