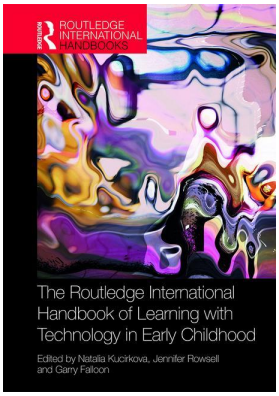

The Routledge International Handbook of Learning with Technology in Early Childhood

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Publication details
https://test.routledgehandbooks.com/doi/10.4324/9781315143040-13
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Published online on: 12 Feb 2019

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RESEARCHING IN THE IWORLD
From home to beyond

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Introduction

In the digital era, mobile and other 21st century technologies have quickly become ubiquitous in all of our lives in complex ways. These changes have also impacted children's lives. Digital technologies and digital artifacts are now an increasing part of 'environmental print', with children also observing adults using devices and engaging in myriad digital practices. Children's learning and playing at home is also undergoing significant shifts and their everyday learning experiences may also be mediated through accessing websites, mobile apps and toys that have digital interactivity. The affordances of portable digital devices make them increasingly accessible to ever younger children who are developing the expertise and knowledge to use these for a variety of different functions.

In our research we have witnessed preschool children and toddlers using video chat media, messaging systems, video streaming, an increasing array of game and learning apps and digital household devices, echoing the work of other researchers (e.g. Marsh et al., 2017; Marsh et al., 2016). Digital functions are now frequently integrated into toys and play objects, with online and offline play activities often being used synergistically (Marsh, 2017b). Children may be using toys that have robotic capabilities (e.g. Furby, Sphero, Dash and Dot), working with augmented reality (AR) or apps based on popular toys and viewing series (e.g. Paw Patrol). And, as has been the case for many household objects in past eras, current and emerging technologies are also represented as children's play items, ranging from toy smartphones with sophisticated electronic functions to pretend play objects that operate symbolically, including those intended as part of doll accessories or dramatic play. In addition to pretend digital play, as we have noted elsewhere (Laidlaw et al., 2015; Laidlaw & O'Mara, 2015), while young children are engaging in digital practices and working with a range of technologies, significant 'digital divides' continue to exist between how such practices and devices may be engaged at home, and children's experiences with technologies in school, preschool and child care settings (see, e.g., Blackwell et al., 2014; ILA, 2017). Thus, it is important for researchers to find ways to document the range of complex experiences, expertise and knowledge that young children are engaging with at home and bringing with them as they enter the spaces of school, child care, and other collective institutional settings. Additionally, it is important to trace the impacts of external influences, such as school practices, policies and the media, on technology practices in children's homes, as they can all be viewed as interconnected.

The 'micro' contexts of children's technology usage in their homes can have a wider reach into these 'macro' contexts, and the larger worlds of technology can also invite shifts in the home.

Research on young children's use of digital technologies is on the rise and includes a growing corpus of survey studies that provide important windows to reveal parent perspectives (e.g., Holloway et al., 2013; Marsh, 2017a; Rideout, 2013). While still somewhat scant, studies documenting children's home technology experiences and usage are also emerging (e.g., Holloway et al., 2015; Neumann & Neuman, 2017; Wong, 2015). However, researching children's experiences in their homes presents particular challenges for early childhood researchers. Homes are complex environments, and as Clark and Moss (2017) state, engaging in research with young children is "an ethical and political endeavor" (p. 153). The entangled nature of researching children's technology experiences at home is amplified further as we enter children's and families' private spaces and navigate across our own research intentions, institutional ethics and the complex interweaving of homes, family relationships, culture and other dynamics.

