Researching digital literacy practices in early childhood
Challenges, complexities and imperatives

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Introduction

Current research on young children’s digital literacies is shaped by at least three research challenges. First, digital technologies are a relatively novel and fast-changing phenomenon in the lives of children. As a societal macro-transformation, the digital affects all aspects of social life and involves additional uncertainties in relation to the conventional conduct of social research. As a new phenomenon, it is difficult to draw from pre-existing research and theorization. Often, the provisional solution for a new research topic/scenario is to draw from an existing related field of study – in our case, more obviously, research on children’s “print literacies” and reading and writing development or children’s engagement with non-digital media and television. This strategy facilitates defining research procedures, interpreting findings and building a cumulative body of knowledge; yet, as Bloome et al. (2013) recently pointed out, theories and methodologies contain implicit grammars and chronotopes regarding the object of study and, in this case, the nature of childhood. As I discuss below, this not always conscious relocation of pre-existing tropes in childhood research to the study of the experiences of young children with changing digital technologies can raise problems. In addition, digital devices and derived applications transform at such a rapid pace that the object of study in itself is difficult to define consistently and findings become obsolete comparatively faster than in other areas of child and developmental research.

Second, research questions around the digital, in Livingstone and Blum-Ross’ (2017) terms are mediated by “public hyperbole about media-related opportunities and risks” (p. 54). Public attention and public policy concerns gravitate around the “effects” and “impact” of digital technologies on the lives of children, development and future trajectories and this, in turn, has implications for how research problems are formulated and how research is designed (Messer and Kucirkova 2016). This magnification of research questions occurs regardless of the presupposed direction of change. Techno-reluctant views raise concerns about the potentially negative impact on development of intense exposure, more recently with a special focus on infants and very young children, to digital technologies. These concerns are quickly picked up by the media and emerge as moral panics around childhood and technology. Also, as I discuss below, they draw from particular operationalizations of research issues that are limited in their capacity
to grasp the complexities of the role of digital media and technologies in human development. Techno-enthusiasts see digital technologies as the revolutionary solution to myriad social issues and problems affecting childhood, particularly in relation to education and schooling. Indeed, digital technologies play, and will continue to play, a role in educational change and innovation, yet too often the eulogy to educational change through digital technologies is presented without acknowledging the connection to established pedagogical approaches or without engaging with the public mission of schooling or accessibility/equity issues (but see Reich and Ito 2017).

Third, the study of the digital literacy practices and experiences of young children is immersed in broader changes and debates regarding how children are placed within research. Some would argue that the move in social research that calls for actors, young people and children, to have an active voice in the research process simply mirrors transformations precipitated/facilitated by the collaborative ethos of digital culture (e.g. Jenkins et al. 2009; Estalella, Rocha and Lafuente 2013). Regardless of debates around what came first in the chain “technology – paradigms of social life – research approaches around childhood”, there is a clear sense that research relationships must change to understand how young children engage with digital technologies. More so, this change seems to be particularly necessary if we want to move research questions and concerns beyond the limiting ways in which research is framed in the public debates and public policy concerns outlined above.

Within this context, in this chapter I review and discuss a selection of critical and emergent issues in the area of research on young children’s digital literacies and practices. Drawing from the starting premises discussed below as part of the review methodology, I focus on what I consider three key issues. First, the challenges, understood as obstacles to overcome, associated with observing young children’s digital literacies and practices. Second, the complexities (i.e. acknowledging that an issue requires considerable analytical detail and thought) tied to how young children’s digital practices are represented and conceptualized. Third, I discuss how research on young children’s literacies is responding to the socio-academic imperative to make research a collaborative endeavour. I close the chapter by considering how these critical questions connect to plausible future research scenarios.

Review methodology

My engagement with the literature shares aspects with narrative reviews (Baumeister and Leary 1997) but has some additional peculiarities. First, it pays particular attention to existing literature reviews, especially methodological overviews, in the study of early childhood literacies and research on digital childhoods. Within these reviews, the publications generated by the DigiLitEY COST Action (http://digilitey.eu) are a particularly important source of information, as these reviews: (a) have broken down research in the digital and multimodal literacies of young children into different key areas; (b) are committed to providing an international and comparative overview of existing research. Second, particular attention is paid to works that have a methodologically reflexive orientation and explicitly discuss how researchers have adapted existing approaches or created new tools to study early childhood digital practices. Third, the literature review and synthesis is assisted by the DigiLitEY Research Methodology Database,¹ a collaborative reference tool populated by researchers that facilitates generating quick overviews of methodological trends in the study of the digital literacies and practices of children between 0 and 8 years of age.

