Becoming a reader and writer in a digital-material world: An examination of young children's digitally mediated literacy practices in everyday contexts

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Abstract

The digital age has caused a fundamental transformation of literacy, and young children's repertoires of literacy and meaning-making practices have undergone drastic changes, as have understandings of becoming literate in the complex digital landscapes (Kress 2010). Despite these changes, current early years literacy discourses remain stubbornly print-centric and fail to acknowledge contemporary children's cultural expertise, hobbies, popular culture interests and material (physical) and immaterial (virtual) pursuits, which remain largely excluded from classroom literacy practice. This study provides an in-depth and rich description of the digital literacy practices of five children aged between 2 and 6 years in a situated ethnography of out-of-school literacy practices. Fieldwork material was gathered from participant observations, informal conversations and artefact collection and analysed to create an in-depth portrait of emergent contemporary practices in the home connected to contemporary understandings and theories of childhood literacy.

Methodologically, I engaged with Deleuzoguattarian constructs such as the rhizome and assemblage theory in order to think differently and creatively about the research design and to embrace and follow the unexpected ways in which young children know/do/be/create literacies in their everyday life (Kuby & Rucker 2016). I engaged in a process of 'thinking with theory' (Jackson & Mazzei 2012) to plug in posthuman concepts with the fieldwork material in order to become attuned to the particular material-discursive practices occurring in the children's home contexts and move away from hierarchies that privilege the human subject over the nonhuman (Barad, 2007). Rhizomapping was utilised as a diagrammatic form of representation to re/present the fieldwork material in a nonlinear and nonhierarchical manner, enabling a conceptual shift to frame the analyses, take more kinds of evidence into account and think more expansively about the fieldwork material. I argue that it is vital to engage with posthuman thinking when examining contemporary literacy practice due to the complex and unstable digital and material conditions of contemporary times.

This thesis provides insight into the digitally mediated and shifting practices surrounding children's reading, writing and meaning-making, and found the material, embodied, affective and spatial dimensions of literacy are substantial components of their early literacy experiences in their home contexts. The findings reveal that: 1) the children's early literacy experiences were intertwined in complex ways with their intra-actions with everyday materials, digital devices and texts; 2) the everyday materials were important forces in producing literacy for the children and cultivated rich, creative and experimental literacy experiences; 3) the children seamlessly negotiated the online/offline spaces and operated within these hybrid spaces with ease, without differentiating between the virtual and actual.

This research makes an important contribution to the task of reinterpreting contemporary literacy practice in the digital age in order to develop an informed early years literacy pedagogy of transformation for current times. Thus it argues that there is an urgent need to disrupt current literacy policy, practice and curriculum, and for early years

practitioners to conceive of literacy in enlarged ways that are inclusive of the material, embodied, affective and spatial aspects of literacy.

Doctor of Philosophy Declaration

I, Amanda Muscat, declare that the PhD thesis entitled 'Becoming a reader and writer in a digital-material world: An examination of young children's digitally mediated literacy practices in everyday contexts' is no more than 100,000 words in length including quotes and exclusive of tables, figures, appendices, bibliography, references and footnotes. This thesis contains no material that has been submitted previously, in whole or in part, for the award of any other academic degree or diploma. Except where otherwise indicated, this thesis is my own work. I have conducted my research in alignments with the Australian Code for the Responsible Conduct of Research and Victoria University's Higher Degree by Research Policy and Procedures.

All research procedures reported in the thesis were approved by the Victoria University Human Research Ethics Committee (VUHREC), Approval Number HRE 16-155.

Signature

Date 7 July, 2022

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Table of contents

List of tables

List of figures

Glossary of key terms

- **Literacies:** In this thesis I draw from the plural form 'literacies' in recognition of the range of contemporary literacy practices that young children engage in and the multiple ways this concept has been interpreted in academic accounts (Flewitt, 2019).
- **Digital literacy:** A social practice that involves reading, writing, multimodal meaning-making and communicative practices using a range of digital technologies.
- **Posthuman perspective:** Challenges assumptions of humanism to disrupt human centeredness and acknowledges the important role of nonhumans. A posthuman theorisation views the child as part of the world, not separate from it, and entangled with matter in non-hierarchical relationships (Barad, 2007),
- **Assemblage theory:** A heterogeneous collection of elements, both material and non-material, that comes into composition in different ways at different times to produce a literacy activity (Deleuze & Guattari 1998).
- **Sociomateriality:** A consideration of the relations among the social and the material that attempts to avoid a priori assumptions about the material and the social (Fenwick, Edwards & Sawchuk 2015).
- **Intra-activity with materials:** The entangled intra-actions of people, materials, tools, technologies, time, space, environment and so on (Barad 2007).

Chapter 1:
Entering a problem

My research journey: Coming to the research as a parent

As a parent of young children, I noticed how, in my children's unofficial worlds, digital technologies were woven into the everydayness of their lives in a very natural way. I observed how the digital was an entangled part of their quotidian relations whereby their early literacy skills emerged, and I felt a pressing need to document and understand these expanded literacy repertoires. Observing their spontaneous and agentic use of technology, their creative engagements with tablet devices, mobile phones, apps, digital games, internet-connected toys, virtual worlds, robots, YouTube, Siri and so on, and the way they seamlessly manoeuvred and interacted with the material and immaterial worlds around them, led me to consider how advances in technology can significantly shape – and change – early literacy and impact children's reading and writing behaviours.

My children's interactions with digital literacies were the stimulus for this research project, and my serendipitous observations of their experiences with media and technologies and their high levels of confidence and creativity with various tools led me to query whether learning to read and write has changed. During our daily life, it was not uncommon to hear the children ask Siri a question or interweave technological terms into their day-to-day conversations:

- "*Mum – my body is feeling tired. I need an upgrade*". (Age: 5.4)
- Bedtime: "*Mum, in the morning, ask Siri to show you what warheads look like, okay?*" (Age: 5.10)
- "*Text Mason's mum and ask if Mason is coming to kinder today*". (Age: 4.9)
- One brother Facetimes his brother from the shopping trolley and asks whether this is the correct lollipop. (Age: 5.6)

Their changing lexicon sparked my curiosity and evidenced the entanglement of the digital in their daily encounters.

Witnessing my children poke, slide, swipe and tap their way through life – the way in which they engaged in the world, the way they communicated, played and made meaning in their complex digital contexts – compelled me to question the nature of young children's early literacy experiences within everyday practice, and how these reading and writing practices have been transformed by contemporary conditions. My children's relations in their digital-material world materialised very differently from mine, and while I had to learn how to integrate various devices and ways of being with technology into my life, my children's interactions with digital and networked devices were seamlessly integrated into their lives alongside their analogue or nondigital activities. I was experiencing the way my children were authentically entangled in the digital contexts in which they lived, and I felt a strong need to

capture these experiences and examine and consider how early literacy learning is mediated by digital interactions, resources and artefacts.

Below is an example of an everyday occurrence observed in my home:

> Siri, are dinosaurs real? Age 3.9 months
>
> *It is a typical evening as I drape over the kitchen bench slicing up vegetables in a hurried effort to prepare a weekday meal. Brock is contentedly building a castle for his Spider-Man figurine out of LEGO Duplo as his twin brother paces up and down the kitchen, not so content. "Mum?" "Yes son?" I reply as my mind skips to the fact that I have forgotten to purchase milk. "Are dinosaurs real?" he asks while looking up at me, his big blue eyes summoning an immediate response. I search for a quick response and mutter, "Well yes, they are real, however, they are now extinct." He gives me a puzzled look and, not satisfied with the response, turns around impatiently and heads to the dining table where my iPhone is located. I watch curiously, wondering what he intends to do. Initially, I think he has forgotten his question and has decided to play a game on the iPhone instead. However, I realise I am mistaken as I inspect him holding down the home key with his chubby pointer finger and in a clear, confident voice probing, "Siri, are dinosaurs real?"*

Reflecting on such observations provoked intense curiosity about young children's digital literacy experiences in their home contexts and set the stage for this thesis. However, this research was also provoked by my experiences as a primary school educator which seemed incongruous with my children's home literacy encounters as described above. Below, I reflect on my experiences as a literacy educator and my discontent with current highly politicised literacy education discourses, which evoke a print-based view of literacy and pedagogical practices that are becoming increasingly mainstreamed and normalised against a set of universal standards (Lenz Taguchi 2010).

My research journey: Coming to the research as an educator

In contrast to the enticing early literacy experiences I observed occurring in my children's everyday lives, my experiences as a primary school educator specialising in literacy education were being nudged in a very different direction. Current trends in literacy education in Australia are preoccupied with benchmarks; mechanical linear skills learned by skill-and-drill and print-centric pedagogies are dominating the field. Throughout my 15 years of classroom practice, I felt the stifling effects of neoliberal reforms and loss of teacher autonomy and creativity as I was redirected away from what I believed constituted effective literacy practice towards an outcome-driven approach by policy discourses based on a print-based approach. Literacy policy and practice in Australia seemed to be preoccupied with narrow views of what constitutes literacy learning and standardised assessments, and hence tick-box exercises and prescribed outcomes became regular occurrences in my daily school life. This view of literacy privileges particular ways of knowing and being that are aligned with what Street (1984) termed an autonomous model, which sees literacy as a set of skills detached from any context. Creative approaches for teaching literacy and creative responses from students were being subdued and replaced with formulaic, one-size-

fits-all approaches. This seemed at odds with children's natural ways of being in the world, such as imaginative play, movement, craft, building, singing and creating. In early year's literacy classrooms, opportunities for play were being removed and replaced with skill-and-drill literacy activities and direct instruction. I felt as though fundamental aspects of early childhood learning and development such as joy, curiosity, wonder and passion were being removed, and instead my task involved labelling and benchmarking children based on what they lacked (Olsson 2009). Increasingly, in my daily life as a primary teacher, I reflected on whether I was meeting the needs of all my learners. Was I making literacy relevant and engaging? Were the children able to see themselves reflected in their literacy learning experiences? Were these 'schooled' literacy practices relevant for the contemporary world? Had we forgotten that all children learn differently, are unique, and require different instructional methods and experiences? The focus on the students and what was best for them and their individual circumstances seemed to have disappeared. I increasingly questioned the validity of teacher-dominated approaches and whether my role as a primary school educator was to enact a didactic pedagogy with which to govern children and make them conform. My role – to enact a model of literacy that was intuitively at odds with my values and beliefs – left me feeling frustrated, deflated and disempowered, and the tension between my literacy ideologies and philosophies and my professional responsibility to adhere to current policy and initiatives intensified. When considering the societal changes occurring beyond my classroom walls due to cultural, social and technological changes, this policy rhetoric seemed to be a paradox.

These contrasting experiences as parent and teacher led me to wonder whether the schooled ways of 'doing' literacy are adequate for addressing the changing needs of learners given the complex societal demands of the contemporary world, and I felt a strong urge to challenge dominant ways of thinking surrounding literacy theory, practice and policy. Inspired by the words of Kuby and Rucker (2016), I contemplated what literacy learning and teaching might look like if I moved away from the habitual ways of thinking about and understanding reading and writing practices, and of doing literacy (especially in schools), and instead envisaged literacy education and research differently? I drew inspiration from St Pierre's (2008, p. 190) question 'might [we] live differently if we conceived the world differently?' and embarked on a journey to challenge my own (and others') dominant philosophical and theoretical thoughts about early literacy learning and development.

Identification of the problem: A complex, changing world

We are, it has been argued, living in a world characterised by rapid change (Mills 2015). Massive technological, social, economic, environmental and political shifts have occurred during the past few decades, impacting every aspect of our daily lives. Pandemics, extreme weather events due to climate change, social unrest, political and uncertainty have become more frequent, and unprecedented changes in society caused by rapidly evolving technological and material conditions present challenges for both the nature of childhood and children's educational futures (Craft 2012). Yet education systems in Australia have failed to adapt to these changes, and instead 'limit the complexity of what it means to be a [literate] child living in the contemporary world' (Malone, Tesar

& Arndt 2020, p. ix). The complexities of the current era and its vast technological advancements have led many to question the relevance of contemporary education (Malone, Tesar & Arndt, 2020; Murris 2016, Taylor 2013).

In early childhood discourses, the notion of the Anthropocene has emerged during the past five years as concerns have been raised about humans' treatment of the planet. This has raised queries about contemporary childhood discourses, in which instead of children being viewed as innocent and weak and positioned as separate from the world, they are instead viewed as capable and deeply entwined with and in the world as part of the complex assemblages of contemporary times. However, current early childhood education policy decisions are still informed by conceptions of children from a developmental perspective, and Malone, Tesar and Arndt (2020) argue that new philosophies and concepts are urgently needed to theorise children and childhoods in current times. In addition, the complexity of the Anthropocene era and its ever-changing technological landscapes signify a pressing need to question dominant discourses surrounding early childhood literacy curriculum and practice (Taylor 2013). Cope and Kalantzis (2000) warn that when considering the complexities of the current moment, investing in old ways of doing education is not the best way forward. A consideration of the complexities of the Anthropocene coupled with those of the digital age draws attention to the prevalence of technology and how digital devices have seeped into nearly every aspect of contemporary daily life; from entertainment and leisure to managing household tasks, communication, health regulation, and education and politics. New technologies are an established and normalised part of family life and local culture, and the ubiquitous presence of technologies in our daily lives has 'fundamentally changed our day-to-day experiences and practices' (Stephen 2020, p. 56). In fact, since the emergence of mobile devices, technology has become so pervasive that 'very few spaces or places today have no media use going on' (Erstad 2013, p. 9). Global and technological changes and rapid advancements have created a more independent, yet also more connected world: the 'knowledge era' is characterised by limitless amounts of information at your fingertips, which can be attained within seconds, and this has created a fast-paced, anytime-anywhere culture and led to changes in our conceptions of time, place and community (Holloway, Green & Livingstone 2013). In addition, the knowledge era provides expanded opportunities for participation and collaboration, access to vast amounts of information, easier and more efficient modes of communication and a more connected and globalised world. These changed conditions are often characterised by complexity, diversity and variation, and all raise important questions about education and whether current educational models are adequate for the complexities of the twenty-first century.

The way we 'do' literacy has changed

Considering the presence, availability and accessibility of digital devices, it is not surprising that young children's lives have been impacted by them. Contemporary children are born into digital homes where they are exposed to digital media from birth (Chaudron et al. 2015; Plowman & McPake 2013). Since the emergence of digital tablet technologies (which have increasingly become more available, accessible and affordable), children have been using these technologies in their homes from a very young age (Neumann 2014), and as Stevenson et al. (2020) assert, this has resulted in an extraordinary increase in media consumption practices in children aged between 0

and 5 years. Marsh (2016) suggests that young children are spending considerable amounts of time online and are immersed in practices related to new technologies from birth. The children entering primary school today have never known a world without the internet, and according to Holloway, Green and Brady (2013), online participation is growing at the fastest rate among the 0-8 cohort. Children as young as 6 months are engaging with apps and digital devices (Danby et al. 2018). As Waller (2008) articulates, this technology is having a significant influence on childhood, and children's early literacy and daily play activities are firmly moulded by electronic media. Caldwell (2000) suggests that as digital technologies have become so embedded in the day-to-day, new cultural norms have emerged in the ways in which children play, learn, communicate, socialise and develop early literacy. This digital revolution has led many educators and researchers to question the impacts of these technologies on children's future worlds, including their future education and work environments. Beavis (2017, p. 1) considers that the 'future work environments of today's children will involve digital texts regardless of the career paths they follow', and when reflecting on these prolific technological advancements, Richardson (2012, p.1) questions the relevance of education in contemporary contexts:

> Let's face it: For my children and for millions like them, life will be an open phone test. They are among the first generation who will carry access to the sum of human knowledge and literally billions of potential teachers in their pockets. They will use that access on a daily basis to connect, create and, most important, to learn in ways that most of us can scarcely imagine.

Due to the rapid increase in young children's ownership of and engagement with digital technologies, and the increase in young children frequently engaging in web-based activities, it is important to closely examine the everyday environments in which contemporary children grow, play and learn. This is confirmed by Carrington (2005), who asserts that children now have much greater access to an increasing range of texts due to technological innovations and adds that texts such as weblogs, computer games and texting are now accessible to them, enabling them to develop a mastery of new texts and literacies at a very early age. These unprecedented technological advancements have led many early childhood scholars to critique the dominant discourses surrounding early childhood education, policy and practice. Taylor, Blaise and Giugni (2013, p. 81) argue that despite the complex changes occurring in the everyday world, early childhood pedagogy remains stubbornly print-centric and is thus a 'grossly inadequate conceptual framework for responding to the challenges of growing up in an increasingly complex, mixed-up, boundary blurring, heterogeneous, interdependent and ethically confronting world'. Hence, there is a critical need for researchers, educators and policy-makers to understand and examine the everyday lives of young children growing up in complex, digitised landscapes. As Erstad (2010, p. 60) notes, the development of digital technologies 'changes our conceptions of text, of readers and writers and ultimately of literacy itself'. These changes have prompted this revisiting of our belief systems about what literacy is becoming.

Negotiating the moral panic

In addition to the narrow literacy discourses circulating in the early childhood arena, the dominant public discourses received by parents/carers in relation to children's use of digital technology tend to endorse a restrictive or

reductionist approach in which they feel the need to protect their children from the dangers of technology, and hence reduce, police and restrict its use (Plowman 2015). As Bulfin and McGraw (2011) state, a technology-as-catastrophe discourse that instigates worries and fears, often caused by sensationalised themes that feature regularly in the media, is prevalent in the public arena. In this thesis, I aim to disrupt these existing discourses and argue that it is time to move away from this 'moral panic' and its unhelpful debates about whether or not technology is helpful or harmful to children's literacy learning and development, and instead broaden the scope of discourse and debate regarding digital childhood (Danby et al. 2018, p. viii). Digital devices, electronic games, new media and web-based activities have become so entrenched in everyday life, for pleasure, education and daily routine that the question should no longer be whether children 'should access the digital worlds in which they inhabit but instead how best to support them in their use' (Walker, Hatzigianni & Danby 2018, p. 85). As Plowman (2015) suggests, there is an urgent need for those involved in educational policy and practice to understand in greater depth the possibilities for embedding new technologies within early literacy provision, and to gain informed insights about children's experience of and response to such opportunities.

Focusing the fieldwork

As noted above, it is well documented in the literature that it is vital to understand young children's emerging literacy experiences in their homes to inform broader educational questions about what constitutes effective literacy practice and offer insights into the reframing of contemporary literacy practices for current times. This study was therefore informed by the following broad research questions:

- How are contemporary young children experiencing digital literacies in their everyday contexts?
- How do they use and interact with digital devices in their homes, and how do these experiences relate to their early literacy practices and emergent literacy experiences?

It takes an interrogative focus on literacy as experienced in the home and family. As articulated above, home and family are spaces that are increasingly becoming significant sites of complexity and diversity, and in which the world of childhood is mediated vis-à-vis technology. Detailed knowledge of young children's digital literacy practices has been documented (Marsh 2016), and studies located in the home have provided valuable connections between the materiality of literacy and its flows in the new times (Mills & Comber 2013). As Dewey (1899/1998, cited in Street 2003, p. 76) maintains, there is much 'we can learn about successful pedagogies and curriculum by foregrounding the relationship between formal education and ordinary life', but although considerable research has been devoted to new technologies and their implications for literacy development, rather less attention has been paid to the early childhood dimension and the significance of digital literacies for children aged between 0 and 8 years of age (Lankshear & Knobel 2006). In fact, as O'Keefe (2020) states, very little research has examined the use of digital technology by children from 2 to 5 years longitudinally, especially with the child as co-researcher.

The influence of children's home settings is well recognised as being crucial to the ways in which children develop language and literacy skills (Pahl 2014). However, as Plowman (2015) argues, most of the research relating to young children and technologies in home contexts is written from a developmental psychology or a child health perspective which is narrow in scope and points to the potential harm of technologies. This view often fails to consider the complexities of family life or consider the child's daily experience within their everyday environment from the perspective of the child. Sefton-Green et al. (2016) suggest that the digital practices and skills young children develop at home have important implications, including for their early literacy development and learning in school. Given that much of young children's literate activity and digital technology experiences occur in out-of-school contexts, it is imperative to examine what occurs in their everyday lives so that it can inform policy and curriculum. In addition, it is vital to go beyond adult interpretations and perceptions of children's early literacy learning, and seek research methods that engage directly with young children, finding ways to enable them to articulate their preferences and experiences from their own point of view (Plowman 2015).

The catalyst that shaped the gaze of my research: Thinking with posthuman theories

This study works from the theoretical positioning that regards literacy as plural and consists of multiple competencies and practices that are shaped by different contexts, purposes and issues (Luke & Freebody 1999). This perspective recognises the emergence of digital literacies, and focuses not only on foundational skills of reading and writing but on literacies as an 'assemblage of entanglements: the objects, skills, knowledge and attitudes that enable complex ways of getting and making meanings from multiple textual and symbolic sources' (WarsChauer & Ware 2008, p. 216). As I am interested in how the technological landscape has shifted reading and writing practices, in this study I adopt the term 'digital literacies' to refer to the diversity of young children's literacy skills and practices across digital tools, technologies and media (Marsh 2019). Contemporary theories of educational research place priority on the human subject and concentrate on the various relations occurring between and among humans. Context shapes understandings, in which agency is typically attributed to the human subject. It is therefore common for education theories, policies and practices to disregard the nonhuman – that is, objects, artefacts, materials and technologies (Ceder 2020). Within these educational theories and ways of thinking, nonhumans are considered passive, while humans are viewed as active and agentic. In addition, these theories view meaning-making as occurring within the individual subject, and therefore overemphasise language as the dominant mode of learning and knowing. Lenz Taguchi (2010a, p. 39) points to how the influence of psychology and cognitive science in educational research has contributed to theories that are preoccupied with the 'processes occurring inside the individual learner'. Scholars such as Lenz Taguchi (2010b), Barad (2007), and Kuby and Rucker (2016), who take a post-anthropocentric approach, view agency instead as relational and involving all human and nonhuman agents. This thinking, which is based on the concept of an ontology of immanence that can be traced back to the work of Deleuze and Guattari (1997), moves beyond the human/nonhuman dichotomies that focus on what a child is doing to materials. Rather, its focus is on relationality and the in-between: 'knowledge is produced in intra-actions that take place in sociomaterial and materialdiscursive relations' (Barad 2007, p. 330). Important to this study is how posthuman thinking shifts the sole analytic focus

beyond the subject-centred. As Barad (2007, p. 332) argues, we should 'meet the universe halfway', and our interests should not lie in the human or nonhuman, but rather in ontological entanglements. From this perspective the learner and the world cannot be separated (Lenz Taguchi 2010a). A posthuman theorisation views the child as part of the world, not separate from it, and entangled with matter in nonhierarchical relationships (Barad, 2007), and Lin and Li (2021) suggest that humanist theories leave large gaps in our knowledge and summon the need for more philosophical discussions about what constitute literacy and conceptions of the child and childhood for twenty-first century contexts, arguing for posthuman theories to be applied.

Within the field of early childhood education, scholars have embraced posthuman ideas to respond to the changing environments and complexities of contemporary childhood:

> We note that children now live in a complex mixed-up world characterized by high mobility and diversity, digital technologies and divides, blurring boundaries and an increasing awareness to the interdependence of our lives. Children are not considered to be entities existing in the surrounding world but rather living as an entangled part of the intrarelational world. (Taylor, Blaise & Giugni 2013, p. 48)

Within this study, I draw on this new scholarship, often referred to under the umbrella of posthumanism, and think with concepts such as intra-action (Barad 2007), sociomateriality (Fenwick, Edwards & Sawchuk 2015) and assemblage theory (Deleuze & Guattari 1998), as these concepts provide a theoretical lens and conceptual shift that frames the analyses in a way that enables me to take more kinds of evidence into account and think more expansively about the research. As Burnett, Merchant and Neumann (2019, p. 113) state, working from a posthuman paradigm challenges the 'individualist view of literacy development upheld by cognitive–psychological research, but also complements sociocultural accounts to foreground the material, embodied and affective dimensions of young children's meaning-making'. While this study is positioned within a sociocultural orientation of literacy within the traditions of New Literacy Studies, I therefore expand on this perspective by drawing from broad posthuman concepts in order to think more expansively about the phenomena being examined. My intention is not to discount past theories, but rather to complement them to think differently: as St Pierre (2011 p. 614) states, 'putting different theories to work can change the world'. As I embarked on my fieldwork, living alongside the child participants and their families for an extended period of time, I came to realise how inadequate the human-centric ways of seeing the world were. Each fieldwork visit entailed an assemblage of objects, things, toys, artefacts, stuff – a close and inseparable interplay of human and nonhuman – and hence the materiality of the children's literacy learning was apparent. I tried to move away from simply focusing on what the children were doing with materials to consider their different ways of knowing with technology and materials instead (Kuby & Rucker 2016, Lenz Taguchi 2010a). Notably, posthuman theories such as intra-action, sociomateriality and assemblage theory provided me with a language to articulate what I was observing in the field. Throughout this thesis, I argue that emerging technologies are transforming reading, writing and communicative practices and that broader conceptual tools are needed to make sense of these changing and complex conditions. A posthuman framing inspired by Braidotti (2013, p. 196) allowed me to move away from binary thinking and fragmented descriptions of human

existence, and instead think creatively and challenge dominant education theories prevalent in the early literacy education arena:

> I see the posthuman turn as an amazing opportunity to decide together what and who we are capable of becoming and a unique opportunity for humanity to re-invent itself affirmatively, through creatively and empowering ethical relations and not only negatively, through vulnerability and fear. It is a chance to identity opportunities of resistance and empowerment on a planetary scale.

Consistent with this posthuman positioning, methodologically I turned to Deleuzoguattarian concepts such as the rhizome and the assemblage to seek an analysis framework that would allow me to think more expansively about the fieldwork material and consider the how children and objects come together in various ways (Burnett, Merchant & Nuemann 2019). I was drawn to a Deleuzoguattarian perspective (1987) because I noticed that many posthuman scholars, such as Barad (2007), Murris (2016), Kuby (2016), Thiel (2015) and Braidotti (2013), draw heavily on Deleuze and Guattari's (1987) rhizomatic and assemblage theory as a way of thinking differently about research practices (for example, St Pierre 2019, Alvermann 2002, Sellers 2015 and Masney 2013). I turned to the rhizome (Deleuze & Guattari 1987) as the overarching frame for my methodological framework and analysis as it offered the opportunity to capture the traces of the actors (both human and nonhuman) within various assemblages without losing the multiplicity and nuances of my fieldwork material. As a theoretical lens, rhizomatic thinking (Deleuze & Guattari 1980/1987) allowed me to capture the complexity of young children's literacy experiences in the home that were increasingly entangled with digital and nondigital materials. Methodologically, the notion of the assemblage was useful for mapping and articulating the research design and fieldwork. The complex nature of contemporary literacies, extended through the conceptualisation of assemblage theory (Deleuze & Guattari, 1987), provided a methodological framework for reconsidering the social, cultural and material aspects of digital literacies in the home without prioritising the human subject. As such, the concept of assemblage allowed me to consider how the children's literacies intersected with materials in complex, spontaneous and nonlinear ways in time and space. Working with Deleuzoguattarian philosophical concepts allowed for a fluid and flexible approach to the collection and analysis of fieldwork material, moving beyond coding and categorisation and enabling me to disrupt linear, ordered ways of thinking and knowing and be open to possibilities.

Chapter summary

In a time increasingly typified by the intensities of the digital age, the emergence of new technologies poses a significant challenge to traditional views of literacy and childhood. The new media age has caused a fundamental transformation of literacy (Kress 2010), and young children's literacy repertoires have undergone rapid changes, as have understandings of becoming a reader and writer in the digital age. Contemporary society presents important implications for literacy learning and accentuates the lingering debate about what kinds of skills and/or practices constitute literacies for contemporary times (Bulfin & Koutsogiannis, 2012). In an era filled with increasing standardisations as part of an attempt to raise diminishing literacy standards, a narrowing and uniformity

of literacy curriculum and pedagogic discourses has ensued, leading to literacy programs that privilege the written word. This narrowing and restricting of the literacy curriculum has resulted in institutions of learning that are, it could be argued, lifeless and uninspiring rather than exciting and vibrant places of joy, wonder, desire and learning. Furthermore, children's cultural expertise, hobbies, popular culture interests and material (physical) and immaterial (virtual) pursuits remain largely excluded from the classroom. An industrial model of education persists despite the seductive enticements of the new Information Age (Vicars 2017), and as Murris (2016) points out, despite the digital revolution the narrow meaning of literacy has marginalised children and is restraining and controlling what they are able to do, to be, to learn and think about (Iorio & Parnell 2015). In comparison, the enticing media ecology outside the school walls offers a world in which children's literacy practices are inextricably linked to digital tools, technological toys, interactive games and online environments. Contemporary children's playful encounters in their everyday settings are entangled with digital media as they make meaning through and from the world around them, and consequently, as Vicars (2017) suggests, their repertoire of home experiences has extended how they do and use literacy. As this shift has resulted in new and different ways of becoming a reader and writer and doing literacy that are often characterised by children producing and constructing their own knowledge and culture rather than simply consuming, there is an urgent need to examine children's home literacy experiences. An understanding is emerging that contemporary children can be viewed as capable, and as having agency in their own early literacy learning. Their creative competencies and their participation in the digital world therefore urgently need to be examined to ensure literacy curriculum, pedagogy and policy that are relevant, purposeful and connected to children's everyday lives.

To conclude this chapter, I take up Leander and Boldt's (2013, p. 41) invitation and attempt to remain open to see literacy differently:

> Unless as researchers we begin traveling in the unbounded circles that literacy travels in, we will miss literacy's ability to participate in unruly ways because we only see its properties. We can hold literacy at the center of the world only as long as we keep it in place at the center of our world. What might we make of the invitation to consider literacy in "and . . . and . . . and" relations?

It is important at this juncture to rearticulate that the focus of this study is on providing a detailed account of contemporary uses and meanings of literacies in everyday life, at one point in time, across varying domains and sites. My intention is not to make stark generalisations or to offer a single truth about young children's digital literacy experiences and learning, but rather to generate a 'strategic sketch, allowing readers to think and feel possibilities of data rather than offer conclusions' (Leander & Boldt 2013, p. 26).

Mapping the thesis

This thesis examines the digital literacy practices of five children from four families located in inner-city suburbs of Melbourne, Australia. These events took place over the course of 36 months. The thesis comprises 14 chapters.

Chapters 2, 3 and 4 offer a critical review and synthesis of the literature pertaining to early literacy learning and development to situate the study within the field of early literacy education. I provide an examination of the literature relevant to this study and work across three broad and diverse fields of research relating to the posthuman turn in early literacy learning, literacy research and research examining the digitised lives of contemporary children. **Chapter 2** begins with a review of the literature surrounding early childhood education from a posthuman lens. I then work backwards, and in **Chapter 3** provide a synthesis of the socioculturally framed literature of early literacy and the nexus of children's everyday use of digital technologies. I conclude the literature review in **Chapter 4** by reviewing research concerning young children's digitally mediated literacy practices in home contexts and identify several gaps in the field, which this study then seeks to address.

Chapter 5 details the research methodology of this study, providing a rationale for and outline of the longitudinal ethnography and child-friendly methods through which the fieldwork material were generated. I expand on the overarching research aim and design, and articulate the theoretical framework underpinned by Deleuzoguattarian concepts such as the rhizome and assemblage theory. I discuss the sampling process, provide a portrait of each of the families and research sites, and articulate aspects of the fieldwork journey.

My aim in **Chapter 6** is to show congruencies between the research aims, the methodology and the specific methods employed, and to articulate the flexible research design developed to weave together multiple threads of fieldwork material and multiple frames of analysis and capture the messy and entangled nature of young children's digital literacies within home contexts. I describe the framework for engaging in age-appropriate research methods with the child participants, and the fieldwork collection methods utilised throughout the study. I conclude by outlining explaining the complex ethical issues and considerations involved in researching with such young children, and with my own family.

In **Chapter 7** I articulate the analytical framework I utilised to make sense of the fieldwork material. I explain the journey I undertook towards approaching the analysis of the digital literacy events occurring in the young children's home contexts, and provide the analytical framework and theoretical constructs utilised throughout the analysis process. I also describe the journey took as I moved away from a conventional qualitative analysis and instead turned to a rhizoanalytic process that involved rhizomatic mapping and 'thinking with theory' (Jackson & Mazzei, 2011) to allow for creative encounters and enable thinking differently about the fieldwork material. In addition, the use of portraiture as a tool for representation is described and justified.

In **Chapter 8** I offer a prelude to the findings chapter by introducing and presenting a contextual description of the four families participating in the study. The aim of this chapter is to provide the reader with a thick contextual description of each family, offering rich insight into the five children's interests, familial routines, habits and activities, and how these shaped their digital literacy experiences in their home settings.

Chapter 9 focuses in on detailed portraits that make visible to the reader the specific digitally mediated literacy events observed in the children's homes. The intent of this chapter is to provide the reader with in-depth,

contextually situated accounts of the young children's digitally mediated literacy events as experienced within their everyday lives. Portraiture was utilised as a form of representation to authentically illustrate what I observed in the field and to capture the complexity, dynamics and subtlety of the children's literacy experiences, behaviours and routines, and specific details of the contexts in which the digital literacy events occurred. The portraits are assembled in four sections: the everyday; text-making; play and identity and agency. These sections reveal the complex and diverse digital literacy events evidenced during the fieldwork period.

In **Chapters 10, 11, 12** and **13** I deconstruct the portraits to offer a detailed discussion of the findings and make connections from practice to theory to make sense and make meaning from what I observed. These chapters bring together analysis from across the fieldwork sources to take the reader through the portraits and analytic commentaries into a detailed discussion of them. I think through the relationships between the digital literacy events I observed and provide an analysis informed by theory (Jackson & Mazzei 2011) that articulates an understanding of children's digitally mediated literacy practices within their everyday settings. In **Chapter 10** I examine the children's complex home environments and argue that everyday materials are important forces in producing literacy. **Chapter 11** details how the more-than-human is an active and agentic participant in early literacy learning. In **Chapter 12** I unpack the important roles of affect, emotion and embodiment in early literacy learning, and articulate how the children's passions and interests cultivated literacy learning. In **Chapter 13** I scrutinise the fluid and hybrid nature of contemporary literacy practices and argue that dissolving boundaries such as online/offline, digital/nondigital, expert/novice, formal/informal and print/digital can create a space of infinite possibility and transformation within which enlarged literate capacities and identities may emerge.

Finally, in the **Conclusion** I explore how this research makes an original contribution to the field of early childhood literacy. I make an argument for the urgent need to contest current early literacy policy and practice in Australian contexts, consider the theoretical and pedagogical implications of this research and attempt to envision what early literacy learning and teaching could look like if we embrace its findings. Finally, I consider the limitations of this study and suggest where it may be built upon in further research, and conclude the thesis with reflective comments.

Chapter 2:

Situating the research in the literature: A posthuman perspective on early literacy

Introduction

Over the past few decades there have been interdisciplinary shifts and reconceptualisations of perspectives on early literacy learning, particularly regarding how researchers and educators approach early childhood literacy education and how children develop as readers and writers. One recent advancement in the field concerns the rapid technological developments in the areas of digital tools, resources and technologies, and how these have impacted textual practices, communicative practices and social interactions (Baroutsis & Woods 2020). Despite this recognition of the shifts occurring in literacy practices due to technological developments, and the contemporary diversity of cultural, social and material conditions, early years education policy, practice and curriculum remain fixed in a developmentalist, human-centred orientation of literacy (Stevenson 2020). Such a paradigm reduces literacy to a set of key skills with preset benchmarks, and privileges a print-based approach to literacy learning. However, emerging technologies are transforming reading, writing, communication and the production of knowledge, disrupting ideas of what constitute literacy practice and behaviours in childhood in the twenty-first century (Marsh 2016, 2019). Technological change, it has been implied, has consequences for the development of early literacy (Erstad et al. 2013), and New Literacy Studies scholars (Gee 2005, Street 2012) have therefore argued for an expanded conceptual lens that focuses on the changing sociocultural conditions of globalisation and technological development and examines how meaning-making practices evolve under these conditions in order to reframe early literacy (Cope & Kalantzis 2000, Gee 2005, New London Group 1996, Street 1984).

In Chapter 1, I suggested that technology has added new dimensions of reading, writing and meaning-making to young children's literacy experiences, which has led to an expansion of new literacy practices in the home. In Chapters 2, 3 and 4 I will critically review and synthesise the literature pertaining to early literacy learning and development to situate my study within the wider field of early literacy education. This literature review commences with an evaluation of current scholarship on early literacy development using a posthuman lens, and works backwards to re/view early literacy scholarship from a sociocultural orientation within the tradition of New Literacy Studies. In it, I evaluate the genealogy of different understandings of early childhood literacy and literacy learning to position this study within the broader field of early childhood literacy education. As this study focuses on understanding early literacy experiences in domestic contexts and my focus is on young children's daily encounters with digital materials, I have reviewed research into digitally mediated textual practices occurring in children's home contexts, focusing on scholarship that deals with young children's interactions with digital technologies to consider how their contemporary lives are shaped by being in digitally rich home environments. The notion of children's digital practices is examined broadly, and includes all technologies, from iPads to computerised toys and virtual spaces.

Posthuman perspectives offer the possibility of extending understandings of digital literacies to account for the full scope of the materials for literacy learning in the home, which has expanded to include both conventional and nonconventional materials. In this chapter, I argue that posthuman theories of early literacy education are expanding to account for the roles of bodies, objects, places and spaces in literacy events that are increasingly understood as emergent, entangled and embodied (Burnett et al. 2014, Kuby, Rucker & Kirchhofer 2015). As Hackett and Somerville (2017, p. 389) suggest, when 'reconceptualising emergent literacy in posthuman ways, these approaches reconcile with young children's ways of being in the world'.

Contemporary childhood is frequently characterised as taking place within a complex digital world in which the challenges of working with constantly evolving technologies interweave with humans in complex ways (Taylor 2013). Posthuman scholarship has shifted away from the humanist assumptions that approached early literacy learning as an individualised, linear measurement of literacy development oriented to progress and following a predetermined pathway of developmental progression (Daniels 2019), and has opened up the possibility for educators and researchers to rethink early literacy as emergent, entangled and embodied, and to focus on the process of making meaning rather than just on the meaning itself (Murris 2016). The posthuman perspective also highlights the need to examine the relations between the child and the material environment to gain a deeper insight into how children's contemporary literacy practices and development are experienced. Importantly, however, posthumanism does not insist that previous sociocultural theories and practices of early literacy be abandoned, but rather seeks to complement and build on these theoretical views, using additional conceptual tools to provide new dimensions of understanding and a broader interrogation of digital literacy events in children's worlds.

Unsettling ways of knowing: A relational ontology

Posthumanist scholarship attempts to unravel binary thought and unsettle established ways of knowing. It is embedded in a relational ontology that encompasses humans, nonhumans and more-than-humans, suggests that we come to know through being with and in the world (Barad 2007). This thinking seeks to decentralise the human subject to move away from human exceptionalism and acknowledge the important role of nonhumans. This paradigm shift sees reality/ies as being about more than just humans. It shifts the analytic focus to the 'intertwining of the human and nonhuman, for example in the use of technology in literacy practices, and sees both humans and nonhumans as entangled, active agents in the world' (Kuby 2017, p. 880). Barad (2007, p. 392) refers to this as ethic-onto-epistemology, and states that 'knowing, becoming and doing cannot be separated'. Posthumanism as a conceptual lens therefore views the three branches of philosophy that is epistemology, ontology and axiology – as entangled and unfolding together rather than separate. According to Barad (1997), contemporary educational models and practices view ontology (being) and epistemology (knowing) as separate rather than mutually implicated, and thus suffer from 'onto-epistemic injustice'. As put forward in the introduction of this thesis, Barad (1996, p. 161) therefore urges educational researchers and educators to meet 'the universe halfway rather than separating being and knowing', by seeing the world as a whole rather than as made up of separate realms,

and focusing on the ontological entanglements of the human and nonhuman in any literacy event. Likewise, Kuby and Rucker (2016) proclaim that literacy has traditionally been studied from an epistemological perspective in which the focus is on knowledge production. This view, they argue, fails to address ways of being (realities, ontologies) and doing (relationships, axiologies). A posthuman position offers a different ontological starting point, in which literacy is approached as a process of constant becoming(s) and formings of literacy relations in the ongoing present, rather than being projected towards a teleological outcome that has an end point or specific product (Leander & Boldt 2013).

However, Sintonen (2020, p. 1329) has claimed psychology is still the persistent and dominant discipline in early childhood education, and argues that from a psychology stance, knowledge is viewed as being acquired through 'representation of the world rather than immersion in the world which presupposes a language/reality dualism'. When a child is understood as being separate from the concepts to be learned and the things involved with learning, such as the learning environments and resources or tools, 'what counts as knowing, and is valued and evaluated as such, is what an individual child is able to conceptualise linguistically, emerging from within the child' (Lenz Taguchi 2010, p. 37). Hence, there is an overemphasis on human language (a logocentric approach) as the dominant way to understand and articulate learning. Posthuman thought attempts to problematise language as the dominant mode of knowing and shift the focus in early literacy learning away from the linguistic or cognitive (which are in line with a humanist-oriented discourse) or production perspectives that have a preoccupation with a normative developmental process (Murris 2016). As Kuby (2017, p. 892) states, 'the sole focus of literacy learning and development should **not** be on the literacy products or outcomes produced by children, rather the focus should shift to the in-the-moment becoming of literacy events'. This study thus draws on posthuman philosophies such as Barad's (2007, p. 185) relational ontology, in which 'people, animals, objects, nature, discourses proceed together in relation to and with one another and thus knowing and being are considered mutually implicated'.

Working with posthuman philosophy

Due to technological innovation, theorising the changing nature of literacy in the conditions of the contemporary world requires different conceptual tools (Burnett & Merchant, 2020). Malone, Tesar and Arndt (2020, p. 58) remind us that contemporary children are born into a complex world featuring 'the fluidity of material and non-material, human and nonhuman, in the time which will be their only known'. In other words, today's children have never known a world without digital technology and are regularly engaging in digital activities such as socialising in virtual spaces and interacting with augmented reality software that were not possible for earlier generations. Bennett (2010, p. 5) states that we need to be open to thinking about and defining literacies in different and new ways: 'if we think we already know what is out there, we will almost surely miss much of it'. As indicated in Chapter 1, the digital revolution has transformed how literacy gets done and how we think about literacy, and new theoretical lenses are needed to understand the changes and to account for the fluidity and hybridity of the literacy practices and encounters occurring in contemporary times (Pahl & Burnett 2013). When considering young children's digital literacy events in everyday settings, and applying a posthuman lens, it is therefore 'critical that a relational ontology

is embraced and consideration is given to the entanglements between human and nonhumans which might relate to the immediate environment and circumstance as well as connect(ions) with ideas, people, places and things in another time and space' (Heydon & Rowsell 2015, p. 459) A posthuman perspective can account for the complexities of the contemporary world and consider aspects of materiality and its affordances in terms of the various material cultural practices and the stuff of everyday life (Miller 2010).

Murris (2016, p. 92) claims that posthuman thinking disrupts hegemonic theories of the child and childhood and instead 'offers a creative alternative to regarding children as objects of study, and frees childhood education from the normativity of objectifying and essentialising children as individual objects of the world'. Important to this study is how posthuman scholarship highlights the need to shift the dominant constructions of the child and childhood in order to better understand how children, families and communities come to know/be/do literacies with other humans and nonhumans while not falling prey to the insufficiencies of the autonomous humanist subject (Kuby, Spector & Thiel 2019, p. 7). Kuby, Spector and Thiel (2019) proclaim that viewing the child through a humanist lens emphasises linear expectations of literacy development and hierarchical views of development. It is important, as Dobson (2020) notes, for researchers and educators to be able to elucidate what conceptions of child and childhood they bring to their work, as these influence the gaze through which the work occurs. When rethinking constructions of childhood, posthumanism proposes alternative ways of approaching childhood that challenge pre-existing ideas that view children as ontologically incomplete or in a stage of deficit (Murris 2016).

A posthuman reconfiguration of the child

Corsaro (2017) has suggested that every era has its own construct of the child and childhood, and of how children are to be regarded within differing conceptual frames. Lin and Li (2020) argue that early childhood research into the child and childhood has stemmed from three main domains – the psychological, the sociological and the philosophical – and propose that the 'psychology of childhood is the dominant domain of childhood which has significantly impacted on global policies, pedagogies and practice of early childhood education' (p. 73). Murris (2016) supports the notion that traditional views of the child have stemmed from the psychology of childhood, and argues that educators and researchers need to resist looking through the same familiar lens when framing the concept of the child. This view is supported by Corsaro (2017), who argues that traditional conceptions of the child and childhood emphasise what the child will become. Development-oriented theories such as Piaget's (1976) stages of cognitive development and Gesell's (1929) concept of maturation view early literacy development as being acquired in a linear trajectory within predetermined developmental stages, and are preoccupied with the linearity and certainty of predetermined literacy outcomes. Murris (2016) has been highly influential in opposing these developmentalist theories and reconceptualising notions of the child and childhood from a posthuman perspective, formulating the notion that dominant views of childhood, which are deeply engrained in our society, are shaped by Western philosophy and educational theories and based on stark dichotomies such as nature/culture and adult/child. These views are:

- Child as (i) scientific cognitive construct. This views the child as lacking maturity and as a passive object who is measured and requires guidance and control. Child as (i) develops in stages (as per a Piagetian perspective).
- Child as (I) human rights construct. Child as (I) has agency and power yet is not granted the freedom to enact decision-making and requires protection by adults. The focus is on the individual child with rights.
- Child as (ii) social construct. The (ii) child is influenced by their interactions within society and positioned as a subject. The (ii) child is compared to others and binaries exist such as nature/culture, human/nonhuman, subject/object, adult/child.

Murris (2016, p. 112) states that these views have become normalised and strongly shape teaching practices, research and policy, and warns against the teacher-directed and explicit instructional approaches of early literacy education, which 'rob children of opportunities to express what they know and can do', implying that schools both assume and privilege a literary intelligence of a particular type. Further, these sentimentalised adult imageries (Murris 2016) influence positions on early childhood education, such as the reluctance to embrace technology in early childhood settings, which assume childhood to be an inferior phase and establish clear differentials between and roles for adult and child. Murris (2016, p. 112) warns that in this perspective, 'the adult's role is to tame, civilise, and domesticate the wild human (child) who is not developmentally nor politically equal', and offers an alternative by proposing a posthumanist view of the child that works against the binary of subject and object. This is:

- Child as (iii). The child is part of the world not in it. Child is an entangled posthuman social, political, biological. Human and nonhuman cannot separate rather all elements intra-act. The child is rich in potential in the now/present, engaged in lived experimental encounters and relations with human and nonhuman.

Our conceptual figurations of the child and childhood have major implications for how educational researchers, educators and policy-makers understand the contemporary childhood experience and contemporary children's relations with literacy and technology, and how these impact curriculum and policy construction (Coulter 2020). By envisioning the child as (iii) – as a being rich in potential and entangled in a posthuman world – Kuby, Spector and Thiel (2018) provoke us to think about what literacy education for a more sustainable and ethical future might look like. Further, by reconfiguring the nature of the child using posthuman theories, researchers (Barad 2008; Kuby, Spector & Thiel 2019; Murris 2016) problematise what counts as 'child' and disturb pre-existing binaries such as child/nonhuman, nature/culture and child/adult. This removes the child from the ontological centre of meaning-making and knowledge construction, and refutes the view of child subjectivity that positions the child in opposition to the adult, which, as Murris (2016, p. 59) argues, is 'something always out of reach'.

Reconfiguring childhood subjectivity

Murris's (2019) construction of the child offers a posthuman reconfiguration of child subjectivity. Posthuman scholars (Barad 2007, Murris 2019, Taylor 2013) question the entrenched humanist definitions of and viewpoints

on early literacy learning and argue for different perspectives to ensure a more ethical and sustainable future in which children are no longer conceived of as incomplete, immature or inferior, and are instead reconceived as young human beings (Sellers, 2013). As previously discussed, Murris (2019, p. 130) implores us to diverge from discriminatory childhood theories and practices such as developmentalist-humanist approaches, and argues that 'injustice is inflicted on children on the basis of adult claims of what counts as true knowledge, and therefore what is educationally worthwhile'. She proposes that children offer knowledge to adults, but that this knowledge remains unheard because of 'identity prejudice or ageism' (Murris 2019, p. 130). She also claims that dualisms such as nature/culture and subject/object present a world in which matter is considered passive and without agency (Murris 2016), and aims to disrupt the nature/culture binary in reconfiguring the geological period during which humans have had a substantial and drastically altering impact on our planet: the Anthropocene era.

The Anthropocene in early childhood

The notion of the Anthropocene has emerged in early childhood scholarship over the past five years and is prevalent in posthuman research as a means of problematising the separation between the child and nature. The Anthropocene connects ideas relating to environmental change to education for societal change, and offers a way of theorising new understandings of the human and new concepts of thought. For example, it is argued (Somerville, 2020) the separation of nature and culture dominant in Western language and ways of knowing is the reason for the destructive exploitation of the natural world, and that this has resulted in 'an epoch in which human activity has become the dominant influence on both the environment and climate' (Malone, Tesar & Arndt 2020, p. 57). Murris (2019) suggests that the Anthropocene also assumes that knowledge and intelligence are located only with the human-adult subject, and argues that instead the child should be viewed as being with and part of the world and not separate from it. Malone (2020) argues that while current child-constructs that position the child as innocent (Rousseau, 1957) still dominate the positioning of the child and childhood that inform policy decisions, contemporary children are actually 'navigating the spaces between the human-centric condition embodied by the Anthropocene and the fluidity between "real" and "virtual", human and machine in the contemporary post-digital world' (Malone, Tesar & Arndt, 2020, p. 59). Malone, Tesar and Arndt (2020, p. 59) argue for a need to theorise education differently and develop new pedagogies and philosophies to account for how 'we now live in an era where "real" and "digital" are becoming intrinsically connected, and we are forced to radically reconsider what it means to be a child, and what "to have a childhood" may mean'.

The notion of the Anthropocene can be demonstrated through Haraway's (2016) concerns regarding the severe impacts of human-centrism involving the anthropocentric actions of individuals and societies. Haraway (2016, p. 35) urges educators and researchers not to ignore these concerns, but to take seriously the human and nonhuman nature of what she calls 'staying with the trouble', and cautions that:

> These times called the Anthropocene are times of multispecies, including human, urgency: of great mass death and extinction; of onrushing disasters, whose unpredictable specificities are foolishly taken as unknowability itself; of refusing to know and to cultivate the capacity of response-ability; of refusing to be present in and to onrushing

> catastrophe in time; of unprecedented looking away.

Reflecting on this quote, Malone, Tesar and Arndt (2020, p. 81) argue that in the era of the Anthropocene, educators and researchers 'must continuously learn to be immersed in the present moment, and to see children as having an impact on and shaping the present, alongside other humans and non-human entities.'. As Haraway (2016, p. 1) suggests, viewing children as 'mortal critters entwined in myriad unfinished configurations of places, times, matters, meanings' encourages a shift away from prioritising humans and seeing children as exceptional because they are human, and towards attending to the interconnection and relations that humans and nonhumans share, such as 'places, times, matters, meanings, and implies that they, and those others, are equally able to affect, or have agency in, their worlds' (Malone, Tesar & Arndt 2020, p. 82).

Finally, Barad (2008, p. 66) argues that by moving away from developmentalist, human-centred discourses, we can shift education 'theory and practice from a focus on assessing the capabilities of individual children in sociocultural contexts to the tracing of material and discursive entanglements ... that render children as capable'. This argument opposes anthropocentric humanism and opens up the inquiry to the more-than-human world that includes artificial intelligence (AI), animals, objects, materials, devices and wi-fi. The onto-epistemological (Barad 2007) perspective encourages a consideration of more-than-human experiences as a site for knowledge that attempts to blur the deep dichotomies between human/nonhuman, passive/active and adult/child, and proposes that meaning and matter be seen as entangled.

The posthuman turn in early literacy

Within the early childhood literacy education discipline, two main posthuman approaches to education and research have been embraced: agential realism (Barad 2007) and assemblage theory (Deleuze & Guattari 1987). Agential realism (Barad 2007) refers to the connectivity and relationality of various entities in the world whereby those entities (objects, materials, humans, animals) do no pre-exist but rather come into relation through entanglements. Agential realism allows for a paradigm shift, moving away from humanist assumptions about passive objects and active minds and instead seeing agency as something that is enacted between humans and nonhumans (Kuby, Rowsell & Rucker 2016). To Barad (2007, p. 70), 'agency is no longer aligned with human intentionality or subjectivity through which humans do things to make changes in the world'. Instead, it is about

> response-ability, about the possibilities of mutual response, which is not to deny, but to attend to power imbalances. Agency is about possibilities for worldly re-configurings. So, agency is not something possessed by humans, or non-humans for that matter. It is an enactment. And it enlists, if you will, "non-humans" as well as "humans". (Barad, cited in Dolphijn & van der Tuin, 2012, p.55)

A correlation to Barad's concept of intra-action can be made which suggests that we come into being through intra-actions. Intra-activity (Barad 2007) is defined as all matter having agency and emerging through relationships in which different bodies of matter mutually change and alter each other in their ongoing intra-actions. Barad (2003, p. 828) argues that 'we are not outside observers of the world. Nor are we simply located at particular places in

the world; rather, we are part of the world in its ongoing intra-activity'. As Wohlwend et al. (2017, p. 453) suggest, intra-action differs to interaction as 'interaction is defined as actions that are materially mediated in relations among subjects and objects that constitute social practices in a cultural environment'. Drawing on Barad's work, Wohlwend et al. (2017, p. 453) define intra-action as 'actions that emerge from within unspecified, entangled and changing phenomena of bodies and give rise to possibilities and transformations'. Theorising agency as relational suggests that agency does not reside solely in the human subject. Enacted agency is theorised as a force emerging between people and materials in various intra-actions (Kuby, Rucker & Darolia, 2017). This is an important distinction that compels researchers and educators to develop a fuller and more vigorous account of how the world forces us to think beyond human-centred intentions. This shift of ontological focus is important to this study, as it acknowledges the diversified digital and nondigital materials children work with during digital literacy events and acknowledges the force and influence of materials within a literacy assemblage. Understanding the impact of the nonhuman actor in the network of literacy practice or assemblage means paying attention to the various human and nonhuman elements within literacy assemblages to grasp how the various interactions shape digital literacy practice.

Assemblage theory and early childhood literacy

Assemblage theory (Deleuze & Guattari 1987) explores the ways in which heterogenous elements or assembled components come together haphazardly in a particular context and compose or self-organise to articulate meaning. Assemblage theory provides a way of examining the interrelatedness and possibility of literacy activity taking place moment by moment, in that it suggests that 'literacy activity is generated through a network of time, place, people and material objects and that an assemblage acts on and is generated through semiotic, material and social flows simultaneously' (Daniels 2019, p. 573). Regarding early literacy, assemblage theory can help account for the rhizomatic, entangled and in-the-moment manner in which meaning-making occurs in everyday life and shift the focus from the product or outcome of the literacy event to the process, or 'What can it become?' This ontological shift is a central concept in assemblage theory, as 'becoming' is defined as a process of change or movement and is ongoing. As Lenters (2016, p. 283) notes, 'assemblages and relations within them are ever-shifting, participants in an assemblage are always becoming, ever-emerging, continually transforming in response to each new set of relations or associations'. Assemblage theory provides a framework for considering the social, cultural and material aspects of literacies and the manner in which literacy events are continually unfolding and transforming (DeLanda 2006, Deleuze & Guattari 1991/1994). Like Barad's (2007) concept of intra-action, research that engages with assemblage theory perceives the objects and materials of early literacy as active participants in literacy learning assemblages which may provide new possibilities for the exploration of early literacies. Importantly, when children's literacy events are viewed as an assemblage, the affective and embodied dimensions of literacy and other unconscious elements can come into focus and provide new insights into young children's early literacy learning, offering a holistic and nuanced account of literacy events rather than a focus on the cognitive aspects of literacy.

Thinking about early literacies as an assemblage provides an important and useful lens through which to examine the unpredictable nature of early literacies and consider how different literacies intersect in complex and nonlinear ways in time and space. While humans are significant participants in the assemblage, it also includes various other elements such as signs, gestures, objects, spaces, emotions, digital tools, events, practices and utterances. By paying close attention to the intra-actions (Barad, 2012) between participants and the various material objects they encounter (e.g. video games, tablet devices, playdough, arts and crafts, comic books, robots, electronic toys, paper, apps, mobile phones, digital toys and LEGO), the powerful role of materials in observed contemporary early literacy development becomes visible. Bringing assemblage theory to bear on the examination of these materials has provided a wider, more holistic account of twenty-first century literacy experiences throughout this study.

Posthuman theories and concepts such as agential realism and assemblage theory have been embraced by early childhood literacy scholars as a way of disrupting dichotomous thinking and reimagining early literacy learning. Regarding early literacy education and practice, Kuby, Spector and Thiel (2018) warn that a focus on mastery or narrowly understood literacy terrain has been of little benefit to children. They argue that applying posthuman theories to early literacy education and research offers an opportunity to disrupt and break the linear, developmental trajectory of early literacy education and instead view early literacies as horizontal, hybrid and fluid.

Posthumanism and materials for young children's early literacy development

Posthumanism theorises materials as active agents and offers new ways to define and understand early literacy. Bridging sociocultural and posthuman perspectives brings the material aspects of early literacy learning to the fore, and thus the social, cultural and materials aspects of the digital literacy events become visible. This enables an examination of the relations between the child and their material environment in order to gain a deeper insight into children's literacy practices, experiences and development. Bodies, expressions, affects, emotions, embodiment and sensory experiences are different from rational control, and these types of affective intensities can easily be lost in traditional representations of literacy. Instead of setting the subject apart from the material, however, posthumanism insists upon the importance of material encounters, as the child is relational, in process and constituted by conceptual and material forces (Murris 2017). Drawing upon the theoretical frame of posthumanism and new materialism is thus a way to move beyond the limitations of a social construction of early literacy, and the subject/object and agency/structure binaries. As Coulter (2020) suggests, it acknowledges the affective entanglements of young people with material objects and assemblages – and expands the scope of materials available for literacy learning to include both conventional (books, pens, crafts) and nonconventional (iPads, mobile phones and digital devices) semiotic objects. When considering the digital aspects of literacies, Miller (2010, p. 33) argues that digital literacies are 'complex interactions involving networks of technologies, human and nonhuman and various elements of the environment … entanglements', and that the 'stuff' of digital literacies is materialised in smart phones, screens, tablets and other complex digital artefacts that spill into the 'stuff' of everyday life. However, it is important to recognise that the materials of everyday literacy events have shifted, and the

posthumanist lens allows for the ever-changing materials available to children to be brought to the fore while also conceiving of those materials as having agency.