Researching in the area of digital technologies presents added areas of challenge for researchers. In children's homes, parents and caregivers maintain some aspect of control over materials and play objects, making choices about purchases, child access and so forth. In the technological realm, parents can maintain increasing levels of control over digital devices and software, determining child access and monitoring, using parental surveillance or restriction tools and applications. Additionally, due to negative attitudes towards young children and technology frequently present in the popular media (see for example, Ashton, 2013; Kardaras, 2016; Stevenson, 2012), some parents of young children can be reluctant to have particular aspects of their child's home practices, play and learning with technology documented, due to fears of being judged as 'bad parents' who allow access to screens, the internet, online games and so on. While any research occurring in children's homes requires conscientious effort, studying children's digital practices in home contexts is careful work that involves developing relationships with both children and their parents/caregivers that allows for and recognizes inherent tensions between parental values and perspectives and children's digital activities. In our own work, we have also found it necessary at times to shift across home and outside-of-home research in order to pursue some of our research questions.

In this chapter, we address events and research experiences that have taken us to a deeper appreciation of the value of autobiographical, participatory and ethnographic methods for researching digital experiences of young children's learning and playing at home, in their communities and beyond. We start with the home and also extend to the ways in which our research has traveled across and into the communities we inhabit and include considerations of the varied ways that children's experiences may be shaped further, by policies that impact school and home, and by the media. After a brief orientation to our digital literacy research approaches and the 'accidental ethnography' that continues to inform our work, we present five illustrative research contexts that move across from specific and autoethnographic insights to wider applications of home-based and ethnographically informed research approaches. We present frames we have found useful to organize our studies of children, addressing the significance of using messy and sometimes unruly ethnographic and autobiographical methods in studying children's learning and playing as well as the significance of this work for understanding experiences of being a child in the early 21st century. Finally, we conclude with some practical suggestions for researchers looking to work with young children's digital and media experiences in the spaces of home, the communities they inhabit and in relation to the broader social forces shaping what is possible within these spaces. Developing understanding of children's complex technology experiences in the home is key to understanding the broader landscape of children's 'beyond home' engagements with technologies, and in bridging possible digital divides between children's lives at home, and those they enter in school or preschool settings.

Becoming accidental ethnographers

In our own approach to researching children's digital practices, we would classify ourselves as 'accidental ethnographers', finding our way into participatory, ethnographic methods (Behar, 1996; Geertz, 1988; Clifford & Marcus, 1986; Heath, Street & Mills, 2008; Richardson, 1997) through both serendipity and unexpected divergence from initial research plans. We (Jo and Linda) first met 20 years ago when were introduced by our mutual mentor Professor Juliana Saxton. We met up several times at conferences and shared hotel rooms when we were both impoverished graduate students and new scholars. While we are both drama education and literacy researchers, we come from methodologically different research orientations. Linda's work has been informed by complexity thinking and Jo's from critical reflective practice. Complexity thinking, within educational theory and research, offers challenges to linear, reductive and mechanistic frames for understanding systems and other phenomena (see, e.g. Davis & Sumara, 2006; Doll, 1993), and suggests that human and cultural systems, such as those of families, classrooms and schools, might be better understood as adaptive, emergent, dynamic and self-organizing (Johnson, 2001). Critical reflective practice is more commonly taken up in education as a recursive process that involves reflection on understanding and professional practice (Schön 1983, 1987) While these two orientations are separate, we continue to recognize common ground across our research and methodological approaches, both having a focus on reflection on smaller details brought into larger perspectives and valuing of holistic, systems-based and nonlinear research activities. We both engage a common thread of self-observation across our projects, although we may each contribute different lenses.

We acknowledge that the work of research involves "the many layers of dynamic nested activity that are constantly at play" (Davis & Sumara, 2006, p. 28) and that the processes of our involvements in research sites and with children and families, as well as the outcomes of these involvements, together constitute the research effort. Schön's (1983, 1987) critical reflective practice approach underpins our understanding of our research conversations, and we locate our work in the "swampy lowlands, where situations are confusing messes incapable of technical solution and usually involve problems of greatest human concern" (Schön, 1983, p. 42). Our collaborative and individual research projects have developed further and in interesting ways, through our work together, our encounters with other researchers and their writing, and from new insights emerging from the messy tangle of these associations. In our mutual work, while we use various qualitative and quantitative data generation methods, it is the composition of texts and our ongoing reflection on these that is the most powerful and significant mode of inquiry (Richardson, 1994). For us, the composition of our texts acts in a nonlinear and recursive way, bringing together our conversations and our collected data, and involving a multimodal and flexible drafting process that merges individual and collaborative texts and video or audio 'talking through' conversations. Over time, our collaborative writing, along with our research interests, has also been increasingly mediated, impacted, and enhanced by technologies, and often by those we are studying.