Research on the digital literacy practices of young children is an area where still further research is needed, yet a synthesis of existing reviews suggests distinct patterns and changes over the last decade. These trends are briefly discussed here as they help situate the themes discussed in this chapter:
Existing research draws from a variety of methodological approaches, including both qualitative (Kumpulainen and Gillen 2017; Kontovourki et al. 2017) and quantitative (Kurcikova et al. 2017; Marsh et al. 2017a). Yet most of the current literature is rather homogeneous in terms of the populations under study, as most studies focus on culturally dominant, middle-class, able children (Miller et al. 2017; Marsh et al. 2017a; Paciga and Donohue 2017) – a trend that might contrast with an earlier research interest on digital technologies and young children from “special populations” (cf. Lankshear and Knobel 2003).

Within this methodological diversity, over the last decade, qualitative and observational studies of young children’s digital literacy practices, occupy a privileged position (Faulstich-Orellana and Peer 2013; Miller et al. 2017). In comparison to existing earlier reviews it is not clear if this position reflects a shift (or in what direction) over the last ten years (cf. Burnett 2010).

Calls for methodological innovation and exploration are embedded in several of these reviews. This forward-looking approach draws from a combination of interrelated factors including: the methodological possibilities of emerging digital technologies; changes in the epistemological lens through which children and literacy practices are understood; and transformations in the relevant research and policy contexts (Ergler et al. 2016; Kurcikova et al. 2017; Marsh et al. 2017a; Miller et al. 2017).

This portrait provides the foundation and justifies the foregrounding of the research issues I discuss in the remainder of the chapter, showcasing the alternatives and solutions that researchers have developed as they delve into the complex task of documenting the digital literacy practices of young children.

The challenges of observing children’s ‘everyday’ digital literacies

The observation of young children and infants is historically the first and one of the most important methods in the study of human development (Bradley 1989) and yet has a contentious position within contemporary studies of childhood. As developmental psychology became the dominant perspective in the study of childhood, experimental and quantitative methods were privileged (Mayall 2013). In contrast, within anthropology the interest in children and education was approached through ethnographic methods and participant observation (Lancy 2008). Subsequently, these divergent traditions met in complex ways as childhood studies emerged as an interdisciplinary field and the methodological and theoretical legacies of each discipline were revisited (Corsaro 2005).

Many current research questions related to the digital literacies and practices of young children are formulated in such a way that research designs would seem to lean toward observational methods as the preferred approach to document children’s engagement with digital technologies (Aarsand 2016). Yet this “inclination” is hedged by at least three difficulties that shape how observational methods have been reworked to study children’s digital experiences successfully: (1) observation, particularly when it aims to provide contextualized and socio-culturally situated accounts, is a labour-intensive method; (2) documenting young children’s behaviour – particularly young children’s digital experiences across a variety of devices – requires significant attention to detail beyond overt verbalizations; (3) the contexts that most contribute to the diversity of children’s digital experiences are out-of-school, family and intimate contexts that are difficult to access.

Very few studies have been designed as continuous longitudinal ethnographic projects (Corsaro 1996) of the digital media practices and literacies of young children – while a number of ethnographic studies with adolescents and youth do exist (e.g. Lange 2014; Livingstone and
Sefton-Green 2016). Some ethnographic studies of children in a variety of contexts might have “stumbled upon” children’s engagement with digital media and technologies as part of their daily practices, communicative repertoires or leisure experiences and have examined these in the context of broader research questions (e.g. Duran 2017). Yet, when the focus turns specifically to digital literacies and practices, researchers must find a balance between various trade-offs. In this case, research designs tend to favour reducing the number of observations that could be gathered through extended ethnographic fieldwork but use recording procedures alongside other data-collection techniques that maximize the detail available in the collected data and the combination of different data-collection techniques. In turn, this has facilitated developing comparative and longer-range longitudinal research projects.

For example, Noppari, Uusitalo and Kupiainen (2017) present a sequential study that tracks the digital experiences of different cohorts of children between 5 and 14 years of age. Data collection on participants takes place every three years involving 50–60 children in each data-collection cycle and includes home visits with observations of children’s rooms and home-tours alongside a battery of other techniques such as questionnaires, surveys, media diaries, media depictions through photograph or drawing and media toys with younger children. The policy-oriented study supported by the EU Joint Research Centre on “Young Children (0–8) and Digital Technology” also adopted a methodological approach focused on concentrated visits to children’s homes to conduct interviews with parents and children, examine perceptions around media through visual materials and conduct digital home-tours (Chaudron 2015). This was a comparative project, involving 21 European countries with at least ten families participating per country. In addition, a shortened version of these home-visit protocols was conducted a year later with the same families from seven European countries allowing for a one-year longitudinal follow-up of some families (Chaudron, Di Gioia and Gemo 2018).