Gourlay and Oliver (2016) propose that material assemblages are similarly overlooked in educational theory, and argue that for too long, educational research has disregarded the vital role played by materials in the learning process. This view is supported by Fenwick, Edwards and Sawchuk (2011, p. vi), who point out that in learning and social situations humans 'do not float, distinct, in container-like contexts of education such as classrooms or community sites that can be conceptualised and dismissed as simply a wash of material stuff and spaces' and argue that 'the things that assemble these contexts, and incidentally the actions and bodies (including human ones) that are part of these assemblages, are continuously acting upon each other to both bring forth and distribute, and obscure and deny, knowledge' (p. vii). Snaza et al. (2014, pp. 39-40) likewise remind us of the important role of the nonhuman with the education process:

> Consciously or not, we educators and educational researchers are used to looking at schools as places where humans dwell together to learn what it means to be human and to accumulate the kinds of skills and habits required to participate in human societies as adults. This occurs in spite of the fact that schools are connected with the nonhuman world in so many explicit and implicit ways…we are not the center of the universe. Indeed, we should not be the center of conversation.

It is, I suggest, imperative to understand how the materials of literacy events have shifted and extended due to contemporary conditions, and by moving away from the focus on literacy as an individual and cognitive pursuit, researchers and educators can avoid overlooking materials from their accounts of literacy learning and practice. We need to avoid the habitual tendency towards overlooking the material aspects of learning, or, as Sørensen calls it (2009, p. 2), the 'blindness toward the question of how educational practice is affected by materials'.

Chapter summary

Throughout this chapter's exploration of the literature surrounding posthuman perspectives, I have argued that the research field of early literacy requires a posthuman framing in order to fully understand the emergent, agentic assemblages of the human child and the digital nonhuman in the contemporary world. Due to the fast-paced, widespread growth and accessibility of digital technologies and the complexity of the Anthropocene era, there is an urgent need to question dominant discourses surrounding early childhood literacy education and seek multiplicity in the frameworks utilised to make sense of the complex world (Taylor 2013).

I have examined literature from posthuman perspectives that seek to move away from a human-centric gaze to account for the changing nature of the contemporary world and the complexities of early literacy. I have argued that given the contemporary childhood experience and contemporary technological innovations, new theories are needed to offer a more nuanced perspective on early literacy and provide new dimensions that can admit a more holistic interpretation of children's early literacy experience. In this thesis, I draw on posthuman thinking to offer a more inclusive account of the digital literacy events young children experience in their homes and account for the

multitude of diverse practices and materials and the ever-changing contexts created by rapidly changing technology. A posthuman perspective in the field of early childhood literacy offers expansive possibilities for reconceptualising the child, the materials and the diverse resources for early literacy, the meaning of childhood, and young children's early literacy digital play and learning. However, Lin and Li (2020) identity a gap in the literature and claim that in early literacy education there is very little scholarship that explicitly wrestles with posthumanist ideas.

In Chapter 3, I will review the literature pertaining to literacy research and provide a brief historical overview of early childhood literacy research from a sociocultural perspective, and consider the progression of literacy constructs driven by the digital shift.

Chapter 3:
Situating the research in the literature: Literacy research

Introduction

Research into early literacy learning and development has a long history, and it is beyond the scope of this literature review to provide a comprehensive appraisal of this complex field. During the past 30 years several theoretical developments have taken place within the early literacy field of research, and much has been written about the changing nature of literacies due to the complexities of the digital era (Cope & Kalantzis 2000, Kress 2010, Lankshear & Knobel 2006, Marsh 2010). More recent perspectives on early literacy have seen researchers making a distinct break from viewing early literacy as a measurable cognitive task concerned predominantly with educational success and instead starting to consider how literacy is used in daily life and within everyday practices and routines (Barton & Hamilton 1998). In this chapter, I review literature largely from within the contemporary sociocultural theorisation and research field and explore more expansive views of literacy and examine the intersection of literacy and digital technology and the evolution of literacy constructs driven by the multimodal and digital turn.

Defining literacy: Shifts in literacy perspectives

Literacy is inherently complex and dynamic. It is always changing and highly contested and cannot easily be defined (Kress 2010). In fact, numerous attempts at defining literacy have been documented throughout the past decade with much disagreement among researchers and educators as to how to define it for contemporary conditions. Meek, in 1991, captured this complexity when attempting to define literacy by stating that it entails 'a maze of studies to match a multitude of practise, full of contradictions and paradoxes' (Meek 1991, cited in Nel & Paul, 2011, p.145)

It is suggested that literacy is the ability to decode, encode and make meaning using written text and symbols. However, as Kress (2010) argues, there is a need to account for the multiple ways in which meaning is made in this digital world and the increasing number of diversified modes other than the written words with regard to contemporary communicative and textual practices. Changed contemporary conditions have led many scholars to ask the question, what constitutes literacy in today's post-industrial age? (Carrington 2017, Marsh 2004, Pahl 2014). Responding to this query, Mills (2015) argues that the digital revolution has put an end to literacy as we knew it, and the very notion of contemporary literacy suggests a move beyond traditional notions of reading and writing with print-based materials has taken place as the needs of our society have changed and continue to change. The world has become increasingly multimodal, and as Merchant (2010, p. 149) states, has become an 'immersive textual universe' in which contemporary literacy entails much more than reading and writing or merely decoding and encoding. The contemporary landscape is demanding that young children access and interact in local and global spaces and create meaning from these spaces, prompting a transformation of how we traditionally

define early literacy (Marsh 2010, Marsh et al. 2017). Yet many of the literacy pedagogical practices in early childhood education settings remain deeply rooted in traditional notions of literacy, privileging the written word (Murris 2016, Pahl & Rowsell 2019, Wohlwend 2015a).

Literacy or literacies? A sociocultural view

The definition of literacy has endured substantial transformations over the past few decades (Millard 2003). For the purpose of this research, I refer to an expansion of what counts as literacy and use the plural form, 'literacies', as this suggests there are many different literacies that shift based on contexts, texts and the identities of the people using literacy (Rowsell & Walsh 2011). The term literacies gestures to the notion that literacy is multiple, diverse and multilingual, and spans domains of practice from the home to school to community, and that there are different literacies associated with each domain (Pahl & Rowsell 2019). This challenges the notion of literacy as a single, universal cognitive quality that simply resides in the individual's head, and instead conceives of it as an asset of social practices which are situated within contexts. Despite the recognition from various scholars of an expanded notion of literacy (Rowsell & Pahl 2020), literacy in educational settings is considered in the narrow form of reading and writing and occurs in isolated, formal and individualistic instruction (a view which is highly regarded by most adults), and as Murris (2016) argues, this has failed many children. Rowsell and Walsh (2011, p. 53) therefore encourage educators and researchers to constantly redefine literacy in order to avoid these persistent and 'anachronistic paradigms and frameworks'.

Street (1995), who has been highly influential in the field of literacy research, distinguishes between literacy as a set of technical skills and literacy as a social practice, emphasising the importance of social interactions within literacy practice. Street (1995) proposed two models of literacy: an autonomous model and an ideological model. An autonomous model of literacy is based on the endorsement of a standard, written national language, transmitted largely through a print-based and linear pedagogy (Millard 2003). It sees literacy as a set of neutral and decontextualised skills that are taught, learned and tested, and promotes a singular view of literacy. Sociocultural literacy models refute this model of literacy and offer the alternative ideological model, in which literacy is seen as a set of social practices that are historically situated, highly depended on shared cultural understandings and inextricably linked to power relations in any setting (Marsh 2016, p. 17). This ideological model sees literacy as relating to the everyday lives of people, in which it continuously changes due to their social and cultural contexts. However, Pahl and Rowsell (2019, p. 3) warn that contemporary literacy teaching still uses the autonomous model. This is echoed by Millard (2003, p. 4), who argues that despite the changing nature of literacy beyond the classroom walls, national policies have attempted to 'arrest language and literacy in a modernist moment and hence insist on curricula whereby the emphasis is all on control through stages and targets and timed delivery of key skills'.

While a sociocultural view does not discount the notion that literacy competence involves skills and technique, it argues that these skills and techniques take on different forms when embedded in different social practices and

contexts, and hence emphasises the notion of meaning-making. This conception of literacy claims there are many different social practices related to reading and writing and therefore very many literacies. Street further upholds the notion that literacy practices are ways of thinking about, and doing, reading and writing in particular cultural contexts (2003). Literacy practices are always constructed out of specific social conditions, and this includes political and economic structures. A feature distinguishing this view from the dominant autonomous paradigm is that in it, literacy practices and knowledge are not simply structured to one's cognition but reconceived as constructions of particular social groups (Street 1984). Vygotsky (1978), Rogoff (2003) and Street (1995) further emphasise the various cultural artefacts children use that are very much part of the social worlds in which their literacy is mediated. These cultural artefacts may evolve and change over time, and indeed now include a much broader and more diverse range of texts, toys and technologies (Flewitt, Messer & Kucirkova 2014).

Street (1995) further explicated the notion that literacy practices are patterned practices set within the context of the everyday, and their features are shaped by context, power and history. As Barton and Hamilton (2012) and Street (1998) suggest, there are different patterns and ways of doing literacy that are associated with different domains of life. This concept has led to a vast array of research into the everyday or out-of-school contexts of literacy practices (Pahl, 2014). Street (2007) asserts that language and literacy must be studied as they transpire naturally in everyday life in order to inform curricular and pedagogic discourses, and it is this notion of the 'everyday' that has informed this study's exploration of how young children are doing literacy in their home contexts and how this can inform early literacy discourses. Home and family are increasingly significant sites of complexity, in which the world of childhood literacy is mediated vis-à-vis technology. As Plowman and Stevenson state (2013), children under the age of five spend most of their time at home, and paying close attention to mundane aspects of their daily lives such as regular family routines and habits can reveal much about their early literacy learning and development. This study's interest is in young children's literacy experiences in the home, including their interactions with parents, siblings and other family members, the opportunities for learning that these interactions provide, the material resources that are available to them, and how their parents' values and attitudes influence their varying experiences.

Literacy in the everyday

Flewitt and Clark (2020) maintain that the fast-paced and widespread growth of digital communication, digital innovations and networked technologies has led to profound changes in everyday literacy practices at home. It has been argued that to understand how language and literacy are practiced it is imperative to study children's everyday funds of knowledge and discourses (Moll et al. 1992). It is widely accepted in the field of early childhood research that home literacy practices create the foundations for children's early literacy learning and development (Neumann 2014); children aged 0-5 spend most of their time at home, and the home is usually the first context in which they experience digital technologies and new media (Kervin, Verenikina & Rivera 2018). Street (2012) asserts that the study of language and literacy must occur as it transpires naturally in everyday life in order to inform curricular and pedagogic discourses. Pahl (2014, p. 32) contends that 'a profound noticing of the everyday'

is what is needed in order to make sense of the future and engaged practice and situated ethnography are essential to examining contemporary uses of literacy. Barton and Hamilton (1998), in their study of everyday literacy practices, noted that when they asked people ask people to talk about their literacy practices they responded by talking about their lives, evidencing how literacy is embedded in the activities and habits of everyday life and underpinned by attitudes and values. Studies on informal literacies and learning have therefore been growing in number during the last decade, and provide important and invaluable insights into informing literacy curricular, policy and practice (Erstad 2013).

This study works from the theoretical positioning that views literacy as plural and consisting of multiple competencies and practices, each shaped by different contexts, purposes and issues (Luke & Freebody 1999, New London Group 1996). This perspective recognises the emergence of digital literacies that focus not only on foundational skills of reading and writing, but on an assemblage of entanglements: the objects, skills, knowledge, and attitudes that enable complex ways of getting and making meaning from multiple textual and symbolic sources (WarsChauer & Ware 2008). This study seeks to the identify the range of digital literacy practices in which children are engaged in the home. It is well established in the literature (Honan 2010, Lankshear & Knobel 2011) that a disconnect between children's everyday home literacy practices and school literacy practices exists, which can be due to a lack of awareness from early childhood educators of the diverse and rich literacy repertoires young children bring with them to school. It is vital for early childhood educators to develop a more expansive understanding of literacy that encompasses the literacy practices children bring to formal schooling. Several studies (Dyson 2003, Heath 1983, Kress 2010, Pahl & Rowsell 2005) of home literacies have been influential in the past decades, underpinned by the belief that 'the home is where young children learn much of their literacy skills' (Pahl & Rowsell 2012, p. 57).

Home and school literacies

Changes in children's home or out-of-school literacy practices have attracted much attention from the literacy research community (Arrow & Finch 2013; Holloway et al. 2013, Honan 2012, O'Mara & Laidlaw 2011, Plowman 2015). It is argued that in order to understand how language and literacy are practiced and inform curricular and pedagogic discourses, it is imperative to study children's everyday funds of knowledge and discourses (Moll et al. 1992). Heath's (1983) ethnographic study 'Ways with Words' examined how language and literacy are practiced in the home and community domains, and indicated a clear disconnect between children's home literacy practices and their school literacy practices. The study examined the reading, writing and communicative practices of working-class children and their families from two communities – Roadville and Trackton– and discovered a divide between the home and school literacy practices of the participants. It explicates that language use is strongly influenced by social norms and values that children engage in within their family and community groups. The disconnect between home and school is further argued for by Luke (2000, p. 2), who warns of a 'schism between out-of-school literacies and texts, the range of practices involving digital technologies and the texts that are valued in the market place, and the formulaic and print-bound literate curricula of many school systems'. Similarly, Knobel

and Lankshear (2007, p. 192) warn of a possible mismatch between children's early digital experiences at home and in their communities and those provided by the school, and argue that for many children, 'activities offered in school appear unexceptional by comparison, and this can lead to disaffection and disengagement'. There is a strong need to bridge this gap in our knowledge of the emergent practices occurring in children's out-of-school worlds because, as Lankshear and Knobel (2006, p. 30) argue, '[w]e are presently at a point in the historical-cultural development of literacy where we don't really know how to deal educationally with these new literacies'. However, Bulfin and Koutsogiannis (2012, p. 332) raise concerns about what they articulate as 'the new home-school mismatch hypothesis', suggesting that the dichotomy between the creative, meaningful, and playful new media outside of school and the dull, dreary, lifeless, rigid in-school literacy practices is oversimplified. Their research instead focuses on the continuities or flows between the home and school literacy practices of children, and found that children negotiate and navigate ways with technology, making spaces for their everyday practices to enter their school practices, and suggests that the home-school mismatch is an overgeneralisation. Instead, they consider how 'young people's digital literacies might be more productively seen as stretched across school and home domains and multiply situated' (Bulfin & Koutsogiannis 2012, p. 343). Dyson (2003) has been influential in arguing for school literacy practices to acknowledge and respect the diverse range of experiences and expertise that children bring with them from their home settings, and welcome and celebrate this knowledge within the classroom, as children draw on their cultural worlds from out-of-school contexts and carry these into their schooled literacy practice. Dyson (2003) has argued for popular culture materials and discourses from children's everyday lives to be legitimised in school contexts which are explicitly tied to the 'funds of knowledge' – that is, everyday stories, practices, and experiences – that children bring to classrooms, and specifically those that are linked to material culture and various artefacts (González, Moll, & Amanti 2006). As Thiel (2019, p. 47) claims, 'a child is more likely to participate and engage in sustained literacy instruction if the instruction entails experimenting with his/her own personal interests and expertise'.

Literacy events and literacy practices

The concept of literacy practices and events (Barton & Hamilton 1998, 2012, Heath 1982, Street 1995) is thus central to sociocultural perspectives, and to this study. Literacy events and literacy practices are central to the notion of literacy as a social phenomenon. Literacy practices are patterned practices set within the context of the everyday in which literacy features (Heath 1983, Street 2003). Heath (1983) developed the notion of literacy events in order to examine the forms and functions of oral and written language. She defines a literacy event as 'any occasion in which a piece of writing is integral to the nature of participants' interactions and their interpretive processes' (Heath 1983, p. 93). Any activity in which literacy has a role is considered a literacy event. As Barton and Hamilton (2012, p. 8) note, 'events are observable episodes which arise from practices and are shaped by them. The notion of events accentuates the situated nature of literacy, that it always exists in a social context'. This construct has been applied in a number of studies (Baynham & Prinsloo 2009, Bhatt & de Roock 2013). Building on these conceptions, in this study I adopt the term 'digital literacy event' to account for events in which literacy has a part, which may or may not involve digital technology (Burnett et al. 2014).

The New Literacy Studies paradigm

The sociocultural orientation of literacy research which has become known as New Literacy Studies (NLS) (Barton & Hamilton 1998, Gee 2005, Street 1997) perceives literacy as being always situated in time and place. The NLS paradigm attempts to account for the changing sociocultural conditions of globalisation and technological development, and the way meaning-making practices evolve under these contemporary conditions. It emphasises the situated social practices that are centred on meaning-making, and attempts to account for the richness and complexity of literacy practices in contemporary society (Marsh 2016). Its perspective draws attention to the situated ways in which groups of people share, sustain and modify certain language, communicative, meaning-making and textual practices. This perspective emphasises the ways of doing reading and writing in certain social settings that account for the shifts within contexts, texts and the identities of the people using literacy (Barton, Hamilton & Ivanic 2000). It is built on two main premises: that literacy has changed and will continue to change, and that is always situated – that is, it is contextually embedded or situationally variable.

According to Gee (2010, p. 166), the NLS paradigm opposes a traditional psychological approach to literacy that 'views literacy as a "cognitive phenomenon" and defines it in terms of mental states and mental processing'. The 'ability to read' and 'ability to write' are treated as things people do inside their heads. The NLS paradigm instead sees literacy as something people 'do' inside society. It argues that literacy is not predominantly a cognitive phenomenon, but rather a sociocultural one. That is, it is a social and cultural achievement; it is about the various ways of participating in social and cultural groups. Thus, it needs to be understood and studied in its full range of contexts: not just the cognitive but also the social, cultural, historical, and institutional. Gee (2010, p. 131), moving away from the term literacies, utilises the term Discourses, which he defines as socially recognised ways of using words or other semiotic codes (e.g. images, sounds) and of 'thinking, feeling, believing, valuing, and acting' to identify as a member of a 'socially meaningful group'. He proposes that literacy is closely associated with identity formation and culture, and suggests that our ways of dressing, speaking and acting all signal our membership of different identities in practice. People use different identities in different discourse communities. For example, when a child is playing a video game they learn the literacies associated with the ways of doing, speaking and being within that discourse community, which is appropriate for that particular domain. This line of argument highlights how literacy is socially constructed, enmeshed in culture, identity and societal power, and shaped by how we use it and the contexts in which we use it. The NLS perspective highlights how literacy relates to everyday practice, and to identities and discourses in homes and communities.

When considering what is 'new' about new literacies, Lankshear and Knobel (2007) identified two categories they refer to as 'new technical stuff' and 'new ethos stuff'. 'New technical stuff' refers to the ability to use different types of software and different types of devices. 'New ethos stuff' refers to the idea that these new literacies tend to be much more participatory, collaborative and distributed than conventional literacies. The authors suggest while that conventional literacies tend to be much more expert-dominated, published, individuated and author-centric, new literacies are much more fluid: 'If a literacy does not have what we call new ethos stuff we do not regard it as

a new literacy, even if it has new technical stuff' (Lankshear & Knobel 2007, p. 1). The distributed nature of literacy practices is emphasised here, and accounts for the ways in which individuals communicate, contribute to and share literacies across distances, cultures and languages. Literacy practices are distributed across people, artefacts, categories and contexts of activity. There is a blurring of boundaries between expert and novice whereby anyone with an interest in a particular practice can participate. This idea of new ethos stuff aligns with Jenkin's (2006) notion of participatory culture and Gee's (2017) work on affinity spaces, which seek to describe the networks and shared communities of common interests.

Burnett (2010) undertook an extensive review of the literature within the NLS field with a specific focus on the literacy practices of children between the ages of 0 and 8 in educational settings. Burnett (2010) begins the review by highlighting the textual landscape in which young children live, suggesting it is multimodal and global and involves practices such as computer games and virtual worlds. Burnett (2010) drawing from the work of Lankshear and Knobel (2006) describes new literacies as 'distributed relationships, multiple identities, multimodal and global participations' (p.248) which are caused by the shifting practices that have occurred as we moved from Web 1.0 to Webs 2.0 to 3.0 and their stronger focus on widening access to knowledge, enabling social interactions and providing personalised and coordinated access to information and networks. This review highlights that many children engage in digital literacy practices in the home and argues that such experience needs to be recognised as a resource for their current and future meaning-making practices. Out of the 36 papers reviewed, however, none focused on children under the age of 3 and only 11 involved children under the age of 5. This could be due to the age group being particularly difficult to access (Burnett 2010). Nevertheless, Burnett (2010, p. 261) urges that 'there is clearly a need for more research into literacy and technology for this age group, particularly for the youngest children and to investigate children's use of a wider range of digital technologies'. Importantly, Burnett (2010, p. 265) argues that digital texts offer new opportunities to engage with multiple and virtual contexts and that different conceptual tools are needed to theorise these practices, which may afford new ways to interrogate and articulate children's digital practices and hence offer a broader gaze to deepen analysis, and suggests that if we are committed to the task of reimaging literacy for the contemporary moment, or to exploring new possibilities for researching with very young children, we must move beyond the existing paradigms.

Mills (2010) conducted a review of the literature within the NLS paradigm with reference to the 'digital turn', examining a decade of empirical research from 1999 to 2009 and including 90 peer-reviewed journal articles. Most of the research examined the new literacy practices occurring in digital environments. In all cases, an examination of participants' textual encounters showed that the participants engaged with both written text and a range of other modes and conventions, highlighting the prevalence of digital technologies in their lives. The report highlights how theorists of NLS, multiliteracies and multimodal semiotics (Jewitt & Kress 2003) have argued that conventional views of reading and writing are no longer adequate to describe the changed ways of doing literacy that include the combinations of sign systems in digital texts. The review further emphasises a focus on the creative production of digital media and suggests a cultural shift has occurred, from consumption of media to creative production.

While the participants in this research were older children, aged 9-10 years, the implications of Mill's (2010, p. 262) review suggest that there is a need to reform conventional measures of literacy, as these are seen to 'lack life validity' and do not reflect children's authentic digital practices in social contexts beyond school.

Rowsell and Walsh (2011) present a theoretical overview of the NLS field that seeks to take account of such work and identify a series of renewed beliefs about literacy education. They synthesise their findings on what the field needs into the following six points:

- more work in other contexts such as homes and communities (Gonzáles, Moll & Amanti 2006).
- less emphasis on cognitive development (Gee 2005), as in what happens in our brains or minds, and more emphasis on cultural practices.
- more research examining the interface between identity and literacy development (Gee 2005, 1999).
- less of a divide between oral and written cultures (Ong 1982).
- an acknowledgment of the screen as our dominant text structure (Cope & Kalantzis 2000, Kress 2003).
- an expansion of definitions from print logic, reading and writing to screen logic, designing, redesigning and remixing (Cope & Kalantzis 2000).

Rowsell and Walsh's (2011) review implies that there is a critical need for new twenty-first century definitions of literacies that account for literacies as multiple and for how today's literacies demand competency in diverse modes. It supports a need to expand upon the NLS framework. Brandt and Clinton (2002) provide a critique of the NLS paradigm, claiming that by defining literacy and reading and writing as situated, social practices, researchers may under-theorise certain aspects of literacy, such as objects and technologies. They argue that the power of local contexts has been exaggerated and does not account for the traces of the global and an understanding of what literacy is doing *with* people in particular settings. As literacy practices are often influenced by larger domains and networks that originate outside the immediate social space, a narrow focus on the local ignores literacy aspects that originate elsewhere. The crucial notion here is that literacy objects, artefacts and resources constructed at a distance can still play a role in local literacy practices (Gourlay & Oliver 2020). Further, literacy may also occur in virtual spaces that are both local and global (Pahl & Rowsell 2015). Brandt and Clinton (2002, p. 351) argue that this 'localised' view 'assumes separations between the local and the global, agency and social structure, and literacy and its technology'. The authors suggest that by delocalising literacy practices we can become more attuned to the material dimensions and restore a 'thing-status' (Bennett, 2010) to literacy, allowing us to attend to the role of literacy in human action. They search instead for new analytical concepts to account for the materiality of literacy practices and stipulate that 'we will try to dissolve these dichotomies by treating literacy not as an outcome or accomplishment of local practices but as a participant in them, as an actor or what Latour (1997) coins an "actant" in its own right' (Brandt & Clinton 2002, p. 338).

In addition, the NLS paradigm has been criticised for not adequately theorising digitally mediated semiotic practices, and hence the relationships between child, text and device, the distributed nature of digital literacies and

the materiality of literacy practices (Gourlay, Hamilton & Lea 2014). Gourlay, Hamilton and Lea (2014) proclaim that there is still a strong emphasis on texts as cultural artefacts rather than on looking more broadly at materiality, and that limited focus has been paid to virtual spaces of digital media. Gourlay and Oliver (2020) urge for an elaboration of the NLS model that moves beyond the social and considers the material in order to meet the complex challenges of working with texts, technologies and learning in a digital world. They claim that the model places less emphasis on the embodied materiality of textual engagement in terms of what students actually do, where they do it and what resources and artefacts they work with. Gourlay, Hamilton and Lea (2014, p. 4) argue for an interrogation of the notion of context and material, stating that:

> Although the NLS perspective restores the focus on meaning-making and situated practices, arguably, it does not adequately theorise digitally-mediated semiotic practices, in particular the relationship between the student, text and device, the multiply distributed nature of digital literacies and the materiality of literacy practices.

Returning to a posthuman theorisation of early literacy and the need to widen current perspectives of literacy, a posthumanist view can bridge social and material perspectives to examine the relations between the child and the material environment and gain deeper insight into children's literacy practices, experiences and development. This thesis seeks to expand on the NLS perspective by drawing from a range of analytical orientations such as Barad's (2007) intra-action and sociomaterial theory (Fenwick, Edwards & Sawchuk 2015) to unpack and examine the digital literacy events observed in the participant children's home contexts in ways that account for the presence of multimodality and the various meaning-making and social semiotic modes they encounter in their domestic settings.

Multimodality and social semiotics

When studying literacy within children's homes and communities, scholars have noted participants using a range of diverse meaning-making practices such as writing, speech, drawing, gesture, movement and model-making (Pahl & Rowsell 2019). Kress (1997, p.137) depicts 'multimodality' as 'an absolute fact of children's semiotic practices'. While literacy learning has always been considered multimodal, Arnott and Yelland (2020) argue that new technologies have impacted on these modalities in significant ways. Multimodality recognises that children are immersed with new technologies in natural ways, and that there is a fluid progression between their digital and nondigital lifeworlds that spans the linguistic, visual, auditory and spatial dimensions (Kalantzis & Cope 2006; Kress & Jewitt 2003; Yelland 2018. It identifies new technologies as part of the everyday experiences that impact on the ways in which 'learners see, think and make meaning about their world, and in doing so, re-shapes their understandings about self and the ideas and experiences inherent to their multimodal lifeworlds' (Yelland 2020, p. 133).

Kalantzis and Cope (2006, p. 23), when deliberating the twenty-first century conditions of literacy, suggest that 'meanings are made in ways that are increasingly multimodal, in which written-linguistic modes of meaning making interface with oral, visual, audio, gestural, tactile and spatial patterns of meaning'. Multimodality is defined as 'the

use of several semiotic modes in the design of a semiotic product or event' (Kress & Van Leeuwen 2001, p. 20). While it is argued that reading and writing have always been considered multimodal because children have had to interact across various modes such as words, images, photos and spatial layouts, however, recently much more attention has been directed to how texts and literacy have changed due to technologies and how individuals make meaning with different kinds of modes. (Kress 2003, Jewitt 2009) Pink (2008) declares that young children naturally interact with their everyday environments, which include people, using all the modes they have available to them and engaging sight, sound and touch. The central premise of multimodality is that meaning-making occurs and can be studied in various modes: 'meanings are made, distributed, interpreted and remade in interpretation through many representational and communicative modes – not just through language' (Jewitt & Kress 2003, p. 1).

Digital literacies

Digital literacy is yet another field of research within the NLS paradigm; however, the definition of the term digital literacy is highly contested, with numerous definitions circulating (Bhatt & de Roock 2013). Gillen and Barton (2010, p. 1) define digital literacies as 'the constantly changing practices through which people make traceable meanings using digital technologies', and suggest that the focus is not on the decontextualised characteristics of learners but rather on situated social practices and meaning-making. When conceptualising digital literacy, several scholars in the field (Marsh 2004, Lankshear & Knobel 2011) argue against a narrow focus on the technology and competence models of digital technology use. For Gourlay and Oliver (2016), to do this would mean ignoring the key insights of the NLS paradigm, which oppose conceptualising literacy as a decontextualised cognitive account that ignores context. For Marsh (2019, p. 21), digital literacy can be defined as a 'social practice that involves reading, writing and multimodal meaning-making through the use of a range of digital technologies'. Erstad et al. (2013, p. 1) move from digital literacy to digital literacies and argue for an expanded view of the term in recognition of both the vast array of contemporary digital literacy practices young children engage with. This view is supported by Lankshear and Knobel (2015, p. 13), who emphasise the plurality of ways in which our sociocultural engagements shape our interactions and interpretations of multimodal texts and practices and argue for the term digital literacies to encompass the multitude of meaning-making practices evoked across different settings, communities and identities in digital environments:

> digital literacy [is] not…something unitary, and certainly not…some finite competency or skill—or even…a set of competencies or skills. Rather it means we should think of digital literacy as shorthand for the myriad social practices and conceptions of engaging in meaning making mediated by texts that are produced, received, distributed, exchanged etc., via digital codification. Digital literacy is really digital literacies.

Over the last decade, Marsh's (2004, 2010, 2011, 2015, 2016, 2017, 2019) extensive scholarship has made valuable contributions to the field of early literacy and to understandings of young children's literacy development and learning at home and in school and how this has shifted due to the digital era. Marsh et al. (2015) use the term 'digital' in relation to literacy to reflect the ways in which reading and writing practices are increasingly mediated by new technologies in the new media age. Marsh (2019) claims that the term 'digital literacies' refers to the

diversity of young children's literacy skills and practices across digital tools, technologies and media. The slipperiness of the term is evident, and its meaning is always in flux due to the constantly evolving social context and rapid technological changes. Bruce and Casey (2012, p. 197) urge us to therefore be mindful of terms such as 'new' when referring to digital literacy practices, and remind us that contemporary children have been born into a world whereby technology is an ordinary aspect of their daily lives:

> Digital literacy is often described as a new literacy. However, we should bear in mind that as adults we get to name the world and what we regard as new technologies are so described because they are new to us. They are not new for many of our primary school children – they have not known the time before. As adults, we can reflect on our own childhood and ask ourselves how many new forms of communication are available today that were not part of our childhood experience – text messaging, email, pictures and digital video are but a few.

With a focus on young children's literacy practices, Arnott (2016) and Marsh et al. (2016) propose that 'digital literacy' refers to the diversity of young children's literacy practices across technologies and media, and involves reading, writing and multimodal communication and meaning-making, which is often realised through digital play or other playful and creative activities. Digital literacy practices can involve accessing, using and analysing texts in addition to producing and disseminating them, while using 'reading' and 'writing' in their broadest definitions. Furthermore, digital literacy describes literacy practices that involve digital technologies and media, but which may also involve and hybridise nondigital tools (Marsh et al. 2016). Burnett et al. 2014 explain how digital literacy practices can cross online/offline and material/immaterial boundaries, and as a result, create complex communication trajectories. The boundaries between the online and offline, the digital and nondigital, are often blurred as the emphasis is on meaning-making with digital resources and across digital spaces (Abrams et al. 2017). Carrington (2017, p. 2) problematises distinctions between online and offline, suggesting that these outdated metaphors are no longer sufficient to explain everyday lives entangled with digital media, and argues that 'the boundaries between the virtual and real-world spaces have shifted and the broader metaphors of "online/offline", "place", and "tool" do not shape the ways in which her participants conceptualize or discuss their everyday lives with digital technologies'.

Chapter summary

In this chapter I have provided a synthesis of the socioculturally framed early literacy literature and the nexus of the digital. I have highlighted some of the limitations of the NLS paradigm, such as its lack of attention to the material aspects of literacy, how we might account for the shifting boundaries between the online and offline nature of literacy practice, and the changing relations between human and nonhuman. These limitations indicate a need to expand on theoretical ideas due to the changing nature of literacies in the twenty-first century. Digital tools, resources and technologies have had a radical impact on how texts are produced, how communicative practices occur, the kinds of interactions people have and the spaces in which we engage. In acknowledging this, we are acknowledging that everyday life involves an entanglement of social with material, human with nonhuman,

technological with non-technological, and we therefore need to look beyond a sociocultural theorisation in order to examine these changed conditions.

In the next chapter, I will turn my focus to the literature examining the nature of children's digital activity in home contexts.

Chapter 4:
Situating the research in the literature: The digital lives of young children

Introduction

A growing body of literature shows how prevalent digital technologies have become in homes and communities in modern Western societies (Flewitt 2012, Marsh et al. 2015, Plowman 2014, Wohlwend 2015a). Most children growing up in contemporary homes in post-industrial countries use digital media as part of their everyday practices, to connect and communicate with distant family and friends, watch their favourite programs, play games, create digital media and seek information. Young children are described as 'growing up at ease with digital devices that are rapidly becoming the tools of the culture at home, at school, at work, and in the community' (NAEYC 2012, p. 2). It is therefore apparent that new technologies are part of contemporary children's funds of knowledge (Moll et al., 1992), and as Caldwell (2000) states, since mobile digital technology has become widely accessible and embedded in daily activity, new cultural norms have emerged in the ways in which children play, learn, communicate, create and socialise. This paradigm shift has changed the routines of everyday life and altered the cultural and social values which shape daily life. These changing technological, cultural, social and material contexts require different literacies from children, teenagers and adults (Lankshear & Knobel 2015, Merchant 2015). Importantly, this immersion of digital artefacts in the home environment occurs at a critical time when young children are developing emergent literacy skills. Sefton-Green et al. (2016) suggest that the digital practices and skills that young children develop at home have important implications, including for their early literacy development and learning in school. However, the digital activity of very young children (under 8 years of age) remains under-researched and largely absent from public policy debates, possibly because this younger age range does not yet feature in 'society's digital imaginary' (Livingstone & Third 2017, p. 660).

DigiTods: The first generation of children to be born in digitalised homes

Children born since the introduction of the smartphone in 2007 have access to touchscreen technologies from birth. These children have been termed 'DigiTods' – a term used in educational literature to describe children who begin their lives with access to the internet via easily accessible and usable tools (Leathers et al. 2013). Also described as the touchscreen generation (Rosin, 2013) or as 'digitods' (Holloway, Green & Stevenson 2015), they are the first generation to be born in digitalised homes and exposed to digital media since birth, and to start using them at a very young age (Marsh 2004, Plowman & McPake, 2013). This generation is the first group of children in history to grow up with a range of digital devices at its fingertips (Holloway, Green & Stevenson 2015), and is increasingly going online at a younger age, and this includes babies and toddlers (Holloway, Green & Livingstone 2013). Leathers et al. (2013) suggest that young children learn to point their fingers between the ages of 10 and 14 months and can potentially swipe and tap a touchscreen device. They contend that this touch-and-swipe movement and the ease of access and portability of touchscreen devices makes them incredibly accessible and

inviting to young children. Mobility, apps, interactivity, accessibility are some of the features of new technologies which make them appealing to young users.

The prevalence of digital devices in children's lives is confirmed by Bar Lev et al. (2018, p. 110), who claim that mobile device use has become 'normative behaviour among very young children and emphasize how deeply it is integrated into the daily parenting practices'. Young children's home experiences now include a repertoire of digital activities, and these artefacts, it is often argued, set this younger generation apart from its older counterparts. For example, it is evidenced that from babyhood, many children engage in screen-based communication such as video calls with distant grandparents (McClure et al. 2017), and before their first birthday can independently manoeuvre user interfaces by swiping (O'Connor 2017). Toddlers are known to access photographs and videos, navigate YouTube, and interact with and complete some age-appropriate digital games and applications (Harrison & McTavish 2018). It is important to note, however, that not all children have equal access to a range of devices, and that issues of difference, diversity and equity need to be considered and addressed when considering the digital landscape of contemporary childhoods (Kumpulainen & Gillen 2017).

Young children's digital activity within daily life

Responding to the urgent gap in the literature pertaining to young children's digital lives, several large-scale research projects in Europe have attempted to capture and articulate the changes in family experiences related to technological developments, activities and habits within everyday contexts. This research reveals the complex characteristics of contemporary practices in early childhood (Marsh 2014) and highlights the need to expand research on children's literacy practice to include new perspectives in which multimodality, linguistic innovation, remix, playfulness, participation and interaction acquire new relevance (Merchant, 2015). Chaudron et al. (2015) conducted a pilot project titled 'Young children (0-8) and digital technology – a qualitative exploratory study' that examined young children's and families' interactions with digital technologies across seven European countries. The findings parallel those of many other studies (Holloway, Green & Stevenson 2015, Kumpulainen & Gillen 2017) which suggest that while young children are in daily contact with a wide range of digital tools and live in rich-media contexts, this does not automatically equate to high digital use from the children. They suggest that children's use of technologies is affected by the way parents introduce those technologies to them and what they allow them to do with them. Children's digital activities are often closely mediated by their parents, siblings, extended family members and peers, and the research suggests that young children learn how to use technologies through observation (Plowman 2014). A study by Marsh et al. (2017, p. 47) found that children's digital literacy practices in the home 'involved extensive engagement with other family members who scaffolded their learning and were delighted in the children's technological capabilities'. Research also points out that although young children may be described as having learned to use technologies on their own, this learning actually occurs through ongoing observation and close interactions with others (Matsumoto et al. 2016). Chaudron et al. (2015) confirm these findings, as their research has shown that children implicitly learn to use the digital tools available in their homes and that they often mirror the actions of their parents, older siblings and other family members.

Chaudron et al. (2015) postulate that the digital activities children engage in often support their offline interests (e.g. looking up areas of interest on YouTube or the internet such as trains, dinosaurs or unicorns) and that they enjoy their nondigital interests just as much as their digital interests. In this way, digital activities can be viewed as a central but not dominant part of children's lives. The report by Chaudron et al. (2015) notes that much less is known about younger children's encounters with technology at home, in part because of the challenges in involving young children as active research participants and gaining access to family homes for repeated visits. It emphasises the urgent need for research that is ethnographic and participatory in nature to capture (in more detail) young children's own experiences, allowing for their voices and agency to inform the study.

Young children and the internet

Studies (Marsh et al. 2015, Plowman 2018, Yelland 2018) have been conducted that account for the uptake of internet use by young children and their widening internet repertoires. One of the key findings from a 2015 European report (Marsh et al. 2015) examining the online and offline behaviours of young children contends that they frequently engage in online activities and use the internet as a source of entertainment. The most common online activities for under-8s include watching films and videos, playing games and listening to music. The study highlights that young children also engage in a range of creative online activities such as drawing, taking photos and making music, and suggests that when children go online their favourite destination is YouTube. Interestingly, the use of tablet devices and the production of child-created content such as the production of 'how-to' video content is increasing. Furthermore, children enjoy watching peer-produced content online. The study suggests that children's operational and technical competencies are well-developed and that they demonstrate a cultural understanding of the uses of technology in society. The report highlights access and use of the internet and shows that young children are enthusiastic users of online sites and applications who undertake a range of activities online that foster play, creativity and learning.

In another important large-scale European study, Kumpulainen and Gillen (2017) conducted a review of the research literature pertaining to children aged 0-8 and their digital literacy practices in the home. The report reviewed 33 studies, and one of its key findings focuses on children's engagements with new technologies in the home setting and their implications for literacy learning. It reports that literacy learning with and from digital technologies is very much mediated by the social context, suggesting that children learn from their parents, siblings and peers through observation and imitation. The report found that technology plays an important but not dominant role in the children's lives, suggesting that children are happy to balance technology use with other activities and engage with traditional playthings such as board games, dress-ups, craft resources and so on. This is also endorsed by Kumpulainen and Gillen (2017, p. 27), who suggests that digital devices do not dominate children's everyday experiences and also found that 'children are active and agentive in their use of digital technologies and media towards their own ends, moving fluidly between online and offline activities'. To sum up, the report emphasises the positive effect of new media and technologies on children's literacy learning, motivation,

engagement and communications, and urges early years specialists to recognise and respond to the expertise contemporary children have and bring to school.

Digiplay: Children's digital play

Digital devices are part of young children's everyday experiences and are firmly embedded in their everyday play encounters (Marsh 2004, Wohlwend 2010). This necessitates an understanding of how technologies are being used in their daily play and the changes that have occurred in play due to technological advancements. As Chaudron et al. (2015) argue, technological devices occupy a growing space in the contemporary childhood experience, and as a result technology is not seen as an 'add on' but rather as part of children's home environments and daily play encounters. For example, the iPad provides opportunities for independent exploration (Wong 2015) and hence new ways of using technology as a play tool. A recent study by Given et al. (2016) found that in their home settings young children integrate digital technologies with their social and dramatic play and their offline literacy learning. Their findings illustrate how young children's at-home play is undergoing significant shifts and their everyday play experiences may also be mediated through accessing websites, mobile apps and toys with digital interactivity. The affordances of portable digital devices and toys make them increasingly accessible to ever-younger children who are developing the expertise and knowledge to use them independently for a variety of different functions (Laidlaw, O'Mara & Wong 2015).

Edwards's (2013) study refutes the binary positioning of traditional play versus digital play, and instead demonstrates how children's play activities blend digital and nondigital spaces and their play encounters travel through various mediums. For example, a child may view an episode of *Peppa Pig* on television or on the iPad, play with a Peppa Pig soft toy or traditional toy, play a *Peppa Pig* game using an app and wear Peppa Pig clothing or costumes. Edwards (2013) therefore urges us to contemplate how in our post-industrial times, it is crucial to consider the nature of converged play, in which traditional play with toys converges with newer forms of digital play. Converged play (Jenkins 2006) occurs when children use a technology and/or are inspired by popular culture characters to participate in traditional forms of play. For example, a child might watch a *Play School* episode on YouTube and then enact a *Play School* scene using traditional toys. Edwards (2013) argues that play activities associated with converged play do not necessarily distract from traditional play-type preferences. Instead, she argues, the two forms of play are interrelated, and converged play can lead to high-quality play experiences involving imaginary play. Due to the prevalence of digital media, for example, children engage in play activities that seamlessly move between online and offline practices, and as Marsh et al. (2019, p. 3) claim, 'in these hybrid spaces, new kinds of practices are possible'. Marsh (2019) also postulates the notion that post-digital play moves away from outdated notions of digital or nondigital and towards a more hybrid type of play involving a complete merging of the two.

The term post-digital play has been applied to describe the hybrid nature of children's contemporary play, which considers the various connections that might be made as children play across various sites and domains. As

discussed in the opening section of this literature review, this term closely aligns with posthumanism's entanglements of the human and nonhuman (Marsh et al. 2019, p. 224), in that post-digital play emphasises the way in which the 'digital is so embedded in everyday play practices that it is no longer meaningful to consider the digital in contrast to the nondigital'. Marsh et al.'s (2019, p. 223) research into young children's experiences in makerspaces illustrates how children 'move seamlessly across digital and nondigital domains in their maker play', interweaving the material and immaterial, and argues for a post-digital approach to researching contemporary play that can inform dynamic flows and 'a move to characterise a world in which the dynamic flows between analogue and digital make a myopic attention to any one of these outmoded' (p. 157). Similarly, O'Mara, Laidlaw and Wong (2020) envisage children as digital architects, suggesting that they not only access digital media during their play episodes but also contribute to and create digital content of their own in playful and creative ways. They suggest that due to the maker movement, children are engaged in playing creatively with varying materials, technologies and resources to make texts and objects through experimentation, and that therefore conceptualisations of play, literacy and literacy learning must evolve.

A further gap in the literature on young children's play explorations in the digital age is identified by Stephen (2020, p. 63), who suggests that 'further research is needed to understand everyday play, social, and creative experiences in the digital age from the perspective of young children, rather than the technological affordances of the resources'. This is echoed by Laidlaw et al. (2019), who claim that due to the increased interactivity afforded by digital tools related to engaging in digital play activity, children are no longer passively consuming digital content but also seeking opportunities to produce, create and disseminate content, and further research is needed to examine this shift. As Holloway, Green and Stevenson (2015) argue, the contemporary childhood experience has undergone a significant transformation in which children's daily play encounters and social interactions have shifted to the digital realm, with a move towards child-generated content and communications (Holloway, Green & Livingstone 2013). When discussing the affordances of digital play experiences, O'Mara, Laidlaw and Wong (2020, p. 144) suggest that contemporary digital play has 'shifted from the stability of the printed word to the ephemerality of digital texts, and ... textual genres are constantly morphing'. Therefore, through their digital play children are developing both new and traditional digital literacy and design skills as producers rather than consumers of digital knowledge (O'Mara, Laidlaw & Wong 2020, Rowsell 2014; Yelland 2018).

Children as digital consumers and producers

Of significance to this research is the notion of the agentic child as both producer and consumer of multimodal texts and digital content. New media has afforded new potentials for young children to create, produce or reproduce texts. Hull and Katz (2006) refer to the notion of the 'agentive self' and suggest that contemporary children engage with multimodal texts in diverse ways, exercising greater agency in their literate repertoires. This is supported by Erstad (2019, p. 36), who argues that 'digital texts and modes provided new affordances for children as active producers of textual expressions and ways of sharing these with others'. Due to young children's immersion in

digital landscapes, a prevalence of child-generated content and child-generated communications is presenting new possibilities for consuming and producing practices.

Carrington (2017) proposes that due to recent technological innovations, and in particular the internet, children now have access to an increasing range of new texts and literacies such as computer games, texting and virtual worlds, and are developing a mastery of new texts and literacies at a very early age. The expanded access to digital content and ease of information afforded by technological innovation has resulted in children rapidly advancing their competence, confidence and familiarity with a range of devices and is 'destabilising the control and flow of information they have access to, rendering them agentic'. Carrington (2017, p. 14) asserts that this new technological landscape 'moves the child away from being seen as passive and allows them to be producers and disseminators of information', thus challenging the direction of early childhood literacy instruction, which tends to be based on the notion of a passive child, relatively dependent for information on the adults who decide the type of information they should be exposed to in order to minimise risks. Carrington (2017) suggests that a new model of the child, similar to Murris's conception of child as (iii) summarised in Chapter 2 has emerged through the new kinds of practices and identity formation surrounding the convergence of technological change, and argues this new model of child does not align comfortably with many of the traditional discourses and school approaches, which 'are modernists institutions par excellence' (p. 161) and thus unfortunately result in the exclusion of children from direct participation in civic life. Carrington (2017, p. 23) argues that the 'worldly and participatory nature of the contemporary childhood experience does not mean the end of childhood per se, but rather the fading of the dominant discourse surrounding childhood and the social and economic conditions that sustain it'.

Early childhood classrooms: A digital desert

When considering the futures of contemporary children, Marsh et al (2017, p.48) look beyond a print-centric approach and state that

> it is necessary but no longer sufficient for children to develop competence in relation to written texts; they also need to be able to engage successfully with multimodal, multimedia texts if they are to acquire the range of skills, knowledge and understanding necessary to navigate the knowledge economy of the twenty-first century.

This notion is supported by Erstad et al. (2020), who state that being digitally literate as multimodal meaning-makers requires being a skilled user and designer of vast and new forms of modal combinations. However, while the last decade has seen increasing calls for educational settings to reflect and build upon young children's digital experiences in literacy provision, concerns about the role of new technologies in early years settings have endured (Plowman 2018). In other words, early childhood settings are reluctant to embrace digital technologies as part of their pedagogical repertoire. Recent research in the field of early childhood education has outlined several reasons for this lack of uptake. Wohlwend (2017) refers to early childhood settings as 'digital deserts', suggesting that visions of developmentally appropriate practice privilege print-based approaches and the use of natural materials, resulting in a resistance from early childhood educators to embracing new technologies in classroom programs.

Yelland (2013, p. 437) also reports resistance from early childhood educators when it comes to integrating digital technologies into their practices due to concerns that technologies detract from play-based learning and developmentally appropriate practice, which is 'amplified by worries for a childhood in which outdoor and spontaneous play are lost'. Murris (2016) argues that these narrowing definitions of literacy and resistance from early childhood educators in regards to embracing new technologies are linked to a particular view of childhood, which sees the child as being in a stage of deficit. She states that 'children are positioned as deficit and in an inferior stage of development requiring protection from adults' (Murris 2016, p. 184) Building on this idea, Stevenson (2020, p.80) argues that early childhood educators are 'steeped in child-centred pedagogy and child-centred play that is typically nondigital which view technology as detrimental to children's natural development'. These views are based on humanistic ideas about technology which view it as separate from the child's everyday world rather than as an entangled part of it. In addition, a humanistic view of technology views technological devices as passive objects rather than as already entangled parts of our everyday relations (Lenz Taguchi 2010a).

In addition, research has shown that lack of teacher confidence and competence also contributes to resistance to embedding digital technologies into classroom literacy programs (Plowman & Stephen, 2005). Erstad (2010) raises an additional argument, suggesting that when digital practices are implemented into classroom practices, they are used to substitute for existing classroom practices rather than to redefine or transform learning, often resulting in little to no enhancement in learning. Wohlwend's (2017) research found that digital technologies are usually underutilised in classroom learning experiences, and when they are utilised, it is for low-level activities such as viewing television or listening to ebooks. This view is best summed up by Burnett (2009), who found that there is a tendency to replicate existing pedagogical approaches rather than realise technology's potential to transform learning and teaching.

Parenting digiTods: Meditating young children's use of technology

Family practices, it has been argued, influence children's experiences with technology in domestic contexts (Plowman 2015, Marsh & Pahl 2014). Existing research on parental mediation reveals that many parents see digital technologies and media as both positive yet also challenging (Kumpulainen & Gillen 2019). Parenting in this new media environment is complex, and parents struggle to navigate this uncharted territory. Contemporary parents grew up in environments very different from those of today's children. Research indicates (Chaudron et al. 2015) that parents find it difficult to know what is best for their children, as digital devices, toys and products were not available when they were young. Many parents believe that exposure to digital media is vital to their child's development, and hope to support their acquisition of the digital skills required to succeed in today's technologically oriented world. Nuemann, Merchant and Burnett's (2018) research highlighted key findings that suggest parents viewed children's use of technology (in this case tablet devices) as educationally valuable, but also had concerns about and need for extra guidance in in relation to choosing appropriate, educationally sound applications, exposure to advertising and content deemed unsuitable for their age, and appropriate amounts of screen time. Consequently, children's use of digital technologies has become an area where parents risk feeling techno-guilt,

as Jaunzems et al. (2017, p. 16) report: 'Australian parents still express confusion and guilt concerning their very young children's media use'. There is also a great deal of angst and tension regarding possible criticism of their parenting and conflicting advice from experts and the media regarding screen time. This uncertainty in illustrated in the quote below, in which Rosin (2013, p.x) captures the contradictions of parenting in this ever-changing digital environment:

> on one hand, parents want their children to swim expertly in the digital stream that they will have to navigate all their lives; on the other hand, they fear that too much digital media, too early will sink them. Parents end up treating tablets like precision surgical instruments, gadgets that might perform miracles for their child's IQ and help them win some nifty robotics competition but only if they are used just so.

Plowman and McPake (2013) propose that due to widespread media coverage about children and technology and a lack of evidence-based research, myths have emerged about children's engagements with technologies. These myths present an alarmist view regarding children's digital experiences. Bulfin and McGraw (2011) argue that a technology-as-catastrophe discourse remains prevalent in public and political arenas, where frequently sensationalised themes about technology ruining childhood feature repeatedly in media reports. As Plowman (2017) notes, these alarmist views evoke reductionist approaches towards media use in which parents and carers are urged to protect their children from the threats of technological use and hence reduce, police and restrict their activity. In a reductionist approach, technology is viewed as a distraction from healthy, natural childhood activities such as playing outdoors or with nondigital materials such as blocks, dolls and trains. According to Green and Holloway (2014), parents are often left 'rudderless' as they inhabit media environments containing multiple and mobile devices yet must navigate competing and contradictory messages from commercial, health, and educational discourses. Roberts and Powell (2014 cited in Jaunzems et al. 2017) liken this media panic to the one that accompanied the introduction of television, and claim that the warnings about young children using digital technologies reiterate those of 50 years ago when parents worried that their children's television viewing would cause 'square eyes' and that viewing violence on television might make children aggressive. Jaunzems et al. (2017) argue for further research investigating everyday family practices of everyday technology use and raise an important point: that as parents did not grow up with digital technologies themselves, they do not have a point of reference for how to navigate this space and support their children in it. Furthermore, new and rapid technological advancements mean that parents and teachers struggle to keep up with changing demands and therefore cannot expect to assume the role of expert.

Parents play a very important role in young children's digital literacy practices as both role models and gatekeepers of their activity. However, the area of family dynamics and new technologies is significantly under-researched (Connel et al. 2015). It is evidenced in the literature that parents mediate digital usage, children learn from parents and mimic their digital behaviours, and parents determine their children's practices and also access to technology (Gillen et al. 2018). Parents mediate by controlling the apps children install, timing their use and monitoring their visualised contents. However, restrictions regarding screen time vary significantly across households, and

recommendations from paediatric organisations such as the American Academy of Pediatrics (2001, p. 423) that suggest children aged under 2 years should avoid screen use completely and that technology use may displace other more active and meaningful pursuits, such as reading, exercising, or playing with friends are argued to be outdated and unrealistic. A recent study on the subject by Kumpulainen and Gillen (2019) found that:

- many parents see digital technologies and media as positive but challenging at the same time.
- parents are not always aware of the range of children's online activities and their skills.
- the benefits of children's digital activities are less obvious to parents than the risks.
- parental mediation includes 'co-use', 'active mediation', 'restrictive mediation', 'supervision', 'technical safety' and 'guidance'.

One of the key findings from this study is that parents set rules and boundaries for their children's digital literacy practices in the home. Kumpulainen and Gillen (2019) also refer to a study by Palaiologou (2016) which found that 86% of families surveyed apply rules to their children's digital technology use.

Kumpulainen and Gillen's (2019) study reminds us of the challenges of staying current with regard to research in the field of young children's technology use in the home due to the constantly evolving nature of technology. New technologies such as the Internet of Toys, virtual reality and augmented reality are permeating children's homes, and it is vital to extend research in this area to account for these developments. Orlando (2019) raises a key point regarding the existing literature in the field: that most of the research into children's play and learning gathers data through parent and adult interpretations of children's use of digital devices and media. There is an urgent need to look beyond how adults observe, interpret and assess young children's interactions with digital devices and digital learning in the home and include the perspectives of the young children themselves. As Plowman (2015, p. 8) states, engaging directly with participating children and finding ways for them to articulate or demonstrate their choices will enable researchers to gain insights that are not available by other means. This thesis aims to draw attention to the dearth of research that gives a full account of children's perceptions and experiences in the context of literacy and technology in the home and make an important contribution to our understanding of research in the home environment.

Chapter summary

This review of children's digital literacy practices at home and within the wider field of contemporary childhood experience signifies a significant transformation has taken place due to the advancement of accessible technology. The literature reveals the important role played by technology in their everyday lives and the ways in which it informs their daily play encounters and early literacy experiences. The literature reviewed in this chapter suggests that due to the rapid changes in this field, (which can only increase in the future as technological developments accelerate), there is an urgent need to study the digital aspect of young children's lives in much greater depth, investigating everyday family practices around everyday technologies and utilising ethnographic methods to seek the perspectives of the children themselves as well as adult interpretations (Plowman 2021).

Literature review conclusion: At the crossroads: A synoptic synthesis of the field

The review of the literature presented in Chapters 2, 3 and 4 has provided a synthesis of the early year's literacy research through a sociocultural framed lens and the nexus of children's everyday use of digital technologies. This research has demonstrated how literacy can be conceived of as a social practice that is culturally shaped. Yet the literature addressing the changing nature of literacies in contemporary times also illustrates how an expansion of a sociocultural view is needed, and drawing on expanded theoretical positionings may lead to more nuanced and textured understandings of children's current experiences with early literacy. The literature reviewed in these chapters has positioned early childhood literacy as a phenomenon that happens in social contexts, between people and materials. Yet the literature bridging social and material perspectives illustrates the need to examine the relations between the child, materials and the environment to gain deeper insight into children's literacy practices, experiences and development – the posthuman view. Posthuman thought challenges the individualist view of literacy development upheld by cognitive–psychological research, but also complements sociocultural accounts to foreground the material, embodied and affective dimensions of young children's meaning-making (Kuby, Spector & Thiel 2019). This literature review highlights how literacy and literacy learning can be conceived of in multiple distinct ways and how different lenses inevitably produce different views. As Kress (2003) states, no single theory can fully explain the complexities of the phenomenon of literacy. The literature reviewed above illustrates the prevalence and affordances of digital devices in children's daily lives, necessitating further exploration of how their lives, daily play encounters and early literacy learning and development are impacted by technological innovations. However, the review also highlights that little is known about younger children's (0-8 years) encounters with technology at home, in part because of the challenges in gaining access to family homes for repeated visits and involving young children as active research participants. In Chapter 5, I will outline the methodological framework of this study.

Chapter 5:
Methodological becomings

Introduction

This chapter presents an overview of the methodology utilised in my study of young children's contemporary digital literacies within the family home. In this chapter, I explain the study's methodological rationale and framework and articulate my operationalisation of a hybrid approach to collecting the fieldwork material; which involved multiple methods such as participant observation, informal conversations, collection of artefacts including photographs of screen shots, drawings, writings, paintings, crafts, models, screen captures of children's work samples on digital devices, and documentation of websites, video games and apps. I sought a methodological approach that allowed me to weave together multiple threads of material and multiple frames of analysis in order to capture the messy and entangled nature of young children's digital literacies within their home contexts.

As I endeavoured to find ways to examine and document the range of complex digital literacy experiences, expertise and knowledge that young children were engaging with at home, I did not approach the fieldwork with a preset research design and predetermined questions and methods of analysis. Instead, I sought an approach that allowed me to create a portrait of the lived experiences of the participants, 'woven together in a way that communicates the multiple layers and perspectives of not only the participants but also the researcher' (Ling & Ling 2020, p. 78). My appreciation of the complexity of the lived world of early literacy and understanding of the messy nature of literacy experiences in family home lives in the interconnected digital world were central to the study.

It is important at this juncture to reiterate my theoretical positioning regarding literacy and technology vis-à-vis the research design. I view literacies as plural, consisting of multiple competencies and practices shaped by different contexts, purposes and issues (Luke & Freebody 1999, New London Group 1996). This perspective recognises the emergence of digital literacies that not only focus on the foundational skills of reading and writing, but include an assemblage of entanglements: the objects, skills, knowledge, and attitudes that enable complex ways of getting and making meaning from multiple textual and symbolic sources (WarsChauer & Ware 2008). Based on my fieldwork, I suggest that new technologies are generating transformations in reading, writing, communication and the production of knowledge that disrupt normalised thinking as to what constitutes literacy in children's worlds in the twenty-first century. Deleuze and Guattari's (1997) concept of a rhizome – a root tuber that spreads in various, unpredictable directions underground – was a helpful way to think about the unexpected and complex digital literacy practices of young children with materials within their home contexts.