iPads at home in Canada and Australia

As early career academic mothers, in our research collaboration, we have often compared details of our institutional, cultural and home lives. We have joked that while the development of 'good ideas' historically is sometimes connected to romantic notions of French philosophers drinking wine and smoking cigarettes in noisy bars while having grand conversations, our own research conversations operate rather differently. Our shared insights always include our lives alongside

children and busy households, with disruptions and interruptions typical of the complex dance of work and home in our research conversations. Our Canada (Linda)–Australia (Jo) time difference also means that often our research conversations take place alongside the daily activities of our children's lives and these filter in along the edges. A child needs a snack, and another requires a hug in the course of a Facetime or Skype call; our writing together is frequently punctuated by the interruptions of caregiving – children needing collection from school or activities, unanticipated illnesses and various requirements for our attention. Yet, significantly, these 'interruptions' are frequently productive, and often profoundly impact our writing about other people's children, providing us with (often unintended) opportunities to reflect on and rethink our ideas.

As we witnessed the emergence of mobile technologies for children, specifically the arrival of the iPad, our shared conversations considered the impact touch screen devices might have for our own children, in addition to wondering about possibilities that tablets might present for early literacy education, and for young learners. While we were developing research project ideas, these were brought to life through our serendipitous observations of our own children, then aged 3, 5, 6 and 8 years old. In particular, a series of events caught our attention when our children played and learned together during Linda's Australian sabbatical in 2011 when we spent many hours observing our children using iPads 'in the wild', combining our individual autoethnographic observations with a collective ethnographic perspective (Flewitt, 2011; Green & Bloom, 1997). Following from these observations, we have recognized the immense value of researching children's experiences in their homes, and have incorporated similar ethnographic approaches in subsequent research and in collaborations with graduate students. While we continue to engage in a range of other qualitative research methods, we find that our observations of children's technological engagements *at* home, and as influenced *by* home, provide us with important evidence of the complex entanglements of child and parent perspectives and interactions, and the artifacts, objects, texts, processes and devices that are part of everyday life.

In describing our approach to researching children's learning and playing from home to school to community and beyond, we draw on the work of Richardson (2016), in thinking through the ways in which we have tried to make sense of ourselves and our worlds, including the 'iWorld' (O'Mara & Laidlaw, 2011) in which we now live. Richardson writes of the chapters in her text "as palimpsests – pictures that, although taken in particular times and places, allow traces of the past to poke through and be visible". She writes that these chapters "reflect the ways in which people make sense of their worlds, finding traces of the already experienced in their new experiences" (Richardson, 2016, p. 7). Although our chapter here is a much smaller enterprise, each of the five pictures we have painted are drawn from different writing and researching projects. In sharing these pictures, we attempt to show the ways in which our lives and experiences from home provide understandings which 'poke through' into our research, sometimes as an outline, a tracery, an idea, at other times changing the ways in which we understand children and their technological worlds, shifting who we are as researchers. The examples start with 'near' moments, from our own homes, to those that reach further beyond, to illustrating how 'moments from home' can reshape research in schools or considerations of policy, and ways in which other moments in homes may be impacted from outside perspectives.

iDollhouse in the iWorld

In our initial experiences of observing our collective children (Jo has a boy and a girl, and Linda has two girls), our autoethnographic observations played an important role in leading us into a new direction for our collaborative research projects. During Linda and her children's time in Australia, in the infancy of the iPad, we observed with keen interest our children sharing favorite

iPad apps alongside details of Canadian and Australian child culture and play. We were particularly interested to note the following vignette, which we originally included in one of the first articles we wrote on our emerging interest in mobile technologies (O'Mara & Laidlaw, 2011):

> Our children were playing at the dollhouses and the 3-year-old realized that a tiny pretend laptop was missing. After everyone looked around for a bit, he returned to play and sat the mother doll at the computer desk. "She's going to Google to find out where the little computer is".
>
> *(p. 153)*