However, this approach to home visits/observations has some limitations. As Noppari, Uusitalo and Kupiainen (2017) point out, it still draws on spoken and written language as the main sources of information. This inclination might raise ontological concerns in terms of what communicative modes and forms of evidence are privileged. It also has limitations in the case of less verbal children and younger pre-verbal children. In addition, while home visits and observations increase ecological validity in terms of documenting children’s daily settings, it could also be argued that this approach favours documenting young children’s digital practices and skills as they are “showcased” for researchers during these visits, rather than documenting them as part of children’s “natural” on-going activities and projects (cf. Silverman 2013).

One approach to respond to these critiques is to intensify the observational component documenting (through a variety of audiovisual recording devices) children’s sustained daily activities and engagement with digital technologies. The trade-off of adopting such a microscopic and exhaustive perspective is that research designs are most often framed as case studies – which, subsequently, may be organised comparatively.

More generally, as Danby (2017) points out, naturalistic observation (i.e. video recordings) and analysis of children’s interactions with, through and around digital technologies would be the preferred approach of micro-interactional and conversational analytic studies. From this perspective the main sources of data are recordings and detailed transcripts of on-going action and interaction and the main analytical work centres on unpacking these interactions – without necessarily relying on verbal retrospective accounts from participants, reflective discourse during interviews, etc., or other sources of evidence outside the interactional order (Clemente 2013). In the following section, I return to this approach as I discuss issues of representation and transcription. Here I want to situate this ethnomethodological approach alongside other ways of understanding detailed observational methods.
One way in which observation, particularly of very young children (0–3 years of age), has been successfully developed is through the “Day in the Life” methodology (Gillen and Cameron 2010). At the heart of this approach is the continuous video-recording of the activity of a child during a full day (or, minimally six hours of the day), observing the context and other participants surrounding the focal child. This day of recording is followed by a second iterative encounter in which parents are interviewed and invited to discuss a summary video of key moments of the recording. The approach has facilitated transnational comparisons, as it can be replicated and adapted with relative ease in a variety of settings, and has contributed to an ecological-cultural (Tudge and Hogan 2005) detailed look into child development and family life. More recently, the methodology has been adapted to “A Day in the Digital Lives of Children Aged 0–3” (Gillen et al. 2018) adopting a comparative perspective across several countries and with an iterative focus on those moments of the day in which there is a presence or child engagement with digital technologies. In addition, there is an acknowledgement that the video-recorded materials can be examined and interpreted from a variety of analytical perspectives (cf. Mills 2016).

Another way of conducting detailed observations is by shadowing (Quinlan 2008) children as they engage in digital activities. In this approach the researcher is in close proximity to the child as he/she engages in digital activities and documents in detail (through field-notes, photography, audio-video recordings) participants’ actions and productions. This approach also allows for conversations around activity (requesting clarifications, interpretations, etc.) to take place as the activity unfolds. In contrast to the observational approaches discussed so far, studying the digital literacies of young children in this way usually requires pre-specifying the objects and questions under study – rather than extracting them afterwards from a broader data set of the child in action. It is also a much more idiographic approach centred on the characteristics and particular interests of individual children, making it a difficult approach to use in comparative studies. However, shadowing is well suited to documenting and tracking the complexities and multidimensionality of digital practices that involve a variety of artefacts, screens, devices and communicative modes, and develop over different spaces (physical and virtual) and temporalities (synchronous or asynchronous communication, projects unfolding over days, etc.).

For example, Winters and Vratulis (2013) followed a single six-year-old child over the course of three weeks as he constructed a variety of projects via a virtual play platform, taking field-notes, screenshots, video recordings and conversing with the child as he played. This allowed the researchers to track and document the multimodal texts and artefacts he created through the platform, and the intimate connection of these productions with the social relations, dynamics and experiences taking place in his family and school.