Methodological framework: Drawing inspiration from Deleuzoguattarian concepts

As I commenced the fieldwork, I endeavoured to find ways to examine and document the range of complex digital literacy experiences, expertise and knowledge of that young children were engaging with at home. I sought

inspiration from Deleuze and Guattari (1994, p. 111), who claim that 'to think, is to experiment', and have noted that learning to think with theories and matter in the world (i.e. children, families, homes, writing, books, art supplies, plants, digital tools and so forth) is imperative if we are to create a new (theories, literacies, methodologies, and ... and ... and ...). Deleuze and Guattari (1994, cited in Holland 2013, p. 350) argue that the main question of philosophy should be not 'What is it?', but 'What can it become?', and have described a hybrid approach to the pursuit of knowing as:

> … like working a quilt, a patchwork of different pieces of text on fabric with different patterns that are laid out to connect to each other in different and infinitely possible ways. (Deleuze & Guattari 1987, p. 476)

Working from a Deleuzian space, I regularly revisited and interrogated the 'philosophical assumptions' (Creswell 1998) which informed the design of the study. This involved the methodological framing of the study vis- a-vis what constitutes or defines twenty-first century literacy: that literacies are multiple, dynamic and malleable, and inextricably linked with life histories, lifeworlds, objects, social interactions, and environments situated in time, place and context. I had to regularly revisit how to think about how the entanglements of children, parents, books, digital tools, communities, families, languages and so forth are intra-actively producing something different in/with/for the world, today. As established in the literature review, contemporary children are mediating meaning-making through multiple modes and in diverse online environments, giving new insights into how literacy practices are changing in an increasingly digitised and hybrid landscape. As Kuby and Rowsell (2017) state when discussing early literacy and the posthuman, we must therefore explore new and/or different ways of being, knowing or doing literacies in twenty-first century contexts. A methodology for understanding these changes requires consideration.

I was drawn to a Deleuzoguattarian perspective (1987) as I noticed that many posthuman scholars such as Barad (2007), Murris (2016), Kuby (2017), Thiel (2015) and Braidotti (2013) draw heavily on Deleuze and Guattari's (1987) rhizomatic and assemblage theory as a way of thinking differently about research practices (for example, Alvermann 2002, Mazzei, 2010, Sellers 2009, St Pierre 2006). I turned to the rhizome (Deleuze & Guattari, 1987) as the overarching frame of my methodological framework and analysis because it offered the opportunity to capture the traces of the actors (human and nonhuman) within the various assemblages without losing the multiplicity and nuances of the fieldwork material. A rhizome in nature is a bulbous plant or tuber that grows erratically in all directions, proceeding by means of offshoots, and has no predetermined structure. Deleuze and Guattari's (1987) notion of rhizomes and assemblages provided a language that could describe the complex ways in which digital literacies emerge sporadically and horizontally in the context of everyday life, without prioritising certain elements and thus ensuring a nonhierarchical reading of the fieldwork material. Kuby, Rucker & Darolia (2017) argue that rhizomatic theory provides opportunities to appreciate and follow the unexpected ways children know/do/be/create literacies and see new and creative ways of conceptualising literacy. It enabled me to disrupt linear, hegemonic and ordered ways of thinking with the fieldwork material and instead think multiplicity – not in regard to increasing its quantity, but instead by inviting different and multiple ways of seeing it, applying different theoretical ideas and making connections to create new understandings. Importantly, this approach provided a

way to unsettle the limiting structures of qualitative research methodologies (Cumming 2013). The rhizome was also useful for seeking unpredictable directions and nonlinear trajectories, and when pursuing the unexpected or spontaneous literacy encounters of young children with materials in their everyday lives (Deleuze & Guattari 1987). Further, by thinking with Deleuzoguattarian concepts such as the rhizome and assemblage, I was able to move away from viewing literacy as a linear trajectory of development and from regarding the conceptualisation of children purely through a sociocultural lens, and therefore became much more cognisant of what I was experiencing in the field and how literacy is experienced in the home.

The Deleuzian (flat) ontology

Deleuzoguattarian philosophy seeks to disrupt humanist-centred thought and posit an alternative (though not an opposite) view of thinking, of ontology and of human experience. Traditional approaches to education research are linear processes that aim to reproduce a series of research steps in order to find an 'objective truth' (St Pierre 2011, 2013). Thus, research perspectives that are predicated on ontological stability and universals, methodologies that reproduce the same bodies of knowledge and the capacity to discern an ultimate and fixed 'truth', would be incompatible with a Deleuzian lens. Posthumanist theories challenge humanist assumptions by advocating for a flat ontology moving away from hierarchies that privilege the human subject. As articulated in the literature review, Braidotti (2016) describes posthumanism as challenging the conflation of anti-anthropocentrist perspectives based in human exceptionalism. This view problematises the primacy of human existence over that of the other-than-human (living and non-living). This ontological positioning allowed me to view the human (child) and nonhuman (digital, material) as entangled and having agency rather than viewing the child as having an active mind and the object as being passive. Posthuman ontologies are described as 'a flattened logic' in which 'discourse and matter are mutually implicated in the unfolding emergence of the world' (MacLure 2013 p. 659), and Barad (2007, cited in MacLure 2013, p. 2013) reminds us how in these ontologies the (human) subject is decentred, forcing a deliberation of how the material world 'intra-acts' with humans in ways that do not necessarily pass through language in its 'ordinary' appearances. This flattened ontological view provided a useful methodological and philosophical frame as I sought to understand the entanglements of children and materials in everyday home environments that were often unpredictable in nature and involving multiple interactions.

The complex nature of contemporary literacies can be extended further through assemblage theory (Deleuze & Guattari, 1987). Framing contemporary literacy as an assemblage provided me with a methodological framework for reconsidering the social, cultural and material aspects of digital literacies in the home. The term assemblage refers to Deleuze and Guattari's (1987/2004, p. 46) conception of social order: it is a heterogeneous collection of elements, both material and non-material, that come into composition in different ways at different times to produce a particular activity'. Thinking about children's digital literacies as a fluid and entangled assemblage – as always becoming and never fixed – I was able to explore different and wide-ranging ways of 'becoming', allowing me to be open to the chaotic network of connections occurring in the home contexts of my study participants. As a central concept in assemblage theory, becoming is defined as a process of change or movement (Lenters 2016). As such,

the concept of assemblage allowed me to consider how the children's literacies intersected in complex, spontaneous and nonlinear ways in time and space. While people are significant participants in assemblages, they also include material artefacts such as signs, gestures, objects, spaces, digital tools, events, practices and utterances, and literacies are co-produced through a constellation of various elements. As MacLure (2013) suggests, various objects, utterances, institutions, bodies and fragments interrelate as a mix rather than a hierarchy, and Carrington (2017) proposes that the use of the term assemblage can account for the way literacies dismantle and reassemble in various combinations as context and requirements shift. When in the field, I therefore endeavoured to pay close attention to the intra-actions (Barad 2012) between participants and material objects. This analytical lens is discussed in detail in the next chapter. As argued in the literature review, from a posthuman perspective, the child exists in a complex entangled network of human and nonhuman (Murris 2016), and video games, tablet devices, playdough, arts and crafts, comic books, robots, electronic toys, paper, apps, mobile phones, digital toys and LEGO all function as powerful materials in contemporary early literacy development. Bringing assemblage theory to the examination of these materials enabled a wider, more holistic account of the shifting literacy experiences of the young participants.

Methodologically, the notion of the assemblage was useful for mapping and articulating my research design and fieldwork. As articulated above, I drew inspiration from St Pierre (2014) and considered notions of a post-qualitative inquiry (i.e. one moving away from humanist approaches) to represent the messy entanglement of multiple research methods and the diverse threads of my research material. This was a challenge for me at times, as the 'voices in my ear' persisted, stubbornly echoing a positivist nomenclature. St Pierre (2021) suggests that the shift to refusing conventional humanist approaches can be unsettling. Terms such as reliability, triangulation, transferability, trustworthiness and validity, derived from my Master's degree, presumed a 'stable, unchanging reality' (Denzin & Lincoln 2003, p. 34) and were in contrast with what I experienced in the field. As I focused on the multiplicity and relational processes of the complex phenomena of early literacy, I moved away from a set of protocols or favoured methods, and instead sought to 'open up' existing methods while providing alternatives (St Pierre 2011). This approach generated a tension for me as a novice researcher struggling to block out the voices in my ear and disrupt the dominant research discourses. As St Pierre (2011, p. 620) warns, engaging in post-qualitative inquiry involves becoming-free from 'constraints of existing structures'. The following excerpt from my reflective journal illustrates this tension as I struggled with developing my researcher identity and with the challenges of learning to think differently, and learned to be uncomfortable with uncertainty:

> *Reflexive journal entry:* *Date: 26/10/2015*
>
> *The knot in my stomach intensifies as I step out of a meeting with the Director of Research Training. I was invited to a meeting to discuss my potential research proposal and study design. The discussion centred on using my children in my research and how this idea is 'preposterous' and in fact, there should be a blanket university rule to enforce that researchers do not utilise family members within their research. Am I being indulgent? Am I doing wrong by my children? The research topic evolved from my experiences*

at home with my children and they are very much part of this research. It is challenging for a novice researcher, one who is at the bottom of the university hierarchy, to trust their instinct and pursue their interests and passion. The power differential apparent as I continue to struggle to locate my researcher identity. I feel completely out of my depth. How do I navigate this space? Do I push back or conform? These fears persist. What if my research is considered 'made up' and does not render impact, or not be considered rigorous? Words like validity, credibility, triangulation haunt me. What if I am doing wrong by my children? What if I don't receive ethics approval (as intimated by the Director)? Throughout the research process, the 'voices in my ear' continue to linger. I learn to push back at these voices; to soften them at times and to trust my intuition (however these voices are never fully silenced). As a parent, educator and academic, I know the research topic is timely and important. I know this through the frequent conversations I witness at the school pick-up, the numerous (almost daily) posts to various parenting social media chat groups, the impassioned conversations with other parents at dinner parties as we discuss contemporary childhood and parenting, the regular headlines in the daily newspaper and the steady flow of posts to LinkedIn, Facebook and The Conversation debating the role of technology to diminishing literacy standards. I know that what I am seeing and hearing is different; it is important and it is necessary. During the course of the research, I would regularly ask my children 'Do you mind if Mummy asks you questions about your technology use?' 'Do you get annoyed when Mummy asks if she can use the work you did on the iPad?' 'Is it okay if Mummy writes about you in her research?' Over the past three years the boys consistently reply positively with enthusiastic responses such as 'I like it,' 'It helps people,' 'I like hearing the stories about us.' For now, the voices in my ear are quiet.

Coming to know: The home as a research site and being in the field

The home as a domain of emergent literacy development was selected as the field work site for this study because the bulk of young children's technology use and emergent literacy development that I was interested in observing occurred there (Edwards et al. 2017). It has been argued that in the home children have relative freedom to use devices and more open approaches to engaging with digital literacies compared to how those devices are domesticated in the classroom (O'Mara & Laidlaw 2011). It has been suggested by language and literacy scholars (Plowman 2014) that parents are children's first teachers of literacy. The familial home environment has been found to be a significant site in regard to the development of emergent literacy, and it has been argued by educators, policy-makers and curriculum developers that we need to value and examine children's lifeworlds and their everyday lived experiences within their home contexts and build upon these to inform literacy curriculum and policy (Kress 2010).

My fieldwork experience within the children's home contexts was very different from how I imagined it to be during the planning phase of the research design. I had expected that I would plan and design research tools that would be utilised similarly at each site. Once I commenced the fieldwork, however, I realised that this was not the case. I constantly had to make adaptations to the research design, often resulting in inventive, creative and sometimes

spontaneous techniques such as role-play, puppets and parallel play, and hence I engaged with what Willis (2002) termed an 'ethnographic imagination'. Due to the uniqueness of each home setting and its family routines, my fieldwork methods did not play out in the same way in each context. At times, the lack of control and uncertainty caused me stress and increased my 'imposter syndrome', yet it also provided me with an opportunity to broaden my thinking about doing research with very young children, negotiating research relationships and undertaking research in complex and personal settings like the home. During the fieldwork period, one of the many challenges I encountered was how to develop suitable methods to engage with young children and encourage their active participation meaningfully and authentically. I centred the fieldwork visits on the notion of 'literacy play' and explained to the children that I wished to observe or participate in their literacy play or free-time activities. Although this was not originally anticipated, the notion of play became a key feature of the field work and enabled me to build rapport with the children. Play offered a space in which to 'mirror children's everyday activities and join in with the mundane and ordinary and doing what young participants do' (Montgomery 2014, p. 122). This also helped prevent parents setting up or staging literacy-related activities for the children to engage in during the fieldwork, as I explained to them that I was eager to observe the children participating in their day-to-day play activities and practices pertaining to literacy and technology. While this proved effective, in some settings parents would anticipate my arrival and have a task ready for me to join in with. I recorded these observations as field notes as candidly and naturally as possible and attempted not to be disruptive (Plowman, 2017). I also had to be adaptive and flexible to the moods and concentration spans of the children, and be directed by their attentiveness and engagement. At times, the children would tire easily, grow irritable or refuse to participate. One of the participants, Ryder, made a chime out of cardboard and craft materials. This was displayed in the playroom, and once he tired of our sessions he would ring the chime, indicating it was time for me to leave. There were several times when Ryder rang the chime after 10 minutes of an anticipated hour-long session. In respecting Ryder's desires, I ensured I ended the session promptly.

Sites and spaces of the everyday

Home visits involved entering the lives of a family and supporting children and parents so that they felt at ease with the fieldwork sessions and with having me as a visitor in their homes, observing their behaviour. The sessions lasted approximately one hour at each site; however, the timing of the visits was flexible to fit in with families' schedules and availability, and children's attentiveness. There was a vital need for logistical awareness that I was a visitor in the busy homes of young families, and that parents needed to care for their children (for example, toileting, getting them something to eat, attending to sibling disputes, changing them and disciplining them) while I was in the home. I borrowed from Orlando's (2019) recent study and implemented organisational strategies to ensure trust, respect and care. These included:

- ensuring I accepted a cup of tea, coffee or water when offered and engaged in friendly conversations.
- insisting parents did not tidy up the house before the sessions.

- encouraging parents to continue with their daily chores or activities during my visits and not stop cooking, cleaning and/or working during the sessions.
- sending a follow-up email after each session thanking them for their time, offering an insight gathered from the session and scheduling our next session.
- contacting the parents via text or email a week before the next scheduled session to confirm it.

The fieldwork proceeded in an emergent manner over a period of 6 to 18 months depending on the availability and commitment of each family, while that in my own family's home spanned 36 months. The fieldwork proceeded differently in each home context due to the need to be flexible and accommodate the family's circumstances and routine. Families had very different expectations of the field visits. Some assumed that I would fit in with established daily domestic routines; others welcomed the visits as social occasions or became anxious about ensuring the house was tidy before my arrival (Plowman 2014). Multiple regular visits to the homes enabled me to develop relationships of trust, build detailed portraits of the families' lives, elicit children's perspectives, gain an understanding of family routines and habits surrounding literacy, and observe changing patterns of literacy and technology use and attitudes. It was an absolute privilege to enter the private homes of busy families. Being a parent of two young children myself, I am aware of the constant demands of family life and witnessed this in my participants' homes as they busily prepared for family celebrations, ferried children off to swimming and dance lessons or juggled their housework and chores such as grocery shopping. Due to changes in family circumstances and commitments, families were not always able to commit to regular sessions or to the 12 to 24 month duration of the study as initially intended. Both the Shar and Rowe families had to end the fieldwork earlier than anticipated due to changing family circumstances. During the Christmas period I found it very difficult to schedule sessions due to the increased social engagements occurring in the children's lives. Being flexible and adaptive to the families' needs, routines and changing circumstances was a priority, and the sessions were an ongoing negotiation. Each phase of the research process was of approximately three to six months' duration depending on the commitment of the family. The fieldwork phases and fieldwork tools are outlined in Table 1 below.

Table 1: The phases of fieldwork

Fieldwork phase	Context	Focus	Methods	Documentation
Phase 1 (approximately 3-6 months)	Home	Familiarisation of the household ecology, family habits and routines. Building rapport with participants	Participant profile Technology audit Participant observation Child-led tours Child-led conversations Artefact collection Informal conversations with parents Researcher reflexive journal	Field notes Audio-recordings of conversations Screen-shots Photographs Artefacts Journal notes
Phase 2 (approximately 3-6 months)	Home	Narrowing the focus to digitally-mediated literacy events	Participant observation Child-led conversations Artefact collection Informal conversations with parents Researcher reflexive journal	Field notes Audio-recordings of conversations Screen-shots Photographs Artefacts Journal notes
Phase 3 (approximately 3-6 months)	Home	Encouraging child participants to lead the sessions	Participant observation Child-led conversations Artefact collection Informal conversations with parents Researcher reflexive journal	Field notes Audio-recordings of conversations Screen-shots Photographs Artefacts Journal notes
Phase 4 (approximately 3-6 months)	Home	Preparing to leave the field	Participant observation Child-led conversations Artefact collection Informal conversations with parents Researcher reflexive journal	Field notes Audio-recordings of conversations Screen-shots Photographs Artefacts Journal notes

Finding a sample

Before proceeding with an account of the ethnographic research design, I will discuss the sampling process used and offer a demographic profile of the participants. The sample size for the research needed to be substantial enough to reveal the individuality and divergence of children's literacy experiences. As articulated in Chapter 1, my family were participants in this study because the impetus for it came from my interactions with my children as I observed their at-home literacy engagements and could observe and document their literacy experiences at times that would not be accessible in other research settings. I also set out to recruit additional families as participants in the study in order to expand my view of digital literacies. My intention was to recruit two to four families in addition to my own. The rationale for the small sample size was that it enabled extended time in the field and the development of 'thick descriptions' (Geertz 1973). A small sample also lent itself to a multidimensional analytical approach that drew on a wide range of sources to produce detailed descriptions of household ecologies, familial routines and experiences surrounding literacy, the perspectives of children and other family members, children's literacy play activities, and specific technologies.

After receiving ethics approval from the Victoria University Human Ethics Committee, I engaged in a process of snowball sampling to commence recruitment (Application ID: HRE 16-155). This process entailed recruiting through networks within the local community (Patton 2002). The research population has been considered a difficult-to-access group (Holloway et al 2015, Orlando 2019, Plowman 2013) due to the difficulty of entering participants' private homes. A snowball sampling technique necessitated utilising networks of families from within my own local community and drawing on personal contacts via community engagements such as playgroups, parent groups and community social events. I advertised the project to families I knew and asked if they could refer other, relevant families. Interested families contacted me via email or telephone. Furthermore, an advertising poster was displayed in several locations within my local community, such as a childcare centre, maternal health centre, local shopping centre, swimming pool and community centre. I targeted inner-city suburbs of West and North Melbourne, Australia such as Ascot Vale, Footscray, Kensington, North Melbourne, Flemington, West Melbourne, West Footscray, Maidstone and Moonee Ponds due to their proximity to my home. Permission to display the posters was sought from the managers of these centres. The families were selected based on the following criteria:

1. Families had at least one child between 2 and 6 years of age.
2. English was the primary language spoken at home.
3. Technological tools of the twenty-first century were present and used in the home.

The recruitment process was as outlined below:

a. Seek permission to display advertising posters.
b. Display advertising poster at child care centres, supermarket, kindergartens, maternal health centre, recreation centres, notice boards at local shops, café, university, library, town hall where permission is obtained.
c. Receive responses via telephone, email or text.
d. Contact the potential participants to discuss the research requirements and offer documents (informed consent and information for participants).
e. Schedule the first meetings.

The children were recruited from families of varying sizes living in a range of urban geographical locations, including an inner-city multicultural community, a housing commission estate and an affluent high socioeconomic suburb. Four out of the five children had not commenced formal schooling when the study began, however, all attended kindergarten or child care in a part-time capacity. The parents' professions varied widely and included university-qualified professionals, tradespersons and workers in unskilled positions. The participating parents had varying levels of expertise and experience with technology, and all of the children used technology in different ways at home. Each child and family discussed and justified the child's digital literacy use in different and distinctive ways, and all had very different routines and habits pertaining to how literacy and technology were experienced in the home context.

All of the children lived in technology-rich home environments where they had access to and used one or more digital devices. Each of the homes had new technology (e.g. the latest mobile phones) and/or technology that was a few years old and handed down from other family members (e.g. a gaming console handed down from an older cousin or a tablet device handed down from an older sibling). All of the children had access to a regular stream of new apps (paid and free) to use. All of the parents used technology for personal and professional purposes, which meant that children had scaffolding expertise available to them from adults and other children (e.g. siblings, cousins or friends) when needed. The sociodemographic spread was not a factor involved in the recruitment process. However, once families were recruited I asked parents to complete a family profile. This included indicating their employment, social class, child's date of birth and so on. All parents listed themselves as middle class. Parents did not disclose their family incomes and I did not ask for that information. Once the families completed the profile, I applied the parents' occupation information to the Australian Socio-Class Index to determine each family's sociodemographic (Sheppard & Biddle 2015). Table 2 presents details of the five child participants, their families and their demographic profiles.

Table 2: Demographic profiles of the families participating in the study

Family	Pseudonym	Gender	Age on first visit	Social class using national register (2015)	Ethnicity	Siblings	Parents/ guardians
Alves	Ash	M	3.4	Emergent affluent	Australian with European heritage	Brother aged 3.4	Mother and father
Alves	Brock	M	3.4	Emergent affluent	Australian with European heritage	Brother aged 3.4	Mother and father
Rowe	Ryder	M	3.11	Established affluent	Australian/ Vietnamese/ Cantonese	Sister aged 2	Mother and father
Shar	Buttercup	F	4.2	Mobile middle	Australian	Brother aged 8 months	Mother and father
Cruz	Emma	F	5.9	Established middle	Australian/ European	Brother aged 10 years	Mother and father

The families in this study had many characteristics in common but considerable variety in terms of parental values and attitudes to the role of technology in their children's lives. Digital devices were commonplace in all homes and all children had access to a tablet device such as an iPad. All children attended a formal educational setting, whether childcare, kindergarten or primary school, and all parents expressed a keen interest in their child's or children's education and sought resources, information and experiences to support their learning. Play was highly

valued by all parents and toys were a central aspect of the children's lives, dominating the domestic space. Below is a photograph taken of typical play corner situated in the Alves family home that indicates the wide range of digital and nondigital toys and resources available to the children during the fieldwork sessions.

Figure 1: A typical play corner in the Alves family home, featuring a range of play materials such as LEGO, print books, pencils, scrapbook, plastic toy figurines, Pokémon cards, iPad and mobile phone

The children in the study led active and varied lives in which technology played an important but not dominant part. The use of technology was balanced with many other activities, including outdoor play and play with nondigital toys. All children attended at least one extracurricular weekly activity such as dance or sport. Technology was embedded into everyday family life in all of the homes and included intergenerational interactions around technology (Flewitt & Clark 2020) such as communicating with grandparents on Skype or using WhatsApp to send photos and videos to members of the extended family. Extended family and networks outside of the home, such as cousins and peers, also played an important part in children's socialisation with regard to technology use.

Parental mediation strategies surrounding technological use differed significantly within each home. Active mediation occurred in all homes where parents had some control over the types of apps and digital content the children had access to. Limits on the amount of screen time children were allowed were loosely enforced. However, within the Rowe family home a restrictive stance towards technology use was observed, and the parents prioritised print-based literacy over digital literacy experiences. Some children had more freedom in their everyday play encounters, whereas other families ensured a more structured environment in which play activities and resources where carefully selected for the child/children.

Becoming an accidental ethnographer

During the period 2016-2019 I had the opportunity to observe and document my own children's experiences and practices with digital literacies, becoming what has been termed an 'accidental ethnographer' (Laidlaw, O'Mara & Wong 2018). My children's interactions with digital literacies were the stimulus for this research project, and my spontaneous observations of my own children's engagements with new media and their high levels of competency and creativity with the tools determined their inclusion as participants in this study, as I was already very much 'inside' the research. An insider-researcher perspective has roots in ethnographic field research (Sikes & Potts, 2008) and exemplifies the principles of drawing on prior knowledge and understandings of the group being studied. In the fieldwork I did with my children, I played two roles simultaneously: those of researcher and researched. I was very much part of the 'lived' experience of the research – a busy mother in a demanding household navigating the new domestic space and traversing the digital terrain. I was learning a great deal about contemporary children's experiences with digital tools from witnessing my own children's home experiences with digital literacies, and these layers of understandings and experiences were an extremely important and valuable part of my thinking as I tried to make sense of the complex and unruly phenomena I was observing in the field. As I witnessed the pervasiveness of portable digital devices and how my children engaged with them, I drew from O'Mara and Laidlaw's (2018) scholarship and used these 'near' moments from my own home, layered with the moments from my participants' homes, to develop my understanding of my children's digital literacy experiences. In a recent study that documented observations of their own children's usage of technology in their 'out-of-school' worlds. O'Mara & Laidlaw (2018, p. 134) argued, 'we learnt much from reflecting on and living alongside our own children through up-close observations at the elbow of our own children'. This promoted the notion of working 'at the elbow of my own children', which offered my research a richness of detail (O'Mara & Laidlaw 2018, p. 144). The excerpt from my reflexive journal below captures an encounter that captivated my curiosity and led me to interrogate the nature of children's literacy experiences within everyday practice and how these have been transformed by the conditions of contemporary times.

Reflexive journal entry *Date: 17/11/2018*

<u>Phone-Child, Child-Phone – becoming one…</u>

My husband is sitting in the front seat of the car with the engine on waiting impatiently for us to get in the car. "Can you put the phone on charge when you get in the car please?" I yell as I throw a few items into the car boot. "Mum, the chargers not working," insists Ash aged 5.9. "What makes you think that?" I respond, annoyed by the comment. "I can't feel it in my fingers, hear it with my ears, see it with my eyes – it's not working – see," Ash responds. I snatch the phone and frantically search for the lightning bolt in the top right corner of the screen. It is not there. He is right. The charger isn't working. He seems so in-tune, almost entwined with the technology that he is able to sense it.

This encounter (and many others) made me wonder: Maybe the way my children experience technology is different from the way that I do. Maybe their lived experience of the world (which has always involved technology) is different. This highlighted to me my children's authentic entanglements with their digital-material world, and the growing complexity of the relationship between the human child and the nonhuman digital.

Below is a photograph of an observation within my family home. Ash, aged 4, was sitting at the children's table drawing when his favourite cartoon, *Yu Kai*, came on the family television. He left the drawing momentarily to follow the dance moves and sing along with the cartoon. Minutes later he returned to the table and chairs to utilise the drawing implements and draw *Yu Kai* characters as seen in the cartoon. I captured this observation on my iPhone while tidying up in the dining room.

Figure 2: Ash taking a break from drawing to dance and sing along with the *Yu Kai* cartoon on the family television

Such unexpected moments in my daily life with my children led to me becoming an accidental ethnographer and informed my thinking regarding the conceptualisation of my research project. I found myself instinctively engaging in ethnographic explorations of my children's digital literacy experiences, such as observing their digital play and recording my observations using the audio function of my iPhone or collecting artefacts they created and engaging in detailed conversations with them about the artefacts. By adopting a seeking-to-understand stance, I positioned my children as knowledgeable about their own lives and I was eager to learn from them. In the next section, I outline my rationale for choosing ethnography as my methodology. While it was not my original intention to use this approach, as the research evolved I noticed that I naturally adopted many ethnographical methods, such as observing my children and writing detailed fieldnotes, sketching maps of their play encounters, and collecting artefacts such as screenshots of their digital activity, photographs and samples of writings/drawings. Ethnography

proved effective in allowing me to capture the complexities of the phenomena I was studying, and for detailed examination of digital literacies to occur.

It has also been argued that knowing a child or having a close relationship with a child allows researcher and child to engage together in research that is authentic and mutual in nature (Abrams et al. 2020). Abrams et al. (2020) suggest that child-parent research has many benefits. The authors assert that thick descriptions (Geertz 1973) are more likely to occur, as richer descriptions may emanate due to a child's ongoing and daily collaboration with the researcher/parent. This is supported by Yoon (2020), who states that child-parent research is vital because it provides a rich context by adding home observations about children and transactions with them on an ongoing basis. Adopting a seeking-to-understand stance and positioning my children as co-researchers was a pivotal element of the research design. The opportunity for co-production and the in situ longitudinal approach also provided opportunities for 'anytime' conversations and observations in everyday in-between moments – in the car, walking to school or at the dining table – all of which yielded rich observations of the various engagements of my children's digital literacy experiences. This occurred because I encouraged my children to collect artefacts for the study and engaged in child-led research approaches such as child-led discussions. Artefact elicitation proved a useful method whereby I would engage my children in a discussion about their digital literacy experiences using an artefact they created as a springboard. Part-way through the fieldwork, my children began initiating the collection of fieldwork material, asking '*Mum, do you wanna look at what I made on the iPad*?' Date: 21/4/18 or '*Mum, you can use this for your research*'. Date: 9/12/2018

I acknowledge that this research design is not unproblematic. It could be argued (Graue & Walsh, 1998) that due to my close relationship with my children, my researcher objectivity and neutrality were compromised. However, I felt that the benefits of the close relationship I had with my children outweighed the limitations, and research supporting this position has been published by researchers who have explored the methodological advantages of employing child-parent research (Abrams et al. 2020). Using child-parent research methodology meant I was able to record digital literacy activities at times that would not have been accessible in other research settings, such as before breakfast or before bedtime. Geist (2012) argues that this methodology has the advantage of allowing the most naturalistic and spontaneous everyday literacy activities to be observed. In addition, the deep knowledge I held about my children was most informative in terms of understanding how and why they used digital technologies and literacy in the home, and how that use fitted into the family's everyday lives, habits and routines (Marsh et al. 2015).

Investigating literacy: Ethnographic explorations

This study was heavily informed by the ethnographic research undertaken by Barton and Hamilton (1998) in their study of local literacies, which examined the situated literacy practices of people residing in Lancaster, England in 1990. As I was interested in studying the everyday literacy practices of young children in their family contexts, as experienced in the home, ethnography as a methodological approach was most suitable. I was interested in what

the children were 'doing' with literacy as part of their everyday routines, and as in Barton and Hamilton's (1988) ethnographic research into the role of literacy practices and events in people's lives, I set out to document and detail literacy practices over a period of time across multiple domestic domains.

Four broad principles drawn from Barton and Hamilton's (1998) approach to ethnography guided this study:

1. Real-world settings: I was interested in examining the naturalist setting of the home and describing participants' everyday lives.
2. Holistic descriptions: The approach aims to offer authentic and "holistic" descriptions of the literacy events and practices found in the real-world settings.
3. Multi-method approach: I needed to utilise multi-methods to capture the complexities of everyday literacy events and generate a range of fieldwork material.
4. Represent participants' perspectives: I was interested in utilising the participants' perspectives and interpretations and using the participant's own words in order to describe and examine the literacy events occurring in the children's home contexts.

Upon entering the field as an emerging ethnographer, I quickly realised that a formulaic approach or set of procedures for 'doing' ethnography would not be feasible. Instead, I found myself stumbling into the fieldwork and 'hanging out' with my participants. It was at this point that I realised the best way to learn how to do ethnographic fieldwork was through the 'doing' of it, and the notion of 'hanging out' characterised my approach to ethnography throughout the study. Located in the traditions of anthropology that resonate with the work of the Chicago School of Ethnography, my approach was characterised by face-to-face, everyday interactions in the home to produce descriptive narratives that portray the social world experiences of literacy in everyday life. Spradley (1979, p. 34) offers below a description of the stance ethnographers may take in relation to their participants in the process of learning from them:

> I want to understand the world from your point of view. I want to know what you know in the way you know it. I want to understand the meaning of your experience, to walk in your shoes, to feel things as you feel them, to explain things as you explain them. Will you become my teacher and help me understand?

In the 1930s, the critical sociologists of the Chicago school introduced a new ethnographic studies movement to examine their own street corners as if they were unknown places. Their ethnographies focused on face-to-face interactions and everyday experiences in urban locations, assuming the role of "other" to produce descriptive narratives portraying a "slice of life". This approach to ethnography was characterised by participant observation. It appealed to me as I attempted to 'hang out' in the children's homes, observe the different aspects of their daily lives and examine 'the minutiae and rhythms of everyday life' (Plowman 2013, p. 336). Below is an example of an artefact gathered from the Alves family home which emerged as I 'hung out' in the field, capturing a typical everyday moment of Brock's literacy behaviours:

Figure 3: Brock (aged 5) using an image of an elephant taken from an app on the iPad as a model to assist in drawing an elephant using drawing implements

As I muddled my way through my ethnographic journey, it became apparent that it is 'the personal qualities that we bring to our work rather than the professional claims we present about it' (Shaffir 1999, p. 678) that are the most important aspect of this type of complex work. In Pahl's (2014) ethnographic work on examining literacy practices as material and spatial in communities, her methods began to 'unravel' in the field as she found her participants suggesting ways of researching she had not originally anticipated. Like Pahl (2014, p. 25), I relied on 'intuitively situated ways of thinking and exploring together with my participants'. For instance, in the Shar family home, sessions generally commenced with Buttercup sharing an artefact (e.g. a photobook, artwork, drawing, digital creation or photograph) with me and talking to me about it. As I prioritised the building of relationships with my participants, I noted that, as Pahl (2014, p. 185) declares, the most important thing to do when in the field 'was to be there, to visit the sites and spaces of engagement'. The longitudinal nature of this ethnography proved effective in attempting to diminish issues of power, and as Mayall (2008) suggests, as I became a familiar figure in the children's lives, they did not feel the need to behave in special ways around me. The extended and immersive time in the field and the relational approach I prioritised afforded me opportunities to co-produce knowledge with my young participants (Pink 2008). For instance, on several occasions the child participants collected artefacts and presented these to me at the start of a fieldwork session. The artefact was then used a stimulus for a discussion which was often child-led. During a fieldwork session, for example, Emma presented me with a printed photobook and declared, '*It's about my holiday and it's for our research*' (Fieldwork Session 4).

At the core of the methodological practice, I used participatory and collaborative methods in different ways. Ethnography offered me a way to incorporate young children's perspectives and experiences of literacy into my research design. As Plowman (2014, p. 36) has argued, 'the role of young children has been overlooked in studies of technology in the home', and I was eager to ensure the children's perceptions of their experiences were prioritised. Since the adoption of the United Nations Declaration of the rights of the child (United Nations 1959), early childhood researchers have increasingly recognised and acknowledged children as active agents in their

own lives (Carrington & Marsh 2005). Research examining children's digital technology use has shown that young children are also capable of communicating their ideas, understandings, perceptions and interests within a research context (Theobald et al. 2015). Through my emphasis on listening to young children's perspectives about their daily lives and their reflections of and on their daily routines, I was able to engage the children in the co-production of knowledge. The development of child-focused and child-framed methods, based on children's preferred methods of communication, has been posited as a way of reducing the ethical imbalance of power in adult/child research relationships (Moore 2014). In this study, children's photographs, drawings, writings and screenshots of their digital literacy activity were used to facilitate discussion and elicit children's perspectives on and meanings of their digital literacies at home, allowing co-production to occur.

As I became more comfortable as an ethnographer, I borrowed from Stenhouse's (1975) dictum to make the familiar strange. I set out to immerse myself in the home life of the children and experience the mundane, the ordinary, the routine, and in so doing I began to see things differently. However, I was also aware of getting too caught up in the 'everydayness' and becoming blinded by the overly familiar, and of the need to distance myself. I was reminded by Pahl (2014, p. 186) that ethnography is 'unknowing as much as knowing', and I had to make a deliberate effort to question my taken-for-granted assumptions and 'peel back' my preconceived ideas about the phenomena (Sikes 2003). Reflexivity became an important tool for me, as Hertz (1997 cited in Sikes & Goodson 2003, p. 34) contends that it 'should be an inherent and ubiquitous part of a research endeavour'. Lather (2004) highlighted the necessity of reflexivity in establishing rigour in the research, and claimed that post-qualitative researchers have turned towards establishing validity through reflexivity. Throughout my doctoral studies, I kept a detailed reflexive researcher journal which became an important research tool throughout both the fieldwork process and the analysis phase. Reflexive journaling involves ethnographers writing about their personal relationships to the sites, the people, and their relations. I found reflexive moments happening at any time, and would record these in my journal or audio-record them using my iPhone.

Reflexivity is considered an essential aspect of ethnographic fieldwork, potentially facilitating understandings of both the phenomenon under study and the research process itself. Reflexive writing was how I wrote my way into thinking and understanding. Richardson (in Richardson & St Pierre 2000, p. 923) refers to writing as a method of inquiry, 'a way of finding out about yourself and your topic', and states, 'I write because I want to find out something. I write in order to learn something that I didn't know before I wrote it' (2000, p.924). By engaging in ongoing dialogue with myself through journal writing, I was able to better determine what I knew and how I thought I came to know it. An introspective record of my work potentially helped me to probe my biases, feelings, interpretations and thoughts. Acknowledging that we are all biased and positioned (Sikes, 2003), I used the writing and thinking process as a tool to understand how my positioning might be influencing the research. Due to my positioning as an insider-researcher within the study, my own beliefs and values around literacy could not be separated from the interrogations I was making. From the outset, therefore, I set out to make my positioning explicit.

Researcher subjectivity refers to 'the capacity of the researcher to acknowledge how their own experiences and contexts inform the process and outcomes of inquiry' (Etherington 2005, pp. 31-32). Below is an example of this reflexive work. This excerpt from my research journal highlights the tension I felt as a novice researcher attempting to muddle my way through fieldwork as insecurities regarding my role as an ethnographer surfaced.

> *Reflexive journal entry* *Date: 13/8/2017*
>
> *Ethnographer or fraud?*
>
> *As I leave today's fieldwork session with Buttercup I am struck with a sense of fear. A great deal of today's session consisted of Buttercup and I sitting and watching Peppa Pig on the family television located in the lounge room. At times, Buttercup would make a comment about the cartoon and her favourite character Peppa Pig. She demonstrated the use of the remote control and flicked confidently through the menu using her knowledge of initial sounds and numbers to select what she wanted to view. Doubtful thoughts fill my mind: What am I looking for? Am I just wasting the family's time? I am such a fraud! It is already Session 3 and I feel as though I am running out of time. What am I seeing in the field? What should I be looking for? What should I be doing? What would an ethnographer do in this situation? Should I be directing Buttercup and requesting she engage in an activity? The voice in my ear is reminding me of the need to dissolve the adultness and not exercise authority, simply to be comfortable with the moment. My adult-contrived ideas about communicating with young children threaten to take over. I am reminded of Sumsion's (2003) warning about relinquishing my preoccupation with accumulating fieldwork material and realise I should not let the collection of fieldwork material be my main focus. This was the moment when I became aware of the need to quietly listen to the children, rather than controlling the conversation based on my own predetermined idea. Once again it became evident that when I stopped dictating an adult-dominated line of inquiry and quietly listened, I started to hear or see the children's stories. As a result of reflecting on this fieldwork session, in the subsequent fieldwork sessions I became more comfortable with standing back and not feeling the need to control the sessions or initiate activity. I learned to let the children lead the sessions and let go of the preoccupation with collecting fieldwork material.*

An overview of the families and fieldwork methods

In this section, I offer a brief description of the child participants' family contexts and outline the research methods utilised within each of the family homes. The five child participants presented in this thesis are Ash, Brock, Ryder, Buttercup and Emma (pseudonyms). Brief background information about each child is presented below, including the research methods undertaken in each of the family homes. The families are introduced in detail in the family portraits in Chapter 8.

The Alves family

The fieldwork with twin boys Brock and Ash (pseudonyms) spanned 2016 to 2019. The boys were 3 years and 4 months when the study commenced and 6 years and 2 months when it concluded. At the start of the project, the boys attended 3-year-old kindergarten 2 days a week for a total of 10 hours. Within the state of Victoria, Australia kindergarten refers to a preschool setting for children usually between the ages of 3 to 6 offering early childhood education before commencing compulsory schooling. During the research project, the boys transitioned to 4-year-old kindergarten in 2017 (which increased to 15 hours a week) and to formal schooling in 2018. This amounted to a complex set of fieldwork material which offered a detailed portrayal of their everyday lives, enabling me to trace changes in their digital literacy practices (i.e. their changed interests, expertise, knowledge, skills) throughout their transition to formal schooling and examine the linkages between their out-of-school and in-school literacy practices. I was able to observe everyday routines such as car trips, habits, bedtimes and early mornings in which literacy played a central part. These 'in-between spaces' may not be as easily or readily observable in other research settings. It is noted that the use of my own family offered an opportunity to understand digital literacy usage across a 24-hour period that was not possible with other participants. This involved viewing everyday exchanges and interactions as they occurred naturally in everyday life and documenting them.

Throughout this study I was not interested in positioning myself through a distant, detached research perspective. As outlined in Chapter 1, I was personally invested, and situated within the research. I therefore drew from an insider-researcher stance. Working with my own family, I attempted to make sense of the new and complex new literacies occurring within my home context. My methods involved: keeping detailed observational notes (both in the moment and reflective) about my children's engagements with technology and literacy; having informal conversations with my children about their digital literacy play; collecting artefacts of their drawings, writings, constructions and so on; taking screenshots of their work from various devices; and having informal conversations with their father about his interpretations and experiences of the children's digital literacy activity and behaviour. Artefact elicitation proved to be a beneficial research tool within my home setting and generated rich conversations with my children about their digital literacy experiences.

Fieldwork collection method	**Methods utilised in the Alves family home**
Participant observation	✓
Child-led tours	✓
Child-led discussions	✓
Artefact collection	✓
Informal conversations with the boys father	✓
Technology audit	✓

Child profile	✓

The Rowe family

Ryder was aged 3 years and 11 months when the fieldwork commenced and attended day care when the study began. Ryder thoroughly enjoyed attending day care and attended four sessions a week for five hours per session. I visited the Rowe family home roughly once a month for six months. The field visits lasted for one to two hours depending on Ryder's attentiveness and willingness. The field visits commenced in April 2017 and concluded in October 2017. I visited the family five times during this period, equating to approximately 320 minutes of observational material. The family concluded the fieldwork visits earlier than anticipated due to an extended family trip overseas, however, we remained in touch via email and Ryder's mother would occasionally send artefacts via email. The methods utilised with the Rowe family are listed in Table 3:

Table 3: Fieldwork collection methods utilised in the Rowe family home

Fieldwork collection method	**Methods utilised in the Rowe family home**
Participant observation	✓
Child-led tours	✕
Child-led discussions	✓
Artefact collection	✓
Informal conversations with parents	✓
Technology audit	✓
Child profile	✓

The Shar family

I visited the Shar family roughly once a month for eleven months, compromising nine home visits and approximately 415 minutes of observational material. Our visits were usually suspended during school holidays. Buttercup was aged 4 years and 2 months when the study commenced, and attended four-year-old kindergarten for 15 hours a week. The field visits commenced in March 2017 and concluded in January 2018 prior to Buttercup commencing school, as the family felt it would be too difficult to schedule field visits around her school times and extracurricular activities. The field visits lasted for one to two hours depending on Buttercup's attentiveness and willingness. They occurred when Buttercup's younger brother had his afternoon nap. The methods utilised with the Shar family are listed in Table 4:

Table 4: Fieldwork collection methods utilised in the Shar family home

Fieldwork collection method	Methods utilised in the Shar family home
Participant observation	✓
Child-led tours	✗
Child-led discussions	✓
Artefact collection	✓
Informal conversations with parents	✓
Technology audit	✓
Child profile	✓

The Cruz family

The Cruz family consisted of Emma, aged 5 years and 9 months, and her brother Lachlan (who was not a focal child in the study). Emma was in her first year of formal schooling when the study commenced, having started primary school the year the field work sessions began. She attended school 5 days a week from 9am to 3.20pm. I visited the Cruz family home roughly once a month for an 18-month period. The field visits lasted approximately one hour each, comprising 12 visits and 570 minutes of observational material. The field visits commenced in February 2018 and concluded in July 2019. The methods utilised with the Cruz family are listed in Table 5:

Table 5: Fieldwork collection methods utilised in the Cruz family home

Fieldwork collection method	Methods utilised in the Cruz family home
Participant observation	✓
Child-led tours	✓
Child-led discussions	✓
Artefact collection	✓
Informal conversations with parents	✓
Technology audit	✓
Child-profile	✓

Chapter summary

In this chapter I have detailed my research design and articulated the longitudinal ethnographic approach utilised in this study. Details of the recruitment process, participants, research sites and aspects of the fieldwork journey offer the reader insight into the study's context. I have also illustrated the congruencies between the methodological framing and the research design, and articulated how the concepts of the rhizome and assemblage theory framed them. The next chapter will detail my fieldwork collection methods and ethical considerations of the study.

Chapter 6:
A mosaic of methods

In this chapter I first illustrate the correlation between the research aims, methodology and specific methods employed in my study, and articulate the child-friendly research methods developed to weave together multiple threads of fieldwork material and multiple frames of analysis and capture the messy and entangled nature of young children's digital literacies within their home contexts. I then describe my framework for engaging in age-appropriate research methods with the child participants and the fieldwork tools utilised throughout the study. I conclude by outlining the ethical tensions I encountered within the study and explain the complex ethical issues and considerations involved in researching with such young children, and with my own family.

A researcher-as-bricoleur stance

Central to this study was finding fieldwork methods that allowed me to create detailed portraits of the lived experiences of its participants, 'woven together in a way that communicates the multiple layers and perspectives of not only the participants but also the researcher' (Ling & Ling 2017, p. 78). This led to me to consider the concept of bricolage, as conceptualised by Denzin and Lincoln (2000), Kincheloe (2011) and Berry and Kincheloe (2004), as an overarching frame for my fieldwork methods and how I dealt with the fieldwork collection process. A researcher-as-bricoleur stance enabled me to bring together the bits and pieces of fieldwork collection methods such as participant observation, informal conversations, artefact collection and reflexive journal entries. Levi Straus (1966, p. 18) used the metaphor of bricoleur to describe the approach of an ethnographer who collects, gathering ideas and artefacts that might come in handy, and carefully pieces things together to create an inventive assemblage or bricolage. Bricolage can be considered a 'critical, multi-perspectival, multi-theoretical and multi-methodological approach to inquiry' (Rogers, 2021, p.1). Bricoleurs do not approach knowledge-production activities with concrete plans, methods, tools, or checklists of criteria. Rather, their processes are much more flexible, fluid and open-ended, and draw on knowledge tools they have at hand in their repertoire (e.g. ritual, observation, social practices) and with whatever artefacts are available in their given context (Denzin & Lincoln 2008). This approach can thus allow for creative possibilities to emerge and provide the opportunity to think differently about the piecing-together of the observed phenomena.

Utilising the bricolage approach (Berry & Kincheloe 2004, Denzin & Lincoln 2000, Kincheloe 2011), I started to record the observed complexities of the everyday digital literacy experiences of the young children in the study. The children's at-home digital literacy activities and textual practices were complex and required an adaptive, imaginative and flexible approach which drew upon their preferred methods of communication, such as role-play and drawing. As the fieldwork tools unfolded differently within each site, I started to become 'a maker of patchwork and a weaver of stories' to make meaning out of the lived literacy experiences of the participants (Lincoln & Denzin, 2003, p.5). I was mindful to ensure that within the study I did not promote the received understanding of literacy as a narrow set of skills or activities accepted by parental attitudes and expectations. In one of the sites, however,

a parent would regularly set up or 'stage' traditional literacy-based activities for the children to complete while I visited. I would arrive to find the lounge room transformed into an artificial classroom stocked with alphabet charts, phonics workbooks, picture storybooks and playdough, with letter tracing tasks and the ABC Reading Eggs app set up on the iPad. This situation was difficult for me to navigate. I needed to be inventive and work as a bricoleur to piece together new tools and techniques within each site as needed. The Mosaic approach provided practical fieldwork tools with which I was able to piece together multiple research methods and sources of fieldwork material, allowing for flexibility to adapt the research methods as required.

The Mosaic approach: A mosaic of fieldwork tools

As Erstad et al. (2019) suggest, there are many methodological challenges when conducting research with children aged under eight, particularly in the private spaces of their home and out-of-school lives. Erstad et al. (2019, p. 4) argue that 'many tools and approaches used with other age groups simply do not work when researching with very young children who are in the early stages of acquiring language'. As I endeavoured to find research methods that gave prominence to the child participants in my study, I realised that these needed to be closely tailored to the children's needs and preferred methods of communication. With this in mind, I was drawn to the Mosaic approach conceived by Clark and Moss (2011), as I felt its participatory approach aligned with the bricolage approach and supported my commitment to an age-appropriate, hybrid approach while also aiming for the co-creation of knowledge. The Mosaic approach, as conceived by Clark and Moss (2011), seeks to actively involve children in the research process, and values and prioritises their perspectives. Based on the premise that children are knowledgeable about their lives and the issues that affect them, it aims for knowledge production rather than knowledge gathering. Kress (2010) contends children are avid meaning-makers and are multimodal, multisensory, active and interactive social beings (Kress 1997), and the Mosaic approach provided a platform from which to utilise creative tools that encouraged more meaningful engagements with the children and enabled different ways of listening to them. The notion of listening to young children underpins this study's methodological framework, and therefore the Mosaic approach was most fitting to 'encourage children's expression in a variety of mediums' (Moore 2014, p. 6).

Drawing on different modes of communication reveals the complexities of lived experience and aligns with Richardson and St Pierre's (2008) notion of crystallisation – a process of looking at the world that is multidimensional. What drew me to this approach was its focus on the capturing the plurality of children's literate competencies and avoiding language as the dominant mode of what counts as knowledge (Murris, 2019). To do this, I assembled a range of research methods based on the children's strengths. These bits and pieces – the assemblage of methods – were assembled to create a mosaic of meaning.

Using the Mosaic approach involved 'an interruption to all my known ways of listening to and working with children' (Davies 2009, cited in Moore 2014, p. 4.). I had to be mindful to 'pause and listen to the children instead of exerting my own research agenda upon them' (Paley 2004, cited in Moore 2014, p. 4). When in the field with the children, I

had to learn to let go of what I thought I should be doing and allow them to guide me. I had to avoid the temptation to slip into a teacher or parent role and prevent myself from taking the lead, or reverting to an authoritarian role. The following excerpt from my reflexive journal signposts my insecurities as a novice researcher muddling my way through the fieldwork journey.

> *Reflexive journal entry:* *Date: 16/9/2018*
>
> *It is a difficult morning. Emma is easily distracted and not interested in acknowledging me (despite selecting the smiley face puppet on my arrival to the home, indicating she was keen to participate in the fieldwork session). Emma's mum and I had a brief discussion and she explained that Emma had a very busy week with lots of additional activities and events occurring which are outside of her usual routine. I attempt to sit next to Emma as she slouches over the couch beckoning for her mum to put on an episode of* Dirt Girl *on television. Do I intervene? Do I suggest an activity for Emma and I to engage in together? Do I assume that Emma is not interested in participating in the fieldwork session today, despite holding up the smiley face puppet upon my arrival indicating her willingness to participate?*

As I consider ending our session for the day, I am reminded of my research design and commitment to listening to the children, waiting patiently and allowing them to lead the sessions based on their preferred methods of communication. I leave Emma for a few minutes and linger around in the background, writing in my fieldwork journal and then picking up a few LEGO bricks off the floor and throwing these into a nearby tub. Within minutes Emma joins me and commences building a house out of LEGO. We sit side by side in silence as I commence building a garden for her house. About five minutes pass and Emma and I are engrossed in the LEGO creation. I notice she has made a laptop out of a square white tile and placed a LEGO figurine next to the square tile. I hear Emma mutter '*Tap, tap, tap*'. '*Can you tell me about what you are making?*' I ask. '*This is my Mum's desk and this is Mum. She is tapping on her laptop doing her shopping*'.

Participant observation

Observation is an imperative starting point for listening to young children's experiences (Clark & Moss 2011). This study relied on participant observation as the primary method of investigation, as I did not have a specific hypothesis and was interested in observing children in their natural settings, participating in their day-to-day lives and activities. As the research sought to understand how people enact and construct meaning in their daily lives in order to explore the innovative ways in which children's literacy practices are experienced within the home, rapport with the participants was fundamental. Pre-intended categories of literacy events were not used and instead I endeavoured to discover naturally occurring patterns of digital literacy behaviour, rituals, practices and experiences. Fieldnotes were used which included not only descriptions of what occurred but also perceptions, interpretations and emotional notes, to allow for a much more in-depth understanding of the phenomena being observed. I utilised descriptive field notes that contained exemplars emphasising situation, environment, and setting, atmosphere, noise and movement, and relations. These fieldnotes were often written during the

observations while the events remained fresh in my mind. Still photographs and audio recordings were used at times to supplement my observations and field notes in order to provide more permanent documentation and aid my memory. At times, it was challenging recording field notes or audio recordings when I was immersed in an activity with participants. I learned to build in times throughout my sessions when I could step aside from my participants for a few minutes and quickly document the fieldnotes in as much detail as possible. Occasionally, I found audio-recording observations to be more effective. It is important to add that while filming the field visits would have allowed me to capture additional aspects and details of the children's homes and interactions with technologies, how parents and children interacted on the devices and how they engaged with digital literacies, the process might have altered the children's actions or impacted on their level of comfort with the research process (Orlando 2019). My aim in using participant observation in this study was to provide a contextual interpretation and holistic account of children's digital literacies within their home settings. Even though participant observation is time intensive, the richness that the fieldwork material yielded outweighed the time and energy outlay.

During Phase 1 of the fieldwork, I noted all examples of children's literacy practices, behaviours, habits, routines and experiences, including print-based literacy, digital literacy and multimodal literacy, in order to gain a thorough understanding of the household ecology, family habits and routines, children and parent perspectives and build detailed portraits of the literacy events occurring. However, as I entered Phase 2, I narrowed the focus and became more selective in my observations, only including literacy events that were digitally mediated in line with my research focus.

When in the children's homes I attempted to adopt the role of participant-observer while being mindful of the Hawthorn effect (Payne & Payne 2004). The Hawthorn effect refers to participants in a study changing their behaviour and activity due to being observed. As a way to deter participants from altering their behaviour in my presence, I joined in games, puzzles and activities, played alongside the children, interfered as little as possible in the everyday activities of the families and assumed an unobtrusive role. At times I was asked by the children to join in cooking, build LEGO creations, making a Stop Motion animation or completing a jigsaw puzzle. I did not initiate any digital literacy practices; however, my field notebook, pen and iPhone used in making recordings occasionally initiated requests from children for some type of literacy experience. Engaging directly with the children and finding ways for them to articulate or demonstrate their experiences enabled me to gain insights that were not accessible by other means and provided me with more confidence in piecing together an authentic understanding of their lives. I set out to acknowledge my role as researcher as a 'visible' part of the process. I discussed with parents and children my perceptions of contemporary children's lives and shared stories of my own experiences at home with my children.

Participant observations were the main source of fieldwork collection utilised throughout the study. Within the first few fieldwork sessions it quickly became apparent that as a researcher I 'inadvertently slipped in and out of the default position as the "governing" adult when attempting to connect with young children in a research-focused interaction' (Moore, 2014 p.10). This was problematic and threatened my commitment to an authentic child-

oriented approach. I then discovered that fieldwork observations were, at times, much more telling than relying on the spoken word. I had to learn to become comfortable with silence and preference observations of children's interactions and engagements. These observational insights were a valuable tool. Davies (2010, p. 61) warns: 'I do not therefore set out to represent the children, I do not presume to know about them, I observe them; I reflect on them, I listen to them as a facet of being'. Reminded that I could never fully know the children, I sought to engage in authentic listening (Moore 2014) and acknowledge that my observations are purely a subjective representation, made, as Merewether and Fleet (2014) suggest, considering my own points of view and theories. Hence the tool of reflexive journaling became an important feature of the study.

Child-led tours

Drawing heavily from visual anthropology, Pink (2008) argues for alternative ways of understanding the world and how it is experienced, and notes that communicating those understandings to other people requires research methods beyond standard interviews, focus groups and participant observation techniques. Her ethnographic work involves the physical nature of walking – walking and moving with people. Tours as a research method stem from Pink's (2016) multisensory, visual approaches to ethnography. Ingold (2006, cited in Pink 2008, p. 1) suggests that 'walking around is fundamental to the everyday practice of social life'. Utilising tours as a research method therefore supports children's preferred ways of being and communicating in the world, and child-led tours privilege the ways that young children communicate – in active and visual ways that enable their perspectives, insights into and interests in their everyday home lives to surface.

Child-led tours occurred in Phase 1 of the fieldwork. They involved asking the children to take the researcher on a self-directed tour of their home and discuss their home environment from their perspective. This enabled me to create relationships with the children, building trust and thus helping me understand more about their home environments and daily experiences. This method also acknowledges the 'hundred languages' (Malaguzzi 1996) that children can use to explore and represent their experiences and gives them the opportunity to take the lead in the research. These tours enabled me to find out what was important, special or interesting to each child and included a 'techno-tour' of their home spaces in order to identify the types of technological tools available and how they used these technologies for literacy purposes. A techno-tour entails the child taking you on a tour of the home environment with a focus on the various technological tools available and what these tools might be used for (Clark & Moss 2011). This is a child-led way of talking that is far more alive than the sterile environment of a traditional interview room: 'The physicality and mobility of this technique can demonstrate children's priorities which might otherwise become lost' (Clark 2017, p. 17).

The approach proved effective in two sites, with the children engaging enthusiastically with the tours and eagerly showing me around their home. However, in two of the participants' homes I did not feel this method was appropriate, as the parents had selected a designated area of the home for our fieldwork sessions to occur in. To reduce the intrusiveness of the method, it was made clear to parents and children that they could deny access to

any room, and parents were given the option, which most declined, of accompanying us while the tour took place. I documented each tour by creating a rough map while noting down the child's dialogue surrounding their descriptions. This method proved to be efficient in developing rapport with the children, ensuring opportunities for them to lead the discussion and activity and me to identify the types of devices and new technologies that the children of the household had access to (or not) and used (or not) and explore when and why they used them. The spontaneous interactions and play episodes that occurred during the child-led tours added richness to the research encounter that might not have been accessed by more traditional research methods.

To supplement the child-led tours, all parents/carers completed a technology audit which was used to identify the types and uses of technologies within each home context. This was completed by all households. The techno-tour offered a detailed inventory of the technological tools available within the home settings. There is extensive research to suggest that contemporary family's homes, regardless of their sociodemographic, have access to a wide range of technological devices, whether these be the latest iPhone or iPad or an older model mobile phone or computer (Holloway et al. 2015). Furthermore, due to the decline in the costs of various technologies, families are reported to have greater access to a wider range of technologies than previously (Plowman, 2014). The study takes a broad view of technology, arguing that it ranges from technological toys such as LeapFrog toys, robots and gaming devices/consoles to family computers, television, DVD players, CDs, mobile phones and mobile devices. The participants' homes contained a wide range of technological tools including tablet devices, mobile phones, gaming consoles, family computers, laptops, televisions and technological toys such as LeapFrog, drones, coding robots, Fitbits and electronic mats. All homes had access to the internet. The homes also contained an abundance of traditional literacy materials such as picture books, jigsaw puzzles, alphabet mats, pencils, crayons, crafts, role-play, imaginative play and print texts. Table 6 below offers an inventory of the technological devices located within the four homes. The fieldwork material used to create the table were gathered in the first few weeks of the study.