The children's dollhouse play led to further quests for additional toy representations and creations, with Linda's children on a hunt for tiny mobile phones and iPads as items all the children regarded as necessary objects for the dollhouse. As iPads were relatively new at that time, the children were unsuccessful, beyond finding a small mobile phone charm in a toy store. For months after returning to Canada, Linda's children collected visual representations of mobile phones or tablets they saw in advertising flyers, with the aim to send them to Australia for the dollhouse. They also accessorized their own dolls, creating 'digital devices' cut from advertising flyers or crafted from paper, and creating a paper laptop computer with a painstakingly drawn keyboard, taped carefully into a tiny doll 'lunch kit' as the laptop case.

Through our 'up close' observations of the dollhouse interactions, we developed a heightened awareness of how children's play, even in non-technological ways, reflects a remix of their worlds and expresses and explores the practices and values of children's home lives. The children in our example (our own) lived alongside parents who modeled everyday uses of technologies and communicated that the objects and artifacts of technology had value, a value clearly represented in our children's play activities.

As we worked together writing our vignettes from home, based on our autoethnographic observations, the picture we created together of what we witnessed in our children's play enabled us to frame the questions and shape a collaborative research project working with early primary teachers and their classrooms. Over the course of this project, Jo and her family came to Canada and Linda and Jo worked together in a kindergarten classroom study. We both recognized that we were learning as much about digital technologies and mobile devices "at the elbows of our children" (O'Mara & Laidlaw, 2011) as we were through the classroom research; our home experiences formed the tracery for our work in schools.

A comparative ethnografiction

Our second research example emerged from an interweaving of observations of our own children and their school experiences, an ethnographic study of a kindergarten classroom and our informal observations of the school contexts of our study. Just as reader response theory suggests that we do not enter into reading texts without bringing in our background knowledge (Rosenblatt, 1994), we too cannot step outside of our background knowledge as researchers – for us, our collective and individual observations of digital practices across home, school, family and research environments stretched across our thinking. By the time of this example, we had both observed Canadian and Australian early years classrooms together, and had engaged in participatory, ethnographic observation through literacy and technology projects in Canadian and Australian schools. As we began work on presentations and publications interrogating some of the challenges and unintended consequences of iPad use for children who have writing challenges or disabilities (Laidlaw & O'Mara, 2015), our autobiographical observations from home also provided important insights, and a multi-level approach:

> This mode of inquiry values working across levels, from the 'general' to the particularity of individual examples, located alongside one another in a larger research bricolage . . . piecing together smaller and larger-scale data and autobiographical examples in new ways.
>
> *(p. 63)*

To address privacy concerns – not wanting to reveal details that might possibly identify our own children or classroom research participants (both teachers and students) – and to address some important home/school divides in connection to using technologies for writing and 'deficit discourses' that can be present in schools (Whitburn, 2013) – we created a fictive 'snapshot'/vignette/tableau that worked to bring together our autobiographical observations from home with those we had gathered in schools. The following is an excerpt about the child we called Emma:

> Emma is in Grade One. Mostly she likes school, but she comes home frustrated on some days. . . .
>
> When she uses the iPad she often finds new ways to use apps that showcase her strengths as a problem-solver, and as a multimodal learner. She also explores her interests in new ways when she uses such tools at home, and becomes proficient at searching websites, apps and video collections, although at her school the Grade One children are not allowed Internet access on any of the mobile devices used in the classroom.
>
> *(Laidlaw & O'Mara, 2015, p. 6)*

This vignette, and others that we used, functioned as ethnographic fictional portrayals we could use to interrogate important patterns we had noted across the particular experiences we had as parents and those we had observed in schools through our research projects. Use of an 'ethnografiction', a term we have invented, provided us with a tool that allowed us to express what we knew could be a contentious conclusion, that there can be 'trouble in the works' for some young children requiring digital assistive technology supports, due to institutional resistance in early years classrooms.