As said, the approaches discussed so far tend to favour an ideographic look and a microanalytical perspective oriented to unpacking the details of daily life and practice. However, other observational approaches and research questions may be more oriented to tracking recurrent patterns across daily routines. This orientation to observation typically requires extensive and repeated observations and is more concerned with sampling issues, yet is still constrained by the challenges presented at the opening of this section. One way to circumvent the difficulties is through a proxy approach; that is, extending Plowman’s (2017) use of the term, by setting up a research process in which the documentation task is delegated to carers or even children. These generate artefacts (often a visual record) that capture their daily events. Often, the generated materials are later re-examined with participants through conversations around the collected artefacts (Reavey and Prosser 2012; Torre and Murphy 2015).

Plowman (2015) in her study of young children’s experiences with technology at home, combined a small set of home visits and direct observations with a procedure that unfolded over
months in which parents were asked to send digital photographs to researchers through their mobile phones, along with brief descriptions of the activity when prompted by researchers via text-messages. As the author states, these images “had ethnographic value, enabling us to gain access to the intimate setting of the home without being disruptive or invasive” (Plowman 2017: 6). However, as Aarsand (2012) points out in his discussion of a research project where parents were asked to video-record their children’s activities at home, handing data collection to adults surrounding the child raises issues both in terms of the identities and social relations that come into play during data collection (e.g. parent/co-researcher, child/participant) and the nature of the collected data and recordings (e.g. more variability regarding what is recorded and when or how data is collected is introduced by the idiosyncratic decisions of each parent) – see Chapter 4 for a discussion of the ethical dimensions of this methodological choice.

This proxy approach, particularly when supported by visual data (photographs and/or video) recorded through increasingly affordable and user-friendly digital devices, has facilitated involving young children in the research process (Thomson 2009; Clark 2010; Yamada-Rice 2017). In addition, allowing children to document their daily practices and interests might help better situate the place of digital technologies in their lives. For example, drawing from various studies conducted before the emergence of tablet digital devices, Poveda, Morgade and González-Patiño (2012) asked children and their families to photograph their daily routines for a week and later interviewed the children about these photographic sets. This helped understand diversity in children’s experiences with media and digital technologies and how, at a time when digital devices were not that portable, domestic spaces were reconfigured through digital and media devices in some homes.

Underlying this discussion of the challenges tied to observing the digital practices of young children there are at least two additional themes. First, the multimodal and multidimensional nature of the data generated through observation, audiovisual recordings and visual artefacts, raises critical questions regarding how the data is encoded and represented. Second, as children and relevant adults are given active roles in data collection, broader questions in relation to the place of participants in the research process emerge. In the following sections I address each of these themes.

**The complexities of representing children’s digital practices and literacies**

In this section, I discuss the complexities involved in representing and communicating data, understanding this as an issue that transverses the whole research process and is not just related to a “technical” decision located at either the early transcription/coding step or the final publication/communication moment. Working through data inevitably involves selection and simplification but recent concerns have turned to how these steps also “flatten” experience. That is, how conventional data transcription/coding and reporting practices make invisible multimodal, sensorial and embodied aspects of human experience – including young children’s digital practices (e.g. Flewitt 2006; Pink 2011) – in favour of talk, language and what can be rendered easily in a conventional academic written text. Thus, calls have been made to “unflatten” representations (Vasudevan and Rodriguez Kerr 2016) and develop ways that inscribe and make analytically more visible children’s experiences and practices – or, at the very least, are more methodologically reflexive about the implications of representing data in one of several possible ways (Bucholtz 2000; Bezemer and Mavers 2011; Cowan 2014; Anderson, Stewart and Aziz 2016). This section reviews some of the complexities of representation, drawing from the insights developed in discussions around transcription (and recording), but adopting a broader
perspective regarding what it means to portray children’s digital literacy practices. I discuss two issues: (1) how (and why) are digital practices and artefacts represented and singled out within children’s on-going actions; (2) how children’s agency is made (in)visible through different means of representation.

The first question might seem out of place given the topical interest of this Handbook and most of the literature reviewed in this chapter. However, it might help to take a step back and rethink why and how digital technologies, among the variety of artefacts, experiences, relations and conditions that configure children’s daily lives and experiences, are construed as particularly relevant and indicative of broader social changes in children’s lives and literacies (cf. Buckingham 2007; Sefton-Green et al. 2016). To do so, consider Figures 3.1 and 3.2.