Table 6: Technological device inventory of the family homes

Technological device	Alves family	Rowe family	Shar family	Cruz family
Mobile phone	3	2	2	4
Mobile devices (such as iPad, tablet, laptops)	7	3	4	7
Television	4	3	3	5
DVD player	2	1	2	3
Internet access	Yes	Yes	Yes	Yes
Pay TV (Netflix, Stan, Disney+, Foxtel)	Yes	Yes	Yes	Yes
Handheld gaming device	2	0	0	3
Gaming console	3	0	1	3
Family desktop computer	1	1	1	0
Internet of Toys (toys with Internet connectivity) Computerised toys such as Leapfrog, Sphero, drones,	2 x spheros 2 x drones AR headset	Leapfrog laptop	Leapfrog eBook reader	App-enabled robot Drone x 1
Other: Fitbit, Garmin, digital camera, printer,	Garmin x 2 Printer x 1	Printer	Printer	2 x Fitbit 1 x digital camera

Informal child-led conversations

As Plowman (2014) warns, a standard interview format is unlikely to be a suitable research method for ascertaining young children's perspectives and experiences, as young children may it difficult to maintain sustained attention for more than a few minutes at a time when conversing with the researcher. While research seeking to explore the perspectives of young children therefore tends to avoid formal interviews, informal child-led conversations can reveal valuable insights (Merewether & Fleet 2014). Hence another source of fieldwork material was child-led conversations. These conversations occurred throughout the fieldwork sessions and while some were occasionally planned, most occurred spontaneously and provided another layer of useful information. Clarke (2010) suggests starting with questions beginning with 'Tell me about…', which can reveal more detailed responses than questions starting with 'Why...', as these may result in children refusing to answer. I therefore used artefacts or notes from previous fieldwork sessions to pose questions such as '*Can you tell me about this app you used in this photo?*' '*Can you tell me about this drawing?*' '*Can you explain what you were doing here on the iPhone?*' '*Can you tell me more about this video game?*' The conversations were recorded as field notes and occasionally audio-recorded. Audio-recording spontaneous conversations proved to be ineffective at times, as I would have to stop the flow of the conversation to turn on the recorder or divert my attention away from the child and lose the momentum of the conversation. Occasionally I accidently recorded over a previous recording, deleted a recording or forgot to press record. Background noise also proved problematic and the children's voices were not always fully audible on playback.

It is important to note that listening to and conversing with young children has been a central aspect of my professional experience as an educator. I was able to utilise my years of teaching experience to support the

rapport-building process with participants, and this allowed me to improvise when interacting with them. Drawing on my professional experiences also strengthened my capacity to engage children in meaningful conversations.

Informal conversations with parents

While my commitment was to eliciting children's perspectives of their digital literacy experiences, I understood that these experiences are always interwoven with parents' practices, attitudes and values, and how they form their children's experiences in the home. I understand the home to be a site where the child and the family construct a culture of reading and writing during their everyday interactions. Informal conversations with parents were therefore a very important piece of the overall mosaic. As Plowman found in her recent study (2014, p. 44), 'although children were social actors who expressed their own preferences, this was circumscribed to some extent as parents had a significant role in establishing the local culture of the home'. The adults in children's lives therefore offered additional sources of understanding, and conversations with parents were important with regard to either confirming interpretations or adding further detail to observations and interpretations. These conversations were not scheduled, and instead tended to occur naturally at the beginning and end of fieldwork sessions, often over a cup of tea. I found this to be a very important method for various reasons: the conversations aided the rapport-building process; I was able to share stories from my own experiences or share insights and research with the parents, which enhanced trust and reciprocity; and I felt I was able to give back to the families by offering findings from recent research studies or sharing valuable parenting resources. I recorded these conversations as field notes. As they were spontaneous, it was not feasible to audio-record them. While I attempted to do so initially, the recordings were of poor quality due to the background noise of a busy household, and further, stopping the conversation to start the recording device stilted it and added a more formal tone, losing the spontaneity.

Artefact collection

Visual material such as artefacts can, it has been argued, enrich a study and provide extra information not available through observation (Clark & Moss 2011). Artefacts can provide telling instances of material culture and offer important insights into society, culture and people (Pahl 2008). I therefore collected artefacts of literacy practices such as photographs, texts, toys, models, illustrations, artwork and crafts. As posited by Pahl (2004, p. 9), 'artefacts within homes carry important family narratives and can be viewed as funds of knowledge and cultural resources providing valuable insights into cultural, social and historical behaviours'. Pink also (2008) argues that visual methods such as video, visual artefacts and media can offer a method of representation of the materiality of culture and everyday experience in ways that do not privilege one form of knowing over another. This is supported by Pahl and Rowsell (2010), who asserts that artefacts are seen as expressive and enable participants to reveal aspects of self that would otherwise remain hidden, and help slow down the everyday details in life and enable deeper reflection.

Throughout the fieldwork and across the different sites, I collected visual material such as photographs of artefacts, screenshots, drawings, writings, paintings, crafts, models, screen captures of work samples on digital devices and

documentation of websites, video games and apps. The collection of the visual material occurred with the participant's approval: I would ask '*Is it okay if I make a copy of this drawing? Is it okay if I keep this story for my research? Is it okay if I take a photo of the animation you created on the iPad?*' These artefacts provided a catalyst for dialogue among the children, parents and myself.

At times the children gathered and offered their own visual material without my instruction or prompting. Parents also offered visual material and sent this to me via email, indicating '*I thought you might be interested in what Ryder did at kindergarten today*' (12/9/2017). This was an unexpected and delightful surprise. I would often be welcomed by the children holding a diagram or a drawing, a printout of a digital book they created or a screenshot they asked a parent to print from a device. At times, the visual material or artefacts were used as discussion prompts for subsequent fieldwork sessions, to elicit the child's perspectives about the literacy experience. For example, I would show the child the artefact (screenshot, photograph, writing) and ask, '*Can you tell me about this?*' Below is an account from my reflexive journal signposting how a child participant began gathering and sharing her own material

> *Reflexive journal entry:* *Date: 11/10/2018*
>
> *As I approached the wooden door of the old terrace home, I was delighted by the sound of booming thuds running through the hallway. This was my fourth session with Emma. She forced open the door and practically jumped out at me, hands waving madly in the air. 'Look, Look!' She exclaimed handing me a printed document. 'I made this with Mummy on her laptop: It's about my holiday and it's for our research. I want to show you how I made it and tell you all about it.' Clearly a very precious document, I was gifted with a glossy photobook of Emma's recent holiday to Phillip Island. Delighted by this welcome, I felt a sense of happiness as my participants are gathering their own material and co-contributing to the research.*

Ethical tensions and sticky moments

Ethics is at the heart of any research endeavour, and all research presents with a range of ethical tensions and dilemmas. These tensions are heightened when entering into the private homes of participants, working with young children between the ages of 2 and 6 and researching one's own family. My ethical responsibility towards my research participants and my own family were very much a priority for me, and underpinned all of the decisions made throughout the study.

Prior to commencing the fieldwork, I obtained ethical approval for the study from the Victoria University Human Research Ethics Committee (application ID: HRE16-155). However, research is full of ethical complexities, and the University's ethics processes did not fully prepare me for the relational work I was about to undertake and the strong need to relate compassionately to my participants. I quickly realised that at the heart of all research is

relationships and that caring was at the heart of all decision-making (Noddings 1984). As Denzin (1989, p. 83) suggests,

> our primary obligation is always to the people we study, not to our project or to a larger discipline. The lives and stories that we hear and study are given to us under a promise, that promise being that we protect those who have shared them with us.

I was therefore drawn to a relational ethics stance, which is founded in an ethics of care (Noddings 1984) and prioritises a commitment to relationships and reciprocal respect and to living in collaborative ways in which we can co-compose and negotiate participants' stories. While decisions pertaining to a relational ethics stance guided and shaped all aspects of the study's methodology and analysis, I also discuss several tensions related to consent or assent, anonymity, unequal power relations and unexpected tensions below. I argue that the use of the reflexive journal was a vital ethical approach that supported me in interrogating and navigating the sticky moments that occurred.

Child-parent research: A complex ethical terrain

I acknowledge what Abrams et al. (2020) describe as 'the taboo nature' of research with one's own children as being an ethical dilemma throughout this project. I struggled to obtain ethics approval from the university to engage in research with my children, and once I did receive it I felt I had to consistently legitimise my desire to include my children in the research project. I interrogated this tension and remained uncomfortable about my positionality. However, I felt it would be unethical not to include my own children and acknowledge their strong influence on the research, as my experiences with them shaped the research from its conception. I could not deny that my role as a parent had a strong influence on my work as an educator and researcher. My experiences alongside my children were the impetus for this project and sparked my interest in the phenomena being examined and the framing of the research project. Regardless of whether my own children were participants in the study or not, I could not undo the relationship I have with them or the experiences we share.

Merchant (2020) describes taking part in child-parent research as navigating a complex ethical terrain, particularly with regard to gaining consent from children who may not be completing aware of what they are consenting to. Informed consent was requested by my children's father, and the children were asked to co-sign the document using a happy face or sad face indicating their willingness (or not) to participate. Recognising that consent is not a one-off process, when working with my own children I developed a strategy of asking for their consent through questions such as '*Can I observe you playing that video game? Can I ask you questions about the video you made? Is it okay if I chat to you about the drawing? Is it okay if I take a photograph of your work for my research?*' This process developed into a routine, and the children started engaging with the language of consent, saying '*Mum, you can use this drawing for your research*' or '*Mummy, you can take a photo of this for your PhD*'. Once the research portraits were written and my children were slightly older, I read the portraits to them and asked if it

was okay to use these stories in my PhD. I also asked if there was anything they wished me to add, change or delete from the portrait.

Consent-as-process

It is important to acknowledge that there are many ethical issues that may arise from involving young children in research; however, a primary issue is that of consent (Graham, Powell & Taylor 2015), and this has direct implications for building rapport with children and parents. Parents voluntarily elected to participate in the study, and once a parent expressed interest in participating, they were provided with an information pack and informed consent document to discuss with their family. They were given time to consider the project and contacted me if the family (partner and children) decided to participate in the study.

However, while parents provided consent, as part of honouring my commitment to child-led research approaches and my positioning of children as competent and capable I was anxious to ensure that the child participants were offering consent, or 'assent', too. Etherington (2005) argues that requesting consent from adult participants and assent from child participants implies a deficit view of the child, and can accentuate the power differential. Etherington (2005) instead suggests obtaining 'process consent' – making consent an ongoing part of the research process. The first home visit sessions included explaining in accessible terms, for all participants, the purpose of the study and my home visit, and I utilised a child-friendly leaflet (comprising visuals outlining the research project) to support this process (see Appendix A). Child participants were asked to give consent by colouring in either a smiley face or a sad face to indicate their willingness to participate in the project. However, I was anxious to find additional ways of gaining informed and ongoing consent (consent-as-process) from the children involved at each stage of the research process (Harcourt & Conroy 2005). I therefore considered how I could show respect and exercise sensitivity to how the children might express their willingness to continue to take part or to exercise 'informed dissent'. This included focusing on the language I used to explain the studies to the children. Smith and Coady (2019) refer to the practice of 'ethical listening', which requires being alert to visual cues in order to ascertain when a child has disengaged and/or withdrawn from participation, and also seeking clarity from parents. As part of this, I focused on remaining alert to moments when my silence was required to enable the children to communicate, and paid close attention to my own body language and posture, for example by sitting on small chairs to stay at eye-level with the children.

Unequal power relationships

As children are potentially more vulnerable to the unequal power relationships that can exist between participants and researchers (Punch 2002), a number of steps were taken to address this issue. During the consent process and throughout the research, the child participants were reminded that they could withdraw from the research at any time without consequence and were free to decline to participate in any activity or answer any question that they did not wish to (Baird 2013). At the start of each fieldwork session I also utilised a puppet strategy to determine the child's willingness in participating in the session. This entailed the child selecting and holding up either a smiley-

faced puppet, indicating yes, or a sad-faced puppet, indicating no. An additional puppet indicating stop was also available if a child wished to conclude the session part-way through. In addition, some of the children involved in the study were able to verbally articulate their wishes; for example, Brock once said to me part-way through a conversation, '*I've done enough talking now*', and subsequently left the room. Other children indicated their wish to withdraw through non-verbal communication, for example by displaying signs of boredom or simply leaving the room and not returning. After the first few home visit sessions I also implemented various other strategies to ascertain consent or dissent. Within the Shar, Rowe and Cruz family homes I utilised a red cup, green cup system. This entailed stacking cups on each other: if the red cup is placed on the top of the stack, it means *Stop, I've had enough*, and if the green cup is on top, it means *Go, I'm happy to continue*. Within the Rowe family home, Ryder created a chime that was displayed in the playroom where our sessions occurred. Once he tired of our sessions he would ring the chime, alerting me that it was time to leave. Within my own home I used questions such as '*Is it okay to talk to you about this video you made for my research?*' There were times when my children would simply ignore me or walk away, or say they were tired, indicating they were not interested in participating in the discussion. Ascertaining consent and dissent was an ongoing process, and as time passed and I got to know the children I was able to read their body language and moods, and became much more at ease with making decisions about ending a fieldwork session earlier than anticipated.

An important thread in this research was my commitment to researching *with* children as co-researchers rather than *on* children as subjects. As mentioned above, I aimed to minimise the power differential by engaging with child-friendly methods based on children's interests and preferred methods of communication.

For the purpose of this study, I have chosen not to reveal any detail that could potentially identity the children individually. Each child chose their own pseudonym, which is used throughout most of the portraits and fieldnotes; however, at times I have not used the pseudonym and have used a personal pronoun or the term 'child' instead, as the child's anonymity could potentially be compromised. While I am aware of new discourses surrounding participatory research (e.g. Lomax 2012) and the desire to recognise children's authorship and contributions to the research, I choose to protect the children's anonymity. Likewise, participants' specific locations have not been disclosed, and instead I have used generic details of their locations. I am aware that while the children consented to participate in the study during the duration of the fieldwork, this may change in the future as they grow older and develop greater awareness; the need to protect their privacy and ensure that the children are not exposed was therefore a priority. In addition, I discussed the visual materials I collected with the children to establish their own interpretations of them rather than giving an adultist assumption of those interpretations (Barker & Weller, 2003). The visual materials collected were discussed with children and adults and permission was requested to use them in the research.

Expecting the unexpected

As Bolzan and Gale (2011) suggest, no amount of preparation can fully prepare researchers for what they encounter in the field: researchers must always 'expect the unexpected'. The notion of expecting the unexpected is particularly salient when working with very young children. The following field notes were taken from my reflexive journal and highlight some of the ethical tensions I encountered within the field. These emphasise the anxieties of a novice researcher attempting to navigate the complexities of the relational research.

- Do I stay for a cup of tea? The parent asked me to sit down and have a cup of tea after the session. Do I accept? Date: 3/5/17
- The siblings are fighting. One child is hitting the other. The younger sibling attempts to bite her brother. The parents are busy in other rooms. Do I intervene? Date 25/8/17
- Do I enter the child's bedroom? The child ran into her bedroom after about 10 minutes of our session. Do I follow? Do I take this as a sign of dissent? Date: 3/5/17
- What happens when the child asks me to help him/her change into a costume? Date: 14/7/17
- A parent asked to speak to me after the session and requested advice about their child's literacy development. The parent was eager to ascertain my opinion about whether the child was considered 'at standard' or not. Date: 3/4/18

I came to see that within each of the sticky moments articulated above, I drew on my experience as a primary educator and parent of young children. Furthermore, drawing on an ethics of care perspective, I prioritised my commitment to the relational dimension of my work with the children and families, and approached each situation with care, respect and reflexivity, because 'reflexivity urges researchers to be reflexive in relation to interpersonal and ethical aspects of research practice, not just to the epistemological aspects of rigorous research' (Guillemin & Gillam 2004, p. 227).

Chapter summary

This chapter has articulated how I used the Mosaic approach as a framework for the development of child-friendly and age-appropriate research methods designed to promote a collaborative and participatory approach based on children's preferred methods of communication. The ethical considerations made throughout the fieldwork are discussed and my commitment to a relational ethics stance is articulated. The next chapter will map out the analytical framework with which the fieldwork material was analysed, interpreted and represented.

Chapter 7:
Making sense of the fieldwork material

Introduction

In this chapter I explain my journey towards the analysis of the digital literacy events occurring in the young children's home contexts and discuss the analytical framework and theoretical constructs utilised in the analysis process. After undertaking an initial thematic analysis of the fieldwork material, I identified emergent themes (Braun & Clarke, 2006) and broadly categorised these into the following groups: everyday stuff/materials; extended textual practices; engagement/interest/affect; creativity; play/playfulness; blurring of online/offline; identity development; and agency. I drew on contemporary theory from NLS, multimodality and multiliteracies to interpret the material; however, I also found myself drawn to posthuman (Kuby 2017, Lenz Taguchi 2010a, Olsson & Barad 2007) ideas relating to materialism, as these supported me in examining the materials and articulating the themes prevalent throughout the fieldwork. A posthuman perspective also enabled me to expand my frame for the literacy events to include for the roles of bodies, objects and spaces in literacy processes that are increasingly understood as emergent, entangled and embodied.

Despite posthuman ideas being dense and difficult to interpret, my reading of posthumanist scholarship captivated my attention, as much of what I had experienced in the field alongside the participants resonated with its concepts and ideas. I was eager to seek an analysis framework that was consistent with the methodological framework and would allow me to think more expansively about the fieldwork material and the multiple ways in which children and things came together (Burnett & Merchant 2020). I felt it was essential to seek a framework to account for the scope and prevalence of the materials for literacy learning in the home, which have expanded to include both conventional and nonconventional materials. I was interested in how different theories associated with materiality could support thinking about children's digital literacies within their everyday environments, so I drew on different theoretical perspectives to interrogate how I was making sense of what I observed, and used material from my fieldwork to revisit those perspectives (Jackson & Mazzei 2012). Due to the complexity of the digitally mediated home contexts, I came to realise that the digital literacy events of young children could not be fully understood from a decontextualised, cognitive account and that I needed to widen my analytic lens and consider the material and social assemblages on which these practices were enacted.

An unexpected detour: Moving away from thematic analysis

With my research questions (see Chapter 1) in mind, I commenced a process of thematic analysis. This typically entails reducing and familiarising oneself with the fieldwork material, generalising initial codes, searching for themes, reviewing potential themes, and defining and naming themes (Braun & Clarke 2006). As articulated above, I found this process limiting and in conflict with the ontological and epistemological ideas arising from the posthuman literature I was engaging with, which describes the world as unstable – a flattened ontology free of

hierarchies and in a constant state of becoming (Deleuze & Guattari 1987). Furthermore, I felt this approach was in conflict with what I was observing the field and the nature of the phenomena of literacy, which is not fixed or static but instead emerges dynamically in the fluidity and messiness of everyday life. I was concerned about the limitations of a thematic analysis, and, like Lafton (2015), in thematising and categorising the material, I became aware of 'separating [it] out' making clear distinctions between one theme and another. I resisted the thematic analysis and turned to rhizomatic mapping instead, as this allowed me to map the connections and disconnections between and across the different pathways in a nonlinear and fluid manner, interweaving fieldwork material with theory, as this was much more representative of what I was observing and experiencing in the field. I sought inspiration from MacLure (2013), who encourages researchers to engage in new modes of analysis which go beyond usual patterns of coding and analysis by theme. The excerpt below from my reflexive journal illustrates the tension I felt as I wrestled with the analysis phase of the research, and my realisation of the need to move beyond a conventional qualitative analysis:

Reflexive journal entry: *Date: 6/3/2020*

Wrestling with the analysis: Troubled by categorical representations

Coloured sticky notes are sprawled across my office wall as I wrestle with the tension of separating out the words/phrases/ideas/concepts into neatly categorised and ordered systems. I look at the charts, tables, neatly penned rows and columns organised on large butcher's paper blue tacked to the walls and I interrogate why I am finding this task so uncomfortable. I struggle with this task of committing the yellow sticky note to a box and find myself attempting to tear the sticky note in half or quarters as I resist the urge to place it into a box and hence separate out the material. I must view the material as whole rather than segmenting it to bits or teasing it apart. Looking at the themes that emerged from the research vignettes, I realise these are not simply themes, but instead actions/activities/lives/events all which tell a complex story and can be interpreted in endless ways. I must move beyond coding and categorisation. This felt risky and uncomfortable as it is not my intention to abandon or disregard existing practices, theories and well established bodies of work but find a way to better account for the complexities of what I was seeing, feeling, hearing. As I attempted to articulate the subthemes and map the threads linking the themes and subthemes, I found the linear constrictions of text, tables, graphs, charts problematic as I needed to capture the rhizomatic (Deleuze & Guattari 1987) interpretations of the fieldwork material. I came to see that the traditional theoretical and analytical tools used to examine traditional, print-based literacies were not sufficient for making sense of the fieldwork material (Wohlwend 2015a). I needed an alternative way to think with the fieldwork material and an analytic approach which allowed me to work with the material in a nonhierarchical and nonlinear manner. I was eased by Law's (2003, p. 595) words 'research needs to be messy and heterogeneous … because that is the way the largest part of the world is – messy, unknowable in a regular and routinised way'. As I started to let go of the preconceived idea of a neat, orderly process of analysis and started reading research from within a post-qualitative paradigm

(St Pierre 2019), I embarked into making sense of the fieldwork material and let go of my desire for a neat and conventional analysis.

Preliminary analysis

From the outset I engaged in multiple readings and re-readings of the various fieldwork materials, and hence preliminary analysis of the material occurred in the form of organising, thematising and applying theoretical ideas while I was in the field. Throughout the fieldwork process, I recorded, organised, logged and transcribed material after each fieldwork session. I recorded the fieldwork material both manually and digitally. As I gathered various artefacts and field texts, I found myself pasting them into a scrapbook and writing notes beside the fieldwork material. The notes included the date, the age of the child at the time of observation, an account of what occurred and ideas from the literature that connected to the field text. I also found my mobile phone to be an invaluable tool throughout the process. At times, interesting encounters would occur at awkward or unexpected times – during bath time, in the car, in the reception area of a medical centre, walking to school, at the playground and in a hotel lobby. The mobile phone enabled me to quickly capture these observations, either by typing into the Notes app or audio-recording them. Due to mobile devices such as smartphones having large storage capacities and integrated cameras, researchers can record video and audio clips allowing fieldwork material to be stored conveniently, safely and instantly. The use of smartphones in qualitative research is a relatively new phenomenon, but the benefits of using these devices for research purposes are yet to be fully explored (Plowman & Stevenson 2013).

During Phase 1, I noted all examples of children's literacy events and practices, including print-based literacy, digital literacy and multimodal literacy, in my fieldwork notebook and transcribed these notes immediately after each session. As the fieldwork sessions progressed, I found the fieldwork material to be quite unwieldy due to the multiple sources of material, and devised an Excel spreadsheet in which I logged the fieldwork material pertaining to children's literacy events. Throughout Phase 2 of the fieldwork, which I describe as the narrowing phase, I narrowed the lens of the study to examine literacy events that were digitally mediated in order to align with the research questions and aims. As articulated in the methodology chapter, I wrestled with the tension of defining literacy events as I noticed that at times, while a literacy event might not include the use of a digital device, traces of the digital still existed. I drew from the following definition: 'digital literacy can be defined as a social practice that involves reading, writing and multimodal meaning-making through the use of a range of digital technologies. It describes literacy events and practices that involve digital technologies, but which might also involve nondigital practices' (Sefton-Green et al 2016, p.15). This notion of a digital literacy event is illustrated in an excerpt from Portrait 8 in which a child participant draws a video game on a piece of paper. Digital technologies were not a direct part of this literacy event, yet traces of the digital still exist.

A three-year old boy is rummaging through his backpack. He has just returned home from kindergarten and is eager to show his mum something as a matter of urgency. 'I made this!' he boasts. He exhibits a scrunched-up piece of A5 paper from the bottom depths of his kindergarten bag. The paper has purple

marker scrawled all over it. 'Oh wow, I love it. Can you tell me about it?' says the mum in an animated voice. 'This is a new game for your phone', says the boy. 'You press start here. Here are the characters. Here is the baddy. You need to get here to get points and get stuff.' The boy makes a range of sound effects and starts enacting the movement and sound of a video game using his body:

Figure 4: Design of a digital game app for Mum's iPhone. Date: 23/4/17

The portrait illustrates how 'digital literacy can cross online/offline and material/immaterial boundaries and, as a consequence, create complex communication trajectories across time and space' (Sefton-Green et al 2016, p.15). To reiterate, I use the term digital literacy event to encompass events in which literacy has a part, which may or may not involve digital technology.

I engaged in a preliminary analysis at this stage in which I made connections to scholarly literature, drawing on NLS and posthumanism, and commenced identifying themes across the fieldwork material. Contemporary literacy theory heavily informed this process, which enabled me to continually revisit the fieldwork material and modify my fieldwork sessions. For example, I was able to check the accuracy of my interpretations with participants, follow up on a discussion and confirm the meaning of an artefact. I also continued to maintain my reflexive journal and noted my thoughts, questions, surprises and connections to theoretical ideas. As mentioned above, the reflexive research journal became a very important tool throughout the study and was integral to this research. I found myself recording these reflexive notes or memos upon leaving the fieldwork sessions, usually while sitting in the car and using my iPhone to capture my thoughts, feelings, concerns, inferences, questions, mindset, biases and emotional states. These notes were transcribed and reviewed prior to subsequent field visits. It was through this ongoing recording and writing that I was able to discover thoughts, ideas and hunches. The journal naturally

became a place to bring together fieldwork material, notes on the methodology, my thoughts and ideas, and responses to the literature, and it enabled me to connect theory and practice. It offered a permanent record of my development towards 'becoming' a researcher and also of my thinking as it evolved throughout the course of the study. The role of theory heavily informed each phase of the research. Therefore, I will next articulate how I engaged with a process of 'thinking with theory' during the analysis phase of the study (Jackson & Mazzei, 2012).

Thinking with theory

As St Pierre (2019, p. 6) notes, 'post qualitative inquiry doesn't have pre-existing methods of analysis like coding data or thematic analysis in which themes somehow miraculously emerge from the data', and as Burr (1995) articulates, while such conventional analysis practices followed a rational trajectory, they nevertheless required that much of the messiness of the research, including traces of ambivalence, were omitted. This way of working analysis, as argued by St Pierre (2021, p. 6), 'refuses a representationalist logic that relies on a two-world ontology, which assumes there is the real out there and then a representation of the real in a different ontological order'. Aligned with the aims of this thesis, which were to illustrate the children's experiences of digital literacies rather than attempt to seek certainty or categorise, measure and compare fieldwork material, I decided to move away from a conventional qualitative analysis and disrupt some of the restrictions of humanist research, such as collapsing, patterning, reducing and coding fieldwork material. In moving away from categorising through coding and a comparative analysis and instead focusing on reading the fieldwork material through posthuman concepts, I engaged in a process of thinking with theory (Jackson & Mazzei 2012). This process enabled me to examine the various possibilities in a digital literacy event.

Jackson and Mazzei (2011, p. vi) articulate a process of 'thinking with theory' and argue for 'research to be a process of plugging in data and theory together', challenging researchers 'to use theory to think *with* their data (or use data to think *with* theory) in order to accomplish a reading of data that is both within and against interpretivism' (p. vii, emphasis in original). This process reduces the risk of the fieldwork material becoming decontextualised or the missing of data that glowed (MacLure, 2013) and further recognises that the material we collect during our fieldwork is always partial, incomplete and temporary. The process entails thinking with theory and field texts at the same time, and borrowing theory from a philosopher or a theoretical concept (such as sociomateriality or intra-action) to enable an eruption of new questions by 'poring over the data, annotating, describing, linking, bringing theory to bear, recalling what others have written and seeing things from different angles' (MacLure, 2013, p. 174). This process allowed me to continue my analysis work as a bricoleur, assembling the various bit and pieces of the fieldwork sources, which entailed the 'plugging in of ideas, fragments, theory, selves, sensations' (p.1). Jackson and Mazzei (2011, p. 1) suggest that there are no specific procedures for this post-data analysis, or 'thinking with theory.' Instead, St Pierre and Jackson (2014) urge researchers to instead 'borrow concepts, invent approaches, and create new assemblages that demonstrate a range of analytic practices' (p.717). The authors liken a post-coding analysis to that of a rhizome rather than a tree in that, as a non-method, it is 'open and connectable in all

its dimensions; it is detachable, reversible, susceptible to constant modification' (Deleuze & Guattari 1980/1987, cited in St Pierre & Jackson 2014, p. 716).

While theory informed each phase of the research project, the process I undertook during the analysis phase is articulated below. I engaged in a process described by MacLure (2013, p. 174) as a rhizomatic process of scrutinising and revisiting the fieldwork material:

> I enjoy that part of the research process that involves poring over the data, annotating, describing, linking, bringing theory to bear, recalling what others have written, and seeing things from different angles. I like to do it "manually" too, with paper and pen, scribbling a dense texture of notes in margins and spilling over onto separate pages.

I used portraiture to re/present the selected fieldwork material. I will explain the process of portraiture later in this chapter; next, however, I will explain the process of selecting the fieldwork material that formed the portraits and how I worked with theory. Salient episodes from the portraits were written on sticky notes: these entailed field notes, artefacts, transcriptions and reflective journal entries. If the form of the field text was too lengthy, I put a reference to it on the sticky note instead. I then attempted to plug in theory by adding different-coloured sticky notes with a theoretical idea, concept or theorist. I revisited the fieldwork material over and over, shifting sticky notes around, removing and adding ideas, and so on. I continued to read across the fieldwork material, plugging in multiple ideas from theory and continually adding layers of meaning to it. In this way the fieldwork material and theory folded into one another. I worked with the same chunks from the fieldwork material repeatedly, revisiting it and folding in different theories. This process continued for several months and as I continued to read, refine and hone my ideas, as Jackson and Mazzei urge (2012): it is not simply to use a theory but rather to put theory to work and allow for the theory to illuminate and make sense of the data.

As a researcher I was entangled in the research assemblage, and I constantly asked: How do these theories help me to make sense of my own entanglements with the fieldwork material? I was reminded that I was not separate from the research; the research 'fieldwork material' was not static, out there waiting to be discovered, but was lived out intra-actively (Barad 2007). This process allowed for the rejection of binaries such as data/theory, insider/outsider, researcher/researched (St Pierre & Jackson 2014). This type of analysis concerns itself less with trustworthiness and more with working with fieldwork material to disrupt the usual way of thinking to 'enliven rather than report, to render rather than represent, to resonate rather than validate, to rupture and reimagine rather than to faithfully describe' (Vannini 2015, p.15).

As the reflexive journal entry below illustrates, I instinctively engaged with theory throughout the research process and found solace in reading and engaging with theoretical ideas and concepts as a way to ease my researcher insecurities.

Reflexive journal entry: *Date: 13/09/2018*

I'm always confused; Is this what is meant by rigorous confusion?

It is the second year into the fieldwork journey and I am riddled with a lack of confidence. Imposter syndrome is a regular visitor and I remain constantly confused. I am still not sure what I am doing, what I am seeing, whether I am seeing anything worthwhile and I feel as though I am making it up as I go. No recipe, no rules. The dreaded phrase: 'contribution to new knowledge' haunts me as I feel I am waiting for a gold nugget to appear – what if it never appears? What if I don't find new knowledge? What actually is new knowledge? I find comfort in reading. I guess, I always have. Reading eases my insecurities. The more I read, the more that what I am seeing and experiencing in the field starts to make sense. Theory becomes a scaffold for me and allows me to gain much deeper and multilayered understandings of the phenomena I am experiencing and importantly gives me the confidence to continue the research journey without becoming immobilised. However, as St Pierre states: What's important here is that theory should be unsettling, disruptive, confusing. St Pierre when discussing post-qualitative inquiring suggests, 'one has to read and read, one cannot not put theory to work – it will happen' (2011). According to St Pierre I must read and read and read some more until I become Deleuzian or until my life becomes rhizomatic. When will this happen? Has it already happened? The more I read, the more unsettled I become as I realise there is so much I don't know and there is still so so so much more to read. Reading takes time. I learn to embrace the uncomfortableness and turmoil. Perhaps this is what Lather (1996, p. 539) called working in 'rigorous confusion'.

Becoming rhizoanalysis

Throughout the analysis phase of the research I returned to the concept of a rhizome (Deleuze and Guattari 1993, p. 36), which is conceptulalised as a 'map that is always detachable, connectable, reversible, modifiable, and has multiple entryways and exits and its own lines of flight… [and has] neither beginning nor end, but always a middle from which it grows'. Due to the complexity, messiness and multiple sources of my fieldwork material I turned to rhizomapping as a diagrammatic form of representation. As articulated above, I struggled with the messiness of the fieldwork material and felt that by organising it neatly in a categorised, linear manner I would not be offering a true representation of the phenomena. Furthermore, I chose to use rhizomapping to disrupt and challenge the traditional conceptions of childhood literacy steeped in a humanist paradigm by drawing on multiple theories to create new meanings about the ways in which young children's digital literacies occur in home contexts that account for the complexity of the human experience and material world. Educational researchers such as Alvermann (2002), St Pierre (1997) and Sellers (2016) have found the rhizome useful for thinking differently about their fieldwork material, and as Alvermann (2002, p. 118) states, the rhizome is a method of 'examining texts that allows us to see things in the middle'. Deleuze and Guattari's (1997) rhizome offered a frame with which to challenge the traditional and logical approaches to knowledge creation and view thought as a process of nonlinear, nonhierarchical and organic growth. This lens allowed me to, as Hagood (2004, p. 145) states, 'move beyond coding and categorising data in order to redescribe and represent concepts differently', avoiding the tendency to categorise the fieldwork material, hypothesise, label, construct definitive ideas of observed digital literacy events and rigidly define what I could and could not see, and instead enabled me to be open to new connections and

becomings. Hence the rhizome acted as a practical tool with which to interrogate the nonlinear, open-ended, spontaneous nature of children's early literacies within their home settings and create a map with which to understand the complexities of their digitally mediated experiences of literacy events.

When reading about rhizomes and rhizoanalysis, I was drawn to the idea of movement and being able to avoid seeing the fieldwork material as a static and fixed representation of children's literacy development. Literacy and technologies constantly evolve, emerge and expand in unpredictable ways, and this approach allowed me to fit the bits and pieces of fieldwork material and theory together to find different linkages and ways of examining and understanding what I had observed. This approach was consistent with Jackson and Mazzei's (2012) 'thinking with theory' process and with drawing on various concepts to think with. As Sellers (2005, p. 6) argued, 'there is an ongoing intermingling of data, methodology and analysis enmeshed with theorising the literature and practicing the theory, in which each becomes the/an/other'. Like Kuby and Rucker (2016), I felt extremely restricted by language and the traditional ways of writing up analysis and research. I turned to rhizomapping in order to show and not tell, as it allowed for a more creative encounter when plugging in the various fieldwork material and theory (Jackson & Mazzei 2012) that offered opportunities to think in diverse ways. Mapping avoids the linearity of ordered systems and binary logic, which is often related to tree logic. Instead, it works as a rhizome and is characterised by a heterogeneous connectivity of diverse and often unrelated parts coming together and fostering connections and multiple entry points. For Alvermann (2002, p.116), who draws heavily from the work of Deleuze and Guattari (1987), 'rhizoanalysis involves creating a map open and connectable in all its dimensions…[with] multiple entryways'. This process allows for a method of analysing the fieldwork material that meant I could focus on seeing things in the middle. As Alvermann states (2002, p. 2) 'looking for middles rather than beginnings and endings makes it possible to decentre key linkages and find new ones, not by combining old ones in new ways, but by remaining open to the proliferations of ruptures and discontinuities that in turn create new linkages'. By utilising rhizomapping as a visual and figurative device, I was able to

- represent the fieldwork material in a nonlinear and nonhierarchical manner
- capture the human and nonhuman without privileging one or the other
- look beyond a sociocultural perspective
- view ideas and concepts as always relating to other concepts in complex ways

After writing the portraits and plugging in the various theoretical constructs, I instinctively found myself experimenting with the creation of sketches or maps to help me organise my thinking. This brainstorming exercise proved effective in allowing me to capture my rhizomatic thinking engendered by the fieldwork excerpts while also enabling various theoretical ideas to be applied and lines of flight such as my wonderings and tensions to emerge, thus opening up potentialities for thinking differently. As Honan (2004, pp. 269-270) cautions, there is no one correct pathway within rhizomapping; instead there is 'an infinite array of mappings possible…a ceaseless flow of connections'. While I felt the concept of a rhizome was representative of what I had observed in the field, I found it extremely difficult to generate rhizomatic maps that were intelligible to others, and felt constrained by the two-

dimensional aspect of a static page. I struggled with how to represent such thought processes and communicate my thinking diagrammatically to others given the constraints of traditional two-dimensional texts. I searched for a software package to electronically recreate these maps, but found digital mapping programs restrictive as these leaned towards traditional mind-mapping, which tends to denote ideas hierarchically and seek final answers or end-points. I settled on using Microsoft PowerPoint, despite being limited by the two-dimensional format of the page, as I could move the key ideas and theoretical concepts and it provided some flexibility with regard to the use of shading, colour, lines and shapes. I found inspiration in the scholarship of Sellers (2013) and Kuby & Crawford (2017), and in a Deleuzian sense I experimented with different fonts, shapes, lines, bold words, and colour in an attempt to let the reader experience posthumanist theories and thinking. Map 1 is an overview of the analytic process created from the notions of the assemblage and the rhizome. This process was iterative, moving back and forth between the phases. The lines represent the connections and movements between the different phases of the analytic process.

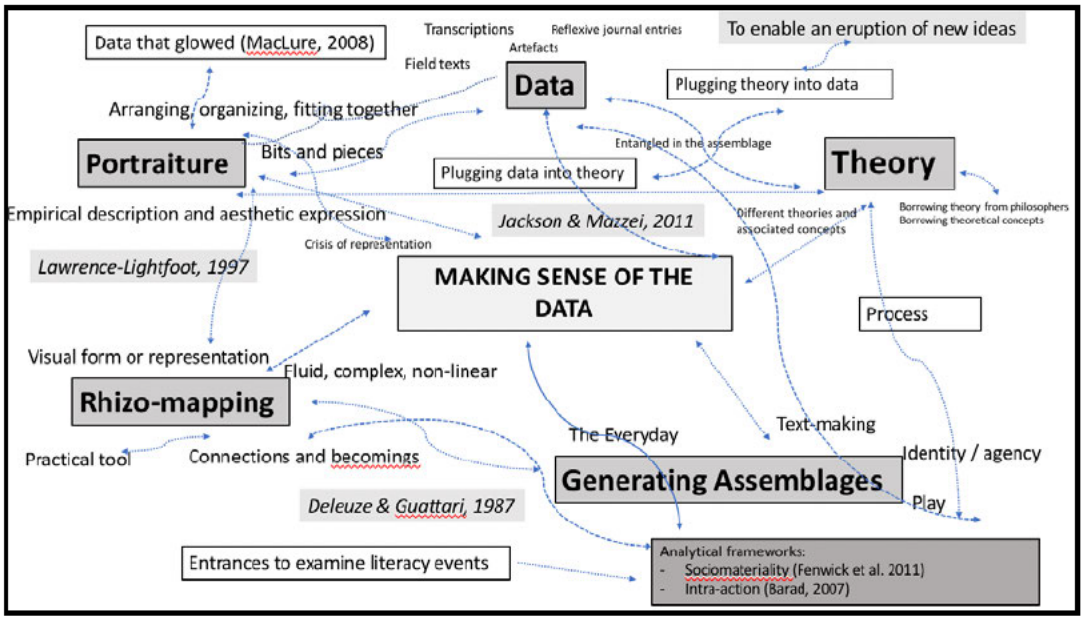


Figure 5: Map 1: Rhizomatic analytic process

Map 2 provides an overview of the findings discussed in the next chapters. It indicates the lines, connections and entanglements between the key concepts surrounding the portraits and the threads of ideas that connect and interweaving between and among the portraits. Map 2 is provisional and can be read in multiple ways. It is open and connectable in all of its dimensions. Transformations occur along 'lines' that move and grow through the rhizome. As the lines are constantly moving and developing, any static representation of the rhizome is transitory as the rhizome is on its way to becoming something else. The solid lines represent the key ideas emerging from the portraits while the dotted lines indicate the threads of ideas connecting the portraits. The 11 portraits are organised in four sections to illustrate the shifts occurring in children's contemporary contexts in relation to the home environment and the everyday materials and to their play, text-making and identity and agency, and by applying a rhizoanalytical lens are understood as interrelated and overlapping rather as discrete or separate.

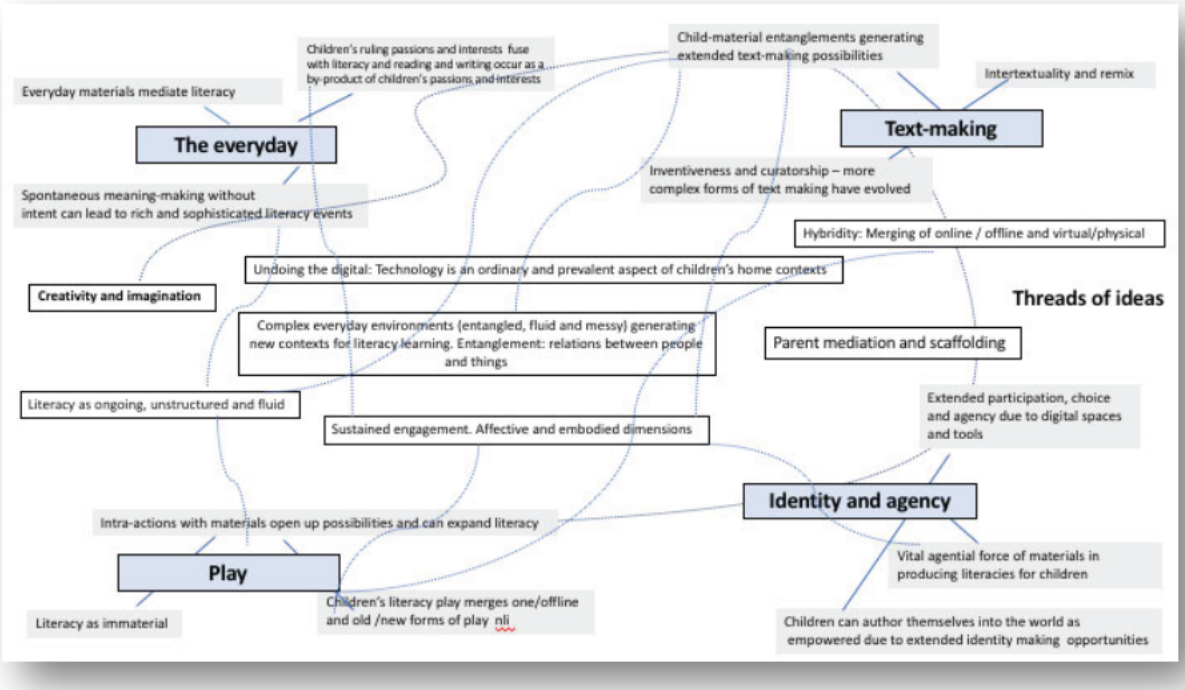


Figure 6: Map 2: Thinking about the findings rhizomatically

Rhizomapping a diagrammatic form of representation

In Chapters 10 to 13 I will present a discussion of my findings and deconstruct the portraits by using rhizomapping as a diagrammatic form of representation to illustrate my rhizomatic thinking. The rhizomatic maps illustrate the interweaving of various fieldwork sources with theory, which allowed for creative and experimental encounters with the fieldwork material and posthuman concepts of theory, enabling me to think about the fieldwork material in diverse ways. Importantly, the approach allowed me to pose different questions of the fieldwork material (Jackson & Mazzei 2013), and open space for different possibilities (Sellers 2005). In the maps in the discussion chapters of this thesis, the various portraits are indicated in shaded rectangles. The key insights I brainstormed from the portraits are indicated by shaded ovals. The key theoretical ideas and concepts I plugged into the fieldwork material are indicated by non-shaded rectangles. This represents my thinking with different theoretical ideas and constructs in order to interpret the fieldwork material. The italic text represents provoking questions and lines of flight, which include my tensions, wonderings and mental musings in order to make sense of what I had observed. The dashed lines indicate connections and represent the threads that weave together the portraits – the mapping of the linkages and flows with other ideas, movement–elements and materials. These lines are not static but rather transformations in action (becomings), and emphasise the process of the literacy event over the end product or outcome. The maps are to be viewed as provisional and open to interpretations.

Rhizomapping allowed me to use multiple theories and discourses to rupture some of the tightly held developmental and singular understandings of children's early literacy learning and development. This enabled

me to deconstruct the fieldwork material by connecting and rupturing the ideas with other texts and allowed for multiple, confusing and messy understandings to emerge. Below is an example of a rhizomatic map used to deconstruct Portraits 1, 2 and 6, which will form part of the relevant discussion chapter.

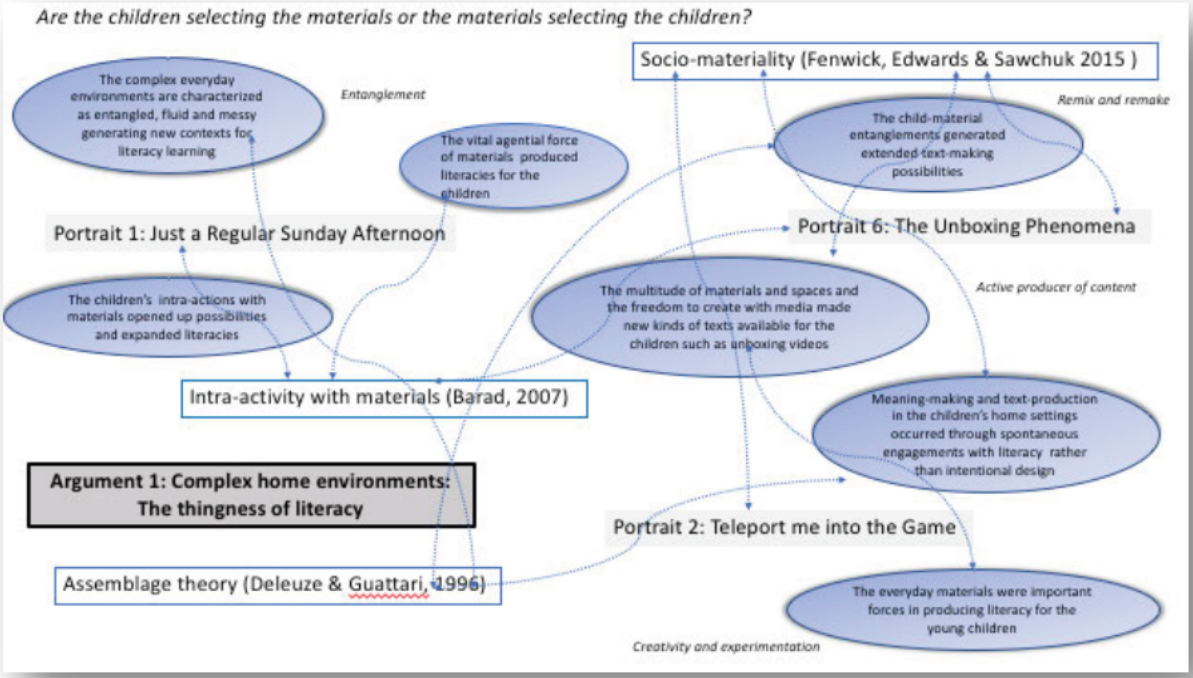


Figure 7: Rhizomatic map offering a diagrammatic representation of my thinking with theory and fieldwork material from Portraits 1, 2 and 6

In the next section of this chapter I will discuss the two broad theoretical constructs assembled in my analysis. I think with two posthuman concepts to produce new thoughts, ideas and questions about the fieldwork material and to conceptualise the digital literacy events I observed.

Analytical framework: The material stuff of the everyday

Upon closer examination of the fieldwork material, what became apparent to me was the prevalence of the material stuff – that is, the everyday stuff which occupied the children's homes and experiences and the various modes which children naturally engaged with and through. These materials included various tools, technology, bodies, actions, objects, texts, discourses, talk, thinking and feeling. The everyday materials, artefacts and objects were a dominant feature of my observations and needed to take precedence within the analysis. I therefore needed to ensure I attended to the particular material-discursive practices occurring in their homes, and the way that materials participated with children (Barad, 2007). Reflecting on the fieldwork sessions, I was surprised by the fact that most sessions across the different sites were concentrated around the various materials used for learning or play and as cultural objects or artefacts. At times, I wondered whether the child selected the object or the object chose the child. As articulated in the literature review, I am aware that materials (the things that matter) are often missing

from accounts of learning and practice; as Sørensen argues (2009, p. 2), there is a 'blindness toward the question of how educational practice is affected by materials'. Barad (2003, p. 801) further argues that 'language matters. Discourse matters. Culture matters. But there is an important sense in which the only thing that does not seem to matter anymore is matter'. Building on these ideas, I sought a lens to observe the patterns and the unpredictability that makes early literacy learning happen in everyday contexts, accounting for the nonhuman forces that are equal contributors in creating children's literacy becomings (Kuby, Spector & Thiel 2018). Following Ingold (2013, p. 160), I had to be mindful of being less concerned with identifying fixed attributes of children and things in literacy home environments, and instead focusing on telling a story in a particular setting through 'an unfolding field of relations in which things connect, become bound up with each other, change and have effects'. In my analysis of the research portraits, I therefore drew on and assembled the following theoretical constructs in order to gain broader perspectives of children's digital literacy practices within the overarching framework of a rhizome:

- sociomaterial assemblages (Fenwick, Edwards & Sawchuk 2015).
- intra-activity with materials (Barad 2007).

These theoretical constructs listed below allowed me to imagine literacy as unbounded and in 'and…and…and relations' (Leander & Boldt, 2013, p. 41).

Thinking with sociomaterial assemblages

> …people and things only exist in relation to each other … (Orlikowski & Scott, 2008 p. 455)

Fenwick, Edwards and Sawchuk (2015) and Fenwick and Landri (2012) applied the construct of 'sociomaterial assemblage' to refer to entanglements of humans and material, and suggest that when considering literacies as sociomaterial assemblages there are no clear distinctions between social phenomena and materiality. A sociomaterial view considers relations among the social (interactions, discourses, symbols, aspects of culture) and the material (objects, texts, technologies, bodies, settings) and attempts to avoid a priori assumptions. Law (2013) urges a method that treats everything in the social and natural world as a continuously generated effect of the webs of relations within which they are located. Bhatt and de Roock (2013, p.6) use the construct of sociomaterial assemblages 'to carefully attend to the ecology of practices' within their research of digital literacy events and seek to examine how sociomaterial relations are assembled and hence realities evolved. Within my analysis of the children's engagements with digital literacies, rather than separating the humans, devices, practices, relationships, products, texts, toys etc., I needed to look at the assemblages created among and between things which came together to produce reality. This construct allowed me to view the users and tools (for example) involved in relationships 'so that the tool and the user mutually constitute each other through interaction' (de Freitas & Sinclair 2013, p. 454). Sociomateriality allowed for a detailed description about *how* things come together rather than *why* they come together. This perspective further implies that material things both digital and material are performative. The performative nature of things allowed materials to be positioned as agents rather than agency only being seen as an intentional action of a human. 'Material things act together with other types of things and

forces to exclude, invite and regulate particular forms of participation in enactments' (Fenwick 2011, p. 4). For example, within children's play episodes I observed bodies, iPads, playdough, plastic toys, voices, tinkering, joy, experimenting, interrupting, seizing emerging possibilities, moving and shifting and entanglements flows that created new and endless opportunities for learning. As Barad (2007) reminds us, young children seem to pay attention to and appreciate the minute details of their surroundings and display an openness to the spontaneity of life and learning, and as Fenwick, Edwards and Shawchuk (2015, p. 250) announces,

> 'Material' is the everyday stuff of our lives that is organic and inorganic, technological and natural: bodies, settings, substances and devices. 'Social' is our symbols and desires, human interactions and communication. It is in the relations and entanglings between material and social forces that everyday practices – including activities, decisions, responsibilities, etc. – are produced.

Barad (2003, p. 816) argued that 'apparatuses are not mere static arrangements in the world, but rather' are dynamic '(re)configurings of the world' and therefore 'are themselves phenomena'. In a sociomaterial perspective the social world is one in which humans and various objects such as technology are in some way created by the relationships they have with each other. I argued in the literature review that technology is an important force in shaping literacy practices and identity, and that as a result of new technological developments new literacy practices have occurred. The sociomaterial lens allowed me to view technologies as active agents in the world, recurring and enrolling humans in networked relations. Kress (2009, p. 57) suggests that a 'materialist account of meaning-making moves away from abstractions such as "language", "the linguistic system" or "grammar", towards specificity, the materiality of modes developed in social uses'. Within the analysis I therefore became attuned to the assemblages of both the material and the human, and how they interact with one another and influence one another.

Thinking with intra-action

Within this theoretical positioning, given the focus is not solely on the human or the nonhuman but on rather the ontological entanglements occurring between them, I drew from Barad's (2007) notion of intra-action. I came to see that ontological entanglements create new entities and are in a process of constant becoming (Deleuze & Guattari 1987), and it is within these becomings that an intra-action between matter both human and nonhuman occurs. Intra-activity is the relationship between any organism and matter (Barad 2007). Intra-activity (Barad 2007) is the notion that all matter has agency which emerges through relationships and mutually change and alter in their ongoing intra-actions. Shifting my lens from the human-centred and/or logic-centred was not easy to do, as this is the way I have always thought, taught and researched in the area of emergent literacy development and digital literacies. However, Kuby and Crawford (2017, p.21) urge researchers to extend their analysis from a focus on people and talk, and instead embrace 'the intra-active ways that humans and nonhumans (ie/materials, space, time, plants, animals and the environment) entangle in producing new ways of doing/being/doing literacies'. To conceptualise this notion of intra-activity, Hultman and Lenz Taguchi (2010) provide an example of a girl playing in a sandbox. The child and the sand come into play together. Therefore, they come into literacies together. The

materials speak with/back to the girl in the entanglement of intra-activity and together they produce new realities, new literacies and new knowledges. This example enabled me to understand the entangled, enacted agency of materials and humans and the forces produced between them. Adopting a sociomaterial and intra-active perspective in my analysis, I made a deliberate effort to shift my gaze and consider the role of materials within the literacy practice.

I argue that understanding children's digital literacy learning requires an analysis of the various interactions in the social, material and spatial environments. For example, if we consider the intra-actions and entanglements in a typical home setting – bodies in a room, a couch, table, books, television, thinking, singing, talking, listening, cushions, toys, crayons, paper, a researcher, a notepad, iPhone, online/offline, texts/ the iPad – the entanglement of the stuff and people are not fixed. They can combine and engage in unexpected ways in a process of literacy learning and meaning-making. Drawing on Barad's (2007) work, I recognised how the material aspects of the children's homes (such as the sound of a beeping iPad in the corner of the room, or the flexibility of playdough) can impact the child's thinking and being. My understanding of Barad's work taught me to see that everything around us impacts everything else, making everything change and in a continuous process of becoming (Deleuze & Guattari, 1997). Therefore, as Barad (2007, p.152) reminds us, 'knowing is a result of a process where the material and the discursive are mutually implicated in the dynamics of intra-activity'.

Struggling with issues of representation

As I endeavoured to write up my research findings and searched for a tool of representation I found myself struggling with what Denzin and Lincoln (2008) term 'the crisis of representation'. Tensions arose which can be illustrated in questions such as: What does it mean to represent the stories from others? How does power shape my inquiries? What if the narrative I tell is not a true representation of my participants experience? Denzin and Lincoln (2008) articulate eight moments of qualitative research to outline some of the key transformations occurring in qualitative research. The fourth moment, known as the crisis of representation (1986 to 1990), refers to what I was experiencing above and is the moment when 'qualitative researchers realised they could no longer directly capture lived experience, but that lived experience is created in the social texts are written by the researcher' (Le Grange 2018, p.1). It also refers to how researchers write and represent their research and problematises how a person's lived experience can be presented by a researcher. Similarly, post-qualitative research involves critiquing representational logic, as St Pierre (2013) points out, assume two things: that there is a central, reality to be found; and that language is able to fully represent such a reality. However, in recognising that written texts are never final or complete and instead are always partial and further that they have been represented by me and will be interpreted differently by the reader, I realised that certainty of representation is not a realistic ambition. Instead I drew on post-qualitative inquiry and searched for a tool to enable experimentation and the creation of new ways of undertaking qualitative analysis (St Pierre 2019).

Returning to Deleuze and Guattari (cited in Holland 2013, p. 350), who argue that the main question of philosophy should be 'What can it become?' rather than "What is it?", my desire in writing up the fieldwork and offering the portraits was to 'evoke feeling and to encourage readers to think and feel differently about what it means to know/be/do literacy'. I have threaded excerpts from my reflexive journal throughout the methodology and analysis chapters to signpost some of the tensions I experienced and my journey towards making decisions about the research design and its representation. These excerpts provide the reader with insight into the reflexive work undertaken throughout the study and show how I worked with theory, rather than simply telling them. The excerpts from the reflexive journals endeavour to make explicit to the reader how I came to write this text and how my subjectivity has been both a producer and a product of this text I borrowed from Lather and St Pierre (2013, p. 635), as I am deeply 'embedded' within the research, 'imbricat[ed] between the inside and the outside of the research process' (St Pierre 1997, p. 177) and therefore cannot be neatly removed from it.

Turning to portraiture as a tool for re/presentation

In my quest to represent the fieldwork material in a way that links imagination, creativity and thick description (Geertz 1973), I turned to portraiture as a tool for re/presentation. Portraiture (Lawrence-Lightfoot, 2016) is an approach which seeks to capture the human experience in great depth by combining empirical description and aesthetic expression. It can be described as 'writing the ordinary lives of people'. I was drawn to portraiture as it enabled me to represent the fieldwork material as portraits while also being able to communicate the participants' experiences more directly. This approach, which aligns with the traditions of the Chicago school of ethnography, permitted me to work with the fieldwork material in a holistic sense, avoiding the dangers of coding and categorising it into decontextualised segments. Context is a crucial aspect of portraiture, as the narratives are always embedded in particular contexts including physical setting, rituals, norms and values, and capturing rich contextual detail is an essential element of the documentation of human experience (Lawrence-Lightfoot 2016). Hence I was able to re/capture a detailed re/presentation of what I had observed in the field. This approach involved recording and interpreting perspectives and organising a narrative around salient excerpts from the fieldwork material to reconstruct a narrative.