As collaborators using examples informed by our own children as well as examples gathered through more typical participant research, we have attended carefully to the ethical implications of publishing or sharing examples. Although we have sought institutional ethics approvals, individually and in our collaborative work, we find that such standardized ethics structures tend not to provide the careful nuances required for work with young children, who cannot be expected to understand the parameters or consequences of research, even if they might be able to provide some version of assent or agreement. Thus, our work is often informed by strategies and techniques from our work in literature or drama education – using fictionalization or other forms of abstraction in presenting vignettes or 'narrative tableau' representations[1] (Laidlaw, 2005, p. xvi) for areas of more critical analysis, and where, perhaps, a deeper truthfulness is more possible when we are able to provide some distancing from the specific individuals who have informed the examples.

Moving further, moving closer through researching in other people's homes

While our own 'at home' and autoethnographic experiences have informed our studies of young children and technology, we have engaged in additional ethnographic research in the homes of

child and parent participants, and mentored graduate students in home-based research. Beginning from our own home observations, however, has changed how we understand research and informed how we approach researching in 'up close' and less predictable (than, for example, a university interview room) environments in homes. Ethnographic research in children's homes is relational and messy, but also has the potential to uncover rich data and has informed many of our insights into the digital experiences of young children. Meeting outside of school and university spaces also can change how research participants will interact with us, as participants' homes provide unique and varied research contexts. One parent participant in a parent and teacher focus group in our Canadian early learning and technology study summarizes:

> Meeting outside the context of our work allowed us more freedom to discuss and reflect on our practice. We were able to speak more frankly than perhaps we would if we met in the workplace. By meeting in our homes, we were able to establish deeper relationships and delve more fully into the ideas that inspired us.
>
> *(S., Parent Participant, 2012)*

Suzanna Wong, who worked with Linda as a doctoral student and with Jo in Australia as a part of our project research team, studied children's multiliteracies and technology practices in their homes as her own research focus. She worked with children in urban and rural homes in Canada, and suburban and regional homes in Australia. Suzanna's research plans, at the start of her study, resembled a more standard approach to gathering data – planning for qualitative parent and child interviews alongside scheduled informal observations. However, she quickly found her research approach becoming more complex, as she followed the children and their families, and they developed a trusting relationship where participants felt free to suggest activities:

> My experience has always been influenced by what the participating children asked me to do (e.g., push them on the swing, come with them to the museum) during my participant observations. Often children asked what I was doing with the camera, pencil and notebook, audio recorder etc. and were curious about my research. When I cross-checked my informal interviews with the parents, what I observed in their homes did not always match what parents were telling me. I learned to listen to the children carefully and observe the children's literacy practices through multiple lenses. Everyone in the same household had different perspectives on literacy practices and using technologies.

Suzanna, as a caring and sensitive researcher, used her extensive background as a teacher and a parent to inform her research practices and was also able to create relationships with her young participants where the children asserted their own opinions and refusals on particular days when they did not feel like being 'studied', and where, later in her analyses of her data, she discovered that across several of the families the children actually had been 'researching' too, through writing their own field notes in her research journal, and capturing surreptitious images of Suzanna on her camera and iPad.

Following from Suzanna's study and her observations of family incongruities in connection to attitudes toward and interpretations of digital practices, Jo, Linda and Suzanna have begun to investigate a more distant circle within our current project, heading into communities and beyond, using several grandparents originally interviewed as teacher or ministry of education stakeholders as research participants. These women, during earlier interviews about digital literacy curriculum and practices in their jurisdictions, were keen to share their observations from

home of young grandchildren and their engagements with digital technologies, with such conversations often overtaking our official interview activities. In this project we have engaged in ethnographic observations across children's homes, as well as during visits to the grandmothers' homes, and our early data provide an interesting cross section of intergenerational dispositions towards technologies and different text forms and modalities (Kress, 2005).