The transcript excerpt in Figure 3.1 is from a study on storytelling in an early childhood classroom in Sweden. The teacher, as seems to be usual in this classroom, is reading to the children from an iPad and the researcher’s focus is on the multimodal and embodied enactment of affect and aesthetic experience during literary storytelling. Cekaite’s preliminary discussion (personal communication, January 2018) of this segment focuses on how the teacher displays a (sad) emotional stance while monitoring children’s reactions and involvement in the storytelling event. However, nothing in particular is discussed about the digital materiality of this image and Cekaite even suggests that a similar sequence could unfold if the teacher was focusing on a print book page (cf. Takacs, Swart and Bus 2015; Aliagas and Margallo 2017).

The image in Figure 3.2 was collected in a family home in Spain as part of the “Day in the Digital Lives of Children Aged 0–3” study (Gillen et al. 2018) discussed above. The video-capture reflects one of the moments selected by the researchers in which digital technologies are present but not being used. This analytical choice was made by researchers despite the fact that mother and child are reading from a print book and that, through conversations and interviews, the parents positioned themselves explicitly as not interested in promoting or facilitating their daughter’s early engagement with digital technologies.

The point of the comparison is not to establish which analysis is “correct” or better grounded. The goal is to contrast the two scenes to illustrate how different analytical perspectives may background or foreground digital technologies in the discussion. Cekaite and Bjork’s research interests lie outside digital technologies. They are interested in social interaction in early childhood settings and, in this case, storytelling and the aesthetics of literary events. Thus, it is perfectly reasonable to expect that they do not put the analytical focus on the tablet device used by the teacher for storytelling. Yet, there might be two additional considerations to make with respect to how the digital artefact is rendered relatively invisible in this discussion. First, the authors take a microanalytical approach (e.g. Danby 2017; Cekaite 2018), with a strong grounding in how affective and aesthetic experiences are enacted and monitored during storytelling. Second, the focus on social interaction and the aesthetics of literary events may be seen as foregrounding the interpersonal aspects of storytelling, rather than the digital device used to deliver the story.

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Figure 3.1 Storytelling in an early childhood classroom.
in Ethnomethodology and Conversation Analysis (EMCA). These theoretical traditions take an orthodox stance regarding how to analyse what participants signal and bring out as relevant in interaction – rather than “bringing into” the analysis categories and issues that reflect researchers’ agendas (e.g. ten Have 1999; Schegloff et al. 2002). From this perspective, if there is little interactional evidence that participants are orienting themselves to “the digital” as a feature of the device or the event, then there might not be (from an EMCA perspective) grounds to bring this aspect into the analysis – which is not to say that EMCA cannot be applied productively to understand children’s digital literacies (e.g. Aarsand and Melander 2016; Danby 2017).

This raises a second relevant issue: could it be that as digital technologies become an ordinary feature of children’s lives and become transparent to participants they tend to be made invisible in the analysis? Arguably, in the example in Figure 3.1 (from a prosperous and technologically advanced country and schooling system), this might be the case: by now probably at least two generations of young children have experienced digital tablets and handheld devices as an ordinary feature of their lives. In other words, given that saliency for participants is a strong criterion to define the direction of the analysis (even if one does not work from an orthodox EMCA perspective), it might be that our understanding of digital technologies as a developmental influence is primed to examine situations in which one of two “extraordinary” developmental circumstances occur (cf. Keller and Kärtner 2013): (1) when digital technologies introduce some type of technological-interactional novelty, pushing research to constantly explore the “latest” technological move; (2) when there is some type of disjuncture that helps foreground “the digital” (e.g. in terms of socio-economic conditions, ideologies and discourses around digital technology, policy and research concerns, etc.).

The example in Figure 3.2 is also extracted from a recording of naturally occurring interaction and illustrates how a different analytical logic is applied to the initial interpretation of the episode. As said, the parents in this family construe the scene as a non-digital literacy event and are explicitly committed to reading children’s print books, visiting the local library and providing their daughter regular contact with print literacy. Yet, the research team considered this episode as an example of the child’s digital life. Working from an ecocultural perspective (Tudge 2008; Plowman and Stevenson 2013; Galera, Matsumoto and Poveda 2016), we considered the digital artefacts and practices that are part of the child’s daily life and mediate how routines and interactions are structured in her home (Rogoff, Mejia-Arauz and Correa-Chávez 2015). Further, this
stipulated role for digital technologies emerges independently from how digital technologies are construed by participants. In this sense, Figure 3.2 shows a two-year-old engaged with a print book but her *interactional ecology* (Erickson 2004) includes a turned-on laptop computer and a touch-screen smartphone on the table, both of which have the potential to become relevant to the episode. Yet, the analytical decision here, contrary to a strict microanalytical perspective and drawing from a broader socio-cultural approach, is to consider the laptop relevant even before it is ostensibly brought into interaction by participants. From a socio-cultural perspective the digital device is relevant as it is actively present in the child’s broader daily routine, is used by her parents throughout the day and, especially, gains particular meanings in the context of parental ideologies around digital technology.