Lawrence-Lightfoot's (1997, p. 14) statement below articulates below how portraiture is interested in capturing the of subtlety human experience:

> Not only is the portraitist interested in developing a narrative that is both convincing and authentic, she is also interested in recording the subtle details of human experience. She wants to capture the specifics, the nuance, the detailed descripting of a thing, a gesture, a voice, an attitude as a way of illustrating more universal patterns.

Salient excerpts from the fieldwork material were therefore selected and re/presented as portraits. These portraits were produced from fieldwork material that held affective intensity, or 'power to affect and be affected by the assemblage' (Masny 2013, p. 343). It is important to reiterate that this study is not trying to offer a single truth or a single reality, but to instead explore emergent possibilities, and portraiture allowed me to represent moments within

the home that were partial, incomplete or temporary. The portraits were compiled from field notes, written observations, artefacts, audio recordings and transcripts of research conversations, and from my reflexive journals. A portrait can bring into play 'transgressive data that escape language: data that were uncodable, excessive, out-of-control, out-of-category' (St Pierre 1997, p. 179). MacLure (2013, p. 661) refers to exploring possibilities of the fieldwork material that 'capture attention because they defy explanation, and refers to data that glows – a fieldnote fragment or video image that starts to glimmer, gathering our attention' because it resists analysis, refuses to render up its meaning'. I utilised this concept of 'data that glowed' when selecting field material to use as the basis of the portraits.

Furthermore, portraiture aligned with my commitment to the relational dimensions of the research and to going deeply into the individual stories (living alongside my participants), understanding people's perspectives and meaning-making and documenting their experiences through stories while capturing the essence of the experience (Given 2012, p. 2). As Lawrence-Lightfoot (2005, p.10) contends,

> The data must be scrutinized carefully, searching for the story line that emerges from the material. However, there is never a single story; many could be told. So, the portraitist is active in selecting the themes that will be used to tell the story, strategic in deciding on points of focus and emphasis, and creative in defining the sequence and rhythm of the narrative.

I was also drawn to portraiture because it advocates for the researcher to 'sketch herself into the portrait' (Lawrence-Lightfoot & Hoffman Davis 1997, p. 45) and positions the portraitist as a visible instrument within the research. As stated in Chapter 1, I am very much entangled in this research, and throughout the project I have endeavoured to make my biases and experiences explicit. Moreover, as Denzin and Lincoln's (1998) crisis of representation has problematised assumptions that the researcher is not hidden and established that her voice is always present. I therefore attempted to make my presence explicit and not mask or hide my multiple roles within the research process and writing up of the research. In some of the portraits my voice is purposefully woven into the story as a result of my interactions in the field. Portraiture allowed me, working as a bricoleur, to capture bits and pieces of the fieldwork material from multiple sources and weave together the intertwining elements. Fieldwork items included in the portraits were selected based on the following criteria:

- to ensure representation of all children and to represent fieldwork material from each setting
- to include a range of different types of literacy events involving different materials/technologies/resources/tools
- to include fieldwork materials that glowed or sparked or created a sense of wonder (MacLure 2013).

The portrait is a temporary and shifting depiction, in which I am entangled with other human and other-than-human components within multiple assemblages. Acknowledging that children grow and change, as does literacy and technology, the portraits offer a sketch of a particular moment in time

Chapter summary

To reiterate my rational for drawing on posthuman constructs: in order to understand the digital literacy events I observed in the field, I needed to examine the entire interaction occurring in the given context, which involved the human, nonhuman, online and offline aspects (Bhatt & de Roock 2013). As the sociomaterial assemblages occurring in the children's home contexts were infinite, I could only focus attention on some aspects in my examination of the portraits presented. A sociomaterial lens provided a theoretical lens and conceptual shift to frame my analyses so that I could look differently at the fieldwork material and take more kinds of evidence into account. This scholarship encouraged me to closely examine the sociomaterial assemblages, and to interrogate the children's home environments in order to consider how humans, the home setting, materials (furniture, books, crafts, toys, paper, iPads), discourses about literacy and learning, parent attitudes and beliefs, the internet, software, apps and so on are all entangled with one another, and impact how literacy transpires.

The next chapter offers a prelude to the findings by introducing the four participating families in more depth, and presents a detailed contextual description of them. It aims to provide the reader with a thick contextual description of the four families, offering insight into the children's characters, familial routines, habits and activities, and to how these shaped the children's digital literacy experiences in their home settings.

Chapter 8:
The family portraits: A prelude to the findings

In this chapter, I introduce the four families participating in the study and offer thick descriptions of and contextual backgrounds for their family home contexts. The family portraits were constructed from a range of material sources, including participant profiles and technology audits which the parents completed in consultation with their children at the start of the fieldwork sessions. Material from parent conversations, child conversations, participant observation of the children's literacy practices, habits and routines and my reflexive journal were also included to ensure multiple perspectives on the children's literacy experiences within their home settings and an authentic representation of each family. In order to offer the reader a sense of who the children were, a glimpse into their characters and a sense of the everyday familial routines, habits and activities surrounding their digital literacy, the family portraits are intentionally written in an informal style, capturing direct quotes from the children and parents. This chapter acts as a contextual framing for the portraits presented in the findings chapter.

The child participants were asked to choose pseudonyms and each family selected a surname from a list of the most common international surnames. Interestingly, most of the children choose pseudonyms relating to popular culture references such as video games or cartoon characters. Once the families were recruited, I also asked parents to complete a family profile. This included indicating their employment, social class and ethnicity. All parents listed themselves as middle class. However, parents did not disclose the family income and I did not ask for this information. Once families completed the profiles, I applied the information on parents' occupations to the Australian Socio-Class Index to determine each family's sociodemographic (Sheppard & Biddle 2015). All families identified as Australian and three out of four listed themselves as being Australian with either European or Asian heritage. The family portraits below are in order of recruitment.

The Alves family | Kensington, Melbourne, Australia

Family Members: Ash, aged 3.4; Brock, aged 3.4; mother and father

'*Mum, text Santa and tell him to put matchbox cars on my Christmas list!*' Ash, aged 3.9 years

Ash and Brock are twin brothers, aged 3.4 years when the study commenced and 6.2 years when it concluded. The children, my husband and I live in an inner-city location in Melbourne, Australia. English is the language spoken at home and we identify as Australian with European heritage. My husband worked full-time as an engineer and I worked part-time as an academic at a nearby university while studying part-time for my PhD. My husband and I were both active users of a range of technologies and used several devices within the home for leisure and work purposes. At the start of the project, the boys attended 3-year-old kindergarten two days a week for a total of 10 hours. During the period of the research project, they transitioned from 3-year-old kindergarten in 2016 to 4-year-old kindergarten in 2017 (15 hours a week) and formal schooling in 2018. This enabled me to trace changes in their digital literacy practices during their transition to formal schooling and examine the linkages between their

out-of-school and in-school literacy practices. The boys thoroughly enjoyed kindergarten and spent most of their time outdoors climbing trees, in the sandpit or engaged in a range of games such as hide-and-seek, imaginative play or construction. The kindergarten is considered a technology-free zone, except for an iPad located at the entrance for attendance and administrative purposes.

The children began formal schooling in my final year of fieldwork. During the first year of schooling, a play-based learning approach was utilised. Brock and Ash's classroom included a large TV screen on which the teacher could display information or present short videos and animations. The children did not have access to technology in the classroom, however, as the teacher felt this would detract from the play-based approach. Brock and Ash enjoyed attending school and especially enjoyed mathematics, science and physical education.

When at home, the boys' free-time activities included playing outdoors, going to the local park, playing with LEGO and playdough and engaging in a constant enactment of imaginary play narratives. They were read to every night before bed, and the home is rich with books, comics, jigsaw puzzles, board games, toys and a range of craft-based activities. The boys engaged in a range of literacy-based activities at home, such as board games, puzzles, drawing and writing on the blackboard and using magnetic letters to create words.

The boys loved using digital devices and were quite adept at engaging with a wide range of them, including iPads, gaming consoles and mobile phones. I was constantly in awe of their 'fearless creativity' when using devices, as they seemed to almost manoeuvre their way intuitively through new apps and software. While my husband and I did not put strict restrictions on their screen time, we did encourage them to 'put the device down and go outside' if we felt it was excessive. Screen time was often balanced with screen-free activities such as playing outdoors, and we often co-used devices with the children for shared experience such as calling or messaging Grandma on WhatsApp, or creating a short photo story together. On average the children engaged in approximately two hours of screen time per day (which may have included viewing episodes of their favourite cartoons on commercial television, Netflix or YouTube); however, this would vary significantly from day to day and was dependent on factors such as the weather, our routine, social events and my work schedule. Our activities could be highly varied depending on the events planned for the day. For example, on a pleasant sunny day we could be out all day at playgrounds and the boys might spend the evening in the backyard and not engage in screen time at all.

My husband and I often discussed the role of digital devices within our family life and the appropriateness of technology with regard to the boys' development. Concerns over issues such as the solitary use of devices that might deter the boys from important social interactions and perceived threats of online activity such as encountering strangers or stumbling across inappropriate content (e.g. bad language) were often discussed. At times we had differing views and found the digital terrain difficult to navigate. We ensured that devices were only used in shared spaces in the home such as in the loungeroom, dining area or playroom. However, we also experienced many benefits of the children's digital activity, such as their increased creativity through the producing of animations and evidence of problem-solving when engaging in digital gaming. My husband noted on several occasions the

children's increased vocabulary and oral language skill development that were due to digital activity, such as using specialist language relating to dinosaurs or Pokémon learned from viewing YouTube videos.

The home contained a range of technological devices, such as televisions, laptops, a family computer, gaming consoles and digital cameras. The boys shared an iPad and occasionally used our mobile phones. The home had internet access. The children's grandparents often purchased the boys the latest technological toys or gadgets. These included a Vtech laptop, electronic mats, Tamagotchiss, Garmin watches and computerised robots such as a Sphero. The home also occupied an internet-enabled television, and the children would regularly watch episodes of their favourite cartoons on it.

Ash and Brock mostly used the iPhone and iPad (due to their ease of use and portability) and engaged with a range of apps such as YouTube Kids, LEGO, Minecraft, Playschool, Ninjago, ABC Reading Eggs Junior, Toco Boco, ABC Kids and Transformers, and used social media apps such as Viber, Facetime, WhatsApp and Skype to communicate regularly with family members and share digital images and videos. The children regularly documented their life experiences using photography and video, and the family devices are full of videos, animations and multimedia presentations they created. During the fieldwork period they developed a passion for digital gaming and played Pokémon Go on the iPhone and Skylanders on the Nintendo Wii console regularly, and this passion occupied their online and offline play. Their digital activity would also occur in common areas of the house where adult supervision occurred.

Family literacy practices such as Facetime and Skype featured regularly within the family setting. These practices were used to communicate with distant relatives. Furthermore, in their first year of formal school, one of the children's friends went to Germany for an extended period, and the children frequently communicated with them via the MSN Messenger Kids app. This online communication tool enabled them to message each other using text and emoticons, video call each other and play video games while conversing.

At the start of the study the children enjoyed watching *Play School* and cartoons such and *The Octonauts*, and had begun watching unboxing videos on YouTube. I asked the boys what their favourite play activity was: Ash responded '*Playing outside in the sandpit*'. Brock responded *'Going to the bridge park*'. I also asked them what their favourite toy was: Ash said, '*My Transformers*'. Brock said, '*My iPad*'.

It was not uncommon to hear and observe the children speaking politely to Siri or Google Home, as evidenced in the fieldnotes below:

- "Peppa Pig *on YouTube please Siri*." (Ash, aged 3.6)
- "*Black Siri – are aliens real*." (Brock, aged 3.9)
- "*Google Home, a knock knock joke*." (Brock, aged 4.2)

The Rowe family | Kensington, Melbourne, Australia

Family members: Ryder, aged 3.11; Skye, aged 2; mother and father

The Rowe family comprised mother, father and two children: Ryder, aged 3 years and 11 months, and Skye, aged 2. The family lived in an inner-city location approximately five kilometres from Melbourne's CBD. The mother was a lawyer working on government public policy and the father was an IT entrepreneur. The parents were both employed in a full-time capacity, but had flexible working arrangements and worked from home frequently. The family valued their weekends together and regular family holidays abroad. Ryder and Skye are Australian with Hong Kong and Vietnamese heritage and speak English, Vietnamese and Cantonese. Both children attended childcare from the age of two.

Ryder was attending long day care when the study began. He thoroughly enjoyed attending day care and attended four sessions a week for five hours per session. He engaged eagerly in all tasks, and particularly enjoyed participating in the creation of various arts and crafts. Ryder's mother described him as kind, social, sensitive and excitable.

Ryder's favourite toys included cars, puzzles and dinosaurs, while his hobbies include arts and crafts, *The Wiggles* and the planets of the solar system. During his free time, he enjoyed 'anything about and with the planets in the solar system'. He sang songs about them, made them out of cardboard, and drew and wrote about them regularly. He often searched YouTube for detailed instructional videos providing comprehensive information about the various planets. While he enjoyed being outdoors during his free time, playing on the slide and swing and climbing various outdoor equipment, he also engaged in making art and craft constructions and viewing *The Wiggles*, *Paw Patrol*, *The Octonauts* and *Giggle and Hoot* on television.

Skye was not a focal child in this study; however, I noted interactions between her and Ryder during my visits. She occasionally attended swimming lessons with her father during my visits.

Within the home, there was a large playroom for the children's toys. Within the playroom were shelves crammed with their favourite picture books, such as *The Wiggles* books, counting books and books about the planets. There was a television with internet connectivity. Baskets lined a corner of the room filled with puzzles, trains, dress-ups and stuffed animals. There was a desk in the playroom featuring a map of the world and various reading and writing implements. Literacy activities were very much encouraged and celebrated in the Rowe family home. The findings indicated that the parents were very active in the children's early literacy development. The family read together every evening; they coloured in and drew regularly and engaged in writing letters and co-constructing emails, letters and postcards to family members. The parents set aside time on the weekend to practice writing the letters of the alphabet, singing songs and learning languages together, as well as playing board games. The parents also strongly encouraged Ryder's and Skye's acquisition of Vietnamese and Cantonese, and utilised digital resources such as Vietnamese-English bilingual books and Mandarin songs via the family digital devices.

The parents closely monitored the children's screen usage and insisted they only use devices for educative purposes. The mobile phones and iPad contained various educational apps carefully selected by the parents. These included the ELLA learning languages app, various drawing apps and educative apps such as phonics-based games and ebooks. Ryder's mother stipulated that '*These are the only apps he is allowed to use*'. The parents expressed concern about potential overuse of screens which might interfere with their children's development and remove them from more creative play and traditional educational opportunities. All digital activities were closely supervised by the parents.

At the start of the fieldwork period, when I asked Ryder what he enjoyed doing in his free time at home, he said '*I love playing cars and watching* Wiggles *and* Paw Patrol *and sometimes doing drawing*' (Fieldnote, 3/5/2017).

The Shar family | Flemington, Melbourne, Australia

Family members: Buttercup, aged 4; Dash, aged 0.8; mother and father

Buttercup lived with both parents and her younger sibling in an apartment in Melbourne's inner-city suburb of Flemington. She was four years of age when the study began and excited about beginning primary school in the next year. The family indicated their ethnicity as Australian and spoke English. Buttercup was described by her parents as kind, patient, cautious and intelligent, and loved taking care of her younger brother Dash. The father was employed full-time as an IT consultant and the mother was a secondary English teacher then on maternity leave, due to return to work in a part-time capacity at the start of the new year.

Buttercup attended four-year-old kindergarten for 15 hours a week. Her brother Dash was aged 8 months. Dash was often asleep during the scheduled fieldwork visits, as this was a convenient time for Buttercup and her mother to engage in conversations with me. Due to Dash's age, he was not a focal child in the study.

The findings show that Buttercup experienced a wide range of print and digital literacy practices in her home and local community settings. For example, she would often visit the local library with her mum and brother and engage in 'story-time' sessions offered there. They were also regular attendees at the local museum and zoo, and borrowed books, puzzles and games from the local toy library.

Buttercup engaged in a myriad of traditional literacy activities with her parents and brother daily. These included book-reading, name-writing, print awareness, decoding labels and environmental print, completing phonics activity books, drawing and colouring, creating picture books, creating role-plays, writing letters to family members, writing shopping lists, playing board games and doing puzzles. The first day I met Buttercup, she was busily rushing around the kitchen. baking brownies with her mother and confidently reciting the ingredients from a recipe poised on the family iPad. '*I love baking with my mum*,' she said. '*I made a book about baking with Mum the other day*.'

Buttercup thoroughly enjoyed playing with LEGO, utilising her art supplies for various art projects, and stuffed animals. She could often be found in her bedroom engaging in dramatic play with her stuffed toys and her brother

as characters in elaborate role-plays. Her hobbies and interests included art, movie-making and dancing. Her bedroom had a large bookshelf full of a range of books. The parents read to the children daily, and believed this practice to be extremely important.

Buttercup loved to sing, dance and act, and she had started attending ballet classes on Saturday mornings. Towards the end of our fieldwork period, Buttercup started using the recording function of the iPad or iPhone to video herself singing, dancing and acting, and would suggest sending these videos to her family members.

Buttercup had regular access to a family iPad. The device was stored by the parents and only given to Buttercup at specific times of the day and for short periods of time, ranging from approximately 20 to 40 minutes. Buttercup loved using the iPad and claimed, '*It is my favourite thing to play with but I'm not allowed to use it too much*'. Buttercup's parents indicated that she was proficient at using the iPad and could use it confidently for a variety of purposes: '*She prefers to engage in tasks on the iPad which entail problem-solving and storytelling and is proficient at using it to create imaginative movies or narratives*'. The parents sought out open-ended or creative apps and programs rather than close-ended apps. They were eager for her to experience digital devices as they believed it to be the 'way of the future' (21/8/2017). They mentioned being nervous about Buttercup accessing age-inappropriate content such as bad language, adult themes and violence online, and used parental-control software to block inappropriate sites and content. They also mentioned privacy as being a concern and avoided the use of apps that required a subscription or registration process.

Buttercup occasionally used her parents' mobile phones strictly as a communication tool and would use Facetime to communicate with distant family members. Towards the end of the fieldwork period, she communicated regularly with her grandparents and cousins via MSN messenger and sent text messages using emoticons or voice and video messages. This digital activity occurred with the mediation of family members and other visitors to the home.

Buttercup's parents described her viewing habits as '*She loves watching animated movies, such as* My Little Pony, DC Superhero Girls, Miraculous Ladybird *and* Chat Noir*, anything that is mostly related to female hero stories*'. She would view these on the family television, the iPad or her father's laptop.

Buttercup used technological tools in a variety of ways, including photo-sharing, creating animations, reading ebooks, watching aminations on YouTube and playing various phonics and spelling-based games. She created photo montages of family outings and special events such as birthdays and the arrival of a new family pet.

During our first field visit Buttercup told me, '*I just love watching* Frozen *videos on YouTube. It's so fun*'. (Fieldnote 25/8/2017)

The Cruz family | Ascot Vale Melbourne Victoria Australia

Family Members: Emma, aged 5.9; Lachlan, aged 10, mother and father

Emma, aged 5 years and 9 months, and Lachlan, aged 10, lived at home with their mother and father. The family lived in a townhouse in Ascot Vale. The father was a public servant and worked full-time, and the mother worked on a casual basis in the events industry. The family identified as Australian with European heritage. The children both attended the local primary school. They engaged in various extracurricular activities outside of school hours, including sporting activities, music and dance and a coding camp. Lachlan was not a focal child in the study due to his age; however, I occasionally observed interactions between the siblings. During my field visits Lachlan was often outside playing basketball or soccer, or playing NBA2K on the PlayStation 4.

Emma began primary school the year the field work sessions commenced. She attended school 5 days a week from 9am to 3.20pm daily. She loved going to school and stated that her favourite aspects of school were visual art classes, writing long stories and playing with her friends at playtime.

Emma's parents described her as quiet, sensitive and thoughtful. She loved writing stories and her room was full of lists of words, stories and letters that she had produced. She would often play imaginary 'schools' with her stuffed toys and dolls, and taught her toys how to spell common words such as *the*, *went* and *how*. She had a passion for animals and unicorns and spent hours engaged in imaginary play with her various figurines. Her mother explained how she carried her favourite unicorn figurine around with her everywhere she went. When we first met, Emma told me that she wanted to be a vet when she grew up and live on a farm with lots of animals.

Emma and Lachlan owned an iPad each and had occasional access to their parents' mobile phones and laptop. Emma's mother introduced her to the Reading Eggs program and encouraged her to use the laptop and complete the Reading Egg tasks: '*She loves collecting eggs and choosing new furniture for her house*'. The iPads contained a range of apps, including games such as Cut the Rope and Angry Birds and electronic readers and spelling apps. The children received a Sony PlayStation for Christmas and began playing Mario Kart in the evenings. Occasionally they had family Mario Kart competitions. Both Emma and her brother were avid gamers. Lachlan taught Emma how to play video games and scaffolded her learning, '*especially when Emma gets stuck at a certain level of a game*'. (Lachlan, 23/4/2018)

Emma often searched the internet for images of animals and unicorns and information about her favourite animals. She enjoyed viewing child-created tutorial videos on YouTube and regularly created her own videos. She also visited websites based on her favourite TV or cartoon characters such as Dirt Girl, the PowerPuff Girls, SpongeBob SquarePants and The Minions.

In a discussion that took place at the start of the fieldwork period, Emma's parents expressed concern about the children's health and wellbeing regarding potential overuse of technological devices and the sedentary nature of technology use: '*You know you hear all these stories in the news about kids becoming violent because of video games, having sight problems or become addicted or lazy and inactive*'. They claimed their children would spend hours and hours searching YouTube and the internet and playing games, and that '*They would sit on the devices all day if they were allowed*' (23/4/2018). The children engaged in screen time activities for one to four hours daily,

depending on the day of the week. However, they also suggested that the devices were extremely helpful when attempting long car journeys, when a child was unwell and needed a quiet day at home or when waiting in a queue at the medical centre or on a flight, and felt that digital skills were necessary for the children's future. They expressed a need for more helpful information surrounding appropriate apps for young children and guidance regarding screen time, safety and digital wellbeing.

A summary of the families' digital literacy practices

The families in this study had many characteristics in common but also considerable variety in terms of their values and attitudes to the role of technology in their children's lives. In a recent study by Plowman (2014), parents' values and attitudes towards their child's interactions with digital technologies at home were described as either 'guarded' or 'well disposed'. The Rowe family could be considered as having a guarded disposition towards technology use, as they set strict boundaries surrounding Ryder's access to and use of digital devices and displayed a preference for nondigital materials. The Alves, Shar and Cruz families could be described as 'well disposed', meaning the children had greater freedom over and choice in their digital literacy activities. This evidenced how family digital literacy practices are closely mediated by parental beliefs and ideologies. All of the parents in the study, however, expressed similar positions relating to parenting, such as the desire to keep children safe, to support their learning and development and to ensure their wellbeing. All parents also expressed some level of concern and ambivalence with regard to navigating the digital terrain and making decisions about screen time and technology use (and/or potential overuse). This tension can be seen in the quotes from my fieldnotes below:

> *I try to read parent blogs and websites and search for Apps and programs that allow for creativity, problem-solving and thinking instead of closed, skill and drill type games and things*. Date: 14/7/17
>
> *I get really nervous about the kids' exposure to ads, marketing and also ah their security*. Date: 12/9/17
>
> *I sometimes feel guilty when the kids are sitting still on their devices for a long time*. Date: 3/4/2018
>
> *My children just started using Roblox and I'm scared … nervous about them being exposed to strangers and what their information will be used for or how it will be used*. Date: 8/9/19

Similar to Plowman (2014), in this study there were no clear links between sociodemographic and parental attitudes towards technology use. All the children were able to exercise their own preferences to some extent. While parents resourced and supported play and literacy learning and sought to ensure a balanced range of activities, children also influenced their own learning and development by choosing preferred activities and seeking out toys and games that were of interest to them. The children actively influenced their literacy interactions with the people and objects around them, although due to their youth their agency was bounded to some extent, given the powerful role of parents in establishing the local culture of the home.

Consistent with other recent studies (Carrington 2017, Chaudron et al. 2015, Marsh 2015, Orlando 2019), I observed an abundance of technologies in all the home settings, which as Carrington (2017) points out were very much part of the 'everydayness' of the homes and moulded into the fabric of daily life. The children were in daily contact with a wide range of digital tools. These devices were used for a variety of purposes such as communicating with relatives, pursuing leisure activities, finding information, completing daily tasks and socialising. All parent participants were considered 'moderate to heavy uses' (Chaudron et al. 2015) of technology and used devices in their professional and personal lives daily, although when I asked the parents about their confidence with new technologies I received a range of responses, such as '*I'm not that techny*', *'I get my husband to do the tech stuff*', '*I just have a go*' and '*My kids know more than me*'. All the homes had internet access and all children accessed the internet on a regular basis. The children used the internet to view videos on YouTube, play video games through apps such as Minecraft, Roblox and Reading Eggs, seek information, and communicate or socialise with family or friends. Over the duration of the study, new and different ways of engaging with technologies evolved as the children got older and new apps, toys, software became available. All the homes contained at least one portable tablet device such as an iPad, and consistent with recent research (Burnett & Merchant, 2020, Marsh 2020, Sefton-Green et al. 2016), my findings suggest that the portable and handheld mobile devices such as tablets and mobile phones were most popular with the children. This could be due to their portability, ease of use and versatility. Buttercup stated, '*The iPad is my favourite toy*'. Brock echoed this sentiment, saying, '*I love the iPad so much, you can just play so much on it. I play on it forever*'.

On numerous occasions, I observed children start and interact with various devices independently, without the help of their parents or older siblings. Consistent with the findings of Burnett and Merchant (2018), children in my study were engaged by the interactive features of touchscreen tablets and by the range of functions and applications available to them. Through conversations with parents and children, I found that children were introduced to new apps, software and gadgets via active mediation from parents, friends, family members, siblings and neighbours. For example, Ash mentioned that his teenage cousin taught him how to use TikTok on Christmas Day. While parents indicated that they supported their children downloading apps and often introduced and co-used new apps or programs with their child/children, they also noted that the children acquired digital literacy skills and competence through observation, practice, exploration and trial and error, and were often surprised by the children's level of competency with various tools and apps, as indicated below:

> *She could easily download apps from the App Store on her own and before she could read properly*. Date: 15/5/2019
>
> *The game is so hard, yet she plays it exceptionally well. She even reads all the content on her own*. Date: 13/2/2019
>
> *They pretty much taught themselves how to use Minecraft*. Date: 29/10/2018

My observations revealed that the affordances of portable digital devices have made them increasingly accessible to young children, who have developed the expertise and knowledge necessary to use them for a variety of different functions. An interesting observation was that four out of the five children's bedrooms were 'technology-free' zones.

The technology they used was often located in communal family living areas such as the living room, kitchen, spare rooms, playrooms or study.

Chapter summary

This chapter has offered a contextual framing for the findings chapters to follow. I have offered a glimpse into the children's everyday lives and provided insights into their family dispositions and home environments, the accessibility of the technological devices available to the children and some details pertaining to the children's literacy practices, habits, routines and behaviours.

Chapter 9 will provide detail of the specific literacy events documented throughout the study.

Chapter 9:
Assembling the findings

This chapter aims to make visible the specific digitally mediated literacy events observed in the children's homes. It will provide in-depth, contextually situated accounts of the young children's digitally mediated literacy events as experienced in their everyday lives. I use portraiture as a form of representation to authentically illustrate what I observed in the field and to capture the complexity, dynamics and subtlety of the children's digital literacy experiences, behaviours and routines, along with specific details of the contexts in which the literacy events occurred. The portraits were compiled from ethnographic methods including fieldnotes, written observations, artefacts, audio recordings and transcripts of research conversations, and from my reflexive journals containing memories, sensations, tensions and emotions.

The home moments I have chosen to include offer a strategic map and invite the reader to think and feel about the possibilities of the children's literacy experiences in their everyday settings (Leander & Boldt 2013). The findings reveal emergent insights into the children's literacy practices at one point in time rather than offering fixed and definite conclusions about literacy outcomes (Leander & Boldt 2013). As per the ethnographic methodological approach, which entailed a hybrid approach utilising multiple methods, the chapter presents 11 portraits which were purposefully selected based on the following criteria:

- to ensure representation of all children and to represent fieldwork material from each setting.
- to include a range of different types of literacy events involving different materials/technologies.
- to present fieldwork material that glowed or sparked or created a sense of wonder (MacLure, 2013).

Table 7: Outline of the fieldwork material presented in Chapter 9, including portrait titles, names of focal participants and families, and dates of fieldwork sessions

Findings chapter	Code	Focal participant/s	Ages	Portrait or field note title	Fieldwork session date	Focal family
Part 1: The Everyday	P1	Brock & Ash	3.9	Portrait 1: Just a regular Sunday afternoon	27/5/16	Alves
Part 1: The Everyday	P2	Brock	4.2	Portrait 2: 'Teleport me into the game'	13/5/17	Alves
Part 1: The Everyday	P3	Ryder	4.3	Portrait 3: Ryder's ruling passion	4/8/2017	Rowe
Part 2: Play	P4	Brock	3.6	Portrait 4: Play School Art Maker app	5/3/16	Alves
Part 2: Play	P5	Emma	6	Portrait 5: A Makerspace rocket	23/6/18	Cruz
Part 3: Texts	P6	Ash & Brock	5.1	Portrait 6: The unboxing phenomenon	1/10/18	Alves
Part 3: Texts	P7	Ash	6.2	Portrait 7: 'Wanna watch my skateboarding video?'	5/9/19	Alves
Part 3: Texts	P8	Ash	3.11	Portrait 8: A paper digital game	23/4/17	Alves
Part 3: Texts	P8	Brock		Portrait 8: A paper iPad		Alves
Part 4: Agency and identity	P9	Emma	6.8	Portrait 9: The virtual world of Roblox	17/7/2019	Cruz
Part 4: Agency and identity	P10	Buttercup	4.11	Portrait 10: Princess Fairy Tale Maker app	15/9/2017	Shar
Part 4: Agency and identity	P11	Ash	4-6 years	Portrait 11: Living in a Pokéworld	2017-2019	Alves

The portraits are organised in four sections which, applying a rhizoanalytical lens, are understood as interrelated and overlapping rather than as discrete or separate. The sections are:

Part 1: The everyday. These findings evidence the diversity of the materials (print and digital) in young children's early literacy development and the agential role of other-than-human entities in generating early literacy opportunities for children in everyday contexts. Due to my extended and immersive time in the field, I became attuned to what makes literacy exciting for the children, and the ruling passions that facilitated a personal investment in reading and writing for them.

Part 2: Play. This section illustrates the digitisation of play in everyday settings and the dynamic literacy opportunities afforded by children's spontaneous digital play encounters. I provide illustrative examples of the children's digitally mediated play and how it traverses online/offline and material/immaterial spaces, and dissolves boundaries of time, place and space.

Part 3: Text-making. This section illustrates the young children's inventive, sophisticated and playful text-making practices. Evidence of the children blurring the boundaries between consumption and production, and of their

engagement in extended textual repertoires as active and agentic knowledge-makers and co-constructors of texts, is revealed.

Part 4: Identity and agency. This section illustrates the expanded notion of self and identities afforded through the children participant's digital and online interactions. The findings show how the flexible spaces offered within the home provided the children with opportunities to explore multiple and shifting identities with materials over time and space, which created more engaged and in-depth literacy interactions. They reveal how, within the informal spaces of the home, agency was afforded by and emerged from the intra-actions between materials and children in ways that provide deep opportunities for engaging with literacy. The children's developing senses of self and social identity shape and are shaped by the potential of intra-actions between them and the family members, materials, and spaces in their everyday lives.

Each section begins with a brief introduction before presenting the portraits.

Part 1: The everyday

In this section, I present everyday literacy events occurring in the homes of participants from the Alves and Rowe families. Three portraits illustrate the children's everyday literacy events and demonstrate how literacy practices have shifted due to a range of everyday technologies. These portraits illuminate how the young children's digital literacy experiences at home were 'inseparable from their entanglement with the world' and the physical environment in which they live and learn (Hackett & Sommerville 2017, p. 389). The portraits illustrate: 1) the complexity of the children's everyday contexts, and how literacy events occurred as people and things came into relation; 2) the ways in which reading, writing and meaning-making have been modified as a result of the diverse digital and nondigital materials available in children's domestic contexts; and 3) how literacy events occurred as a result of the children's passions and interests, which often resulted in affective responses in which the children used reading and writing as a conduit to facilitate these passions.

Portrait 1: Just a regular Sunday afternoon

The first portrait, titled 'Just a regular Sunday afternoon', highlights the complexity of young children's domestic contexts. I selected it for this section because it reveals the ordinary, complex and entangled way in which the Alves family children came into relation with people and things, and encountered digital literacies within their home context. I present an episode of Ash's and Brock's day in which multiple devices, interests and activities intertwine.

The portrait presents two children, Ash and Brock (aged 3.9) from the Alves family, who are engaged in a range of literacy events occurring on an ordinary Sunday afternoon. The literacy events include asking Siri to locate a YouTube video, playing with a LEGO app and LEGO bricks, and taking part in a Skype conversation with their uncle. It is a Sunday afternoon and the children have returned home from a playdate at the local park. My husband (the children's father) is attending to household chores while I (their mother) am preparing the evening meal. The children are familiar with using digital devices and have access to a range of technologies such as the family

television, iPad and iPhone, and can use the family laptop with our support. The technologies are located in the communal family spaces and are nestled among an array of traditional toys such as LEGO bricks, train tracks, print books and craft activities. On occasion, I observe an iPad precariously stacked under a pile of books or spot a lone mobile phone strewn on the couch. The children have access to devices at certain times of the day and demonstrate competency and independence with the digital tools. The literacy events described in the portrait below occurred over the course of approximately 30 minutes while Ash and Brock were engaged in free play.

> *Ash and Brock (aged 3 years and 9 months old) eagerly burst through the front door, having arrived home from a playdate at the local park. Armed with a digital device each, they position themselves in the comfort of their bean bags as their mother cooks dinner. Brock can be heard speaking to Siri: "Siri,* Peppa Pig *on YouTube." He handles the iPhone, interacting with the apps utilising both hands, two thumbs and two index fingers simultaneously. Ash sits attentively prodding at the iPad, manipulating the virtual LEGO pieces, creating a virtual spaceship. He holds the iPad in the air, mimicking the sound and movement of a spaceship. About five minutes later he rushes over to the LEGO Duplo tub and commences building a physical spaceship out of LEGO bricks and compares this to the one on the screen. Suddenly a flicker of light appears from the laptop perched on the kitchen table as the familiar sound of the Skype ringtone alarms. Ash immediately clicks the green accept icon and the children launch into a Skype conversation with their uncle, talking over one another excitedly. The excitement on their faces [is] evident as they wave at their uncle through the screen. They show him paintings they crafted at kindergarten as he sits on the other side of the world, revealing scenes from his bedroom window of the tree-lined Salzburg streets. Minutes pass and Brock tires of the Skype conversation and turns his attention to the craft materials overflowing from a basket slumped in the corner of the loungeroom. He tips the basket out and commences piecing together a wooden alphabet jigsaw puzzle.*

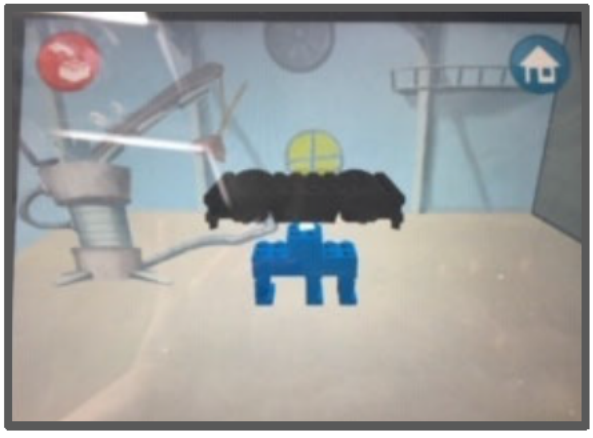


Figure 8: A screenshot of Brock's LEGO animation created using the LEGO Junior App

Portrait 1 presents a typical, busy afternoon in the Alves family home. Brock and Ash engage in a range of literacy events such as online viewing on demand, virtual communication with a distant relative, digital gaming on a tablet device and use of AI to address leisure interests. The digitally mediated literacy events occurred alongside conventional literacy events such as playing with physical LEGO blocks and jigsaw puzzles, demonstrating how 'digital activities have sunk into everyday life' (Stephen 2020, p. 59). The portrait illustrates how the children move in and out of engagements with material and immaterial objects such as the iPhone, iPad, Skype software, relatives, LEGO bricks, wi-fi connection, beanbags and YouTube. They draw upon multiple social practices (such as communication via Skype with family members and viewing a YouTube clip) and modes (such as movement, sound effects, speech and image) which marks them as having autonomy in their literate behaviours and being afforded various literate identities. The children have been inducted into the cultural, social and material practices of family life such as communicating via Skype in which the use of digital technologies is very much intertwined in the family's daily activities, routines and rituals. The portrait exemplifies the complicated, agentic and situated contexts in which the children developed early literacy, in which digital devices are woven into the fabric of daily family life. Importantly, it illustrates how the children's digital literacy encounters are not fixed or static, but occur dynamically in overlapping assemblages and entanglements as part of the fluidity of everyday life, and emerge from being part of a family in which using technologies for domestic tasks, leisure, and work or study is merely an everyday activity.

Portrait 2: Teleport me into the game

Portrait 2, titled 'Teleport me into the game', further highlights the complexity of the Alves family home context, presenting an array of agents, modes and semiotic systems that constitute what counts in contemporary meaning-making. I use this portrait to illustrate how new ways of meaning-making have emerged with the diverse materials available to the children in their daily life. The portrait exemplifies how literacy events are not solely human endeavours but rather a relational practice that entails a web of humans, nonhumans, meaning-making practices, and literacies.

> *Brock (aged 4 years and 2 months) was introduced to a digital game called Skylanders by a friend at kindergarten with an older brother who is a 'gamer'. He received a second-hand Nintendo Wii console and plays the Skylanders game regularly with his brother and father. The game has a set of physical toy figures that provide access to the different characters, spaces and features within the game. This works by placing a particular figure on a round portal peripheral that comes with the game; the related character then instantly appears on-screen. Brock becomes enthralled with the digital game. The game involves solving various challenges and puzzle elements. He spends hours roleplaying with the Skylander figurines and transfers these into his drawings, writings and craft activities. He uses the YouTube search engine to type in the letters SKYL to seek out animated clips about Skylanders. He undertakes internet searches to locate images and information about Skylanders. He saves his birthday money to purchase new figurines from a local video-gaming store.*

Book Week is fast approaching. Book Week is celebrated in schools and kindergartens in Australia and entails children and educators dressing up as their favourite book characters, reading and celebrating books which have been nominated for a Book of the Year prize and engaging in book-related activities. Brock's kindergarten has tasked the children with bringing their favourite book to kindergarten and wearing a costume to represent a character from the book. It is late Sunday afternoon. My husband and I are attending to the household chores and preparing for the busy week ahead. I empty out Brock's kindergarten bag to find a letter from the kindergarten reminding parents of the upcoming Book Week celebrations. I frantically ask Brock to decide on a book character he would like to dress up as. Brock locates his favourite book from his bookshelf, which is an information text about Skylanders characters. He asks his dad to help him create a Skylander costume out of cardboard. Brock chooses his favourite Skylander figurine, the Tree-Rex, to base this costume on and locates Tree-Rex in the print book. Brock also suggests looking up Tree-Rex on Google to find better images of him. Brock and his father spend the afternoon making the costume out of whatever materials they have available (as this was not planned). They locate old boxes, paper, sticky tape and leftover paint and experiment with different ways of constructing the materials until they create a Skylander costume. Brock finally puts on the costume and shuffles around the loungeroom in a manner resembling a Skylander. He suggests that maybe [his dad could] "Teleport me into the game' like his toy figurines. He uses sticky notes to locate sections of the book he wishes to present to his teachers and peers and plans what he wants to say about the Skylander character, the book and the costume. Brock's father noted, 'That evening he couldn't sleep because he was so excited about showing his costume to his teachers and friends.'

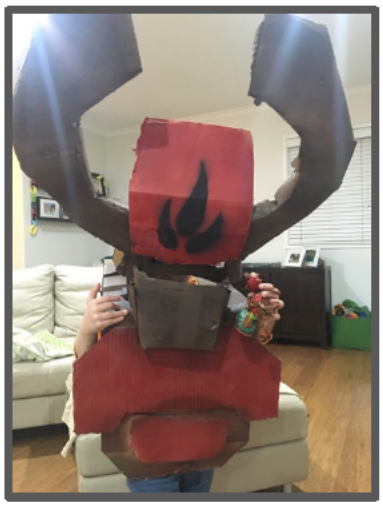


Figure 9: Brock and his father's constructed Book Week costume titled 'Tree-Rex'

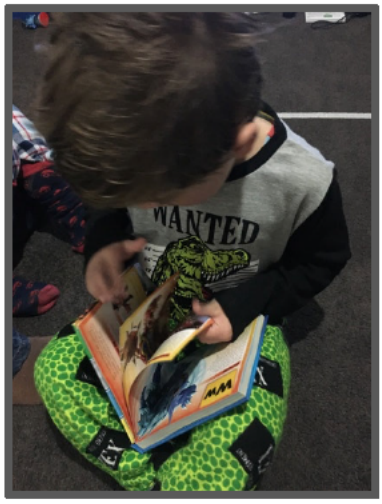


Figure 10: Brock locating aspects of the Skylander text he will present at the kindergarten Book Week celebration

Figure 11: Brock and his brother playing Skylanders on the Nintendo Wii gaming platform in a communal family space in the home.

Portrait 2 reveals Brock engaged in an assemblage of role-play, reading, craft, dress-ups, digital gaming, internet searching, communication, drawing, construction and scaffolding from his father as the complex entanglement of elements come together to create literacy possibilities for him. His meaning-making practices are very much characterised by a complex array of multimodal, multimedia, semiotic and traditional resources. Brock does not differentiate between digital and nondigital materials, instead engaging with whatever tools and modes are available to him, and hence his literacy practices emerge in purposeful, creative and spontaneous ways. He interacts with digital technologies such as the Nintendo Wii digital gaming platform, Google search engine and YouTube, and these shape his early experiences of literacy in the home and foster a mastery across a range of

modes (such as words, images, sound and computer code) with a variety of literacy materials, both conventional and digital.

Portrait 3: Ryder's ruling passion

The final portrait in this section showcases Ryder from the Rowe family and his ruling passion (Barton 1998) of the solar system. Through the longitudinal nature of the study and fieldwork material gathered across an extended duration this meant that the children's continuing and long-term interests and passions were evident: for example, Brock's Skylander-related activity or Ryder's fascination with the solar system. Ryder was aged 4 years and 3 months and had an intense interest in the solar system that lasted for several months. The digital literacy events outlined in the portrait occurred over a period of two months. The fieldwork material was gathered through observations of Ryder in the family home and also by Ryder's mother from his kindergarten setting. Ryder's parents set strict boundaries around screen time and technology use, limited his time on devices and encouraged and celebrated his interactions with non-screen-based activities. Ryder's parents were very active in his early literacy development and provided rich materials, resources and support for Ryder to acquire early literacy skills.

> *Ryder bounds down the hallway; bare feet thumping on the timber floorboards. He welcomes me with a hug. I greet Ryder's family as I follow Ryder and his younger sister down the long, narrow hallway into the crowded playroom. A laptop is carefully poised on the entertainment unit. The laptop is hooked up to the family television mounted on the wall. Ryder's parents have strict rules about screen time and only allow the use of screens for educative purposes and for limited time-fractions.*
>
> *The YouTube tab is open on the laptop and Ryder assertively types 's o l a' into the search bar. Immediately the text 'The Solar System Song' appears. He presses on the link and without hesitation Ryder and his younger sister jump up and down, dancing and singing along with the words. Ryder's voice booms, 'There are eight planets in the solar system, we revolve around the sun.' The children prance around the playroom interacting with the clip – an assemblage of singing, dancing, screen, props and toys, using their bodies to enact the actions of the planets.*
>
> *The clip ends and Ryder pounces on the device, confidently navigating the YouTube search bar, scrolling through the 'What's next' tab. Aware that YouTube is a source of valuable information, he states, 'Do you know Pluto isn't a planet?*'
>
> *Muttering under his breath, he rejects some clips: 'That's for babies,' I hear him moan while settling on an animated clip titled 'Planet size comparison'. He presses the 'Skip ad' link.*
>
> *Ryder appears to have viewed the clip several times, as he sings along word for word. The children engage in embodied play where they act out scenes from the animation using a ball to represent a planet.*
>
> *Ryder's mum enters the room and signals to the children that only 10 minutes of screen time remains.*

Ryder protests, demanding more screen time.

After several more solar system animations, Ryder's mother re-enters the room and turns the laptop off, and asks Ryder to go and play in the other room. I follow Ryder into the study. The room is strewn with books, paper, writing implements, soft toys, paper, crayons and playdough. Posters fill the walls. Several nonfiction books about the solar system are scattered on the table and floor while a large poster of the solar system looms over us, positioned on the wall hovering over the study-desk. Ryder suggests, 'Let's make a book about planets.' Ryder asks me to assist with stapling the pages together, while he searches for a pencil.

Figure 12: Ryder's desk in the playroom, showcasing a range of materials related to his ruling passion of the solar system

Ryder continues to relay facts about the various planets as he enthusiastically writes the planets of the solar system on the paper, occasionally looking up at the poster for assistance with spelling. Within minutes he hands me the text below:

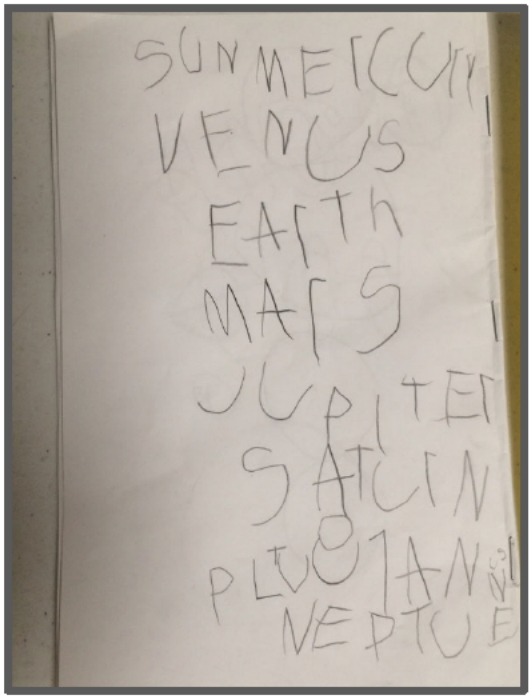


Figure 13: The contents page of Ryder's, book listing the sun and the names of the planets. Date:4/8/2017

I return to Ryder's house four weeks later to be greeted by Ryder eagerly waving a book in his hands. 'I made this for you. It's about the solar system. I made this for you,' he states and passes me the book. Ryder then suggests we go and play with the toy trains.

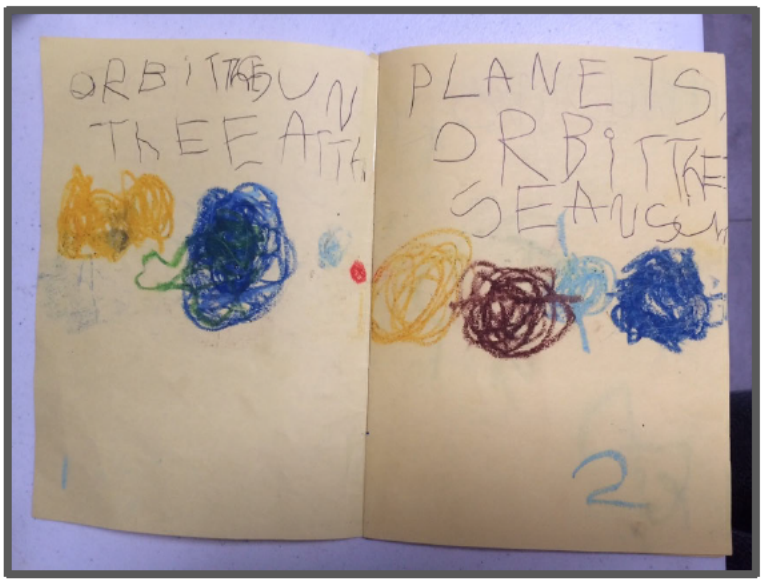


Figure 14: Pages of Ryder's solar system book, created during a fieldwork session

Ryder's mother explains how Ryder spends much of his spare time researching information about the planets. She explains how this 'deep passion or interest' is mostly self-initiated. He memorises information, diagrams and the spelling of the words.

She follows up a few days later by sending me the following photographs via email. The first is a model of the solar system created at home using bottle tops, wool and a cardboard roll. The next was created at kindergarten, using newspaper, paper and wool.

Figure 15: A model of the solar system created Ryder using by scraps of materials found within his home.

Figure 16: A three-dimensional model of the solar system created by Ryder and displayed in his kindergarten classroom

The portrait reveals how Ryder developed an enduring interest in the solar system, and this grew and spread in a range of forms and intersected with a range of daily literacy practices. I observed Ryder seeking out information about the solar system through various modes such as YouTube, print books, posters and speaking to adults about the topic. Ryder's enduring interest in the solar system and his willingness and desire to communicate and share this passion led to the authoring of a range of texts involving print books, three-dimensional models and diagrams. The information texts (Figures 13-16) included a list of the planets in order, facts about the planets and detailed diagrams. Ryder demonstrated an awareness of the structures and features of nonfiction texts by including factual information, a diagram, a title and numbered pages. Ryder's passion was encouraged and supported by his family

members, who promoted the extension of this knowledge and inspired future literacy learning. For example, they purchased Ryder new books related to the topic of interest, took him to the museum to explore the topic further, sought relevant child-friendly apps and engaged in frequent discussions about the topic.

Ryder's parents demonstrate a restrictive or reductive (Plowman 2014) stance regarding technology use in the home and a preference for print-based, traditional literacy materials such as puzzles, print books and arts/crafts. While Ryder's technological interactions were strongly mediated by his parents, he was able to exercise his own preferences to some extent. For instance, he was able to choose which YouTube videos he viewed, he negotiated an extension of screen-time activity, and during a separate fieldwork session he initiated digital activity by asking his father if he could show me a new drawing app the family had recently downloaded on the iPad.

Summary

It is important to note that while the Alves and Rowe family homes contained technologies such as iPads, mobile phones and internet-connected toys and laptops, the homes also contained an abundance of traditional literacy resources such as print books, crafts, jigsaw puzzles, role-play activities such as puppets and dress-ups, drawing implements and board games. Furthermore, in all my observations of children's digital literacy events, these were always carried out alongside or 'intermingled' with the 'old', or more traditional, types of literacy. This was evident in the portraits presented in this section, in which Ash, Brock and Ryder merge traditional literacy events such as book-reading, writing and drawing with newer literacy events such as making a Skype call, digital gaming and searching YouTube for information. Portrait 1 revealed Brock playing across digital and nondigital contexts simultaneously as he engaged with a LEGO app and also LEGO bricks. Portrait 3 revealed Ryder's 'ruling passion' (Barton & Hamilton 1998) for the planets and this emerged through and alongside a variety of virtual and physical materials. Affective intensities were evidenced in Ryder's sustained, long-term intellectual and emotional investment of the literacy practices surrounding his ruling passion. The portraits revealed how digital technologies were an important (but not dominant) feature of the children's home lives. Even though the children enjoyed playing digital games or watching videos, they also enjoyed performing other nondigital activities and spent their free time engaged in a range of traditional activities such as drawing, imaginary play, outdoor play, baking and playing with a range of toys. My observations revealed that digital technology use was balanced with many other activities, including outdoor play and play with nondigital toys. Importantly, throughout the fieldwork period and across the four families, I consistently observed the child participants' enthusiasm for and attraction to nondigital tools to be equally as evident as that for their digital activity.

The distinctness of each family context is evident above, as variation was noted with regard to the parent mediation of digital activity, reflecting their various parental ideologies and attitudes towards technology and literacy development. Mediation of the children's usage of the devices varied greatly, from digital interaction that was mostly controlled by adults to completely unsupervised access (e.g. a child using a smartphone using a gaming device such as a Nintendo Wii on their own). In most cases there was some level of supervision (whether direct or

indirect), and evidence of the use of 'blocking' technology to protect the children from accessing unsuitable content. Importantly, all children were able to exercise some level of autonomy over their digital literacy activity.

These findings showcase the children's shifting reading and writing practices within their complex everyday environments, and the specific literacy events that textured the families' everyday practices in digital contexts. The portraits illustrate how the child participants used reading and writing to support and facilitate their passions and textual production.

Part 2: Play

In documenting young children's literacy events in their domestic contexts, I have gained insights into their fluid, creative and entangled literacy play encounters. In this section, I focus specifically on the technologisation of play in everyday settings and the dynamic literacy opportunities afforded by children's spontaneous play. In Part 1: The everyday, Portraits 1-3 revealed how digital technologies were an ordinary part of children's contemporary environments and children were simply 'being children' and engaging with the materials, toys and objects which inhabited their everyday world. The assemblages of play presented in this section exemplify the materially rich nature of children's play in the digital age, as the children move seamlessly across online and offline and material and immaterial boundaries (Burnett et al. 2014). To make visible my understandings of the increasingly digital nature and complexity of children's literacy play, I offer two portraits from the Alves and Cruz family contexts. The first portrait exemplifies Brock's imaginary and dramatic play and how this converged with digital play.

Portrait 4: Play School Art Maker app

> *Brock is aged 3 years and 6 months. He sits on the loungeroom floor among an assortment of soft toys, a plastic boat and an iPad which is tossed out on the carpet rug in front of him. He carefully positions the soft toys in a semicircle, as though they are sitting attentively as part of a captive audience. An episode of* Play School *is airing in the background on the family television mounted on the lounge room wall. The song 'Open wide, come inside, it's* Play School' *floats through the room. Brock snatches the iPad from the floor, swipes the iPad and taps the Play School Art Maker app icon.*
>
> *He selects 'create animation' and chooses a variety of characters from the display. He selects the characters Big Ted, Jemima, Little Ted and Humpty. He chooses a fantasy scene and then deselects this and chooses an underwater scene instead. He presses the red record icon and begins to animate the characters by moving them up and down and adding a voiceover to the animation. He records the animation:*
>
> *'Hi, I'm Big Ted.'*
>
> *'Hi, I'm Jemima.'*

'Hi, I'm Humpty.'

'Let's have some fun. Brrrrr, brrrrr.'

'Who wants to come?'

'Me, me!'

'Let's go.'

He plays back the animation several times. He turns to me with a large smile, seemingly proud of what he has created and says, 'Wanna watch? Look'.

Brock carefully positions the iPad back on the carpet rug, collapses the iPad cover and turns to his stuffed toys. He uses these toys to mimic the animated scenario between Big Ted and Jemima. 'Hi, I'm Big Ted.' 'I'm going on my boat. Shshshshshsh. Wewewewewe.' Brock continues the dramatic play scene for several minutes before running to the window to see what his brother is doing outside.

Figure 17: Screenshot of Brock's *Play School* animation taken from the iPad

The portrait above reveals a play episode involving an animation app, traditional toys and a *Play School* television episode. The play spaces within the Alves family home were filled with a range of traditional toys such as trains, print books, dress-ups and puzzles, and digital tools such as a television and iPad. It was early afternoon and Brock's sibling was outside in the sandpit. Brock was in the lounge room engaged in free play. The family television was airing a *Play School* episode in the background. Brock engaged in various narrative representations using digital animation and role-play. The *Play School* app had been downloaded for the children a few weeks earlier (after the parents saw it mentioned on a parenting blog) and the family had created several animations together.

Brock's father mentioned, '*Brock can confidently use the app by himself to create short animations and he loves it. So far, he has made about twenty of so different scenes*' (26/3/16). Portrait 4 captures Brock engaged in exploratory play in his home environment using the various modes available. As noted in the portrait, the boundaries between the physical and virtual blurred for Brock, with all play objects – the iPad, stuffed toys, plastic boats – crossing into the realm of imagination and the narrative structures of dramatic play inside and outside the online world.

Portrait 5: A Makerspace rocket

Portrait 5, titled 'A Makerspace rocket', reveals Emma (aged 6 years) from the Cruz family engaged in a play episode with a Makerspace kit. Makerspace kits blend design, art/craft and technology and involve a range of materials such as alligator clips, cables, playdough, circuit boards and cardboard. They expose children to aspects of computer coding. During the field visit, I observed the materiality, fluidity and messiness of the entangled bodies and things in the Makerspace episode. The interweaving of the material and (im)material surfaced as the hybridised Makerspace assemblage progressed (Burnett et al. 2014). Emma and the various materials such as wires, playdough, buzzers and bulbs come into play together in ways that were not always intentional; hence the materials and Emma were active agents in the moment.

> *It is early evening and Emma's father has just returned home from work. Emma's mother is helping her brother with his homework. Emma's father sits at the dining table, about to eat his evening meal. Emma joins her father at the dining table and proceeds to empty the contents of a Makerspace kit beside him. The Makerspace kit was purchased through Emma's school's Book Club program. In a discussion with Emma's mother (at the end of the fieldwork session), she mentioned that the Makerspace kit had been used several times previously and Emma's brother taught her how to use it. Emma spreads out an assortment of materials across the table and begins tinkering with them.*
>
> *Emma thumps her fist into the colourful playdough and hums softly to herself. Playdough, a battery pack, electrical wire, buttons, buzzers, beads, LED bulbs are sprinkled across the glass dining table. Tap, tap, thump, thump.*
>
> *Dad: 'This looks interesting, Emma.'*
>
> *Emma: 'I'm making the rocket blast off to space.'*
>
> *Dad: 'How?'*
>
> *Emma: 'I need to make a circuit. See?' She points to the instruction manual. 'All the bits must fit together.'*
>
> *Emma follows the instructions carefully, concentrating on the task at hand – completely engrossed in the moment. Minutes pass and Emma barely looks away from the task. Intent, she moves wires carefully*

from one part of the playdough to the next. She carefully watches the bulb to inspect when it will light up. She carefully crafts the rocket out of the coloured playdough. The rocket is erect on its perch, yet fails to light up.

Emma utters, 'Dad, I need help.'

'Let's look at the instructions again,' he responds.

Emma's father points to the section of the instructions that will support her in completing the circuit.

Emma revises the instructions, pointing to each step with her finger, ensuring she has completed each command. In order to complete the electrical circuit, the components must connect so that the electricity flows in a complete circuit. Aware that she must have a complete circuit for the rocket to light up, she states boldly, 'There must be a break in it. It's not working. I need to fix him.'