From playground conversations to policy analysis

While neither Jo nor Linda had previously conducted policy research, our observations of some of the disjunctions between home technology practices and those we observed in our own children's schools as well as those of classroom research sites led us to interrogate policy documents. In the early days of the iPad, many schools in Victoria (Australia) were introducing one-to-one device programs, including schools in Jo's local area. She found herself constantly in the midst of discussions about iPads, their worth or worthlessness for school as parents stood around in groups waiting for children in the hot Australian sun. Parents expressed passionate positions and opinions, and when Jo researched in school settings, teachers were reporting that parents around her city expressed multiple perspectives on the issue. Parents voiced concerns as widely ranging as wireless technology rays causing cancer, the loss of childhood through early engagement with digital networks, children's potential disconnection from the physical world and the fear that teachers wanted to use iPads in class to avoid teaching. Linda was hearing parallel technology conversations among the parents at her children's school as they watched their children playing in the snow after school during the Alberta winter. We compared notes and realized that there was a different contextual timbre to the conversations in each of the two locations. In Jo's state of Victoria, schools were rapidly adopting iPads, while in Alberta, even though ownership rates in children's homes were similar, iPads were generally being taken up in classrooms more gradually.

Across local school districts in both places we noted an unevenness to the patterns of adoption, and parents expressed feeling unsettled about technology use and the presence of iPads in early grade classrooms. In our discussions with each other we noted that despite some surface similarities between Canada and Australia's education systems, there were considerable differences in technology provision. This led to our collection, comparison and interrogation of policy documents from Alberta and Victoria with Jill Blackmore, Jo's colleague at Deakin who brought expertise in policy to the study. We then examined provision and usage of mobile digital devices for the early years of primary/elementary education, comparing the different ways that our state and provincial policies were influencing approaches to mobile devices (O'Mara et al., 2017). The overwhelming finding was that despite consistent enthusiasm by our respective education departments to use mobile devices in classrooms, there was far less willingness to 'foot the bill'. In the case of Victoria, the burden of provision was passed on to parents, with schools initiating 'bring your own device' programs, starting in the preparatory year. As we noted:

> In Victoria, co-contribution is seen as the parents contributing the device, where the school is contributing the infrastructure to make the program possible.
>
> *(p. 97)*

In Alberta, the cost of provision was often at least partially diverted to parent fund-raising revenues, with some schools adopting what we term 'the casino model', using charitable gaming proceeds to purchase iPads and other classroom technologies. Significantly, however, purchases through this gaming funding must be: "Items and resources that are positioned as 'extras' . . ." (p. 98), providing the message that technologies purchased through charitable gaming funding

are items that are not essential for classroom use. This positioning has contributed to an atmosphere rather different from that of Victoria, where devices are positioned as essential to early years classrooms, and thus needed parental contribution to make their adoption possible.

What became most intriguing to us about our findings was the cultural specificity and impact of parental attitudes towards how policies around provision unfolded. While parental concerns about technology usage for children in each of our own locales seemed quite similar, expectations for how these technologies would be provided were vastly different. Australian parents were willing to pay for devices themselves (although sometimes grudgingly), while Canadian parents would accept volunteering at casinos (also sometimes reluctantly), but actively resisted district attempts to institute anything resembling a 'bring-your-own-devices' program, believing that technologies used in schools should be school funded equipment.

This research example, which began with informal observations of parent conversations while watching over playing children in Canada and in Australia, was followed by our conversations wondering about how our two systems might compare (expecting we would find more similarities than we did!) and recognizing that we needed assistance in addressing the policy theory and context. Jill Blackmore enabled us to locate the study within the broader policy discourse and literature and scaffold from our autobiographical observations, providing an opening to reveal systemic differences in technology provision. We have found that working with others, where everyone in the team brings different strengths, is a valuable way to expand and extend research and further develop our own analyses and insights. And importantly, even in a study that delved into policy considerations, our autoethnographic observations played a key role in alerting us to a new area of inquiry and helping us to understand another aspect impacting children's learning across home and school, and the interplay of different institutional, cultural and regional values and practices.

Popular media and home perspectives

Our final example brings together ethnographic research in homes, conversations and interviews with parents and the wider influences and impacts of the popular media. As Linda and Jo began to work with our initial iPad research projects, we also began to track how the emergence of mobile technologies used by children was being represented in the popular media, quickly recognizing that themes present in the news, online magazines and social media sources were also being mirrored in our interviews and informal conversations with parents of young children. As Suzanna entered children's homes during her ethnographic doctoral research, she made similar observations. Linda, Suzanna and Jo began a more formal tracing of news and social media stories through a longitudinal popular media literature review, with a focus on the emergence of mobile devices and their impact on children's changing literacy practices, tracking trends from 2013–2017.

In our parallel research conversations with parents, we noted that media articles were not only providing information, they were also often influencing parent perspectives – and at times, even sparking particular worries and fears – with themes and metaphors from particular popular articles amplified as these were reposted multiple times on social media sites. These frequently included sensationalized themes, such as 'digital screens as addiction' with titles including, for example, *It's 'digital heroin'* (Kardaras, 2016), or links to danger, such as *The screens that are stealing childhood* (Stevenson, 2012). Ideas that were 'going viral' online, representing an attitude of what we interpreted as moral panic about digital screen time for young children, often also appeared to 'infect' some of the parent participants in our research projects. The popular 'fear-based' articles and media seemed to be contributing to parental tensions in regard to making decisions

about their child's access to technologies in the home. Parents would mention particular articles in their conversations with Suzanna as she came into homes to observe children's practices, and media sources were frequently mentioned in Jo and Linda's parent interviews.

One of the most interesting aspects of this study for us was how we could trace patterns of ideas that had currency to different time periods of the study – for example, over time, as popular articles began to shift their focus to more 'balanced' examination of the challenges *and* benefits of technologies for children's use at home, we also noted our discussions with parents becoming more nuanced and less 'panicked' for parents who tended to favor 'old disposition' (Kress, 2005) perspectives regarding technologies. Through this project we have gained increased recognition of the complex influences informing parent perspectives, and subsequently, also implicated in children's access to various technologies and digital practices in their homes. Through our examinations of popular media articles alongside our research with parents, we have also gained an appreciation of the impact of information from popular sources, particularly when research studies are typically published more gradually than the 'instant' world of Facebook, Twitter and other social media. This project has also led us to wonder about the role of new media and social media in offering 'just in time' information to parents and teachers, and how our own research in future studies might be more responsive. If we, as researchers, do not respond, parents and educators will access the information they desire through other means.

Complex entanglements and messy methods

When we describe our methodological approach to others, our descriptions span a range of methods and approaches: autobiographical, writing as inquiry, a range of ethnographies, critical reflective practice and complexity thinking. At times we also bring in feminist perspectives, for our inclusion of "our domestic experience of nurturing children" (Grumet, 1988, p. 5), as well as our interests in the post-structural (St. Pierre, 2014) as perhaps better able to represent our messy entanglement of methods and the diverse threads of data we weave into our work.

Yet, in the post-typographic digital era (Merchant, 2015), we live in messy times. Children's lives at home are intersected by the continually emerging mediascape (Appadurai, 1990), and the pervasive presence of technologies – old, new and emerging. Capturing children's and parents' experiences and perspectives in the midst of such digital complexity, for us, has been a similarly recursive and living endeavor, and where, following Sumara (1996), we note, "The world, our existence in the world, our relations with others, happen all-at-once". The realms of the micro and the macro co-exist, and while often we begin with our micro examples of 'the personal', we relocate these (Kamler, 2001) in a kind of multidirectional mapping. Of course, planned research activities do have a chronology in that they occur over time, and writing projects also flow from beginnings to conclusions, providing us with a certain tension of making the messiness of research with children, families and educational institutions appear more linear in the rear-view mirror of publication and completed projects.

Additionally, we view our methods as mirroring the messy yet networked nature of digital technologies, following from complexity thinking constructs which explore changes in networked systems (Goldstein, 1999; Gough, 2012). Digital phenomena and practices are frequently interconnected and rhizomatic in structure, and follow patterns of emergence, whereby smaller scale aspects of systems self-organize into larger scale patterns of sophistication (Johnson, 2001).

As we have noted earlier, children's digital activities and engagement in their homes are similarly messy and complex – entangled within children's own micro worlds, parental influences and structures, and impacted by the reverberations of the macro worlds of schools, communities, institutional influences, culture, media and technologies. Our collective projects have attempted

to make meaning of the digital worlds and experiences that children are inhabiting, and to use these insights to inform our ongoing work as literacy educators and researchers in the intersecting world of educating teachers. We recognize, too, that even the best methods can only provide us with mere glimpses, snapshots of particular moments or events, and that the multi-layering, intersections and entanglements of the messy methods we take up can provide us with a slightly wider view.