Suddenly, Emma disregards the instruction booklet and experiments with moulding the playdough differently over the wires. She uses trial and error to try different ways of positioning the wires and playdough.

'Let's try this,' Emma's father suggests, showing Emma how to position the playdough around the wires.

Emma continues to move the wires in different ways, experimenting with the different ways the materials meld together.

Being guided by the humming of the electric circuit and using her fingers to feel her way through the playdough, she suddenly hears the 'Buzzzzzz' she has been eagerly waiting for and delights at seeing the rocket light up. She yells and jumps up and down. 'Yay power! I'm an astronaut! The circuit's working. We're going to the moon in my rocket, going to the moon pheww, pheww!' Emma's excitement at seeing the rocket light up fills the room. 'Good work, Emma!' her brother yells from the other side of the lounge room. She hastily pulls the circuit apart, flinging bits everywhere, and enacts a rocket with her arms and legs, blasting off into the air.

'Can I take a photo of my rocket with your phone?' she asks.

Emma, looks at me. 'Let's make another one now, wanna help?' Emma flicks through the instruction booklet, seeking out another task to make.

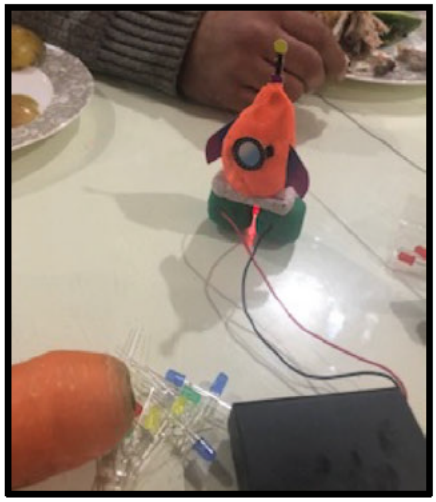


Figure 18: The Makerspace kit play episode occurring at the family's dinner table. Photograph taken by Emma

This example highlights the complexities of contemporary play in everyday practice, in which the diverse materials available to Emma open up possibilities for imaginative, creative and intuitive play. Agentic practices for Emma were evident as she directed her own learning, explored personal interests and made choices about what she would create and how she would undertake the task. The playful tinkering described in the portrait shows Emma being guided by the feel of her fingers and the sound of the electrical circuit as she explored the possibility of the formation of an electrical circuit: that is, being guided by the materials. The materials took on a multitude of forms and could be considered active agents in this assemblage. Sustained engagement and concentration were evident as Emma persisted with the task and requested to undertake another Makerspace task. This could suggest Emma was engaged in deep learning through the task. Affective and embodied responses of joy and enthusiasm were evidenced as Emma jumped up and down with excitement as the rocket lit up. Within the context of the home, the open-ended nature of literacy learning and interactions positioned Emma as active in her learning (via tinkering with a Makerspace kit or engaging with various apps) and provided opportunities for new and different ways of becoming a reader and writer.

Summary

This section presented Brock and Emma's literacy play encounters in their home settings and showed how these were frequently digitally mediated and crossed online/offline and material/ immaterial spaces (Burnett et al. 2014). Brock and Emma did not differentiate between the online and offline spaces and instead moved fluidly across the spaces in whatever modes were available to them. This portrait highlights the shifting nature of contemporary play because of the diverse technologies available to the children and provides examples of digital literacy play as intra-active relationships between people, materials and contexts (Barad, 2007). The findings in this section evidence that the digital was an integral part of the children's play, in which the material (screens, bodies, toys, crafts, animation software, wires) and (im)material (online games, wi-fi, joy, excitement, motivation, attitudes, interests, desires, sensory experiences) were interwoven, creating new contexts for early literacy learning.

Part 3: Text-making

In this section, I narrow the focus to illustrate the text-making practices occurring in the children's contemporary home environments and explore the changed materiality of text-making through the texts, tools and resources available to the children. I conceptualise the notion of text in an expanded way to encompass any artefact of production whether print, screen or craft-related production (Rowsell 2020). I present three portraits from the Alves and Rowe family homes to illustrate the children's inventive and playful text-making, in which more complex forms of text-making were evidenced due to the children's expanded access to a broad array of materials and diverse experiences. Evidence of the children's new dispositions towards texts and inventive ways of working with texts are demonstrated. The findings reveal how the child participants blurred the boundaries between consumption and production of texts and digital content and engaged in extended textual repertoires as active and agentic knowledge-makers and co-constructors of texts. The portraits reveal how contemporary authorship is nonlinear, as the children from the Alves and Rowe families remix texts and layer personal experiences, popular culture interests and fragments of other texts into their own text-making.

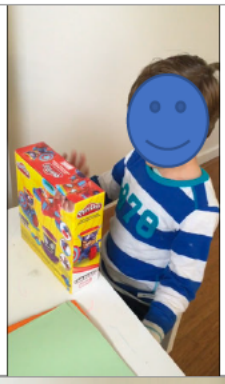
Portrait 6: The unboxing phenomenon

The siblings Ash and Brock from the Alves family are aged 5 years and 1 month. They recently received an *Avengers* playdough kit as a gift from their grandparents. The kit is designed so that children will play with the playdough using the various implements provided. Both children are interested in superheroes and have a range of superhero costumes which they frequently dress up and role-play superhero scenes in. As part of their leisure activities the children have begun viewing a range of videos (mostly animations) on YouTube. They enjoy viewing unboxing videos showcasing children unboxing products such as Kinder Surprise eggs, collectable items such as cards, confectionary, and toys including surprise toys, superhero toys and LEGO kits. Unboxing videos are a phenomenon which comprises adults or children opening a commercial product, narrating their actions, using the product and offering a critique of the item. Child-created unboxing videos in which a child opens a toy and describes it, assembles it and reviews it have become popular. This peer-produced online content can be defined as 'an act or instance of removing a newly purchased product from its packaging and examining its features, typically when filmed and shared on a social media site' (Oxford dictionary 2022). This portrait, titled 'The unboxing phenomenon' was located within the photo library of my iPhone. I was upstairs at the time and the children coordinated, filmed and co-produced the unboxing video.

> *A video is located on an iPhone. I watch it back with a grin on my face. 'Kids, when did you make this video and who filmed it?' I inquire, intrigued by the video's presence in my iPhone photo library taking up precious memory space. 'I videoed my brother doing unboxing when he got the playdough toy from Nanny.'*

Video: Ash is sitting at his desk with the playdough box poised in front of him. A serious look on his face. Ash inspects the toy package carefully. He looks up at the camera. Brock is filming the scene. Brock is standing on a chair and points the camera down towards Ash:

Timestamp	Video still images	Transcript	Action
0.00-0.08		Hi, I'm Ash. We are going to open up this set.	Ash looks up at the camera and then inspects the toy packaging.
0.08 – 0.19		This set comes with 3 characters, 3 vehicles and it has (ah) 3 lids. Well, it says it comes with 3 vehicles…	Ash points out the various aspects of the packaging which indicate what is included within the set. He uses hand gestures to point and facial gestures to show emotion such as excitement and surprise.
0.20-0.54		Well I don't know if you can mix it (playdough) up, but my playdoughs are all mixed up. So, kids, kids, kids – don't mix up the play doughs – that will be awful. I don't like mixing my playdoughs.	Ash shakes his head and uses facial expressions to warn viewers not to mix the playdoughs up.

0.55-0.82			It comes with Captain America and he has a shield (see). The shield goes on the bike. Where's the bike? Oh here it is. It's pretty cool.	Ash waves his hand, signalling looking for the image of the bike on the packaging
0.84-1.03			ASH PAUSES (to build suspense) Soooooooo kids, lets open up.	Ash begins to unbox the toy, exaggerating the sound of the box opening and plastic rustling.

This example illustrates Ash and Brock's inventiveness as they engaged in a non-traditional form of digital content creation which showcased them as active producers of texts. The children drew on texts they had viewed online and used these as models to mimic the structure and elements of an unboxing video, reproducing, replicating and remixing this content. Ash mimicked the surprise-and-reveal format of an unboxing video by building suspense prior to opening the product. In the portrait, complex forms of text-making are evident as Ash mimics the dialogic practices of movement (using his hands to gesture to certain aspects of the toy packaging) and sounds (exaggerating the sounds associated with unwrapping a product) associated with this textual practice. Additionally, traditional and newer literacies merged as the children engaged in digital literacy learning and conventional literacy learning, which were developed in unison (Kress 2003). Ash engaged in traditional literacies such as decoding and encoding the text on the packaging – textual and structural features of a narrative, through which he demonstrated an understanding of audience as he introduced himself, offered a clear purpose for the video and created a clear beginning, middle and end regarding the video content. Yet Ash had also developed newer literacies, such as the production techniques of the online videos he viewed, such as reading the information on the box prior to the unboxing, using the surprise-and-reveal format to build suspense and showing the audience the parts of the toy while also offering a critique of the toy.

Portrait 7: Wanna watch my skateboarding video?

The next portrait, titled 'Wanna watch my skateboarding video?' revealed Ash's (aged 6.2 years) recent passion for skateboarding. For a few months, Ash has been learning how to skateboard. He requests that his parents film

him skateboarding so he could watch the footage back and improve his technique. It is a rainy day and Ash is disappointed he cannot go to the skate park. Several months earlier, on a recent domestic flight, as a means of passing time, Ash and I tinkered with the iMovie app located on the iPad and co-constructed a brief iMovie about the family, using the app's trailer feature which allows users to create short, 60-second trailers.

One rainy afternoon Ash scrolls through the iPad photo library and views the recent skateboarding videoclips. He decides to make a video about his love of skateboarding to use for his upcoming 'show-n-tell' at school in the week ahead. He initiated this activity.

Moments later, Ash can be found positioned neatly in his beanbag, poking and tapping intently at the iPad.

He props the iPad up on a book and positions it towards the Nintendo Wii gaming console. He plays a skateboarding video game for several minutes and video records himself engaging with the digital game.

He then moves to the dining area armed with his skateboard and iPad.

Ash films himself examining his skateboard and narrating various elements of the skateboard, carefully describing the skateboard's bearings and deck.

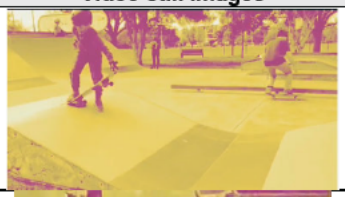
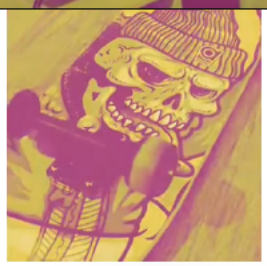
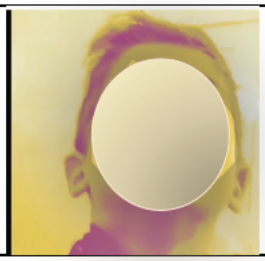
He returns to his bedroom and positions himself at his beanbag. About 10 to 15 minutes pass and Ash is busy poking and prodding at the iPad. He selects the iMovie app. He drags and drops various video clips from the iPad photo and video library into the app. Ash makes careful considerations in regards to choice of music, filter, text, animations, transitions and pace. I ask him how his project is going and he says, 'I need it to look cool like the videos I watch on YouTube. This music sounds cool.' About 20 minutes later he emerges from his bean bag. 'Wanna watch my skateboarding video?'

Video transcript:

'This is Ash and I'm going to do some epic tricks.' The video clip begins with Ash skating down a half-pipe.

'This is my skateboard. This is the back of it. Look at the cool design. These are the wheels. They have really fast bearings.'

The video lasts for 1:28.

Timestamp	Video still images	Transcript	Action
0.00-0.14		*This is Ash and I'm going to do some epic tricks.*	*Ash skateboarding down a half-pipe.*
0.15-0.42			Ash skateboarding down a half-pipe and pivoting.
0.43-0.99			Ash playing a skateboarding video game on the Nintendo Wii.
1.00-1.24		*This is my skateboard. This is the back of it. Look at the cool design. These are the wheels. They have really fast bearings. It has grip tape to make me grip better.*	Ash pointing out the different parts of the skateboard.
1.25- 1.28		*This is me.*	*Ash turning to face the camera and nods at the camera.*

This portrait demonstrates Ash's complex form of authorship as he integrates texts of all kinds – moving images, still images, music, narration and print – to assemble a multimedia product. The new forms of skills and dispositions Ash appears to be exhibiting with regard to the creative discourses of video production are evident. Ash's interactions during the videomaking process reveal how he made careful choices about the semiotic resources and materials that could provide him with more powerful modes to express his intentions. We also see Ash experimenting with identity and using the composition of the multimedia text as a form of self-expression. Within the video Ash demonstrates sophisticated choices about the style of the text, utilising sepia effects to represent a certain style, creating the mood of the text through his choice of music and pace, and using informal language and tone to represent a casual, almost 'street-like' feel. The video composition tool allowed Ash to position himself and be positioned as knowledgeable, inventive and creative. The portrait showcases him as confident and competent with the material objects, the software and the creative discourses of digital content-making.

Portrait 8: A paper digital game and paper iPad

Below I present two artefacts which together form Portrait 8. The artefacts illustrate the further convergence of old and newer textual practices as Ash and Brock blur boundaries between digital and paper and home and school. The first artefact was collected from the Alves family home. The 3 year-old-child created a drawing or plan of a new video game for his mother's mobile phone. Ash attended kindergarten three a week. and often brought artwork and crafts home from kindergarten and shared these with his family. There is a shelf located within the family dining area dedicated to the various drawings, paintings and sculptures created by Ash at kindergarten. These were celebrated by the family and photographs of the artwork were sent to Ash's grandparents and other family members.

> *A three-year old boy is rummaging through his backpack. He has just returned home from kindergarten and is eager to show his mum something as a matter of urgency. 'I made this,' he boasts. He exhibits a scrunched-up piece of A5 paper from the depths of his kindergarten bag. The paper has purple marker scrawled all over it. 'Oh wow, I love it. Can you tell me about it?' says the mum in an animated voice. 'This is a new game for your phone,' says the boy. 'You press start here. Here are the characters. Here is the baddy. You need to get here to get points and get stuff.' The boy makes a range of sound effects and starts enacting the movement and sound of a video game using his body.*

Figure 19: Design of a digital game App for Ash's mum's iPhone

In this example of a video game played on paper, Ash merges old and newer literacies as he draws using the traditional media of paper and markers to interact with a text with digital aspects. New and old converge as he

plays across paper and digital formats, and as he changes the paper drawing to a toy and shifts from artist to designer, Ash blurs the boundaries between online/offline, digital/analogue and real/imaginary.

Similarly, the next artefact illustrates Brock transporting his favourite toy (the iPad) into his technology-free kindergarten environment after being was asked to create his favourite toy out of construction materials during a session at kindergarten. Brock, with the assistance of his kindergarten educator, created an iPad out of cardboard and paper. He engaged in imaginary play with the iPad, acting out various scenes of familiar iPad use such as communicating with his grandmother, taking selfies and playing a digital game.

Brock: 'Look what I made at kinder today.'

Mum: 'Wow buddy, that looks great, what is it?'

Brock: 'My iPad.'

Mum: 'Oh, I love it. Why did you make an iPad?'

Brock: 'We had to make our most favourite toy ever. I made my iPad.'

Mum: 'Great, can you tell me about it?'

Brock: 'Yer, you press it and I message Nanny, watch toy videos, go to the Appstore an get new cool games. It has the ahhh Apple sign, see?' (points to the back of the iPad)

He clicks on the camera icon and engages in imaginative play, taking photographs around the loungeroom, and selfies of himself pulling faces at the camera, muttering to himself 'Click, selfie, pow pow.'

Figure 20: My favourite toy: Brock's paper iPad, created at kindergarten. Photograph taken by Brock

These artefacts depict Ash and Brock mobilising what they know from home and transporting this knowledge into their formal educational settings (Dyson 2003). The findings suggest these new ways of doing literacy (e.g. the distributed, co-produced and remixed nature of contemporary texts) are blurring the boundaries between home/school, formal/informal and online/offline. This notion of children bringing their digital lifeworlds from home to school or school to home (the in-between or liminal spaces) is also presented in various other observations (e.g. Portraits 2, 3, 8 and 11), for example in Portrait 4 in which Ash created a video at home and requested it be emailed to his school teacher for show'n'tell, and Portrait 8 above, where Ash (at kindergarten) designed a new game for his mother's iPhone.

Summary

This section illustrated how the children found new ways to work with, create and engage with digital and nondigital texts. The portraits reveal that the children's textual practices were transformed by everyday technologies, resulting in an extended repertoire of textual production. The children pursued new ways of remixing and authoring sophisticated texts and creating their own digital content, demonstrating high levels of creativity and expertise. The text-making assemblages evidenced the children layering their personal interests with popular culture references and other texts they viewed, and remixing these within their own textual creations. This section argues for the need to think about texts in enlarged ways due to the material changes occurring in daily life.

Part 4: Identity and agency

In the final section of this chapter, I examine the potential offered by digital spaces for young children's identity development. The flexible spaces offered within the home contexts provided the children with opportunities to explore multiple and shifting identities with digital and nondigital materials over time and space. This afforded them more engaged and in-depth literacy interactions, providing infinite possibilities for early literacy learning in which they were positioned as empowered and agentic in their digital interactions. The increased participation in a range of literacy events due to the digital spaces available to the children in the home led to greater choice, control and agency over their early literacy practices.

These findings are illustrated through three portraits. Portrait 9, titled 'The virtual world of Roblox', provides evidence of Emma's identity work that transpired in literacy events mediated in a virtual world. Portrait 10, titled 'Princess Fairy Tale Maker app', reveals Buttercup's encounter with an animation app in which notions of agency, participation and choice were evidenced, allowing for a positive sense of self to emerge. Portrait 10, titled 'Living in a Pokéworld', provides extended evidence of Ash's long-term passion relating to Pokémon. The cultural resources relating to Ash's Pokémon passion afforded identity development and early literacy learning. Each of the portraits reveals how the informal spaces of the home were infused with digital artefacts, creating spaces of possibility for the child participants to access more powerful identities and literacy practices.

The portrait opening this section examines Emma (aged 6.8) and her brother Lachlan (aged 10) playing and communicating in a virtual forum. This playful encounter within a virtual world demonstrates how the online space afforded Emma and Lachlan opportunities to 'try on' various identities. Midway through the fieldwork period, Emma and her older brother began playing an online game called Roblox in the Cruz family home. The children downloaded the Roblox digital gaming app on their devices (iPad, laptop and parents' mobile phone) and spent time using the game in creative mode. Roblox's creative mode is designed to allow users to accomplish tasks and to role-play, create a virtual world, and customise different aspects of the virtual setting. The in-game chat feature of the game allows the player to search for friends and log a friend request, and if they accept, players can chat to each other via the in-game messaging system. Emma's parents were supportive of the children using the game in creative mode, but did not permit them to connect or communicate with strangers. The parents monitored the children's use and regularly checked who they were connecting with. The children had a few friends each who were either school friends, cousins or distant relatives.

Portrait 9: The virtual world of Roblox

I arrive to find Emma and her brother in the loungeroom. The glow of the iPad screen reflects the intense concentration on Emma's face. Emma's brother is sitting on the floor, his laptop positioned on the coffee table, staring intently at the screen. Both children barely glance up at me, merely mutter a 'Hi', totally engrossed in their virtual play. Emma's brother murmurs 'We are on Roblox in creative mode. I made a farm for me and Emma to play in and chat because Emma loves animals.' I glance over Emma's shoulder and notice the chat feature on the screen.

'Wher is the dor.' Emma asked her brother via the chat messaging feature.

'Look behind the cow,' he replies.

'I need to do work on my farm,' Emma suggests.

'Can you tell me about Roblox?' I ask (nervously, as I don't want to disturb their creative and very focused play).

'There are little games, mixed into one game. You can choose which one to play. It's sooo fun,' explains Emma.

'You can find your friends and play the same game as them and chat and stuff,' she continues.

Several minutes pass. Emma continues to explore the virtual world, running through green fields, jumping over rocks, dodging ponds, entering a barn. Emma's avatar is a funky-looking girl with bright purple hair wearing a unicorn t-shirt and a purple visor. Her brother's is a brown-haired male wearing blue headphones and a green flannel shirt.

'I like your avatar,' I say, being mindful of not interrupting Emma's digital play.

'You need Robux to buy more things and stuff for your avatar. But there are some free things in the shop you can use. I watched it on YouTube.'

'Watch this,' she states as I see her avatar run over to a cow and pat it.

Emma looks up at her brother and asks, 'Hey, how do ya build stuff? This is hard.'

Lachlan and Emma commence co-constructing a barn out of various bricks and objects. Lachlan's avatar leads the action, while Emma's avatar mimics his actions. The intense concentration lasts another 10 minutes or so until the children's mother calls them to the dining area for a snack.

This virtual world experience led to experimentation with various identities for Emma. The portrait revealed how Emma and her brother made sense of their on- and offline identities and became more digitally literate through their collaborative interactions. The virtual world of Roblox provided openings for Emma to enter and explore her gamer identity. Peer scaffolding occurred as Emma's brother created the virtual world, invited Emma in and scaffolded her learning, which led to the siblings co-constructing the space. They adopted various roles as gamer, designer, learner and mentor that provided evidence of how digital literacy practices shaped their relational practices, and how those practices transformed the ways in which they related to each other while simultaneously playing in virtual and real-world settings.

Portrait 10: Princess Fairy Tale Maker app

This portrait reveals Buttercup's creative use of an animation app on the iPad in which literate identities emerged as she constructed a sense of self as reader, creator, author and user of language. Buttercup, aged 4 years and 11 months, was permitted free time on the iPad each afternoon for 30 minutes to an hour while her younger brother slept. The apps available to Buttercup were carefully selected by her parents. When discussing choices surrounding apps and digital media, Buttercup's parents they revealed a desire to move away from closed-game design towards more creative and open-ended games and apps where the children could 'be creative' (22/11/17). Buttercup expressed how much she '*loved using the iPad, that it is her favourite toy and that she is really good at using it, better than her dad*' (22/11/17). The literacy events illustrated in the portrait occurred over a 15-minute period.

One wintry afternoon Buttercup and I sit on the lounge room floor positioned in front of the cosy warmth of the heater. Buttercup and I are discussing her toy figurines, which involve princesses, ponies and fairies. She explains which toy is her favourite and why. 'Buttercup, you can have 20 minutes on the iPad if you like,' yells Buttercup's mum from the kitchen bench. Buttercup runs to snatch the iPad from her mother's clutches. 'Let's play the Princess Fairy *app,' Buttercup suggests. She fluffs up the cushion and sits on the sofa with the iPad positioned neatly in front of her. I sit beside her.*

I watch Buttercup as she enters the iPad password (which is her dad's date of birth) and locates the Princess Fairy Tale Maker app. 'It's my favourite one,' she declares. Once the app is open she selects 'Fairy Tales' from the three options of 'Draw', 'Fairy Tales' and 'Colour In'. Buttercup keenly scrolls through a range of scenes or backgrounds. She selects a castle scene and chooses a princess, a fairy and a unicorn as the characters. 'I love this one. I'm great at it.' She carefully positions the characters on the page and selects a few stamps (a bright sun, some flowers and a teapot) to add to the scene. Humming and muttering to herself, she methodically revises the scene, moving a few items around. Intense flow sustained.

She clicks on the camera, turns the iPad and positions it in front of her face, and takes a selfie. She positions this in the top right-hand corner of the screen. 'That's me,' she mutters. 'I'm the author.'

She then presses the record button to commence the narration.

'Once upon a time there was a evil… an evil ummmm.'

She clicks delete narration and starts again.

'Once there was a princess, Anastasia. Ah, the wicked princess wanted to get or cut all of the fairy's beautiful hair off. But the fairy grabbed the power from the sun and flashed it into the princess's eyes, making and hurting her eyes. She couldn't see anything anymore. The fairy lived in the castle with her beautiful sunflower. The End.'

The app asks whether she wishes to save or delete the audio recording. She clicks save.

Buttercup plays back the animation several times. Seemingly content with the animation, she yells, 'Mum, send my story to Gran! I always send Gran my stuff. She loves my stories.' Seconds later, Buttercup asks if I want to play dress-ups with her.

Figure 21: A screenshot of Buttercup's animation created using the Princess Fairy Tale Maker app

Buttercup's engagement with the Princess Fairy Tale Maker app afforded innovative opportunities for early literacy development in which Buttercup exercised power, choice and control over this literacy learning. She demonstrated high levels of accomplishment in creating and narrating a digital animation and independence in using the technical and operational skills associated with digital literacy activity. The open-ended nature of the activity available to Buttercup on the iPad allowed for new forms of participation to occur in which she positioned herself differently, and were spaces for her to enact agency. In considering this portrait in relation to identity, Buttercup enacted literate identities which allowed her to author herself in unique ways. Buttercup declared, '*I'm the author*,' demonstrating her sense of self as a reader and writer.

Portrait 11: Living in a Pokéworld

This final portrait provides a long-term account of Ash's fluid and rhizomatic entanglements with all things Pokémon, in which his identity as a Pokémon fan, expert and reader and writer is shaped over time. Ash's ruling passion for Pokémon spanned a two-year period from the ages of four to six. This portrait draws attention to the intra-actions between Ash and the rich cultural resources available to him through his everyday encounters that supported his literate identity as a reader and writer.

> *Ash's fascination with Pokémon endures over several years. His bedroom is full of Pokémon stuff such as Pokémon stuffed toys, posters, toys, clothing, costumes and toy figurines. Ash has folders full of Pokémon cards. He cherishes these folders dearly and carries them around with him, eager to share and discuss his valued possessions with others, almost as a form of currency – he even sleeps with them. His interest in Pokémon is deep and is evidenced in the number of artefacts and drawings he has made connected with Pokémon. One afternoon, I witness Ash sitting attentively at a wooden IKEA children's table tucked away in the corner of the loungeroom, pencil in hand, examining a Pokémon card. 'HP,' I hear him mutter to himself. Ash is 4 years old and beginning to recognise initial sounds. He places the*

card carefully onto the yellow paper and begins drawing and writing, referring back to the Pokémon card as an important reference for his busy task. Ash is using his Pokémon cards as a stimulus for his early writings. He draws a variety of Pokémon characters with care and precision and then attempts to write their names. After several minutes, he yells, 'Mum can you write Jigglypuff?' Ash eagerly explains to me how HP refers to the health of the character and that EP refers to experience points.

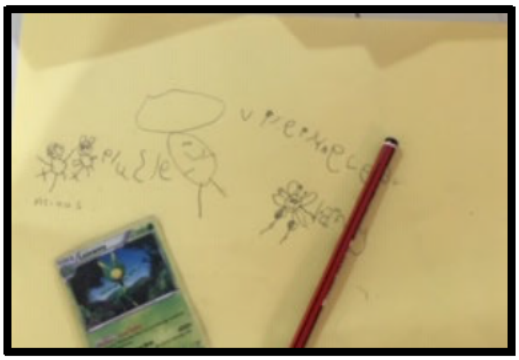


Figure 22: Literacy event: Early writing using a Pokémon card as a stimulus (Ash, aged 4)

In his free time at kindergarten Ash draws colourful illustrations of his favourite Pokémon characters and engages in early writings (see below). Ash's educators' mention that he will eagerly engage in imaginary role-play, acting out detailed and elaborate scenes surrounding various Pokémon battles using specialist language, and speak freely in front of the class during show'n'tell sessions about various Pokémon cards, figurines and evolutions. Out in the kindergarten yard, Ash coordinates a group of friends engaging in performative Pokémon battles and scenes. Pokémon cards have also become a source of currency and the children will organise playdates to showcase their precious cards.

Figure 23: Ash's Pokémon drawing created at kindergarten

The artefact below was co-created by Ash and his father. Ash is busy drawing various Pokémon and putting borders around the characters, creating his own collection of Pokémon cards. Ash's father notices Ash's busy activity and asks, 'What are you up to, mate?' Ash replies, 'These are Pokémon cards. It's a comic.' Ash starts to recite the narrative to his father and eagerly asks his dad to scribe. 'One day Ash Catchem (A Pokémon trainer) catches a Ghastly. Misty screamed!' Ash continues reciting the narrative until the end. 'Battle time, I choose you Geodude.' Ash is delighted by his creation and states assertively to his father, 'It's my Pokémon comic book. Tomorrow we'll do more – okay?'

Figure 24: Ash's Pokémon cartoon, co-created with his father

Ash, now aged 5, has recently discovered the wonders of Pokémon Go – an augmented reality game allowing users to travel between the real world and the virtual world, catching Pokémon as they journey through familiar or unfamiliar neighbourhoods. The treasure-hunt-style app allows users to move around the places where they live, and the smartphone will vibrate to let users know when they are near a Pokémon. Once they've encountered a Pokémon, the user takes aim on the smartphone's touchscreen and throws a Poké Ball to catch it; however, it might run away! Users must also look for PokéStops located at interesting places such as public art installations, historical markers and monuments where they can collect more Poké Balls and other items to offer. Ash and his father go out on Pokémon hunts a few times a week and Ash has become fascinated by local landmarks and their historical pasts. I ask Ash to show me how to capture a Pokémon. 'You wait till there is a Pokémon and your phone buzzes. You point your finger on the Poké Ball and flick. If you get lots of candies you can evolve your Pokémon."

On several occasions Ash is overheard scrolling through his Pokédex (on his mother's iPhone6) reciting the names of his Pokémon captures. He reads the names confidently and with ease. The names can be difficult to decode and are not always easy to sound out phonetically. Ash's father remarks, 'Sometimes I don't even know how to read these names. Some of their names are really hard to pronounce, like

Chinchou and Pidegeot.' Ash memorises all Pokémon; there are more than 200 of them and he knows their evolutionary history, which is really complex. When discussing Pokémon with family members, friends or educators, Ash slips into using specialist language such as, 'Some Pokémon can turn into x and ys, which is their ultra-evolution,' or 'Charizard has a disadvantage when fighting a water type like Squirtle because when you mix fire with water the fire goes out."

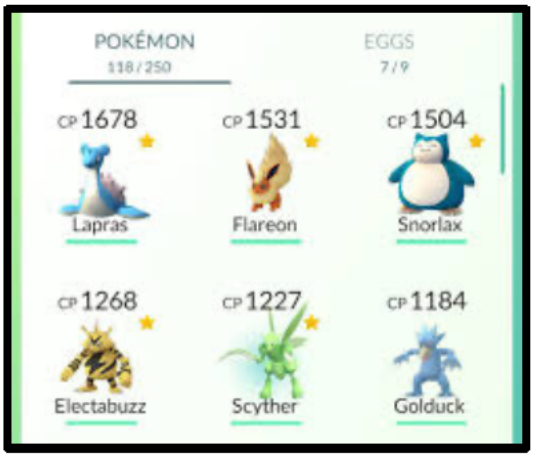


Figure 25: A example of Ash's Pokédex (a listing of Pokémon characters)

Ash (just turned 6 years old) is in his second term of formal schooling. Pokémon has grown in popularity and the children have started trading Pokémon cards at school (until the cards are banned from the schoolyard due to disputes surrounding trading). The Foundation class has been learning about narratives and one Sunday afternoon Ash expresses his desire to create a Pokémon Sun narrative. For his sixth birthday he received a Nintendo DS (a handheld gaming device) and regularly plays a game called Pokémon Sun. The game is highly text-based and Ash spends hours devoted to mastering it. He uses the game's in-built speech bubble option and help option features to provide him with extra information and tips to progress to the next level.

.He is aware of the computer program Microsoft PowerPoint, as the family used it once to create a birthday card for a friend. He asks me if he could create a PowerPoint about the new Pokémon game. Ash begins by typing a title page and calls his narration 'Pokémon Sun'. He asks me to help him add music to his story. I show him how to copy and paste images from Google Images. With my assistance he types away, narrating a detailed story about Pokémon Sun, using images from Google Images to support the text. He asks me to show him how to do 'talking bubbles' and I explain to him what talking marks are. We sit together, side by side, at the kitchen table: bodies, a laptop, Microsoft PowerPoint and some Pokémon cards next to them (for inspiration). After approximately 20 minutes of intense focus the multimodal text (including music, narration, text and visuals) emerges and Ash suggests, 'Now let's turn it into a movie.'

'Finally, I got all of the Z crystals and I got a new Pokémon. Now I've got a lot of good Pokémon bucks and I can buy whatever I want.'

'My first Pokémon in the box. Go all of you.'

'I don't know who(which) three do I take out.'

'Wow I found a new Pokémon,' said Ash.

'Go master ball – jiggle jiggle jiggle ding.'

'What's the matter Lily?'

'Don't worry, I will help you. Go Primmarina. Use Sparkling Aria.'

Figure 26: Ash's multimodal product based on the digital game Pokémon Sun

The portrait reveals Ash's longstanding passion for Pokémon and how this intersects with a range of literacy events. In it, Ash competently engages in a wide variety of textual practices to communicate his expertise and passion related to Pokémon, express himself and play with multiple identities. Ash is positioned as agentic, empowered and active in his experiences with literacy and technology. Different literate identities are enacted within the different contexts of the activities he engages in. Ash has freedom within his home environment to embed his identity into his text-making as he desires.

Summary

This section has illustrated the ways in which materials such as texts, cultural artefacts and devices contribute to dynamic relations in literacy events in order to propose a more detailed and nuanced understanding of children's evolving literate and broader identities as integral to their literacy experiences within their everyday settings. This section provided evidence that for Emma, Buttercup and Ash, their home contexts offered them freedom, time and space to explore multiple identities and provided new ways of being, as they were able to produce texts, create, play and connect with others, and had greater control, choice and agency over their literacy practices and evidenced expanded notions of self and identities through their digital and online interactions.

Chapter summary

This chapter has provided a rich, descriptive account of the complex and diverse digital literacy events Ash, Brock, Ryder, Buttercup and Emma engaged in as part of their everyday lives, including detailed evidence to show how digital technologies, digital media and popular culture were situated within the media ecologies of their homes and how these permeated aspects of the children's daily literacy experiences. The child participants demonstrated proficiency at using various digital tools as they confidently navigated virtual worlds, capably sought information from online sources, navigated digital gaming, generated and manipulated digital content and engaged in online networking. The findings illustrate the complex multimodality of the children's digital literacy practices and how these are connected to the everyday rhythms and routines of the family's daily life. The presence of digital technologies in the children's homes not only extended their literacy practices across the diverse modes and media (Kress 2003), but also 'transformed the previously bounded space of the home into a networked space where the young children could connect remotely with family members and friends and engaged with a world of information and content using diverse web-connected digital media' (Flewitt & Clark 2020, p.451). However, these digital experiences were always undertaken alongside nondigital materials and more traditional forms of literacy such as storybooks, board games, role-play and crafts, suggesting that the digital was an ordinary but not dominant feature of their lives. I was able to see how the children made meaning, quite naturally, from all kinds of 'stuff' in all kinds of ways, and how the stuff of the everyday was important and produced literacies that were both social and material.

The findings revealed how, within the children's everyday home environments, literacy play encounters and text-making practices have altered and shifted due to the prevalence of digital technologies. This shift has resulted in expanded opportunities for the children to experiment with multiple textual identities and extended their participation in, choice of and agency over their literacy practices. Children's play interests and ruling passions acted as conduits for their reading and writing practices, allowing for sustained and self-initiated engagements with literacy practices. These passions changed and evolved over time as the children grew older. The children did not differentiate between digital and 'traditional' activities to the same extent as adults, and in many instances entangled their play seamlessly across different spaces, places and products. This evidenced how the digital was seamlessly integrated into their lives how this and resulted in a myriad of changing literacy practices, which children confidently and capably navigated as producers and creators. In many instances, the children were given freedom,

time and space to openly explore their digital home environments and materials, and engaged with the various modes and semiotic resources available to them. Yet a variety of parental attitudes towards the role of technology in the children's lives was noted, illustrating how literacy and technology are closely meditated by adults. The parents' perceptions of the potential benefits or dangers of early exposure to technologies shaped the opportunities that children had to explore or play with different technologies in the home, although all families went to some effort to ensure a mix of both traditional and digital activities.

In addition, these findings illustrate the construction of the children's subjectivity connected to agency (Rowsell & Pahl 2020). The expanded opportunities for literacy engagement and opportunities for self-initiated exploration due to the freedom, time and space the children were afforded in their home environments created a space of countless possibilities and transformation in which enlarged literate identities and learner subjectivities emerged (Rowsell & Pahl 2020. Further, agency was afforded and emerged through the various self-initiated experiences with literacy and technology that positioned the children as empowered and active in their literate activity. As evidenced in the findings, the materials available to the children such as playdough, LEGO, the Pokémon Go app and the iPad co-shaped their relations, and rather than being viewed as neutral or passive were instead viewed as mediating action. From this viewpoint, the literacy users (children) and literacy materials (iPad, Pokémon cards, paper, computer software) were perceived as equal agents in literacy events, entangled within the process of producing literacies. This idea will be explored in detail in Chapter 10.

Chapter 10:

Deconstructing the portraits: Complex home environments: The thingness of literacy

Introduction

In Chapters 10 to 13, I will think through the relationship between the digital literacy events I observed and provide an analysis of Portraits 1–9 that articulates an understanding of the socially situated and digitally mediated experiences of early literacy practices in the young children's home contexts. I make connections from practice to theory and draw on a range of analytic frames to make sense of the portraits. In particular, I draw from what Zapata, Kuby and Thiel (2018) describe as entanglements with fieldwork material that allowed me to concentrate on the relationality of materiality, language, affective moments, space, place and objects of literacy, 'with an acute understanding that these dimensions are weaved in together and are, therefore, inseparable' (Lemieux & Rowsell, 2020, p.144). Thinking with Deleuzoguattarian theories such as the assemblage and the rhizome offered a new way for me to examine children's digital literacy practices by acknowledging the body, emotions, feelings and also objects and materials as an important part of their literacy practices (Thiel 2015). The deconstruction of the portraits is done in a nonlinear manner throughout the chapter. The key insights are threaded together much like a rhizome, and the rhizomatic maps are centred in each section of the discussion to offer a diagrammatic form of representation that illustrates my thinking. These maps outline the key ideas and theories drawn upon within each section, and illustrate the interweaving of various fieldwork sources which allowed creative and experimental encounters with fieldwork material and posthuman concepts of theory that enabled me to think in diverse ways.

Throughout the next four chapters, I put several posthuman concepts to work with the fieldwork material. Below is a list of these concepts, with a brief explanation of each concept and how I think of it in relation to early literacy.

- **Assemblage theory:** A heterogeneous collection of elements, both material and non-material, that comes into composition in different ways at different times to produce a literacy activity (Deleuze & Guattari 1998).
- **Sociomateriality:** A consideration of the relations among the social and the material that attempts to avoid a priori assumptions about the material and the social (Fenwick, Edwards & Sawchuk 2015).
- **Intra-activity with materials:** The entangled intra-actions of people, materials, tools, technologies, time, space, environment and so on (Barad 2007).
- **Entanglement:** Newness produced when parts come together as a whole.
- **Posthuman agency:** Agency as a force emerging between people and materials and not residing solely in individuals (here I draw from Bennett's (2010) **vibrant matter** and Kuby's (2019) **enacted agency**).
- **Literacy as (im)material:** The way in which the material (physical world) and immaterial (e.g. online spaces, emotions, discourses, attitudes, social relations) are related and become enmeshed in meaning-making practices (Burnett et al. 2014).

Working at the edges of literacy

In this chapter, I present key insights from my study of early literacy as emergent, entangled and embodied. In particular, I examine the material, embodied, affective and spatial dimensions of literacy as substantial components of becoming literate. One of the more significant findings to emerge from this study is that early literacy experiences in the home have shifted due to social, culture and material changes in the contemporary world and an expanded view of literacy is needed in order to account for these changes. Due to the prevalence of the digital aspects of early literacy emerging alongside conventional literacies and the expanded range of materials available to the child participants in this study, I observed different and new ways of doing/being/knowing literacy throughout my fieldwork (Lemieux & Rowsell 2020). The children's expanded textual repertoires included a variety of materials, modes and media, and importantly the felt, relational and affective aspects surrounding their textual practice. I therefore draw on what Rowsell and Pahl (2020, p. 1) describe as an expanded view of literacy or 'working at the edges of literacy'. Expanding the idea of what literacy is and being open to more expansive ways of being/doing/knowing it considers practices such as reading Pokémon cards, viewing and remixing an unboxing video, sending a WhatsApp message to a grandparent, playing collaboratively in a virtual world or asking Siri a question, all of which could be considered reading or writing practices. This perspective prompted me to continually expand the boundaries of literate activity to include the dynamic and ever-evolving practices occurring in children's day-to-day lives. In this chapter, I tease out the following arguments:

- that the everyday materials were important forces in producing literacy for the young children.
- that we need to rethink agency as merely a human endeavour and instead consider the relationality between humans and materials and how nonhumans can be viewed as active agents in digital literacy events.
- that embodiment and affect were generated through features of materiality and were important aspects in the children's early literacy encounters.
- that contemporary literacy practices are fluid and hybrid in nature, and the digital and nondigital domains of literacy learning should be conceptualised as entangled as part of the early literacy learning process.
- that the boundaries between the human/nonhuman and the material/virtual are in a constant state of change, and therefore become spaces of emergent possibilities producing infinite potentialities for literacies.
- that literacy must be conceived of in enlarged ways inclusive of material, effective, embodied and spatial aspects

Argument 1: Complex home environments: The thingness of literacy

Philosophically, drawing from posthuman theory caused me to expand my sole focus from people to embrace how materials (space, time, nonhumans) are significant in literacy (Kuby 2019). Throughout this study, I discovered how the various materials (digital and nondigital) available to the children in their home contexts were not add-ons,

but vital parts of how literacy developed for the young children (Rowsell 2020). I witnessed the various connections the children made with their physical environments, which evidenced an inseparability of child and matter and offered a glimpse into the 'relational worlds of the children ... how children engage with materials and objects, and how the materials and objects engaged with the children' (Malone 2020, p. 160). The observations led to what Wohlwend et al. (2017, p.450) describe as children being perceived not as 'subjects wielding tools' and prodding screens to their will, but ... [as] as much the 'effects of the intra-action as the artefacts and the surrounding space'.

Rhizomatically mapping the portraits resulted in a philosophical shift in my understanding of literacy. By embracing concepts such as intra-action and assemblage theory, I started to see how literacy learning takes place *in-between* the child, materials/time/space and other people. While this may seem like a minor shift, I believe it has the potential for drastic and transformational consequences for early literacy learning, as it is a significant departure from the sociocultural and NLS perspectives that focus on the child doing something to materials with intent.

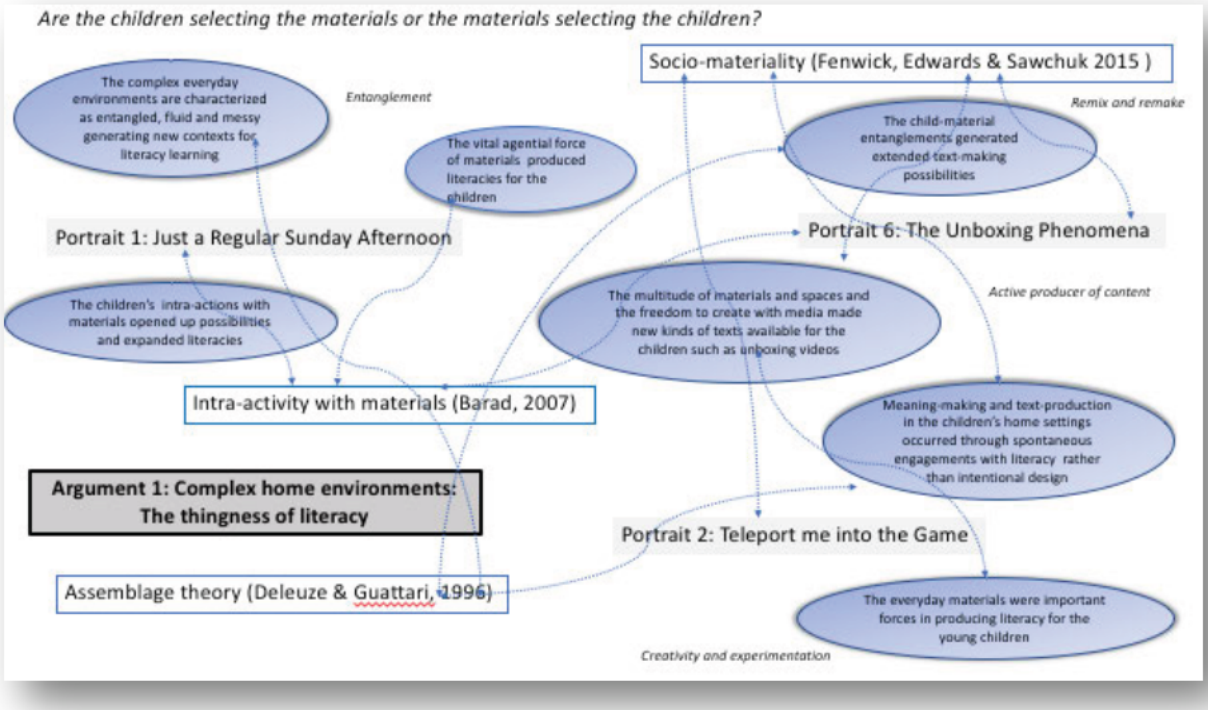


Figure 27: Rhizomatic map offering a diagrammatic representation of my thinking with theory and fieldwork material from Portraits 1, 2 and 6 to make sense of my findings

The rich literacy opportunities showcased in this study revealed the children tinkering, experimenting and seizing opportunities with materials. Miller (2010) reminds us that while mundane objects may be perceived as ordinary and inconsequential, it is time to correct the balance and move towards the material in terms of recognising both the inherent 'thing-like' status of literacy (Brandt & Clinton 2002) and the things that people bring to their text-making processes. I argue that the everyday materials in the children's environments (which included digital

materials) make visible how literacy has material qualities. As Bridges-Rhoads & Van Cleave found: it (literacy) is made from materials, and these materials generate literacy (2017). Importantly, this study shows how the range of everyday materials has been extended in the digital landscape of contemporary homes. Through this study, I continually questioned the intersections between the digital and literacy, and my observations led me to conceptualise the 'digital as part of a larger web of meaning-making in which, while it was not central or playing a dominant role, it was closely embedded in the fabric of everyday literacies, creating innovative ways of becoming a reader and writer' (Rowsell & Pahl 2020, p. 106).

The children taught me to be open to the world, and rather than privileging the human subject, I learned to see how humans, the environment, materials, time and space are all entangled in literacy events. Putting the concept of assemblage theory to work helped me to become attuned to: a) the objects and things in the children's everyday environments which informed their literacy practices, resulting in an extended repertoire of literacy practice; b) the seamless manner in which the technological materials were deeply embedded into young children's lives alongside non-technological materials; and c) the everyday material objects that illuminated the children's passions, creativities and identities provoking literacy encounters. In the discussion that follows, I foreground the material worlds of and relationality between the children and the nonhuman and the various entanglements between the children and matter, and the important relational links to the world of objects that these made visible. I argue that this view allows for an openness and emergence by means of which children's literate capacities can become expanded.

Becoming through materials: Relations between humans and material

I return to **Portrait 1: Just a regular Sunday afternoon** to provide an analysis of the complexity of the children's home environments, which can be described as a 'co-mingling of things, bodies and semiotic resources' (Merchant 2020, p. 246). In deconstructing Portrait 1 and putting assemblage theory to work, the relations between Brock, Ash and the everyday materials around them illustrated how the children and varied objects come together in assemblages of digital and nondigital interactions in which materiality (iPads, LEGO, Skype, paper, laptop) actively produced literacy subjectivities that were always more-than-human (Hackett & Somerville 2017, Kuby & Rowsell 2017, Murris 2016). Brock and Ash were equally immersed in both multimodal worlds and embodied or felt worlds, and the affordances of digital technologies were woven into their daily lived experiences as they engaged in social interactions with family members and interacted with texts and technologies across varied spaces as a source of entertainment. Portrait 1 illustrated how the young children were simply being children and answering the world (Ingold 2013). Rather than seeing the children as separate from the world, I noticed how the human and nonhuman responded to each other and wondered about the agential force of materials in producing literacies for Ash and Brock. I noticed that Ash and Brock's day-to-day literacy events were immersed in new technologies in a natural way, and that as McTavish (2014, p. 320) argues, 'as adults, we may grapple with how best to account for the choices we have to integrate this technology, but for young children born into this technological epoch; it is simply a way of being'.

Portrait 1 revealed the seamless and commonplace way Ash and Brock responded to the Skype call, suggesting the ordinariness of this task. An excerpt from the portrait exemplifies this notion: '*Ash immediately clicks the green accept icon and the children launch into a Skype conversation with their uncle, waving at their uncle through the screen, talking over one another excitedly'.* The children demonstrated an understanding of the protocols of the social practice of a video call as they appropriated a contemporary literacy social practice with technology. The Skype ringtone evoked the children to stop their activity and attend to the laptop, indicating agency and intentionality between the children and the device and thus evidencing that agency was distributed among the performative agents (Barad 2007) – the laptop, the Skype software and the children. Within this assemblage, the children were in relational engagement not just with each other and the other humans but also with the nonhuman. The children merged and become-one with the laptop, and formed an assemblage of forces and flows as they intermingled in-between the different components (bodies, Skype, voices, devices, drawings) (Lenz Taguchi 2010). An entanglement between the human (children, uncle, parents) and the nonhuman (iPad, Skype, laptop, wi-fi) for undertaking the task of communication among distant family members was evident. The way the children conversed with their uncle and displayed artwork through the Skype call indicated that they had undertaken this practice previously and illustrated how the children's learning about literacy had altered as a result of digital social practices related to digital literacies in the wider world (Medina & Wohlwend 2014) and how what counts as literacy involves experimentation with twenty-first century communicative practices.

The boundaries between the physical and the virtual world blurred for Ash as he moved between the spaces fluidly and negotiated his literate identity in both embodied and digital contexts. Engaging with the virtual LEGO app inspired him to engage with the physical LEGO bricks available. This action suggests a seamless blending or interconnectedness of online and offline spaces for Ash as he moved across digital and nondigital spaces. The tactile manner with which he held the iPad up in the air as a plaything and enacted the movement of a rocket suggests the entangled relations between the human and nonhuman and the assemblage of embodied movement and experience. As the portrait illustrated, '*he (Ash) holds the iPad in the air mimicking the sound and movement of a spaceship*'. The iPad in this sense becomes 'whatever it becomes as it entered into relations with the child and other things in practice' (Merchant 2020, p. 26). Burnett and Merchant (2020, p. 19) argue that the instability of digital technologies that sees devices as always open to (BE)coming different kinds of things must be considered: 'iPads as things cannot ever really be seen as fixed – they are unstable and help to shape emergent literacy practices' This example illustrated what Bennett (2010, cited in Burnett & Merchant 2020, p. 20) articulates: that 'things are things beyond what people actually conceive them as, or design them to be', and that this further demonstrates the thingness of literacy. Burnett and Merchant (2020, p. 23) proclaim that 'as things come into relation with other things, they become different and help generate diverse ways of doing and being'. This way of thinking foregrounds the interactions between nonhumans as well as humans, and sees literacy practices as essentially material. It suggests that devices become different things as they become 'embedded in the relational possibilities of everyday life' and that as Burnett and Merchant (2020, p. 28) argue, 'what they become or what they are is emergent'. I will expand on this idea of technology as emergent in the next section.

I discovered that the children and the material things they encountered were inextricably bound together and that these digital–human–material assemblages enabled and expanded literate engagements for the children. Potter argues (2020) that children's material culture and lived experiences has various technologies closely embedded, and this results in heterogeneous relationships that shift between the home environment, the material resources, and the children. For example, within the moment-by-moment flow of Brock's activity, he demonstrated independence and autonomy in navigating the internet to search for videos effectively. He capably self-directed the use of AI as he sought out his favourite videos on demand through YouTube. Rather than asking Siri for '*Peppa Pig*', he requested '*Peppa Pig* on YouTube' (Portrait 1), suggesting that he had learned the sophisticated practice of narrowing and refining his search by adding the term YouTube. This could have been learned through either previous experience or mediation by a family member. This practice was consistent with other observations from the fieldwork relating to the use of AI. For example, a fieldnote emerged from a conversation with a parent from the Cruz family home in which Emma's mother explained how at the age of three-and-a-half, Emma integrated AI into her day-to-day literacy experience to seek information: '*Emma, I think aged about three at the time, wasn't content with my explanation about the extinction of dinosaurs and so she picks up my iPhone lying on the coffee table. She grabs hold of it and holds down the home key on the iPhone and says; "Siri – are dinosaurs real?"*' (Date: 25/10/2018).

This portrait also provided an indication of how the children's everyday lives were entwined with AIs. The use of artificial intelligence systems such as Siri or Google Command provided the young children access to information that would previously only be accessible if they could read and write proficiently (Lovato & Piper 2019). The fieldnote from a discussion with Emma's mother during Fieldwork Session 2 revealed Emma turning to the conversation interface Siri to seek reliable information about dinosaurs as she was not satisfied with the response from her mother. Brock, Ash and Emma had greater ability to enter the 'literacy club' (Smith 1998) and engage with information previously not accessible to them, which presented new opportunities for them to find answers to their many questions, expand their passions and interests, nurture their curiosities and explore their worlds. Brock used Siri to aid his search requests and the search engine algorithm subsequently shaped his interaction. This algorithm (which is patterned on previous search history data and online activity) directed or shaped the flow of the subsequent activity. Brock was directed to information through a web of effects. Hence the unpredictable, emergent relations that arise as nonhuman and human bodies met were evident. Thinking with posthuman concepts allowed me to query the uninvited or unnoticed actors such as wires, cables, code, algorithms, wi-fi and databases – a mingling of materials which created cause and effect and a flow of activity – and in this way I started to view the more-than-human world as a key player in the children's emerging digital literacies (Burnett & Merchant 2020).

As the children undertook certain practices mediated by digital materials, such as communicating with distant relatives and friends through online portals such as Skype, WhatsApp and MSN Messenger, digital materials within the home contexts reproduced generational social and cultural capital (Arnott & Yelland 2020, p.). The role of

digital technologies has been described as an integral part of the everyday family practices (Arnott & Yelland 2020, p. 137) 'as online communities strengthen intergenerational communication and relationships, reduce geographical barriers between family relationships and allow individuals to belong as members of online communities, now more than ever young children create and participate in multiple realities, realms and platforms'. This example showed how Brock's and Ash's communication repertoires were complex and had expanded, and importantly, how they were patterned by their family, extended family and community experience as well as potentially wider influences. The social and material considerations of Brock's and Ash's home environments influenced the extent to which the children were inducted into the changing digital landscape. Using tools of communication such as Skype and WhatsApp enabled greater participation in the social world for Brock and Ash, as evidenced by the interplay between the children, family, community and materials, all of which contributed to the complex web of the home literacy environment in a digitally networked space. As a result of this, I started to see literacy as an intra-action between humans and nonhumans (Kuby & Rowsell 2017) which relates to the immediate circumstance and environment, but may also connect to ideas, people, places, things in a different time and space (Heydon & Rowsell 2015).

As I shift my focus to deconstruct Portrait 2: 'Teleport me into the game', I consider Brock's meaning-making with materials and how the human and nonhuman dimensions of literacy were difficult to seperate (Burnett & Merchant 2020). Portrait 2 evidenced the playful and imaginative ways in which Brock moved across digital and nondigital environments and engaged with various materials, highlighting the changing nature of meaning-making in contemporary times. Brock's everyday practices involved creative, collaborative and experimental meaning-making, showcasing the emergent quality of the kinds of meaning-making practices that occur in contemporary environments with digital technologies.

Emerging entanglements: Spontaneous meaning-making modes and materials

In **Portrait 2: 'Teleport me into the game'**, Brock's spontaneous meaning-making (without intent) led to a multitude of textual experiences. The portrait captured Brock's multimodal meaning-making practices, which involved an assemblage of everyday stuff. This stuff entailed a range of technologies, apps, crafts, toys, bodies and emotions which invited Brock to embark on an extended repertoire of reading and writing practices. In unpacking the portrait, I think with sociomaterial theory (Fenwick, Edwards & Sawchuk 2015) and move away from the designed possibilities of technologies, instead focusing on what happened as the various materials entered relations with Brock. It was not the technology that was 'telling' for me, but instead what happened in the moment, of meaning-making in the digital home environment.

The analysis exemplifies that literacy events are not solely human endeavours (Hackett & Somerville 2017, Kuby 2017) but rather a relational practice that entails a web of humans, nonhumans, meaning-making and literacies. As evidenced in several other portraits, new ways of meaning-making have emerged with diverse resources, and reading, writing and meaning-making have been modified by digital technology (Burnett & Merchant 2020). Portrait

2 shows Brock engaged in an assemblage of role-play, reading, craft, dress-ups, gaming, internet searching, communication, drawing, construction and scaffolding from his father as a complex entanglement of elements comes together to create sophisticated literacy possibilities. His meaning-making practices are very much characterised by a complex web of multimodal, multimedia, semiotic and traditional resources. My observations indicated that the child participants did not differentiate between digital and nondigital materials and instead engaged with whatever tools and modes were available to them, and hence their literacy practices emerged in purposeful, creative and spontaneous ways. In this instance, Brock intra-acted with digital technologies such as the Nintendo Wii digital gaming platform, the Google search engine and YouTube, and these shaped his early encounters with literacy while also fostering a mastery of a variety of literacy materials, both traditional and digital across a range of modes (e.g. words, images, sound and computer code). Despite being considered pre-literate, Brock applied alphabetic knowledge to enable him to search for animations of Skylanders on YouTube, grasping that the letters SKYL aided his YouTube search requirements. Brock resourcefully suggested the use of the Google search engine to search for images to use as a model for his Skylander Book Week costume, indicating his digital competence and capacity to seamlessly incorporate digital artefacts into his daily literacy activity in order to address his needs. He positioned himself as a capable user of literacy, demonstrating sophisticated reading and communicative practices as he used Post-It notes to locate sections of the book he wished to present to his teachers and peers and rehearsed this oral presentation.

Brock merged his love of Skylanders into his role-play activities, print reading practices and craft-related activities as he designed and created a costume out of everyday materials to represent a book character. Kress (1997, p. 137) has made the argument that 'multimodality', in which children happily combine various semiotic systems, such as talk, drawing, gesture, dramatic play and writing, is 'an absolute fact of children's semiotic practices'. This was evidenced in the portrait as Brock shifted fluidly between modes and media, resourcefully drawing on a range of everyday materials (digital and nondigital) to support his literacy needs and desires (Kuby & Rucker 2015). Kuby and Rucker (2015) coined the notion of literacy desiring as opposed to designing, as the notion of design is intentional and leaves out aspects of movement or surprise and is intentional. Literacy desiring suggests a process, a coming-together or flow of practice much like a rhizome (Deleuze & Guattari 1987) that accounts for unpredictable emergence and non-linearity. Literacy desiring is evident here in the rhizomatic manner in which the human (Brock and his father) and the nonhuman (gaming console, cardboard, iPad, wi-fi) intra-acted spontaneously to reveal the unstructured and fluid nature of literacy activity in everyday life.