Practices and possibilities

As our chapter may indicate, we tend to shy away from visions of singular answers for research practice in favor of more entangled perspectives. We (Linda, Jo, Suzanna) have learned to navigate through the 'interesting mess' of studying children's learning and playing with technology, in part through happenstance and having neatly planned research experiences unfold differently than we have expected. However, this less predictable research trajectory, entering into and out of home experiences, intersecting autobiographical experiences with ethnographic research, and including comparative analyses coming from Australia and Canada, has provided us with opportunities to gain finer grained understandings of children's digital experiences than we might have otherwise. In current 'messy' digital times, considerations of the complex ways in which children experience and engage in technologies at home is important in relation to understanding children's technology experiences in schools and other experiences outside of the home. Within institutional contexts, children's learning and technology experiences are frequently organized through linear, sequential approaches, where the influences of home and life out of school are compartmentalized. But in the digital age, children's experiences, practices and skills are interconnected, and might bridge across the domains of home and school, opening up the silos of classrooms (Souto-Manning, 2013). Thus, perhaps research practices such as those we have addressed – taking up the personal and autobiographical – entangled with other research forms – might also inform new insights and approaches for children's learning and playing across what can be an interconnected landscape of home and school environments.

In offering suggestions for other researchers, in taking up a more 'unruly' approach to studies of technology with children, we note the value of interconnection and networks in our approach – across ideas, in relation to the value of shared projects and in our own daily technology experiences. Our collaborative body of technology research has accrued in layers and interconnected projects and has been informed by our own conversations that have come alongside work we have done with others, as well as being mediated by the technologies we have studied. Initially we began with the shared anxieties of being new scholars and wondering how to navigate a "program of research". We heeded advice from mentors about the advantages of working with others – that research need not be a lonely endeavor and that it was important to create structures (relational, technological and otherwise) where "ideas could mingle and swap" (Johnson, 2010). As we have suggested earlier, while we have not been able to recreate the Parisian salons, we have benefited from a similar kind of "coffee house culture" that has enabled many good ideas to emerge, although ours is more of a kitchen table operation than salon. Similarly, to the practices of the children we study, our "playing around with" language, texts and digital forms, together, has been important for our own research and our own learning.

Additionally, in our ethnographic research with children in homes, we acknowledge that "starting from where they are" is important in being granted access, developing effective research relationships and uncovering rich data. But this is also advice we have followed for ourselves. As we have noted, our projects have often started with some 'small thing' we noticed and wondered about. We have also followed our interests, rather than trying to be strategic. Over time, when

we return to key observations and shared obsessions, our conversations and writing have helped us to tease out the threads that have led us to new insights, and to new projects.

We also acknowledge the value of comparative work in examining the complex digital worlds of children, in helping us to understand our individual and collective contexts in more depth. This work has helped us to trouble 'the taken-for-granted' aspects of our own contexts and school systems; comparing our 'similar but different' locations and experiences has helped us engage in the work of making the familiar strange, helping us to work, in a sense, as educational anthropologists (Tobin, 2014).

Finally, although the digital shifts in the 'iWorld' have been rapid, we continue to value important aspects that move more slowly. We navigate the tension of keeping pace with new technologies and new practices against the knowledge that our insights often occur over time, with multiple efforts and persistence. The fast, the slow, the digital and the relational are all deeply entangled, and for us, make up the stuff of interesting research work.

Acknowledgment

We acknowledge the funding support of the Canadian Social Sciences and Humanities Research Council, which supported the work of this article, across two projects: *Literacy Learning in Playful Spaces: Using Multimodal Strategies to Develop Narrative with Young Children* and *A Comparative Investigation of Pedagogical Possibilities of Digital Tools for Family and School Early Literacy Education*.

Note

1 Within the theater, a tableau is a complex structure where actors' bodies create a 'still image' that others might view and interpret.

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