The increasingly blurred boundaries between body-machine and virtual-real-world became evident and implied an interconnectedness with technology in which the relations between space, time and bodies are entangled. The disjuncture between what is digital and what is not became blurred as what Brock was seeing, sensing and doing became hybridised. The augmented reality technology exemplified an example of post-digital (Marsh, 2019) forms of play in which an entanglement between devices, bodies, objects through a digitally augmented experience. Interestingly, once the costume was constructed and tried on, Brock said, '*Teleport me into the game*' (Portrait 2),

suggesting that he could be transported into the virtual world and thus implying a merging with the more-than-human world that fostered 'imaginative play that crosses virtual and physical domains' (Marsh 2017, p. 158). As I make a correlation to Haraway's (1997) metaphor of a cyborg, signifying a human-technology entanglement or a melding of the body and technology – the increasingly blurred boundaries between bodies and machines – I argue that new theoretical models are increasingly needed to explain the ubiquitous and sometimes invisible aspects of the digitally mediated world and the ways in which digital devices can be considered extensions of our bodies (Wohlwend 2017). As evidenced in the portrait, where Brock referred to teleporting himself into a digital game, Ingold (2013, p. 105) suggests that children do not necessarily separate the human and nonhuman:

> These literacies do not become the children's possession, a skill, an end product somehow lodged within them. Rather the literacies are pathways and channels as Hackett and Rautio (2017) advocate for a view of young children's multimodal meaning-making that resists a separation between human and nonhuman, and the human design or intentionality this would imply, and instead considers what comes into play as human and nonhuman actants 'wrap around one another'.

Meaning-making in everyday contexts takes unexpected rhizomatic turns and twists. My husband and I had forgotten about the forthcoming school Book Week event and had not intended to construct a costume late on a Sunday afternoon. Working with materials unfolded in a natural way and the complexities of Brock's meaning-making practices were highlighted as he remixed and re-appropriated texts from his gaming and reading material into a costume. Brock and his father reworked or repurposed leftover materials to generate the costume, and this remixing was evidenced in several other observations of Brock as he constructed Skylander characters out of LEGO, role-played imaginary Skylander scenes with his brother and created narratives about Skylanders at kindergarten. The observation made me question the NLS perspective and move towards a critique of the notion of literacy as design (Cope & Kalantzis 2000). I questioned whether the design approach fails to recognise how children make meaning through multimodality in contemporary everyday life. Brock and his father engaged in meaning-making and creating in a spontaneous way, without intent, and such 'in-the-moment practice' or 'meandering engagements with literacy' can, as Lenters (2016, p. 264) urges, lead to innovative and creative literacy events:

> The texts that are produced through "everyday" literacies are not always created by intentional design. In everyday practice, text production can simply "happen" as one thing leads to another. Or, it may be through random experimentation, a text ensues…. Often, text-production occurs through meandering engagements with literacy, the opposite of intentional design. And some would argue it is in this space of play hat truly creative or innovate texts ensure.

Drawing on this quote in relation to the children's spontaneous text-making and my plugging in of the fieldwork material from **Portrait 6: 'The unboxing phenomenon'**, I contemplated Ash's and Brock's textual and embodied play as the children engaged in an unplanned and playful creation of an unboxing video. Portrait 6 shows the children 'layering' their personal interests as part of an intra-active process between them and various materials

which led to an innovative textual encounter. This playful text was constructed across a multimodal as well as a material landscape. An entanglement between the two children, the mobile phone, some toy packaging and video recording software shows an interweaving of various material and immaterial elements. The children engaged in copying, modifying and borrowing elements and materials from previously viewed toy-unboxing videos in what Dyson (2003) describes as a process of remixing. When plugging in this everyday textual practice and thinking with a sociomaterial view of literacy, the relations between the physical and material things and human activity unfolded in the moment of the children being in the world and working with materials. In this way, texts can be seen as constantly being assembled and reassembled, often in a haphazard manner (Kuby, Rucker & Kirchhofer 2015). For instance, the construction of the Tree-Rex costume in Portrait 2 illustrated the remixing, blending and converging of texts. The notion of remix highlights the instability of text in contemporary contexts, as texts are no longer individually authored and static but rather co-produced and distributed. Dyson's (2003) work articulates how in their everyday literacy practices, children appropriate cultural texts and reinvent them to make something new. Dyson (2003) demonstrates how children draw from all available discourses, including language, beliefs, popular culture and media, to construct meanings and make sense of the world. Building on Dyson's (2003) work, Lenz Taguchi (2010a) suggests that children also use what they know about the world and what they discover about bodies, space and materials as they conceptualise and create texts intra-actively.

The analysis of Portrait 6 resulted in a significant turning point for me in relation to my philosophical views about early literacy. It revealed a moment of the children playing with materials – or becoming-with materials. Putting the concept of intra-activity with materials together with the fieldwork material from Portrait 6 shows that Ash's and Brock's work with materials and one another creates newness as they invent and experiment. The unintentional, unbounded, and rhizomatic way in which the unboxing artefact came into being through intra-actions with humans and nonhumans (i.e. time, space, materials, environment) connects with Kuby, Rucker and Kirchhofer's (2015, p. 399) recent research in which 'many times an artefact unfolded in the moment of students being in the world and working with materials'. The children were given time and space in their home environment to create using materials that mattered to them. They engaged in a co-creation, jointly inventing alternate discourses and ways of being together hence generated knowledge together. The children seemed to thrive when playing with materials. The unplanned and spontaneous text-making that occurred (closely tied to the children's interests) allowed for increased opportunities for creative expression, and as Barad (2007, cited in Kuby & Rucker 2016, p.16) writes, 'knowing is a material practice of engagement as part of/with the world as the world is becoming'. The world (both human and nonhuman) is becoming, not fixed, meaning that the intra-activity that produces knowledges and realities is not stable or fixed either, but ever-changing moment by moment (Barad 2007).

And so what?

This thinking raised important questions for me regarding the schooled ways of doing literacy. From a schooled literacy perspective, the inventive and unplanned creation of an unboxing video may not be deemed a literate or writing practice. However, thinking with an enlarged view of literacy and drawing on the work of Kress (2005) and

his notion of old and new dispositions to text, we can see how Ash developed both traditional and contemporary literacy dispositions in sophisticated ways. He engaged in traditional literacies such as decoding and encoding the text on the packaging, and reproducing textual and structural features of a narrative which demonstrated an understanding of audience as he introduced himself, offered a clear purpose for the video and had a clear beginning, middle and end for the video content. Yet Ash also developed newer literacies, such as the production techniques of the online videos he viewed on YouTube, including reading the information on the box prior to the unboxing, building suspense and showing the audience the parts of the toy while also offering a critique of it. Excerpts from the portraits revealed the new dispositions Ash exhibited: '*Ash points out the various aspects of the packaging which indicate what is included within the set. He uses hand gestures to point and facial gestures to show emotion such as excitement and surprise*' and '*Ash pauses (to build suspense): Soooooo kids, lets open up*'. This demonstrates Ash's awareness of the affective and technical literacies that inform production of toy-unboxing videos. The notion of old dispositions to text suggests that traditional texts are stable, sequential, linear and composed by the writer and interpreted by the reader. In contrast, the notion of new dispositions to texts suggests that digital texts are often multimodal in nature, nonlinear, unstable, and designed by the producer and redesigned by the reader (Kress 2005). Ash and Brock demonstrated authority and competence with material objects, the software on the iPhone and the creative discourses of video production. Furthermore, as Laidlaw, O'Mara and Wong (2015, p. 69) argue, 'children are learning traditional literacy skills in new and different ways'. Ash was beginning to decode the text on the toy packaging by using initial sounds and visual cues; he understood the purpose of various types of texts (e.g, he was aware that the purpose of an unboxing video is to describe the toy packaging and content, persuade or dissuade his viewers of the quality of the toy and offer a critique of it while maintaining suspense). He understood the conventions, language structures and features of different text types (e.g. using terms such as '*kids*' and '*We are going to open up this set*' to invite the audience in) and critically examined different kinds of texts. In other words, Ash exhibited emergent literacy skills in ways that were non-traditional, as he embraced the blending of traditional and digital tools, print-based text and digital text. Notably, an examination of what the children were doing with the various materials or tools showed that production and consumption of texts were occurring simultaneously as they borrowed, examined and remixed the resources at hand. The point I make here is that we should not oversimplify what children are doing with literacies in their everyday lives, or what matters to them or underestimate their capabilities. A prominent finding of this study was a shift towards the young children being active co-creators of digital content 'due to their instant and easy access to a world outside their immediate physical and embodied space at younger ages' (Mustola et al. 2018, cited in Arnott & Yelland 2020, p. 137).

The discussion thus far has demonstrated how intra-actions with materials provided possibilities and expanded literacy opportunities for the children. Importantly, I learned to embrace how materials (space, time, nonhumans) matter in literacy events and how everyday materials were important forces in producing literacy for the young children. However, in accounting for the stuff that matters to children and thinking with a relational ontology, the rethinking of agency must occur. I learned to see that the materials were not passive objects waiting to be

manipulated by the children. Therefore, from a posthuman stance, agency must be attributed to the things, objects and material worlds that surround the children. This is a difficult concept to grasp, and I struggled with how best to articulate my thinking around to this idea and how to draw from the portraits to illustrate this concept. In the next chapter, I therefore examine material agency and consider how 'humans can work with materials and materials can work with humans to form dynamic becomings' (Sheridan et al. 2020, p. 1289). Drawing from Lenz Taguchi (2010a), I consider how the child is no longer regarded as superior to materials but instead becomes part of the assemblage.

Chapter 11:

Deconstructing the portraits: Complicating agency

Situating research in a posthuman stance provokes the rethinking of agency (Kuby & Rucker 2017). As Barad (2015, p. 287) articulates, 'matter is promiscuous and inventive in its agential wanderings: one might even dare say, imaginative'. This ontological shift sees materials as active agents and entails looking beyond the human when conceptualising what might be considered as human agency during the digital literacy events described in previous chapters (Barad 2007). While observing the children, I noticed how the materials available to them co-shaped their relations, and realised I needed to shift from viewing materials as neutral or passive and instead examine how they mediated action in the literacy events (Carrington 2017). In this chapter, therefore, rather than examining what the children did to materials in their literacy activities, I think with intra-activity to consider how they and the materials were intra-actively entangled.

When thinking with posthuman concepts such as Barad's (2007) concept of intra-action, agency is conceived not as being possessed by individual things or beings but as emerging through relationships. Hence, it is dispersed across people and materials and seen as a force being produced (Kuby & Rowsell 2017). The rhizomatic map below offers an illustrative representation of the posthuman theories regarding agency put to work in this chapter.

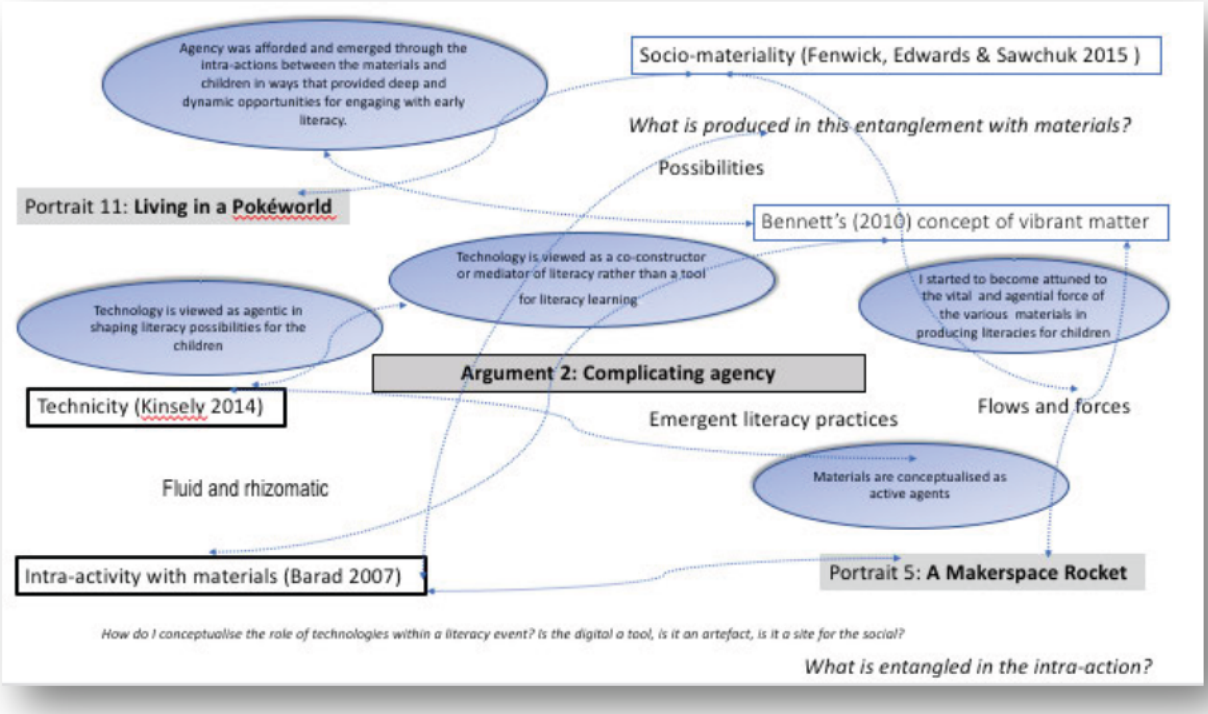


Figure 28: Rhizomatic map offering a diagrammatic representation of my thinking with theory and fieldwork material from Portraits 11 and 5

Posthuman theories such as Bennett's (2010) concept of vibrant matter and Barad's (2007) of intra-action are found in the fieldwork material from Portrait 11: Living in a Pokéworld and Portrait 6: A Makerspace rocket, which examine how the everyday materials available to the children have agency. Bennett (2010) conceives of materials as actants, explaining how they become important in the creation of literacy. In this perspective, materials are considered dynamic and closely entangled with human activity, and are therefore performative. On reflection I was able to identify how the material aspects of the children's home environments were strong performative agents in their literacy learning, and how the children and the materials were equally malleable to one another. Bennett (2010) argues that the human and nonhuman constitutively transform each other, co-constructing literacies, and that both are vital for the creation, invention and experimentation of literacy events. This view, combined with the concept of intra-action (Barad 2007), allows for a reframing of materiality from a 'design affordance to a cycling interplay produced by the physicality, fluidity and messiness of entangled bodies, things and places' (Wohlwend et al. 2017, p. 447). This was evident in Portrait 2, in which I moved away from thinking about the end product and started to pay attention to the process by which Brock and the materials intra-acted (Barad 2007). I learned to view matter as agentic – as 'promiscuous and inventive in its agential wanderings: one might even dare say, imaginative' (Barad 2015, p. 287). Bennett (2010, p. 5) saw the immanent agency of objects as including 'the ability to make things happen, to produce effects', and an attention to the vibrancy of matter (Bennett 2010) and the agency of objects in an intra-action between objects and humans highlighted the role of objects in unfolding various literacy events for the children (Barad 2007).

Agency emerged through intra-actions between the materials and child

Portrait 11: 'Living in a Pokéworld' was a long-term account of Ash's fluid and rhizomatic entanglements with all things Pokémon, in which his identities as a Pokémon fan, expert, reader and writer were shaped over time. Ash's ruling passion (Barton & Hamilton 1998) of Pokémon spanned a two-year period, from ages 4 to 6. The portrait drew attention to the intra-actions between Ash and the rich cultural resources available through his everyday encounters which supported his literate identity as a reader and writer.

In deconstructing Portrait 11, I suggest that Ash's agency emerged through and was afforded by the intra-actions between the materials. The intra-actions between Ash and the Pokémon card resulted in the generation of early writings related to Pokémon. He intra-acted with the Pokémon card, time and space, and was given the freedom to explore his literate identities. Ash's agency was therefore the effect of and enacted through the sociomaterial entanglements afforded within his home setting (Fenwick, Edwards & Sawchuk 2015). This was not solely about Ash and his parents acting agentically by using the Pokémon materials and devices in the creation of various literacy events. Instead time, space, materials and people intra-acted in their creation. Agency can therefore be viewed as not being performed solely by Ash, or solely by nonhumans (which creates an either/or binary), but rather as the force, flow, togetherness, in-betweenness happening during an intra-action. The force of Ash and the force of the Pokémon cards or Pokémon Go app overlapped, merged and extended into each other. Ash was enticed by the Pokémon-related material, which evoked various literacy interactions. For example, Portrait 11

describes Ash attentively scrolling through the Pokédex on his parent's mobile phone, reciting the names of Pokémon and investing hours into mastering the *Pokémon Sun* digital game. These illustrate how the materials engaged Ash, resulting in flows of activity that could not be predicted. In addition, 'the actions of the nonhuman object may have a more significant impact on the movement into the next moment' (Marsh, 2017, p. 5). In other words, intra-action with the nonhuman changes an event and may propel literacy events. The interest-driven Pokémon-related literacy events described in Portrait 11 were not initiated by adults; instead Ash was intra-acting with materials that spoke to him. Seeing Ash and the many other things within his home context as an entanglement in which all were equally affected by their relationships, or 'relationally linked with one another in webs', made visible how 'they make a difference to each other: they make each other be' (Law & Mol 2008, p. 58). The in-between-ness of Ash and the materials unfolded and created new realities, new artefacts and new ways of being a literacy learner (Kuby & Crawford 2017). As Lenz Taguchi (2010a, p. 47) argues 'agency is dispersed equally and mutually across people and the world – the learner and the world emerge in a co-dependency in entangled becomings'.

Ash's Pokémon-related activities were generated through an assemblage of time, place, people and material objects, and this assemblage acted on and was generated through semiotic, material and social flows simultaneously, exemplifying the changing nature of the literacy learning occurring in everyday contexts. In other words, the Pokémon-related materials were significant in shaping literate engagements for Ash. From this viewpoint, literacy learning relates to how nonhumans make children act and engage in the processes, and what forces are evoked in the event (Lafton 2015). Similar to Sefton-Green's (2004) research documenting his son's experiences with Pokémon, this portrait highlighted Ash's entry into all sorts of literacies in which Pokémon had a significant impact. Ash reconceptualised material he experienced as a gamer and Pokémon fan and drew upon this material when making texts (Pahl 2014). He merged and melded his knowledge of Pokémon acquired through multiple texts, and competently engaged in a wide variety of textual practices to communicate his expertise and passion for Pokémon, express himself and play with multiple identities. Ash's devotion to Pokémon also moved beyond his home context and became a form of cultural capital as it entered the schoolyard, where the trading of Pokémon cards occurred (until the school banned Pokémon cards, condemning the stuff of the everyday). As Dyson (2003) explains, adults, including educators, often prohibit and reject references to popular culture despite the important role they play in peer-based culture. As Ash drew on his Pokémon expertise as a form of cultural capital (Marsh 2011) to facilitate imaginary play scenarios in the kindergarten playground, his kindergarten educators commented on his desire to present that expertise to his peers and educators, demonstrating membership in a cultural group. Ash engaged in specialised language when discussing his Pokémon passion and was positioned as a Pokémon expert as he entered the technical discourses associated with this Pokémon world. When discussing Pokémon with family members, friends or educators, Ash would slip into the use of specialist language such as, '*Some Pokémon can turn into x and y's which is their ultra-evolution*' (20/5/2018). This poké talk demonstrated Ash entering a new and specialised discourse, and evidenced how the nonhuman (in this case the various Pokémon-related materials) and Ash were equally affected by their relationships.

Malone (2020, p. 161) describes the forces involved in children's relationships with materials and objects and how these 'interlink with the environment in responsive and reciprocal ways where forces push and pull, and where complex relationships between organic and inorganic, and other-than-human subjects already exist'. Looking back at the digital literacy events outlined in Portraits 2, 5 and 11, it was not the child or the technology that was a dominant feature, but rather the becoming, or the in-between entanglements of the children and the nonhuman that created new ways of being a literacy learner and led me to examine the relationship between literacy and technology and between children and technology. I learned not to make an a priori distinction between the human and nonhuman, and instead to view technologies as active agents recruiting humans (or being recruited by humans) in activity within an entangled assemblage (Latour 2017).

Technology as agentic in shaping literacy possibilities

Thinking about agency in posthuman ways prompted me to rethink the role of the technology within a literacy event. Delagrange (2011, p. X) theorises technology as 'embedded within webs of social and cultural contexts where they have agency and intra-act with people in active, entangled, sensed and lived ways'. In this way the technology becomes a mediator or co-producer of a literacy event rather than a tool. Various instances within this study demonstrated technology as agentic in shaping possibilities in children's early literacy experiences in the home. Through the various intra-actions outlined above, I became attuned to the diverse materials such as Pokémon cards, the *Pokémon Go* app, iPhones, PowerPoint, a laptop, GPS and wi-fi, and how these nonhuman materials afforded Ash multiple opportunities to interact and play. This allowed me to understand how the nonhuman was central to Ash working towards agentic literacy practices. For example, the use of the PowerPoint software afforded Ash the opportunity to demonstrate his Pokémon expertise, combining visuals, audio and text in an efficient, effective and professional manner. Ash's mother commented that the computer program enabled Ash to produce a lengthy and professional multimodal product that he would not have been able to produce by hand as the process would have been too cumbersome. However, constraints also occurred, as Ash was restricted by the PowerPoint template. He wanted to '*turn it [the PowerPoint] into a movie'*, but restrictions were imposed by the software. The agentic force of the technology can allow or restrict an interaction.

Throughout the portraits, the nonhuman was at times powerful and capable of disrupting a situation, provoking an intense affective response and/or altering a child's attention and the trajectory of their literacy activity. Bennett (2010, p. 6) refers to this notion as thing power – 'things have agency in themselves insofar as they produce effects in humans and other bodies'. which she describes as 'the curious ability of inanimate things to animate, to act, to produce effects dramatic and subtle'. Kinsley (2013) makes the point that research into virtual or online dimensions tends to posit them as other and immaterial in nature, whereas in fact the material nature of the online or virtual experience needs to be more carefully considered. In this endeavour, the agency of technology needs to be acknowledged, and Kinsley's (2013, p. 372) concept of "technicity" suggests the 'power that technologies have, both on their own and in combination with the human body, to make things happen in the world'. In this viewpoint, technology and humans are viewed as mutually constitutive to one another. As evidenced in Portrait 10: Princess

Fairy Tale Maker app, the agentic forces of materials such as the Pokémon Go app show how technology can be viewed as a co-producer in literacy events rather than a tool for literacy learning. The 'vital agential force of materials in producing literacies for the child' (Lin & Li 2020, p. 76) is evident in the way the Pokémon Go app alerted Ash by vibrating and sounding an alarm if he encountered a Pokémon, resulting in Ash's focus or activity being redirected (or not) by the technology. The notion of 'thrownotogetherness' surfaces as being not so much about what they (the children) choose but what might choose them (Masny 2005). Ash's strong attachment to the Pokémon-related materials held affective intensities for him resulting in excitement and the desire to take part in Pokémon-related activities such as playing the Pokémon Go game, creating a PowerPoint product and creating various texts. In this way, Ash and the nonhuman were acting on each other simultaneously and transforming each other. These observations led to what Bennett (2010, p.49) refers to as vibrant matter, as she argues that 'matter is not necessarily passive but has an active and productive capacity'. However, Lemieux and Rowsell (2020) warn that an overemphasis on technological devices as tools or resources has limited educational impacts, and that devices actually become different things in the relational opportunities of everyday life. Burnett and Merchant (2020) contend that people and things are always in a state of flux and that this view opens multiple possibilities for literacy as being whatever is assembled in the moment. Importantly, this thinking led me to viewing technologies as emergent.

The agential force of materials

Barad's (2007) concept of intra-action guided my interpretation of **Portrait 5: A Makerspace rocket**, which illustrated agency as the in-betweenness, togetherness, flows and forces of humans and nonhumans. The agentic forces of materials were evidenced as Emma played-with-materials and materials played-with-Emma (Kuby, Ricker and Darolia, 2017). Close examination of Portrait 5 revealed Emma engaged in a play assemblage with a Makerspace kit. Makerspace kits blend design, art/craft and technology, and involve a range of materials such as alligator clips, cables, playdough, circuit boards and cardboard, exposing children to aspects of computer coding. I observed the materiality, fluidity and messiness of the entangled bodies and things in this Makerspace assemblage, which evidenced Barad's (2007) notion of intra-action. The interweaving of the material and (im)material surfaced as the hybridised Makerspace assemblage progressed. Emma and the wires, playdough, buzzers and bulbs came into play together in ways that were not always intentional; the materials and Emma were active agents in the moment. As Kuby (2017) found in her study, the playdough and wires altered Emma's thinking just as much as her thinking altered the playdough and wires. Emma was being guided by the materials – as she explored the possibility of the formation of an electrical circuit. Portrait 5 showed how the materials were a strong performative agent in Emma's literacy learning (Lenz Taguchi, 2010a). The way the playdough could be easily manipulated, moulded and manoeuvred to form various parts of a rocket and the wires could be twisted and bent to meld with the playdough, and the sound of the circuit showed how materials performed in a particular way, shaping Emma's activity. Emma and the materials were co-constructing literacy together. The language used by Emma, such as '*We're going to the moon*' (rather than '*I'm going to the moon*') suggested she perceived the various

materials as equal participants, or, as Kuby, Rucker and Darolia (2017, p. 370) claim, that she'[thought] about materials as active agents').

Playful improvisation and exploration in the Makerspace kit episode sustained Emma's interest. As this example shows, while Emma was initially guided by the instruction manual and the desire to complete a circuit, experimentation occurred as she used trial and error, intuition, creativity and problem-solving to work her way through and with the materials. Emma was entangled in-the-moment, and as Kuby, Rucker and Darolia (2017 p. 367) claim, 'the working-with-materials preceded the knowing – it was through intra-activity, in-the-moment and enacted agency with materials that ways of using the materials, creating new literacies, and ways of being came to be'. Emma eventually disregarded the Makerspace kit instruction manual and, guided by the materials, used her fingers to feel and sense, suggesting the learning and knowing was taking place in-between (Barad 2007). Emma was not deterred by the frustration caused by a failed attempt at completing the circuit. Rowsell's (2020) recent research into maker literacy suggests that engagements in maker literacy events involve children working in creative and intuitive ways, often relying on embodiment and emotions and less on invention and skills. A sensory embodied force was noted as Emma was guided by her senses and the feel of the materials.

Thus far, I have argued for careful consideration of the material aspects of literacy and a consideration of materials as agentic and significant aspects of the literacy encounters I have documented. Alongside these aspects of early literacy observed in the study lie the roles of affect, emotions and embodiment. As shown in the example of Emma above, I observed the affectively driven practices the young children engaged in that motivated, inspired and sustained their literacy encounters. In the next chapter, I will draw particular attention to the examination of the affective and embodied engagement produced in literacy events, and how 'pleasure and potentiality can and do arise in apparently inconsequential episodes that involve new media' (Burnett & Merchant 2016, p. 65)

Chapter 12:

Deconstructing the portraits: Affective literacy entanglements

An important insight to emerge from this study was that literacy events are not merely cognitive pursuits but visceral and emotional reactions 'spilling with affective energy' (Thiel 2015, p.116). Thinking with a sociomaterial perspective during the analysis of the digital literacy events observed, and moving away from a cognitive-focused analysis, my attention was directed to the role of affect, emotion and embodiment in the children's practice of early literacy – that is, those aspects of literacy events that were not always 'rational or conscious' (Lenters 2018, p. 646). I became attuned to how affect and emotion played significant roles in the young children's literacy encounters and helped to 'propel generative interactions with literacy' (Burnett & Merchant 2018, p.66). Building on the arguments articulated above regarding the important and agentic role of materials in the children's literacy learning, this chapter therefore examines the children's affective responses to texts, people, ideas, spaces, devices and other materials that were important parts of the affect-producing intra-actions of early literacy.

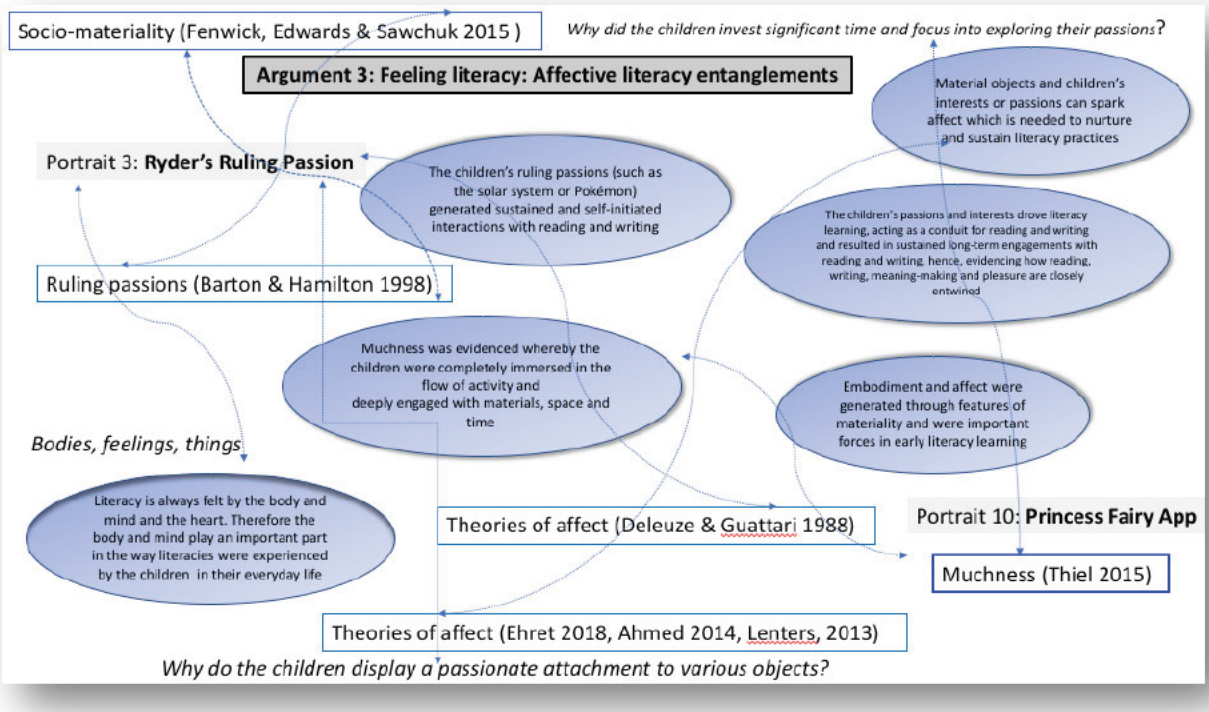


Figure 29: Rhizomatic map offering a diagrammatic representation of my thinking with theory and fieldwork material from Portraits 3 and 10

In this chapter, I think with theories of affect (Ahmed 2010, Ehret 2018, Thiel 2015, Lenters 2013) to contemplate the emergence and unfolding of positive affect in the children's literacy experiences. I argue that this propelled and sustained long-term engagements with reading and writing. Ehrat (2018) reminds us that literacy events are affectively driven – that is, that literacy is always felt, and the mind, heart and body play important roles in the way they are undertaken in everyday activities. Drawing on Deleuze and Guattari's (1998) definition of affect, Burnett

and Merchant (2020) describe affect as the feeling generated as people and things meet up in the moment. In other words, rather than being simply the feelings experienced and described solely by individuals, affect is the feeling produced as people and things assemble. When I examined the child participants' literacy practices as assemblages, affect and its place in the bodies and the materials associated with literacy practice became central agents in their literacy learning assemblages (Lenters 2016).

Things that enchant children and propel literacy learning

Returning to **Portrait 3: Ryder's Ruling Passion**, I noted affective intensities in Ryder's prolonged commitment to and emotional investment in the literacy practices surrounding his ruling passion of the solar system. The pleasure and pride he exhibited in relation to his passion of the topic of the solar system can be described as affective engagement. I argue that the various things – material (laptop, books, craft material, YouTube) and/or (im)material (emotions, excitement, memories, pleasure related to a love of solar systems) – that enchanted and moved Ryder with great intensity acted as a force motivating and inspiring affective responses that were significant in propelling his early literacy learning. Why did Ryder's curiosity about the solar system emerge, or Ash's long-term devotion to Pokémon? Why did the children invest sustained time and focus in exploring these passions? These unconscious forces, or aspects of literacy events that cannot easily be described or named by the children, could be considered affective encounters. Ahmed (2010, p. 29) articulates affect as a stickiness that 'sustains or preserves the connection between ideas, values and objects'. Many of the literacy events observed throughout the study were affectively driven, and affect was evident as the children drew on their ruling passions, whether Pokémon, unicorns or Skylanders, and displayed deep engagement, enthusiasm, pleasure, pride and a long-term investment of time and energy (a stickiness) in enhancing their knowledge related to the passion. As Lenters (2018, p. 648) explains, 'this passion or engagement comes before emotion; it is a visceral, preconscious response of the body (individual and collective)'. This notion alerted me to the important role of the body in literacy learning, and the positive emotional responses (bursts of energy, shifts of gaze, sustained concentration or excitement) produced when the children came into association with literacy objects and materials. A bodily affective response is seen in the excerpt from Portrait 5 as Emma: '*yells and jumps up and down. "Yay power! I'm an astronaut. The circuit's working. We're going to the moon in my rocket, going to the moon, pheww, pheww!" Emma's excitement at seeing the rocket light up fills the room*'. Other bodily responses were also observed, such as Ryder enthusiastically running down the hall to engage in viewing solar system animations on YouTube or Buttercup's intense focus on the iPad screen when creating a digital animation. These embodied responses to literacy objects and activities are, as Leander and Boldt (2013, p. 26) state, often not predictable, and unfold in unruly ways:

> [A] nonrepresentational approach describes literacy activity as not projected toward some textual end point, but as living its life in the ongoing present, forming relations and connections across signs, objects, and bodies in often unexpected ways. Such activity is saturated with affect and emotion; it creates and is fed by an ongoing series of affective intensities that are different from the rational control of meanings and forms.

In contemplating the children's relationships with materials both digital and nondigital, I noted that the children demonstrated strong and passionate attachments, or a 'stickiness' (Ahmed 2010), to various objects within their home settings that held affective and emotional connections, such as Pokémon cards, unicorns or animals. As in Pahl and Rowsell's (2019) recent research on artifactual literacies, I found it was difficult to separate out the material aspects of objects from how the children felt about objects. The children's identities were inscribed in these objects (Pahl & Rowsell 2019) as material displays of identity, and were closely aligned with their peer affiliations and popular culture interests such as *Skylanders*, Pokémon, unicorns, *Paw Patrol* and so on. The children's bedrooms, clothing and play areas were strewn with objects related to their passions. These cultural materials, such as toys, clothing, furnishings, media characters, video games and apps, oozed into the children's day-to-day activities as they remixed and blended different objects, drawing from their cultural inventories to produce new ways of being and doing literacy (Dyson 2003). In addition, I noted that many of the fieldwork sessions were dominated by the children's interests in and passions towards particular topics, which often involved a range of material objects related to this interest, and strong emotive responses such as joy, excitement and pleasure were evidenced in regards to their attachment to these materials. This was particularly noted in the way the children ran or jumped towards objects or smiled and laughed when engaging in activities, and their excitement about a particular toy or object. This affective attachment to materials was observed in Portrait 11: '*Ash has folders full of Pokémon cards. He cherishes these folders dearly and carries them around with him, eager to share and discuss his valued possessions with others, almost as a form of currency. He even sleeps with them*'. Ahmed (2010, p.31) articulates how 'emotions are shaped by a sociality of objects'. By this Ahmed (2010, p. 31) suggests that 'objects impress themselves on and stick to people, feelings, emotions and affect, or how bodies turn towards things'. An example of this occurred in the Cruz family home, in which Emma's affective connection to her toy figurines was observed: '*She had a passion for animals and unicorns and spent hours engaged in imaginary play with her various figurines. Her mother explained how Emma carried her favourite unicorn figurine around with her everywhere she went for months and spent hours online researching facts about unicorns*'. The point I make here is that close attention to the children's bodily affective responses offers an important means of understanding literacy development. This thinking can also help educators provide settings in which children's literacy assemblages can expand to include a rich and growing array of materials such as a unicorn figurine, a Pokémon card or an iPad that provide the stimulus for the kinds of affect needed to nurture and sustain literacy practices.

Following this line of thinking, I turn my focus to the children's ruling passions, based on the personal interests that were closely connected with material everyday objects. I draw a parallel between the concept of affect and Barton and Hamilton's (1998) concept of ruling passions. From a social practice perspective, Barton and Hamilton (1998) conceptualised 'ruling passions' as a way of explaining how people's passions and interests often dictate their literacy practices and how rich and authentic literacy practices may transpire as a result.

Ruling passions and interests fuse with literacy

In **Portrait 3: Ryder's ruling passion**, evidence of Ryder's creativity and agency ensued when Ryder was encouraged to draw upon his passion for the solar system, which engaged him at a visceral level. Drawing on Barton and Hamilton's (1998) notion of ruling passions, I argue that Portrait 3 reveals how Ryder's development of an enduring area of interest of the solar system grew and spread in a range of forms and led to a range of literacy events. I observed Ryder seeking out information about the solar system through various modes such as YouTube, print books, posters and conversation with an adult. As in Portrait 1, Ryder's ease of access to the internet and mobile technologies enabled him to begin interactions with the digital world and in affinity spaces at a very young age (Marsh 2014, McPake, Plowman & Stephen 2010, Neumann & Neumann 2014), fuelling his curiosities and extending his ruling passions. An excerpt from the portrait demonstrated Ryder's strong desire to increase this area of interest: '*The clip ends and Ryder pounces on the device, confidently navigating the YouTube search bar, scrolling through the "What's next" tab. Aware that YouTube is a source of valuable information, he states "Do you know Pluto isn't a planet?"*' Ryder was seemingly aware of the power of technology, and specifically the affordances of YouTube and how they could extend and enhance his passion, and engaged digital activities to support his offline interests as an enlargement of these activities (Kumpulainen, Sairanen & Nordström 2020). Several observations of the study's child participants indicated the use of affinity spaces (Gee 2017), in which the young participants entered into various online spaces such as YouTube and websites to extend their knowledge in a particular area of interest. The internet afforded opportunities for them to connect and collaborate with others virtually and access affinity spaces (Marsh 2011, Merchant 2010), and this instant and easy access to the world outside of their immediate embodied space allowed them to fuel and extend their passions. The children's various interests and engagements in online activity led to a range of reading and writing practices occurring off-screen.

Much like Barton & Hamilton's (1998) study of local literacies, the child participants were eager to share, show, discuss, play and demonstrate their ruling passion/s with me, which evidenced how 'people's everyday literacies, the literacies that fulfil and sustain, the literacies that keep people reading and writing beyond school walls, are guided by personal interests and desires' (Lenters 2016, p. 286). Ryder's solar system interest lasted several months and generated a sustained long-term engagement in literacy which was often self-initiated. Ryder's knowledge of the solar system impressed people, and he was recognised as a solar system 'expert' and positioned himself as one; thus, this solar system passion was integral to Ryder's identity and social positioning. As evidenced in the portrait when he stated '*Do you know Pluto isn't a planet?*', Ryder was eager to share his expertise with others. Ryder's passion was encouraged and supported by his family members, who promoted the extension of this knowledge and inspired future literacy learning. For example: Ryder's family purchased Ryder new books related to his topic of interest, took him to the museum to explore this topic further, sought relevant child-friendly apps and engaged in discussions about this topic. This area of interest was collaboratively developed and sustained by his family members, educators and peers, which in turn provided Ryder with rich opportunities for becoming a reader and writer that were always interwoven with other activities.

These examples highlight the complex and diverse way in which reading, writing, meaning-making and pleasure are closely entwined (Burnett & Merchant 2018). Gee (2004) illustrated this in a recent study, in which his young participant found the world of Pokémon captivating and pleasurable and learning to read was a by-product of his intense interest in and dedication to Pokémon. Much like in Gee's (2004) research, Ryder utilised reading and writing to support his zealous love of the solar system, and literacy offered him a conduit at which to communicate, develop and fuel this passion. This thinking highlights the importance of the relationship between affect, engagement and the purposes of literacy. The child participants in the study were not reading and writing for their own sakes, but because the literacy events and practices enabled them to fulfil personal interests and desires. Further, the new modes of engagement and interaction available to the children through new technologies offered expanded choice, freedom and flexibility based on their affective interests, identities and participation in diverse activities and practices.

A moment of muchness: Sustained engagement in literacy events

Working alongside the children for an extended period alerted me to the role of affect in provoking creative, inquisitive and playful literacy encounters across various modes and media that in turn generated sustained engagement in literacy events. Returning to **Portrait 10: Princess Fairy Tale Maker app**, I think with Thiel's (2015) concept of affect (conceptualised as 'muchness') to examine Buttercup's deep emotional investment in the creation of a digital animation. I argue that affect played a vital role in generating literate engagements for Buttercup which made evident the excitement of playing with the possibilities of a digital environment. I witnessed and felt the intensity of Buttercup's joy, concentration and enthusiasm as she engaged in creating the animation using the iPad, and the pleasure that bubbled up in the moment, providing sustained engagement with text. For Thiel (2015, pp. 38–39), 'muchness is theorized as an affective moment of intellectual and creative fullness that pulsates between bodies, space, objects, and discourse'. Buttercup's excitement was evident when her mother suggested she could engage in 'iPad time'. She expressed pleasure and enthusiasm as she cheered and ran to retrieve the iPad from her mother's hands. She also mentioned her love of using the iPad and how she could '*make cool stuff on it, all by myself*'. During our first fieldwork session Buttercup stated that using the iPad was her favourite free-time activity, highlighting the affective relationship she had with the iPad. The iPad provided Buttercup with a sense of autonomy, and she described having the freedom to use it and create independently. Sustained engagement meant she had time and space to explore on the iPad, resulting in more opportunities for repetition and variation that produced more complex digital creations and learning, which included experimentation, playful invention, innovative artefacts and sharing content with family members.

The concept of muchness (Thiel 2014) explains the ways in which bodies react, respond and engage intellectually when given access to materials. Throughout the observation described in Portrait 10, Buttercup and I sat side by side for approximately 30 minutes as Buttercup prodded, poked and swiped at the iPad intently, her focus and commitment to the task evident. Buttercup positioned the iPad directly in front of her and self-directed, and commanded the activity with confidence. This contrasted with other fieldwork sessions involving print-related

literacy activities, where Buttercup would position the materials between us so that I could support or scaffold her activity. Throughout the time, I witnessed a sense of concentration and deep engagement which I had not witnessed in previous sessions. Her sustained motivation was evident, and she could be described as completely immersed in the flow of the activity, or what Thiel (2015) describes as 'swept up' in it. Thiel (2015, p. 42), when describing muchness, suggests that it occurs 'during sustained engagement with an activity, when bodies are swept up in a line of flight, digging into the work, unstopped by challenged or frustration'. Buttercup demonstrated positive learner dispositions such as risk-taking, persistence and patience, for example when she deleted the first recording and began a new one. Despite the frustration of the initial setback, she persisted and displayed a strong sense of accomplishment. As Thiel (2015) argues, residuals of muchness might be pleasure, happiness and accomplishment, but also might be frustration. 'Muchness is a force that makes someone or something stick *with* and come back *for* more, despite obstacles' (Thiel 2018, p.28)

Thiel (2015, p112) argues that children become more 'deeply and intellectually engaged when given access to a broader range of materials and opportunities to perform and participate in literacy practices'. Buttercup was positioned as capable, competent and creative and was given time, freedom and space in her home setting, and encouraged to move freely between and with materials and engage in risk-taking opportunities in open-ended and unruly ways. Materials and activities were available to her, but there were no structured ways of engaging with them imposed and no specific outcomes expected. Buttercup self-directed this activity confidently and actively narrated a story, demonstrating an awareness of the language and structural features of a narrative. Through her interactions with the app and her various sociocultural interactions with her family (grandmother, parents) she engaged in collective imaginings (Flewitt & Clark 2020) of herself as an author, a creator of digital content, and consequently positive affective responses such as positive attitudes and feelings towards literacy emerged: '*I love this app, this is my favourite, I'm great at it*'. The accessibility of the iPad enabled new forms of participation and afforded Buttercup the space to position herself differently. She stated, '*I am the author*', indicating the assembling of desirable literate identities within her everyday contexts, including identities of expertise and power. Thus a sense of accomplishment and positive sense of herself as a reader and writer emerged: '*Mum, can you send my story to Gran? I always send Gran stuff. She loves my stories*'. I discovered that affect, coupled with the intra-actions between people, materials and spaces in these assemblages, drives very young children to engage in literacy events.

This chapter has established the important roles of affect, the body and emotions in literacy learning – the highly dynamic affective encounters between bodies, ideas, materials that characterised the children's literate engagements. Literacy does not simply reside in a child's mind; instead, their whole bodies, minds and hearts play important roles in literacy encounters. In the next chapter, I will shift my focus to examine the disappearing boundaries between the online and offline spaces of literacy activity.

Chapter 13:
Deconstructing the portraits: Spaces of possibilities: Hybrid and fluid literacies merging online and offline domains

The digital literacy practices of the study's child participants, particularly when child-initiated, 'often merged online/offline and material/immaterial boundaries and as a consequence, created multidimensional, playful and dynamic digital literacy practices' (Kumpulainen, Sairanen & Nordström 2020, p. 490). The rich and dynamic literacy episodes observed throughout the study demonstrated the complexity of contemporary literacy and play, and evidenced a blurring of boundaries between the online and offline domains and an enmeshing of the human, material and semiotic. Therefore, I argue that the entangled nature of contemporary literacy makes it difficult to sustain tight definitions of spaces (online/offline) or contexts (virtual words, videogames), and brings into question the boundaries between space and literacy practice. As articulated throughout this thesis, it is increasingly difficult to disentangle what happens onscreen from what happens in physical spaces, or to identify where on-screen/online activity ends and off-screen/offline begins.

In this chapter, I put to work Burnett et al.'s (2014) concept of (im)materiality to help me to interrogate the shifting dimensions of space in children's digital literacy practices. A literacy-as-(im)material perspective brings together insights from Chapters 10 to 12 into materiality, embodied literacies and so on, and argues for a multiplicity of literacies that brings together aspects of space, screen mediation, artefacts and embodiment. Burnett (2014) suggests the idea of 'going online' is becoming anachronistic as we increasingly operate across hybrid offline/online spaces, and argues that examining the relationships between the material and immaterial encourages a view of literacy as an entanglement or mingling of multiple relationships. As evidenced in the literacy events captured throughout the study, multiple relationships may play out in different time-spaces but come together in the subjective moment of meaning-making in different ways for individuals. I argue that a literacy-as-(im)material perspective helps to capture the complexity of the on/offline literacies observed throughout this study, and provides a language and a framework with which to understand how contemporary literacy play dispels boundaries as fluid movements across media and technologies from nondigital to digital, and across online and offline domains.

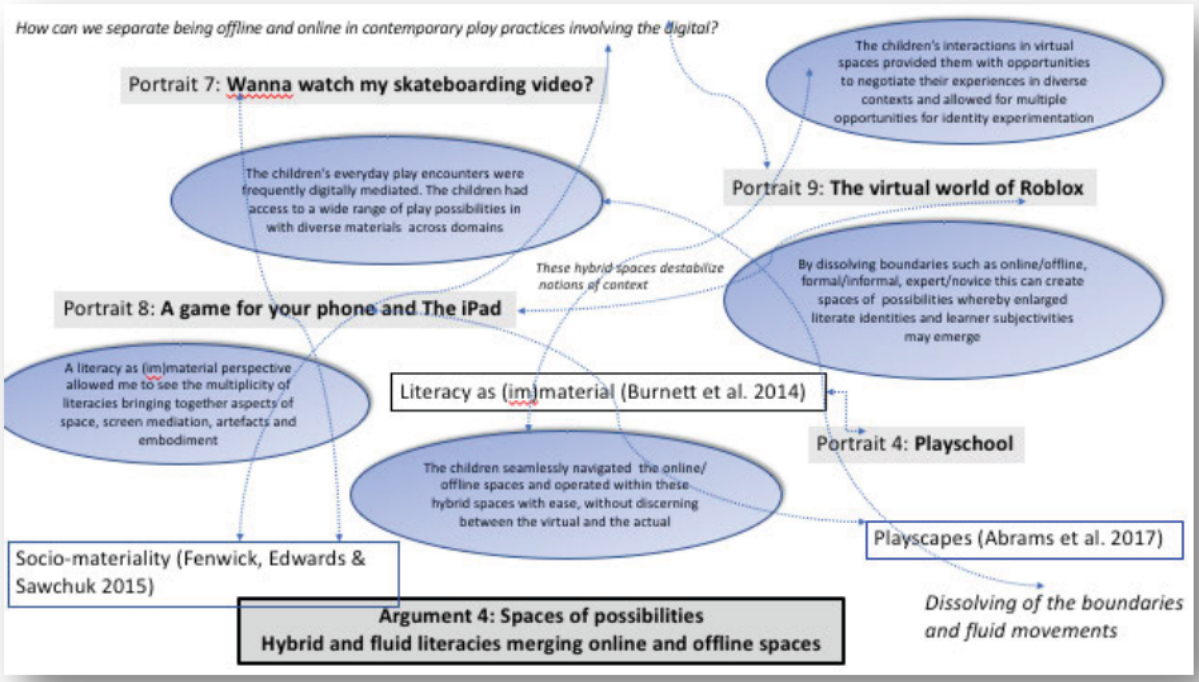


Figure 30: Rhizomatic map offering a diagrammatic representation of my thinking with theory and fieldwork material from Portraits 4, 7, 8 and 9

Fluid online/offline literacy play

As previously argued, in **Portrait 4: Play School Art Maker app**, Brock's playful improvisations were a recursive and unfolding activity that provided diverse kinds of literacy learning and possibilities and showcased the various connections he made with his everyday physical environment. The connections Brock made across and between modes and media created new kinds of play, which could be seen as a process of transduction, which occurs when semiotic material is transferred from one mode to another (Kress 2010). This notion of transduction is illustrated in Brock's drawing on the resources available to him and 'mixing up' of the modes, bringing about unexpected or unintended types of play and literacy activity (Kress 2010). Considering that contemporary children's play involves various digital entities, I echo Marsh's (2017) argument that we can no longer apply traditional theories of play, rather we must adopt theoretical views that move away from a human-focused position to account for the various objects and include opportunities to theorise the relationality in learning and play (i.e. learning as personal and collective, cognitive and embodied, rational and affective). This argument draws attention to the wide range of possibilities and complexities in both children's play and the varying networks that facilitate but also shape that play. It also accentuates the importance of play in the development of early literacy and conceives that play is itself a literacy. Wohlwend (2017, p. 49) advocates for play to be considered an essential aspect of early literacy programs: 'play is a literacy that easily navigates the material/immaterial indeterminacy of the pretend meanings and digitally enhanced play, enabling players to imagine otherwise and slip the constraints of here-and-now realities.'

In considering Portrait 4 and the offline and online nature of contemporary play, I think with Abrams, Rowsell and Merchant's (2017, p. 9) notion of 'playscapes'. This notion 'transcends compartmentalised framings of aspects of children's play such as space, time and practice and instead views play as entangled meaning-making across space and time' (Abrams, Rowsell & Merchant, 2017, p.11). It argues that playscapes reflect the 'interweaving of human, material, semiotic and discursive practices and attempts to articulate how boundaries are blurred between children's digital technology use, digital media participation, popular culture and play practices' (Wood et al 2019 p.215). This view of playscapes is evident in Portrait 4 as Brock, perhaps evoked by the force of the *Play School* program airing on the family television in the background, was reminded or nudged towards the Play School Art Maker app located on the iPad, moving from the real-world space to the online space. On completion of the animation and viewing it back, Brock merged this playful encounter into the physical world, manipulating his teddy bears and toy boat and narrating a new narrative, and thus imitating scenes from both a *Play School* episode and the Play School Art Maker app using real-world play objects. He did not distinguish between the screen-based media and the concrete toys, and moved fluidly between the spaces. As evidenced in the portrait, the materials available to Brock evoked him to engage with them and mediate the action. '*Hi, I'm Big Ted*,' he muttered, bouncing the physical object of a teddy bear up and down. He moved seamlessly between the physical and virtual worlds and navigated the various spaces for his play. It appeared that for Brock, there was no distinction between the online and the offline. His moment-by-moment play was spontaneous, inventive and unpredictable. He was simply responding to the materials, time and space to engage in spontaneous and creative literacy play.

In this instance, I observed what Gidding (2014) described when observing his son playing LEGO across virtual and material spaces: that children move seamlessly across these domains, and that the material and (im)material are interwoven in their imaginatively conceived 'gameworlds'. As in Gidding's research (2007), Brock played in an off-screen space what he had previously played on-screen.

When thinking with the concept of playscapes, an expanded discourse about space and the boundedness of practice emerges. Marsh (2017, p. 3) suggests that 'the boundaries between the subject/object and material/virtual are in a constant state of forming or becoming'. The notion of playscapes draws attention to the hybrid and fluid digital literacy practices that arise through children's on/offline practices, involving interactions between materiality and immateriality as described Burnett et al. (2014). In the next section, I therefore think with Burnett's et al.'s (2014) notion of literacy as (im)material in order to offer a broader analysis of Brock's literacy play encounter that accounts for the synergies between online/offline domains and complex networks, and foregrounds the relationship between the human senses, place and meaning-making in the engagement of digital texts.

Literacy as (im)material: Assemblages of material and immaterial elements

Adding an additional layer of complexity to the analysis of contemporary literacy play involving digital entities, the relationship between online and offline practices needs to be examined given the way in which young children's digital literacy practices move across these domains, as a flow of practice (Marsh 2015). Burnett et al.'s (2014)

conceptualisation of literacy as (im)material acknowledges the way in which the material (physical world) and immaterial (e.g. online spaces, emotions, discourses, attitudes, social relations) are related in meaning-making practices and become entangled. As argued previously, while the material aspect of literacy is vital, the immaterial also plays a pivotal role regarding affect and embodied practices. Burnett et al.'s (2014) use the term to articulate a relationship between the material and immaterial and demonstrate the interconnectedness between space, mediation, embodiment and stuff, and thereby explore literacy as a sociomaterial practice further. This model therefore both refers to the material element of things (e.g. screens, wires, toys, keyboards, tables, texts, whiteboards and bodies) and shows these as intertwined with the discursive, social, affective and conceptual aspects of literacy experience and practices. While software and technology play a role in text-making and literacy development, a literacy-as-(im)material view also shows other aspects such as bodies, movements, materials and places are significant in shaping literacies. I use this model to offer a further analysis of Portrait 4. The table below maps out the four prepositions of (im)materiality against the practices occurring in the portrait to conceptualise the material and immaterial elements within the literacy play encounter.

Table 8: Aspects of Portrait 4 mapped against Burnett et al.'s (2015) concept of immateriality

Preposition	Definition	Analysis
Preposition 1: Space	Relationships between the material and immaterial are relevant to how literacy is spatialized	The world beyond the home is accessed through the Web (animation app, television episode) Communication through the animation app Internet – access to global spaces Animation – virtual world Home
Preposition 2: Mediation	Screen-based texts mediate reality in ways that prompt shifting relationships between the material and immaterial	Gaming app Reading instructions within the animation App Television episode of *Play School*
Preposition 3: Stuff	Literacies are materialised in things	Bodies, laughter, sound effects, problem-solving, mobile devices, apps, wi-fi, toys, television, pleasure, discourses, emotions, parental attitudes, joy, pride
Preposition 4: Embodiment	Meaning-making is embodied	Role-play Verbally narrating game-like play Navigating virtual gaming spaces Manipulation of the animation software

As Burnett et al. (2014) propose, investigations into children's engagement with (im)material culture should acknowledge the relation between the spaces in which that engagement takes place, the mediated nature of the world seen on screens, the 'stuff' involved in meaning-making practices and the embodied nature of those practices. Portrait 4, for example, illustrated the (im)material practices of play, inquiring, navigating, searching, looking, finding, reading, viewing, discerning, copying, remixing, sharing and designing that Brock performed as he interacted with the (im)material aspects of space, text and stuff in subjective ways. The concept of (im)materiality helped me to challenge sharp separations of virtual/real-world, online/offline, local/global, and instead view this activity as a constant flow between domains. Notions of context become destabilised and online and offline spaces blur as what happens online shapes what happens offline and vice versa in complex and multiple

ways: for instance, in **Portrait 7: Wanna watch my skateboard video?** Ash's hobby melds into the online space and merges in the form of a media production, but his love of playing a skateboarding digital game previously conjured the desire to learn to skateboard in the real world. As Colten (2017) found in her research, by adopting this model in the analysis of digital literacies we can move away from viewing literacy as a mental construct or set of skills and see digital literacies as an assemblage of (im)materiality.

The notion of literacy as (im)material captures the relationship between what happens online and offline and avoids viewing these as separate domains. The material, textual and connected dimensions are seen as interrelated, suggesting that together they help us to focus on the on-/offline and the on-/off-screen as part of the same socially produced space. This view alerts us to the flows that occur across on/offline and on-/off-screen literacy practices and the kinds of experiences and feelings made available as this happens, drawing attention to how official and unofficial literacy practices and identities merge with each other in different ways. Importantly, an understanding of literacies as (im)material and as moving across fluid and hybrid spaces disrupts dichotomous thinking. The children did not differentiate between the digital and nondigital, between schooled practices or home practices or between expert and novice. In embracing a posthuman lens, what materialised for me was how the children taught me to be open to the world and to answer to it rather than constantly trying to label it or categorise it. These ideas helped me to overcome dualities regarding what are considered official and unofficial spaces and recognise the complex, multiple and nuanced way digitally mediated literacy practices emerged in contemporary contexts.

Boundary hopping: A space in-between

The disappearance of boundaries between the domains of literacy practice such as school/home, formal/informal, online/offline and expert/novice is further exemplified in **Portrait 8: A paper digital game and paper iPad**, in which the young children creatively wove together and transported their digital textual pleasures onto the traditional mode of paper. In the example of a video game played on paper, Ash merged traditional and contemporary literacies as he drew with the traditional media of paper and a purple marker to play with a text with digital conventions. Kress's (2015) notion of transduction surfaces (as discussed in Chapter 6) holds that meaning is remade across modes but also across dimensions of time and space. The image was transformed into an object that also expanded Ash's range of modes and practices for creating meaning to verbal modes and playing on the app through embodied modes of posture, movement, and facial expression as he pretended to be an iPhone owner playing on a digital gaming app. This highlights again how the view of literacy as (im)material challenges sharp delineations between material and immaterial. As Burnett et al. (2014, p. 92) explain, 'threads and traces of other times and places play out in any literacy event'. A further connection can be made to posthuman textual play that involves the whole body (not just the mind) and can be viewed as an embodied experience (Lenters 2016). The embodied nature of Brock's engagement with the text is evidenced in this excerpt: '*Brock: "You press it. I can message Nanny, watch toy videos, go to the App Store an get new cool games. It has the Apple sign, see?" (points to the back of the iPad)*'.

These observations showed the children transferring what they know from home and bringing it into their formal educational settings. Despite Brock's kindergarten being a technology-free environment, the vertical structures of the formal institution dissolve as he transports his cultural and digital lifeworld into the educational setting (Moje et al, 2014). In this way literacy can cross sites and travel in a bidirectional manner between home and school (Pahl 2014), blurring the boundaries between the official school space and the unofficial space of the home (Dyson 2003). Here we see the (im)material nature of space, that is the integration of the spaces of home and school, and how the children configure identities through them. Maybin (2007) conceptualised the notion of 'under the desk literacies' to capture how literacies are constantly on the move and occur in liminal spaces; I argue that the children were pushing boundaries in this way and developing their own third space (Wohlwend 2015) – a liminal space or space in-between. Changing ways of doing literacy (such the distributed, co-produced and remixed nature of contemporary texts) are blurring the boundaries between home/school, formal/informal and online/offline. This home–school knowledge exchange and the notion of children bringing their digital lifeworlds from home to school or school to home (the in-between or liminal spaces) is also presented in various other observations (Portraits 2, 3, 8 and 11). For example, in Portrait 4 Ash created a video at home and requested that it be emailed to his school teacher for show'n'tell, and in Portrait 8 where he (at kindergarten) designed a new game for his mum's iPhone. This problematises dichotomous notions such as in-school/out-of-school or formal/informal literacies (Bhatt & de Roock, 2013), and embodied and print contexts. A literacy-as-(im)material perspective can promote the notion of home/school knowledge exchange and the bidirectional connection that exists between the literacy practices developed at home and the practices occulting at school (Gillen 2018).

Playing with identities in a virtual world: Shifting identities with materials over time and space

I now return to **Portrait 9: The virtual world of Roblox** to consider the fluidity with which Emma and her brother navigated between on- and offline spaces using digital and nondigital resources which 'necessitated that they negotiated and adapted their identities in both embodied and digital contexts' (Arnott & Yelland 2020, p. 135). As online and offline practices intertwine, children's development of new identities drawn from their interactions in online and offline communities permits them to negotiate their experiences in diverse spaces, which consequently provide them with a multitude of possibilities for identity experimentation (Comber 2016). Building on Rowsell and Pahl's (2007) theorising of sedimented identities in texts, I situate 'identity' within this study as the performance and materialisation of agency through representational and communicational choices. Thinking with a literacy-as-(im)material perspective draws attention to how literacy practices often 'span different domains' and how these can 'evoke a variety of contexts in different ways' (Burnett et al. 2014, p. 2), and thus how children can present aspects of identity across textual spaces, including the simultaneous occupation of real and virtual networks.

In Portrait 9, two children 'playing with' their identity-making within the virtual world of an online game. They were observed playing, socialising and learning across a virtual and actual space. The children merged their personal interests (Emma wishing to live on a farm when grown up, her love of animals) with their social and cultural relationships (playing a multi-player digital game, chatting via the chat function with siblings/peers, gaming culture)

in a virtual space. As the children engaged in the virtual world, despite being in the same room and only a few metres away from one another, they utilised its chat function to communicate, allowing them to tap into their gamer identities. They played simultaneously in a virtual and a real-world space, demonstrating how their (im)material performances were deeply entwined with their embodied lives. An excerpt from Portrait 9 reveals Emma exploring her gamer identity: '*I glance over Emma's shoulder and notice the chat feature on the screen. "Wer is the dor?" Emma asks her brother via the chat messaging feature*'. This literacy event provides evidence of expanded literacies for Emma as she manipulates and creates images, sound and text simultaneously.

The portrait reveals how Emma and her brother made sense of their online and offline identities and became more digitally literate through collaborative interactions. The virtual world of Roblox provided openings for Emma to enter and explore her gamer identity and self-expression. Craft (2013) suggests online environments extend identity play; suggesting that digital tools and spaces enable reconfigurations of children's normal identities and experimentation with a sense of self. Emma and her brother adopted various roles as gamer, designer, learner and mentor that showed how digital literacy practices shaped their relational practices, and transformed the ways in which they related to each other. The children also exhibited agency as they bypassed the game designers' design feature of purchasing items using Robux (Roblox's in-game currency) in order to modify their avatars and instead used the 'affinity space' (Gee 2017) YouTube to seek out alternate ways to acquire free items and personalise their avatars: '*You need Robux to buy more things and stuff for your avatar. But there are some free things in the shop you can use. I watched it on YouTube*'. Emma later told me that her parents prohibit her from purchasing Robux. As with Portrait 5, a correlation to Gee's (2017) work on affinity spaces can be drawn. Various fieldwork examples (Portraits 3, 5, 7 and 11) showed the children entering into affinity spaces, which were usually online spaces in which participants joined interest-based groups to learn, expand and share their knowledge. The boundary between expert and novice blurred as the open-access of affinity spaces positioned the children as producers or, as Gee (2017) stipulates, becoming experts without credentials (Gee, 2017).

Marsh (2010) claims that virtual worlds are important spaces for to play with identity experimentation as children can create new activities, new worlds and new ways of being. This notion was apparent when the children negotiated identities vis-à-vis digital objects or virtual worlds. For example, throughout Portrait 8, Emma and her brother 'played' with identities as they co-created a virtual 'grown-up' world of a farmhouse and created avatars that reassembled their real-world selves. The avatars they created represented their (real-world) favourite colours, styles and hobbies, intersecting their online and offline identities, and Emma used the virtual world to explore her future self as a grown-up, interacting with various objects and articulating her future (grown-up) desire to reside on a farm when she is an adult. When discussing the potential for identity development offered by digital spaces Gee (2010) argues that virtual spaces offer possibilities for playing, learning and socialising in online networks, and the freedom they afford may lead to power and connectedness with others, and expanded notions of self and identity.

To conclude: in this chapter I have illustrated how within their various digital interactions the child participants in this study dissolved separated framings of time, space and practice. This evidenced how the boundaries between

space and literacy practice are interlinked and an assemblage of (im)materiality'. This thinking urges literacy educators and researchers to be mindful of a priori or taken-for-granted binaries that result in the restricting of literacy provision and practice. As Burnett et al. (2014) propose, inquiries into children's engagement with (im)material culture should acknowledge the relations between the spaces in which the engagement takes place – this includes, the digitally mediated aspect of what occurs on the screen, the material elements, and the embodied nature of the literacy practices.

Conclusion

Chapters 10 to 13 have offered a detailed analysis of the findings illustrated in Chapters 5 and 6. Thinking with theory, to I have deconstructed the 11 portraits to unpack the key insights derived from them and constructed an argument for the urgent need to think about literacies in expanded ways, and in particular to recognise the important role of the affective, embodied and material dimensions of early literacy. I argue that self-initiated and sustained trajectories of literacy engagement occurred for the child participants in this study that were closely connected to their passions and material objects of interest. The discussion evidenced how materials mattered to the children and how the materials and the children co-constructed literacies. I have also illustrated the fluid and sometimes unintentional ways in which literacy emerged for the children, which was a departure from intentional design. My analysis of the portraits points to a need for literacy educators to move away from the sole focus on a literacy product or outcome and instead focus on a process allowing for flows, intensities and surprise (Kuby 2019), and for consideration of how literacy is not just a cognitive task but rather one felt by the whole body. Finally, I examined the fluidity and hybridity of contemporary literacies, where the fluid boundaries between the human/nonhuman and the material/virtual were in a constant state of becoming, and therefore became spaces of emergent possibilities, producing infinite potentialities for early literacies.

I argue that recognising the material, embodied, affective and spatial aspects of literacy and thus seeing young children's literacy activity in expanded ways raises critical questions of the accounts of literacy 'development' currently prevalent in Australian early childhood literacy discourse. These ideas oppose notions of literacy as an individual, sedentary practice denoted by a linear, predetermined developmental trajectory. As argued in Chapters 2 to 4, despite the vast changes occurring beyond the children's classroom walls, as evidenced in this study, 'early childhood classrooms remain stubbornly print-centric' (Wohlwend 2019, p. 147). Early childhood education remains fixed in developmental and human-centred approaches stemming from developmental psychology (Murris 2016, Taylor, 2013). This view centres on a predetermined developmental view of literacy learning with a strong emphasis on classroom practices focused on transmission, reproduction or imitation and a stable, defined and transmittable body of knowledge (Olsson 2018). Lenz Taguchi (2011, p. 36) queries the majority of pedagogical practices implemented in schools, which she states are 'still based on a print-based approach' and 'do not consider contexts for creative and experimental literacy learning that incorporate the body and material artefacts as a part of learning environments', ignoring children's multiple ways of meaning-making (e.g. involve role-play, singing, moving, drawing, building, creating, making) and being dominated by educational experiences geared towards

logocentric (language-focused) or anthropocentric (human-centred) methods. As Kuby (2018, p. 33) notes, this 'doesn't leave room for multiple ways of reading, writing, and being literate in the world today'. This 'Cartesian mind/body duality, in which the mind is prioritised over the body', is disrupted by posthuman scholars, and Lenz Taguchi (2011, p. 39) makes the important point that

> although there are new strategies for the teaching and learning of literacy that try to challenge instrumental preindustrial pedagogies (such as Reggio-inspired and inquiry approaches), contemporary teaching and learning practices tend to regard as taken-for-granted that learning takes place inside the individual student

The assumptions implicit in these humanist developmental views neglect what Barad (2007) refers to as a relational ontology in which various entities in the world connect and relate through various intra-actions. As Deleuze (1980, p.190) suggests 'education today suffers from infantilisation, with young children represented as immature and lacking and seen as being in stage of deficit, or 'adults in the making'. He even argues that 'if the protests of children were heard in kindergarten, if their questions were attended to, it would be enough to explode the entire educational system' (Deleuze 1980, p 109). The literacy events and practices I have unpacked in this chapter raise important questions about 'schooled' ways of doing literacy. In the final chapter of the thesis, I will therefore contest current early literacy policy and practice in Australian contexts, consider the pedagogical implications of my study and attempt to envision what literacy learning and teaching might look like if we embrace the findings from this research.

Chapter 14:
Piecing together the threads

Introduction

This final chapter of the thesis begins by problematising the current political context of Australian educational settings and highlighting the need to urgently disrupt literacy and literacy education discourses. I argue that current literacy policies and curriculum in Australia inhibit the development of understandings of children's literacy practices as presented in this thesis. I summarise the research findings and how they address the study's overarching aim, and explicate the study's main arguments and the contribution it makes to new knowledge in the field of early childhood literacy both theoretically and pedagogically, while also offering practical recommendations for early years educators. I then outline the limitations of the study and consider the potential for further research, before concluding with some final reflective comments.

Disembodied brains on sticks: An outdated, deficit model of literacy

Given the complexities of our current times and the diversity of contemporary children's lives, the Australian government's approach to literacy policy and practice has been to offer an oversimplified answer – to reduce, simplify and tighten literacy provision. This has led to the adoption of what Vicars (2017, p. 16) describes as a deficit model of teaching and learning aligned with an industrial model of literacy: 'despite an increasing acknowledgment of how technological innovations have changed how children learn and use literacy, the teaching of reading and writing guided by policy continues to privilege a print-based principle and an industrial model'. The everyday lives of children like Brock, Buttercup, Ash, Ryder and Emma, their high levels of competence with digital literacies and the complex, situated, cultural, social and material aspects that influence their literacy learning are disregarded or ignored under this print-centric approach. Murris (2016) asserts that this deficit, linear model of literacy education assumes an ontological split of the mind and body; as Haraway (2016) states, it is based on autopoietic systems – self-produced binaries, or 'brains on sticks' (Murris & Haynes 2020, p. 26). This approach does not create learning environments that allow for creative literacy experiences incorporating the body and material aspects of literacy learning (Lenz Taguchi 2010a, p.). Furthermore, as noted above, it is based on a deficit view of children which position them as incapable. As a result, 'we fail so many of the world's children' (Murris 2016, p. 154): as Erstad and Gillen (2019, p. 32) point out, literacy approaches of 'accountability and standardized testing, do violence to the life experiences, talents and indeed skills of children from backgrounds that do not comfortably align to what is required of them in such demands'. These practices are considered inauthentic to many children, particularly those whose everyday lives do not readily or comfortably map onto the environment of the testing regime or a particular type of 'schooled' literacy (Gee, 2005). They also fail to consider children's cultural experiences or 'funds of knowledge' (González, Moll & Amanti 2006).

In the current era of assessment and standardised testing, questions also need to be raised about what is being assessed and whether testing improves educational outcomes. It is important to recognise that the assessments are not neutral; as Murris (2016, p. 184) states, 'the tests that measure the student's capabilities are based on a particular view of literacy and knowledge and figuration of child as deficit'. Cope and Kalantzis (2010) assert that standardised tests based on print-based approaches assess a very particular kind of skill and short-term memory and lack life validity. Standardised assessments are not about meaning-making, and yet this form of high-stakes testing drives curriculum and pedagogical trends. Regrettably, as Erstad (2010) states, a focus on learners and how we can best engage them in literacy learning that has implications for their lives and trajectories as learners seems to have disappeared:

> it is as if the developments in young children's lives outside of nursery and school are occurring within a self-contained, virtual bubble that has little to do with the stuff of the first years of schooling, which generally continues to focus on phonics, print-based literacy and canonical narratives. (Marsh, 2006b, p. 23)

Laidlaw et al, (2015, p. 74) call for a reconceptualisation of early years literacy models for the 'new disposition children', arguing that 'we need to ask whether schools are ready for children rather than whether children are ready for schools'. I acknowledge that the term 'new' used here is problematic, as I am aware that due to the rapid emergence of technology what is considered new at the time of writing this thesis will no longer be considered new once it is complete. Even during my fieldwork period, new textual encounters emerged and became normalised within the children's experiences as apps and technologies evolved. For example: one child participant became interested in TikTok at the conclusion of our fieldwork period and began producing TikTok videos with an older cousin. The MSN Messenger Kids app also gained popularity towards the end of the fieldwork period, and participants from the Alves and Shar families became regular users, frequently sending and receiving text messages with friends and family members. Furthermore, what is considered new for adults reading this thesis might not be considered new for the child participants. As noted in the literature review, contemporary children have been born into this digital milieu and have never known a world without the digital. Although Kress (2005) and Laidlaw, O'Mara and Wong (2015) use the term 'new' to describe the new depositions exhibited by children related to their digital textual practices, I argue that a more suitable term would be 'emergent'. The term emergent signals that while these digital literacy dispositions and practices (e.g. creating an unboxing video or asking Siri a question) might be new for adults in comparison to more conventional literacy practices such as writing a letter they are not necessarily new to the child participants. After all, these practices will continue to evolve and change as technologies advance.

Speaking back to policy: An education system in crisis

Next, I engage with the wider political discourse to consider the current climate in literacy education in Australia and contest the current neoliberal reforms occurring in both policy and practice, which have resulted in the 'micronizing [of] curriculum and teaching and deskilling [of] teacher work' (Luke 2003, p. 61). I argue that there is an urgent need to examine the current political context in Australia in regards to literacy education, which Cockburn

(2018) defines as a national crisis. Albright and Luke (2010, p. 3) claim that the current rhetoric from educational policy-makers, politicians and the media with regard to literacy education tends to regurgitate a longstanding narrative of 'declining standards, loss of the literary canon, troubled and unruly students, irresponsible parents and overly permissive teachers'. Media headlines broadcasting this literacy crisis, feature debates about Australia's plummeting performance on PISA league tables, inadequate literacy levels, falling NAPLAN test scores and enduring disputes surrounding the reading wars, which can be traced back to the 1950s (Luke 2003). In response to this literacy crises, what has ensued is an increased testing agenda, a return to the basics of reading and writing, a dumbing-down of the literacy curriculum and a more uniform, standardised approach to literacy education (Luke 2003, Carrington 2017 & Cope & Kalantzis 2010). However, as Luke (2003, p. 59) warns, these policy discourses do not address the real crisis, or what he calls 'the challenges of new times'. What is missing from current policy discourses is the fact that Australian literacy education policy and practice fail to acknowledge and respond to the complexities of the rapidly changing world and the major social, cultural, technological and economic shifts it is undergoing, and instead have opted for complexity reduction. In addition, outdated notions of what actually constitutes contemporary literacy and a curriculum and pedagogy grounded in print-based approaches dominate the field. As Luke (2003, p. 61) argues, the government's response to the challenges of contemporary times has been 'more tests, outcomes of different kinds and levels madly proliferating and an increased move towards US-style commodity-based instruction'. This neoliberal approach blatantly disregards the powerful changes to literacy and enticing literacy practices occurring outside of schools, alongside 'complexities surrounding globalisation, digital disruption, and the impact caused by mass-health crises (the recent Covid-19 emergency for example), which reveal that a sole print-based literacy education is insufficient preparation for life and work' (Bacalja 2021, p. 1). As Lenz Taguchi (2010a, p. 36) states, we need to question the relevance of these enduring practices, particularly in relation to 'the lives of millennial children living globalised lives'. Finally, Luke and Albright (2007) argue that despite over a decade of these particular policy approaches, concerns over equity and literacy provision have endured, with the equity gap between advantaged and disadvantaged students widening. A literacy education review undertaken by Freebody (2007) indicates that out of the 38 OECD countries, Australia is third from the bottom in terms of school funding. The review suggests that Australia has flatlined as a nation in terms of international literacy league tables; educational disadvantage remains high, and teachers and students are disengaged.

Neoliberal reforms and policies have increased pressure on accountability for student learning outcomes and resulted in a deskilling of teacher work. While teachers are clearly central to the quality of children's literacy learning, they have been effectively silenced and isolated from decision-making when it comes to building both policies and theories of better literacy practice (Darling-Hammond 2000). Teachers' agency has been removed and replaced with prescriptive curriculum and oppressive regimes of testing and inspection (Biesta 2010). This shift has seen teachers leave the profession due to a combination of lack of autonomy and other systemic factors such as an increased standardised testing agenda, restrictions on curriculum, negative impacts on the socio-emotional needs of children, lack of trust in and respect for their profession, and lack of voice and agency (Bartell

et al. 2019). It is well documented that national policy and curriculum create pedagogic structures that influence classroom practices (Darling-Hammond 2000); therefore, it is no surprise that the oppressive systems generated by current policy constrain the work of teachers, impeding their professional judgement to the detriment of their students, and result in classroom practices that suppress learning divergences and learner creativity. Concerns over performativity agendas are even more alarming when we consider how childhood has changed and will continue to change due to the emergence of the digital world. As Craft (2012) argues these changes require imaginative, open and creative approaches from educators rather than restrictive, conservative and stifling practices. She further argues there is imperative to prepare children for the literacy demands of contemporary society (Craft 2012).

This study has drawn attention to the powerful, unstable and complex changes to literacy that are occurring in out-of-school contexts and that require significant paradigmatic shifts from literacy educators, researchers and policy-makers. As Murris (2016, p. 177) insists, the 'digital revolution is an opportunity to liberate child as deficit and include literacy practices that involve all of children's multimodal languages and capabilities', and it has long been argued by literacy scholars that policy-makers must take into consideration the literacy practices that children bring to their educational experiences and expand the views of literacy that inform policy and curricular (Dyson 2006, Luke 2003, & Pahl 2009). This thesis is well placed to make recommendations in the areas of policy, curriculum and early childhood practice. Based on the findings from this study, I argue that there is an urgent need for sustainable and ethical approaches to early literacy learning and development that address the complexities of contemporary daily life and value the diverse literacy expertise and experiences that children bring into the classroom.

The original contribution of this research to the field of early literacy education

The broad aim of this thesis was to develop an in-depth and contextually situated account of young children's digitally mediated literacy practices as experienced within their everyday contexts. Its detailed and rich account of the five child participants' digital literacy practices as experienced in their daily lives provides deep insight into their digitally mediated shifting practices surrounding reading, writing and meaning-making and finds that the material, embodied, affective and spatial dimensions of literacy are substantial components of the children's early literacy experiences in their home contexts. In their everyday lives the five children made meaning in diversified ways, drawing on a range of modes, methods and tools beyond alphabetic print. One of the more significant findings to emerge from this study was therefore the need to understand literacy differently and theorise towards wider frameworks of literacy that are inclusive of the multitude of practices and access to diverse materials occurring in children's everyday lives. It thus makes an important contribution to understandings of contemporary literacy.

This study found that Brock's, Ash's, Ryder's, Emma's and Buttercup's early literacy experiences were intertwined in complex ways with their intra-actions with everyday materials, digital devices and texts. As evidenced in this study, due to a rapid growth in technological advancements, the accessibility and ease of use of digital technologies

has led to transformations in how children develop early literacy (Craft 2012), and this shift has resulted in extended opportunities for children to experiment with multiple textual identities and expand their participation, choice and agency over their literacy interests and practices. This increased participation in literacy events affords expanded learner subjectivities in which young children position themselves as competent digital content creators, readers, writers, communicators and meaning-makers. Ash, Brock, Ryder, Buttercup and Emma demonstrated proficiency at using various digital resources as they confidently navigated virtual worlds, capably sought information from online sources, navigated digital gaming, generated and manipulated digital content and engaged in online networking. They pursued new ways of remixing and authoring sophisticated texts and created their own digital content, demonstrating high levels of creativity and expertise. As they moved across the various digital landscapes in their home settings, they developed and deployed literacy knowledge and skill and expressed their identities, and in doing so created new texts and literacies, transforming the traditional understanding of what is meant by literacy (Millard 2003).

The study has illustrated the complex multimodality of the five children's digital literacy practices and how these were closely connected to the everyday rhythms and routines of each family's daily life. While the families in this study had many characteristics in common, they exhibited diversity in terms of parental values about and attitudes to the role of technology in their children's lives, and the children's digital literacy practices were closely mediated by parental beliefs and ideologies. As detailed in the accounts of the five children, the presence of digital technologies in the family homes not only extended literacy practices across the diverse modes and media (Kress 2003) but also transformed the home environments from a bounded space into a networked one where the children could connect and communicate remotely with family members and friends and engage with a world of information and content by using diverse web-connected digital media beyond their home environment (Flewitt & Clark 2020).

Undoing the digital

A significant finding of this thesis is the realisation of a need to move away from debating whether digital technologies can or will enhance literacy provision and instead regard literacy as simply digital. The young children in this study developed early literacy in ways that were increasingly mediated through digital channels. The study thus forced me to reframe the notion of the digital and think about it in different ways. I was able to see how the child participants did not differentiate between the digital/analogue and the online/offline, and instead treated digital devices and networked spaces as commonplace. The children also frequently utilised digital tools in ways not intended by the designers, as evidenced when Ash held an iPad in the air and manipulated it like a toy rocket. Digital tools became different things to the children, such as play objects, tools to communicate with, ways of seeking answers to questions or artefacts with which to revisit personal memories (Burnett & Merchant 2020). This study, in other words, evidenced how technology was deeply embedded in their daily literacy practice and an ordinary part of their lives. I therefore conceptualise that the digital is part of literacy and not separate from it. The ways in which the children 'did' literacy were very much entwined with technology, and this allowed me to see that even when a digital device was not a direct part of the assemblage, fragments of the digital still existed, for instance

when Brock created an iPad out of construction paper or Ryder made a digital game out of paper and pen. This highlights the urgent need to move beyond debates about whether analogue versus digital or paper versus screen is best for young children's development and literacy education. I therefore argue that it is unhelpful to see the analogue and the digital as separate and competing entities, and that instead educators should look differently, and consider 'how the essence of materiality is implicated with the digital, intangible, physical and material processes in which they are inextricably entangled' (Sintonen 2020, p. 1324). Thinking only of the affordances of the digital or viewing the digital as a resource or tool does not offer a 'multidimensional focus to understand the state of constant creation and especially children's interactions with digital literacy and technology' (Sakr 2017). In contrast, it is important to recognise the agentic forces of technology and view technologies as a co-constructor or mediator of literacy rather than tools for learning. This view shifts the focus from technology to the sociomaterial relations occurring between humans and nonhumans. In this view, things (and people) do not have a priori existences or qualities, but become who or what they are in relation to other things or bodies, and as de Freitas and Sinclair (2013) argue, through the various interactions the tool and the user mutually constitute each other. In summarising the key insights of this study below, I therefore argue for a reinterpretation of early literacy that includes the material, embodied, affective and spatial dimensions of literacy learning.

Literacy has material qualities: This study evidenced how literacy is always surrounded by an assemblage of other things and how children are part of an 'entangled web or network of relationships' (Lenz Taguchi 2010a, p. 152). Everyday materials were important forces in producing literacy for its child participants, and cultivated rich, creative and experimental literacy experiences. The children were learning new ways of knowing and becoming readers and writers through their various entanglements with the diverse everyday materials available to them in their home environments, which have been extended due to technological innovations. My observations of the children playing with materials alerted me to the spontaneous ways in which reading, writing and meaning-making occurred in the home, and highlighted the fluid, sometimes unintentional ways in which literacy emerged, which was often a departure from intentional design. The children were given freedom, time and space in their home contexts to openly explore their digital home environments and materials, and engaged with the various modes and semiotic resources available to them in ways that often led to sophisticated literacy practices based on their interests and desires. However, these experiences were always undertaken alongside nondigital materials and more traditional forms of literacy such as storybooks, board games, role-play, crafts, dress-ups and building blocks, suggesting that the digital was a very ordinary but not dominant feature of contemporary home life. The various digital materials did not replace nondigital materials, but rather complemented traditional toys and literacy experiences.

Complicating agency: The flexible spaces offered within the home contexts provided the children with opportunities to explore multiple and shifting identities and materials (digital and nondigital) over time and space. This afforded engaged and in-depth literacy interactions, providing multiple possibilities for early literacy learning in which the young children were positioned as empowered and agentic in their digital

interactions. However, the study has also shown that the more-than-human is an active and agentic participant in early literacy learning, not a passive object of individual children's meaning-making. The children and various materials came into relation together as a force, providing dynamic opportunities for literacy engagements. Technology was viewed as a co-producer or mediator, and was agentic in shaping the possibilities in literacy learning and digital play. Therefore, I argue, consideration of materials as agentic and as significant aspects of the literacy encounters is vital in classroom literacy provision.

The role of affect, emotion and embodiment in early literacy learning: Working alongside the child participants for an extended period highlighted the important role of affect, the body and the emotions in literacy learning as the dynamic affective encounters between bodies, ideas and materials that characterised the children's digital literacy engagements became apparent. This study alerted me to how literacy is not just a cognitive endeavour but instead involves the whole body and mind. I became attuned to how affect and emotion played a significant role in the children's literacy encounters and helped to drive interactions with literacy. The children's passions and interests drove their literacy learning, acting as a conduit for reading and writing and resulting in sustained long-term engagements with reading and writing, and thus evidencing how reading, writing, meaning-making and pleasure are closely entwined.

Spaces of possibilities: Hybrid and fluid literacies merging online and offline domains: The research argues that everyday literacy play has been extended due to the digital landscape, in which the digital was an integral part and the material and immaterial were interwoven. The children seamlessly negotiated online/offline spaces and operated within these hybrid spaces with ease, without differentiating between the virtual and the actual. In addition, the children crossed boundaries between home/school, expert/novice, formal/informal and traditional/contemporary, evidencing how the changing ways of doing literacy in contemporary times are characterised by increased opportunities for participation, playfulness and fluidity. Their dynamic entanglements with digital technologies and online spaces fostered greater connections between spaces and domains, and highlighted the possibilities that emerged as they and the nonhuman intra-acted. The children's digital interactions in online and offline spaces also afforded them opportunities to negotiate their experiences in diverse spaces, which in turn provided possibilities for identity experimentation. I argue that dissolving boundaries such as online/offline, digital/nondigital, home/school, expert/novice, formal/informal and print/digital can create a space of literacy possibilities in which enlarged literate identities and learner subjectivities can develop (Rowsell & Pahl 2020).

Theoretical contributions: Seeing the world differently

Through working on this thesis, I discovered the need for new theoretical models for analysing the relationship between technology and literacy development. The constantly evolving technologies and expanding digital networks that propel literacy practices in everyday contexts disrupt comfortably established theories of literacy learning. The posthuman view, and literature bridging the cultural, social and material perspectives, allowed me to examine the relations between the child and the material environment to gain deeper insight into children's literacy practices, experiences and development. This theoretical work was an important aspect of the research as I moved

away from a sole focus on the human subject and instead focused on the intra-actions in which humans are considered as being 'in a state of mutual inter-dependence with everything else' (Lenz Taguchi 2011, p. 40). This ontological shift compelled me to focus on the relations between the children, their parents and things and move away from an anthropocentric and logocentric framing. It helped me to consider the various ways in which young children engage with, experience and make meaning in the world that do not solely involve language. This foregrounded embodied and affective experiences involving the whole body, not just the mind. As Barad (2007) insists, we are always in relation with others, and seeing the world as made up of entanglements attuned me to the complex assemblages of a wider range of actants entangled in literacy assemblages. This flattened way of reading the world helped me to observe and understand the nuances, complexities and possibilities of the multimodal, hybrid and intra-active literacies I was observing. Engaging with posthuman theories enabled me to see what occurs when literacies are viewed holistically rather than focusing on a device, outcome, product or child, and observe the digitally mediated relations that emerged when children engaged with materials and materials engaged with children. By attempting to collapse deep habitual binaries such as online/offline, body/mind, digital;/nondigital, human/nonhuman, I became more open to thinking differently and avoided the tendency to categorise my fieldwork materials, hypothesise, label and construct definitive ideas of observed literacy events. Instead of rigidly defining what I could and could not see, I was able to be open to new connections and becomings. I therefore argue that, considering the complex contemporary conditions of the technological landscapes in which contemporary, globalised children live, it is imperative for researchers and practitioners to broaden their perspectives and explore posthuman thinking in early literacy education research and development: 'thinking with posthuman concepts, such as affect, embodiment, and place, can enhance both multimodal literacy instruction and children's engagement with literacy' (Lenters 2018, p. 643)

What might become? Recommendations for early literacy policy and practice

While working on this thesis I have become increasingly aware that early literacy learning in everyday life is messy, complex and entangled with matter. To conceive of an early literacy pedagogy that is 'more attuned to the global present', I propose a shift to more expansive and opened-ended early literacy pedagogies (Taylor, Blaise & Giugni 2012, p. 48), and make a set of recommendations for early years literacy practice supported by practical guidance for early years educators. My intention here is not to generate a list of literacy best literacy practice, but to imagine alternate pedagogical practices that foster learner engagement and creativity, are more inclusive of and responsive to learner diversity, and, importantly, build on the wide range of literacy practices occurring in children's everyday to yield deeper learner engagement. At the same time, I have attempted to imagine what posthuman concepts such as sociomateriality and intra-action could look like in an early literacy classroom setting. This pedagogical approach opens up literacy learning rather than restricting or narrowing it, and invites possibilities for early literacy teaching and learning and for the material and relational work associated with literacy learning.

Based on the research findings, I therefore make the following recommendations to support early childhood literacy provision and practice.

Recommendation 1: Expand the accepted repertoire of what is considered a literacy practice with an understanding of literacy as a sociomaterial practice

This involves continually thinking about literacy in expanded ways and being open to embracing emerging literacies, technologies, texts and practices in order to expand the boundary of what is conceived as a literacy classroom activity. By broadening our view of literacy and understanding literacy as a sociomaterial practice, we give attention to the material aspects of social activity and the broadened scope of the various 'things' associated with contemporary literacy activity. By widening the accepted repertoire of literacy practices, educators can also become much more responsive to and accepting of evolving and constantly shifting literacy practices, along with learners' needs, backgrounds and interests. This practice recognises that literacy is embedded in the everyday world and legitimises the dynamic and ever-evolving literacy practices that occur in children's day-to-day lives, and their expanded textual repertoires. It allows for more inclusive literacy spaces and the opening-up of literacy learning to include a variety of materials, modes and media – and, importantly, the felt, relations and affective aspects surrounding children's textual practices.

The application of this practice could entail:

- expanding the types of literacy practices implemented in early years classrooms to include: viewing and remixing an unboxing video; having a conversation via Skype; creating an animation or a three-dimensional drawing; playing a video game; making a how-to video; creating a map; sending a WhatsApp message; maker literacy; collaborative play in a virtual world; or asking Siri a question. These practices could include digital and nondigital compositions and learners could be invited to read/view/analyse and create/produce/make these varying literacy practices as part of their literacy repertoire. They provide opportunities for learners to exhibit their literacy practices and receive feedback from peers and others, and critically analyse a vast array of literacy practices.
- recognising the changing nature of texts in contemporary contexts that are no longer static and print-based. Wohlwend et al. (2017) advocate that writers/makers and readers/viewers of twenty-first-century texts need to be proficient in both producing visual images and artefacts and critically analysing texts in videos and everyday objects such as toys and artefacts from home.
- allowing activities such as imaginative play, building, artwork, drawing, model-making, multimodal composition and photography to become a stimulus for literacy learning experiences from which reading and writing events emerge. This could allow educators to move away from a focus on language as the sole medium of meaning-making.
- providing opportunities for learners to engage in multimodal 'maker literacy' practices that stimulate thinking and feeling through various modalities and through embodied and sensory experiences (Wohlwend, Buchholz & Medina, 2018, Lemieux & Rowsell 2020). Posthuman approaches recognise movement, emotions, senses and touch as important ways of children being in the world. Wohlwend et

al. (2018) recommend that educators accept learners as creators and innovators and create a classroom atmosphere that invites exploration and tinkering.

- broadening the text types available to learners and destabilising the very notion of text to include comics, Pokémon cards, toy packaging, parody videos, unboxing videos, multimodal texts such as webpages, video games and animations. These text types could be used as models or mentor texts, and learners should be encouraged to produce and remix their own. Classroom texts should be selected based on learners' passions, hobbies and cultural experiences, providing a bridge to "ruling passions" at home and acting as a conduit for everyday life to flow into the classroom (Barton & Hamilton 1998). This view enables learners to bring in funds of knowledge from home and mix these with their schooled contexts, bridging academic literacies with everyday literacies and opening up third spaces by connecting various domains of practice.

Importantly, these contemporary literacy practices and text types should be facilitated alongside traditional literacy practices, and rather than being viewed as binary or separate, should be seamlessly integrated, enabling connections between print/digital, home/school, virtual /actual and so on, and a recognition of the hybrid and fluid nature of child-created spaces. Working across a full range of these expanded classroom literacies should allow movement across digital and nondigital spaces and across digitised and material tools. As Wohlwend and Buchholz (2014, p. 33) argue, 'teachers should follow the children's lead to see how they are using and making texts with all the multiple resources they find around them, from paper and pencil to tape and popsicle sticks to cameras and digital video'.

Recommendation 2: Recognise that materials matter

This refers to the utilisation of materials (digital and nondigital) and resources that matter to children and the acceptance of learners' material culture. Considering material artefacts (including objects, print and digital texts) as potentially significant actants within literacy learning affords educators new ways of conceptualising agency and literacy, new ways of understanding literacy learning as an intra-activity between artefacts and humans and new ways of considering the self as part of these learning assemblages (Dyson 2003). It involves giving attention to the material – where stuff is not just stuff but rather an integral part of learner subjectivity. Material objects position learners differently by uncovering multiple modalities and subjectivities (Rowsell & Pahl 2020). Children's ruling passions connect with material objects and evoke an affective appeal, providing conditions of possibility where certain subjectivities can emerge.

This practice involves implementing a perspective that brings material culture from children's everyday lives into the classroom to inform student learning in ways that apply meaning to their everyday lives. When educators view literacy as having material qualities and place emphasis on the materiality of literacy, they can respect children's everyday literacies and allow these to enter the schooled literacy space. By welcoming and celebrating the inclusion of popular culture materials, toys, artefacts and discourses from children's everyday lives, they enable

more sustained, in-depth literacy engagements to occur. This approach could include requesting parents and children to undertake a home inventory that would allow educators to find out about the children's home lives and draw on some of these aspects in the classroom. Learners could be encouraged to bring materials from home to contribute to learning experiences and class inquiries, or be provided digital cameras and encouraged to take photographs of objects or artefacts from their homes and communities to use as the basis for literacy learning, for example as a stimulus for the creation of a narrative text where the learners have choice over the mode (digital story, written, oral, 3D representation/model, performance). When educators recognise that children's literate repertoires are complex and patterned by family and community experience as well as by wider influences, they can display a willingness (through observation and discussion) to find out about children's interests, legitimise these interests and to create space for them in the literacy classroom.

Recommendation 3: Provide unstructured time and space for play, choice, freedom and improvisation

When children are given choice and freedom in their literacy endeavours, different potentialities may arise (Burnett & Merchant 2019). Further, when they are given freedom to explore and experiment, unpredictable, creative and inventive change occurs and children become more open to answering the world. As Lenz Taguchi (2010a, p. 100) argues, 'we need to really convince the children that they are allowed to think the way they want and not in proper, true or right ways'. This practice involves the idea of opening up the literacy curriculum rather than reducing or restricting it. The argument here is twofold. Firstly, play needs to be reinstated as an essential element of an early years literacy program. The rich episodes of children's play documented throughout this study highlighted the importance and value of allowing children adequate time, space and freedom to play, a view supported by Dyson (2016) and Wohlwend (2011), who view play as a literacy. Secondly, children need to be given unstructured time to play and freedom to select materials and activities of interest and pursue these in their play. This kind of play allows for improvisation and the recognition of the fluid and sometimes unintentional or unbounded ways in which literacy emerges. This view is a departure from an outcomes-focused approach or intentional design, and is much more aligned to children's play encounters experienced in home settings. Its emphasis is on the composition of a text or process rather than the end product. Burnett and Merchant (2019, p. 55) argue that

> although intentional design and production are important aspects of multimodal literacy work, creative engagement is often unplanned and emergent in nature. Facilitating this sort of experimentation is based on an understanding of how meaning is made in the moment which may, or may not, result in a finished product.

As Kuby and Rucker (2015, p.324) argue, 'we must allow children to chase their ideas and use materials to communicate in ways that make sense to them'. This involves educators being being open to unpredictable and unexpected directions as learners make meanings using digital and nondigital resources, and being attuned to the ephemeral aspects of literacy –i.e. what sparks joy, passion and excitement or what learners gravitate to. Time, space and resources for improvisation can generate creativity and deep levels of learning.

From this paradigmatic stance, Wohlwend et al. (2017) remind us that we need to move away from thinking solely about literacy in terms of alphabetic ways of (re)presenting (written, oral). The authors remind us that literacy occurs through bodies entangled with materials, creating 3-D models, movies, artefacts, murals and so forth (Wohlwend et al. 2017). With this in mind as we move on from a from logocentric approach learners can be offered choice in how they express their ideas and thus flexibility in how they articulate their literacy ideas, understandings and learnings. This view recognises the affective and embodied nature of literacy and how it is felt by the whole body not just the mind. Allowing young learners to move and use their bodies is important in literacy provision. Improvisational play could be included in a literacy classroom by, for example, allowing learners to respond to a text or reconstruct a text through movement rather than by maintaining a sole focus on language. Practical, embodied approaches such as freeze frames, reader's theatre, maker literacy and the tableau strategy could be enacted, allowing children to make meaning through embodiment.

Recommendation 4: Provide playful digital-material learning experiences

As this study illustrated, young children enter school already acquainted with using digital tools in sophisticated ways and able to make choices about how to communicate, create and learn with the technologies that underpin twenty-first century literacy practices. This practice concentrates on the digital aspect of early literacy provision and involves learners working across modalities – that is, moving across digital and nondigital spaces and across digitised and material tools. Wohlwend's (2015b, p.160) research has been significant in the field of early literacy in conceiving of a play-enriched and technology inspired literacy model that makes 'sense for today's pixel-saturated 24/7 connected world'. They have proposed the notion of 'Playshops' which expand reading and writing workshops by including opportunities for collaborative production of animation, life-action plays and digital films (Wohlwend & Peppler 2015). Building on Wohlwend and Peppler's (2015) work and drawing from the practices above and the findings of this study, I envisage playful digital-material learning experiences that offer learning by choice, in which children are free to choose whether to work collaboratively or individually by engaging with which experience/material/mode speaks to them. As the deliberate inclusion of popular culture capitalises on learners' everyday knowledge, a broad range of materials including cultural artefacts and materials from children's everyday lives, such as Pokémon cards or football cards, collectable toys such as Kinder Surprise eggs and Ooshies, LEGO, playdough, YouTube clips, photographs or artefacts from home, animations and unboxing videos, digital artefacts and various modes (spatial, material, bodily and digital) should be included alongside a wide and ever-evolving range of software, apps, devices and media. The technology children have access to could be open-ended – for example, the video/camera function on an iPad –allowing for greater freedom, creativity and flexibility so that learners can experiment with multimodal composition. Educators could survey learners about the types of apps and software they use at home and allow them to lead sessions and mentor other learners and the teacher in how to use these technologies. Educators can enter the assemblages with children and engage in collective experimentation alongside their learners, providing multiple entry points and possible pathways through the literacy learning process.

An important aspect of these learning experiences involves opportunities to work with 'the provisionality of digital media', in which children are invited to remix existing texts (Merchant & Burnett, 2019, p. 55). This recognises the instability of digital texts, as learners are encouraged to copy, modify and remix texts as legitimate aspects of writing and making multimodal texts, and is more aligned to the everyday nature and instability of contemporary texts as demonstrated throughout this study. This aligns with contemporary notions of authorship as nonlinear, allowing learners opportunities to remix texts and layer personal experiences, popular culture interests and fragments of other texts into their own text-making.

Learning experience:	Digital and non-digital materials:	Modes of communication:
View clips on YouTube such as toy review videos or unboxing videos. Critique the videos and make your own	iPads, YouTube, examples of unboxing videos, toy packaging, craft materials	Spoken, gesture, audio, visual
Play a video game. Map out the game, create the next level or create a new character for the game	iPads, video games, paper, crayons, cardboard	Gesture, spatial, audio, visual, spoken, written
Design your own video game or new App OR design a new model of iPad, iPhone out of construction paper and use it in a role play	Construction paper, craft materials, crayons, playdough, dress-ups, props	Spatial, written, visual
Garage band: create a song as a response to a text or a class topic	iPad, GarageBand App, musical instruments	Audio, gesture, spoken
Animations: create short animations based on a class topic, area of interest, shared class experience	Playdough, craft materials, shoeboxes, iPads, animation Apps such as: Puppet Pals or Stop Motion Studio	Spatial, audio, visual, spoken
Blog or Padlet: Post your favorite joke or a fact about yourself.	iPad, blog or Padlet Application or web page	Visual, written
Popular culture play: Choose a toy: Make a review video about it and/or design your own toy to add to the collection	Pokémon cards, Football cards, collectables such as Ooshies, Kinder Surprise Eggs etc…	Gesture, spatial, audio, visual, spoken, written
LEGO – create short animations using LEGO.	LEGO, Stop Motion Studio App, playdough and craft materials	Spatial, audio, visual
Skype: Plan a Skype and implement a call to another school, a grandparent, an expert. What questions will we ask?	Writing and drawing implements and laptop with Skype software	Written, spoken
iMovie: create a short video or photo story about a favourite hobby, favourite toy, your family or your pet.	Digital cameras, iPads, movie making software such as iMovie, photo story	Gesture, spatial, audio, visual, spoken, written
Photographs: take photographs of an important object and audio record why this object is important to you.	iPads, objects from children's homes	Visual, spoken
Create a piece of digital artwork using the iPad	iPad and App such as Piccollage, craft materials	Visual, spatial
QR code technology: use QR code technology to access information or a video clip about a topic and respond to the clip through role play or drawing	iPad, video clip, craft materials, writing/drawing implements, paper, dress-ups, props	Gesture, written, visual, audio
Augmented reality: engage with a literacy-based augmented reality App such as Wonderscope and summarise the story via role-play or collage	iPads, Wonderscope App, collage materials, paper and writing implements, dress-ups, props	Gesture, spatial, audio, visual, spoken
Emojis - create a message to a friend or family member using emojis	Printed out images of different emojis	Visual, spatial, spoken
PowerPoint or Keynote: Plan and create a short presentation about your favorite picture story book, cartoon character or topic of interest	iPad with PowerPoint or Keynote, writing/ drawing implements, paper	Gesture, spatial, audio, visual, spoken
Media-related play: watch a scene from a recent animated movie such as Frozen and create a role-play of the scene	iPad, craft materials, dress-ups, props	Gesture, spatial, audio, visual, spoken
Book creator: Use the book creator App to create a narrative related to a class topic, recent class experience or a prompt.	iPad, Book creator App, paper, writing and drawing implements	Spatial, audio, visual, spoken

Figure 31: Play-enriched digitally-inspired learning experiences – a framework for an early literacy program

Recommendation 5: Relinquish the power and position children differently

By positioning children differently, educators can attempt to disrupt instructional and didactic teaching approaches and decentre themselves as the singular authority (Sellers 2016). We have entered an era in which one's age does not corelate to how expert their knowledge of digital literacies is, and instead parents, educators and children are learning alongside each other (Arnott & Yelland 2020). Due to increased access to technologies and the increased

autonomy digital activity affords, young children can be active agents in their learning, with increased creative expression (Craft 2012). Educators therefore need to reposition children as full of potential and capable, and acknowledge that in some instances the children are the experts and that educators can learn from them (Rinaldi 2021). By applying the practices described above, educators can position learners as having greater control and choice through and with things, ideas and topics that matter to them. Learners and educators can engage in co-creation (with other humans and nonhumans) and generate knowledge together (Kuby, 2017). A co-constructed curriculum practice empowers children's participation which can enhance learner subjectivities.

Recognising learners as capable includes positioning them as problem-solvers, inventors and thinkers, and flattens out hierarchies of power between teacher and student. Educators can support learners in accessing various affinity spaces (real and virtual) to explore interests and passions and develop expertise in these areas. In this way, as Haraway (2008) urges, literacy classrooms might become places whereby children have increased power and freedom to act, play and learn with a diverse range of actants (that may be other than human) and thus become a more livable place. Importantly, as Kuby and Rucker (2016, p. 31) remind us – drawing inspiration from Lenz Taguchi (2010b) – 'this work, this teaching, this living, this learning that we are advocating is about an ethics of immanence and potentiality; it is about opening ourselves up as educators to the limitless possibilities of what children/space/time/materials are capable of doing/knowing/becoming'.

Challenging educators' pedagogical beliefs: Pre-service teacher and in-service teacher professional literacy training

Notably, as Kuby and Rucker (2016, p.58) suggest, 'simply adding more diverse resources, tools and materials for children' literacy learning to the classroom will not suffice'. Educators need to embrace a philosophical change with regard to their pedagogical beliefs about literacy learning. I believe it is imperative for scholars, educators, pre-service teachers to continually interrogate their attitudes to and beliefs about the changing nature of literacy and technology; if we are to address the divergence between literacies in everyday life and literacy in school, we need to continually revisit our own definition of the scope and range of literacy at school and update that definition to reflect its changing nature. We all have different ideas about what literacy is and what it looks like based on our previous histories, experiences and worldviews. However, due to the complexity of the current world and its continuous technological advancements, Dyson (2006) suggests educators need new basics. We need to recognise that literacy is not simply something that resides in textbooks, but something that is lived (Rowsell & Pahl 2020). This perspective will allow educators to recognise the situatedness of literacy practices and draw on learners' funds of knowledge to tailor literacy experiences to the specific cohorts of learners in their classrooms. Bringing a posthuman lens to pre-service teacher education and in-service teacher professional development that recognises and acknowledges the agency enacted by materials, can enable educators to think differently about spaces, time and objects, how these are organised and what possibilities more diverse arrangements and resources might afford to early literacy provision. In addition, if we as researchers and educators examine own ways of doing literacy in our personal and professional lives this may lead to a greater understanding of how

literacy involves both social and material aspects and is therefore both sociomaterially constituted and constantly changing. By scrutinising our own personal and professional literacy routines, habits and behaviours, we might come to recognise the changing, dynamic and unstable nature of contemporary literacies and the ways in which technology is seamlessly intertwined with many of our literacy practices.

Moreover, playful and collaborative literacy professional development workshops can be implemented for educators that give them opportunity to 'play around' with new media, new technologies and new texts (such as memes, animation, comics, video games) and consider the possibilities for literacy learning. By encouraging risk-taking, experimenting, and tinkering with literacy provision, educators can investigate new literacy practices and map these against the existing curriculum, allowing for creative reinterpretations of curriculum that acknowledge the changing nature of literacy.

Conclusion

In this study I have endeavoured to capture the messy and entangled nature of young children's digital literacies as experienced within their home contexts. Technology occupies a growing space in contemporary childhood, and my aim in this study was to examine young children's and family's digital literacies, with a focus on the 'everyday' situated practices of children between two and six years of age. It is therefore vital to understand young children's emerging literacy experiences in their homes so that this can inform broader educational questions about what constitutes effective literacy practice and offer insights into the reframing of contemporary literacy practices for current times.

This study was informed by the following research questions:

- How are contemporary young children experiencing digital literacies in their everyday contexts?
- How do they use and interact with digital devices in their homes, and how do these experiences relate to their early literacy practices and emergent literacy experiences?

It offers a thick and rich description of the contemporary literacy practices occurring in the homes of five young children from a total of four families, including my own. The rationale for the small sample size was to allow extended time in the field in order to build relationships of trust with my participants and develop thick descriptions (Geertz 1973). The small sample size allowed me to produce detailed descriptions of the household ecologies, family routines, habits and experiences surrounding literacy, while also eliciting the perspectives of the children and other family members. The rationale for the focus on the 0–6 years cohort was due to the limited research done with this age group and the rapid increase in online activity due to the increased accessibility and usability of touchscreen devices (Marsh 2016). All the families participating in this study resided in inner-city suburbs in Melbourne, Australia.

This study was heavily informed by the ethnographic traditions developed by anthropologists (Goetz & LeCompte 1984) and utilised in studies of situated literacies such as Barton and Hamilton's (1998) ethnographic research on local literacies. Literacy research into out-of-school contexts entails conceiving of literacy as a social practice to examine 'patterns and ways of doing literacy that are associated with different domains of life' (Pahl 2014, p. 2). As I was applying a literacy-as-social practice paradigm and following this tradition of literacy practices that occur in everyday life (Street, 2000), and given that my focus was on the day-to-day, routine digital literacy practices as experienced in the home, ethnography as a methodological approach was most fitting for this study. My interest was in what children were 'doing' with literacy as part of their everyday routines, habits and play experiences, and as in Barton and Hamilton's (1998) ethnographic research into the role of literacy practices and events in people's lives in Lancaster, England in 1990, I set out to document and detail literacy practices over an extended period, through participant observations occurring across multiple domestic domains.

The fieldwork phase of the research spanned 36 months and centred on regular family home visits, which included observations of children's digital literacy practices and experiences, artefact collection, and conversations with children, parents and siblings both in family groups and one-on-one discussions. I documented the experiences that occurred to examine daily events and patterns tied to literacy, and my observations provided me with extended evidence of the complex entanglements of child and parent perspectives on literacy experiences and digital interactions and extensive observations of the various artefacts, objects, texts, processes and devices that are part of children's everyday lives. Throughout the study, as I was eager to incorporate the young children's experiences and perspectives of literacy as a main part of the research design, I endeavoured to use participatory and collaborative research methods, including child-framed research methods based on children's preferred methods of communication. I drew from aspects of the Mosaic approach as conceived by Clark and Moss (2011) and included research methods such as artefact elicitation, mapping, drawing and one-to-one conversations led by the children.

The study adds significant value to early years literacy policy, curriculum and pedagogic discourses by offering an understanding of contemporary children's formative experiences in their home contexts and recommendations for current early childhood literacy policy and practice. It expands current knowledge in the field and offers rich descriptions of the phenomena encountered to inform literacy pedagogy and practice.

Limitations of the research

While the small sample size in this study allowed for an in-depth, prolonged and nuanced examination of the literacy practices occurring in five children's homes, these findings may not be representative of all Australian families due to differences in access to technology, social class, family composition and so on. While some variation in the sample group was noted regarding ethnicity and social class, there was limited diversity pertaining to language and religious diversity and family size. All families involved in the study spoke English at home, were from middle- to upper-class backgrounds and lived in inner-city locations. Engaging with a larger sample featuring

more diverse participants may have generated different knowledge, and this could have altered the trajectory of the study and the resulting insights. It is therefore imperative that future research in the field of early digital literacy learning encompass a wider variety of sample characteristics, including the involvement of families from low socioeconomic backgrounds and families with diverse needs and differing family circumstances. In addition, while all families in this study lived in households with internet access and a steady supply of technological devices and software, it is important to recognise the digital divide and to acknowledge families that do not have access to digital capital (Merchant 2007). Many children begin school without access to digital resources and have differing levels of digital experience. As Marsh (2010) highlights, preschools and schools have an important role in addressing digital inequality.

The major limitation of this study is that the literacy practices I captured may have been biased due to what the parents chose to represent as their children's everyday literacy practices at home. For instance, one of the families often orchestrated examples of their home literacy activities and resources, and the technological resources that they wished me to see, ahead of my observations. Examples of this were puzzles, craft activities, picture books and educational iPad apps such as Reading Eggs that they set up for their children to use. In order to mitigate this and capture the children's authentic digital literacy practices, I worked to position my fieldwork visits around literacy play and free-time activities, and discouraged families from staging activities.

Future research: Stepping through the portal

Throughout my work on this thesis, I discovered the urgency of pursuing posthuman thinking in relation to early childhood literacy learning and development. However, there is still much to examine in this field. This study speaks to the importance of further research to explore how posthuman theories can support educators' in transforming their theoretical beliefs and practices in educational settings for young children. Future research could examine how the recommendations for practice I outlined above could be translated into early years classrooms and explore their potentialities in building an informed early years pedagogy of transformation. Specifically, I envisage further research detailing how educators can move beyond alphabetic text production in their early years literacy classroom practice to embrace a more expansive definition of 'schooled' literacy, and utilise aspects of maker literacies in their literacy programs. Such research could explore the educational value of maker literacies that move beyond narrow, high-stakes, accountability-driven learning environments and provide more equitable and inclusive literacy provision, ensuring increased participation for all learners.

Concluding thoughts

To conclude this thesis, I return to the provocation by Deleuze (2004, p. 208) that I cited in Chapter 13: 'If little children managed to make their protests heard in nursery school, or even simply their questions, it would be enough to explode the whole education system'. I believe it is time to disrupt literacy education and actively go against the normative political discourses and reductive approaches in literacy education to imagine differently, and thus to do justice to all children (Murris 2020). Initial teacher education (ITE) programs need to respond to the

paradigm shift to ensure literacy practices that are meaningful and relevant to young learners and address the changing needs of learners living complex lives. As Wohlwend et al. (2018) proclaim, it is imperative for teacher educators to engage pre-service teachers in the activities that matter to the children they will teach. As evidenced in this study, this paradigm shift entails expanding what counts as literacy to account for the nuances, complexities and possibilities of multimodal, hybrid and intra-active literacies. While I was writing this conclusion, the Australian government published a report on the *Quality Initial Teacher Education Review* (DESE 2022). The purpose of this report is to strengthen ITE courses and ensure high-quality teacher graduates and their classroom readiness. It states that 'It is critical to ensure the next generation of teachers are being taught methods of teaching that are supported by evidence, with a focus on ensuring they have the practical skills necessary to enter the classroom' (DESE 2022, p. iv). The implications of this thesis speak to several of the recommendations of the report, in particular Recommendations 7 and 9.

Recommendation 7 of the QITE Review states that many ITE graduates are under prepared in several key areas, including the teaching of reading, cultural responsiveness, supporting diverse learners, classroom management, family/carer engagement and teaching in regional, rural and remote locations (DESE 2022, p. 37). This study speaks to the importance of preparing ITE graduates for the shifting and complex reading and writing practices currently occurring in young children's everyday lives, and provides educators with pedagogical practices to ensure a culturally relevant pedagogy that builds on children's home lives and interests and is more inclusive of and responsive to learner diversity.

Recommendation 9 of the QITE Review outlines the need to support families and carers to engage with teachers: 'Universities must develop in their students the purpose and value of sharing the funds of knowledge possessed by all parties to inform their practice and to cater for the individual needs of their students' (DESE 2022, p. 47). As discusses above, the recommendations of this study offer several practical guidelines for educators with regard to drawing on learners' funds of knowledge and inviting their cultures, popular media interests, backgrounds and passions into the classroom. The findings of this study highlight the urgent need for educators to build closer and stronger connections with children's everyday lives in meaningful and authentic ways.

In addition, the findings of the QITE Report (DESE 2022, p.11) suggest that ITE providers consider the potential of microcredentials and short courses to 'provide quality access to opportunities to enhance teacher capability in short timeframes.' The ideas above, could be incorporated into short courses in which educators have opportunities to rethink their literacy paradigmatic and philosophical ideas and examine how contemporary literacies are expanding rapidly along with innovative communication and evolving technologies.

Ash, Brock, Buttercup, Ryder and Emma have shown me how everyday life has changed significantly in ways considered unimaginable even a decade ago. AIs, smart watches, portable devices, the Internet of Toys, robots, digital personal assistants and personal gaming consoles are already entangled in children's lives in such complex and natural ways. The children in this study fearlessly embraced their digitalised worlds, creating new ways of

being in the world that resulted in new ways of knowing/being/doing literacy that were characterised by infinite possibilities. Rather than seeking complexity reduction by simplifying and reducing literacy provision, we must listen to and trust the children we teach, and 'follow their rhizomatic paths of literacy learning' (Kuby & Rucker 2016, p. 30). Children have uncovered a different literacy world; one that is occurring in the undercurrents, outside the official literacy discourses of school and policy. This literacy world is ever-changing and in a constant state of flow and flux; it is full of rich possibilities for children to experiment and pursue their passions and for enlarged literate identities and learner subjectivities to emerge. It is not reflected in official literacy curricular, policy and practice discourses. Young children like Brock, Ash, Emma, Buttercup and Ryder have stepped through the portal into this literacy world, however, and while some adults may be hovering on the outskirts, many have become stuck – either wary of stepping through the portal or stuck in their fixed viewpoints. In a world of uncertainly, risk and rapid change, literacy educators, researchers and policy-makers cannot afford to turn away from this diversity and complexity, obscure it or get stuck in 'determining what is, what was and what should be, in ways that will only fix positionings, differences and knowledges' (Lenz Taguchi 2010a, p. 48). Instead, it is time for educators, researchers and policy-makers to embrace the future possibilities and potentialities in what might become, and welcome 'children's unruliness as part of the constructions and materializations of childhood and literacies rather than always trying to tame what children do' (Thiel 2020, p. 84).

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Appendix A: Child-friendly leaflet

Dear ……,

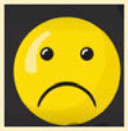
My name is Amanda. I would love to learn about your play activities. Sometimes I will watch you play and other times I will join in with your play activities.

I will take photos of your activities.

I will write down what you are doing in my notebook.

At the start of the session, when I come to your house, I will ask you if I can watch you play.

If you don't want me to watch your play activities you can use the puppet with the sad face to say NO.



If you would like me to watch your play activities , use the puppet with the smiley face to say YES.

During the session, you can say stop to end the session, by holding up the stop puppet

Any questions ???