How data is represented also has implications for how *children’s agency* is methodologically and analytically approached. As Bloome et al. (2013: 606) discuss, research paradigms in the study of children’s literacies contain *methodological grammars* that construct children in different ways (Mayall 2013). Building on this, here I discuss how methodological decisions highlight or obscure children’s actions around digital technologies and children’s voices within activities. One way of approaching this issue is by re-examining some of the methodological alternatives discussed so far. For example, a proxy approach in which data collection is delegated to a parent, or even situations in which parents scaffold their young children during interviews (Holloway and Stevenson 2017) has the advantage of providing access to situations that are difficult to reach. Yet, without access to the particular circumstances under which the information was gathered, or careful reflexive monitoring in the analysis, arguably, the data could unintentionally reflect parental agendas and adult perspectives more than children’s experiences.

When research turns to young children’s interactions, the claim is that recordings of embodied action and material productions provide more generative data to understand children’s meaning making, rather than other types of “manufactured” data (Silverman 2013). Yet, again, this assumption intertwines with concerns about how data is represented and about how children’s agency is captured in the analysis. Cowan’s (2014) methodological discussion of different transcription approaches, in which the same episode is transcribed and represented through different conventions, illustrates this point well. Different approaches might simply “erase” children’s actions as they are (not) encoded within a transcription format and its particular assumptions about what is and is not relevant in interaction. More obviously, analytical approaches focused on verbal action and talk easily disregard the critical role of embodied and non-verbal action in young children’s interactions and social agency (cf. Kidwell and Zimmerman 2006; Goodwin, Cekaite and Goodwin 2012). Yet, even when the coding/transcription approach is committed to capturing non-verbal and embodied action and an array of modalities, representational choices involve ontological decisions about the organization of the social world (and of children within it) (Ochs 1979). For example, as Cowan (2014) illustrates, EMCA transcription approaches are increasingly paying attention to a large set of paralinguistic features and embodied actions, but are particularly oriented to highlighting sequentiality and the temporal unfolding of interaction. Other multimodal approaches (more tabular and non-sequential in how they present data) might obscure temporarily but unpack with more clarity how different modes and meaning-making resources are deployed by the child. Further, each alternative may be inclined to see and locate child agency in particular ways: an EMCA approach might put the focus on how children orchestrate interaction with participants while a multimodal approach might put the focus more on the semiotic repertoire displayed by the child.

Transferring responsibilities to children in the data-gathering process, in itself, construes children as agentive (e.g. Greene and Hill 2005; Clark 2010). However, building this assumption into the research process does not necessarily solve the issue of how children and their digital
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(and non-digital) practices are represented. Two recent research examples help illustrate this complication. Hilppö et al. (2017) discuss how young children engage with visual materials as mediational tools. In their project, among other tasks, children were asked to take digital photographs of their “moments of joy” in pre-school and then discuss a selection of these images with their class peers. Wargo (2017) focuses on group sonic compositions recorded through digital media in a first grade classroom. Neither project is framed as having a specific focus on digital technologies or media but both focus on semiotic modes that are captured, stored, manipulated and shared in digital format. Thus, the two studies also provide an interesting indirect window into how young children engage with different types of digital media within broader activities.

Hilppö et al. (2017) identified two ways in which images acted as mediational means for children to discuss their daily experiences. In one of the approaches children shifted away from the photographs which “functioned as backgrounds or canvases for reprising the original events” (Hilppö et al. 2017: 364). Yet in both cases, children emerged as active meaning-makers who draw from a digital device and a (visual) semiotic artefact among various elements in their environment to construct and share reports of their school experiences. Wargo’s (2017) case study focuses on classroom activities and the literacy curriculum around sound created by a first grade teacher. In this curriculum, a digital audio recorder became a “character in the classroom” (p. 400) – an actant in Latour’s (1996) terms – that structured and mediated how the children in the class documented the sonic compositions generated during the curricular experience. However, the study also shows how children can extend and alter the curriculum, either by “interrupting” the compositions with non-sanctioned interventions or assembling objects that unsettle some of the explicit and implicit distinctions and identities that the teacher and curriculum set-up (writer vs. reader, sound composer vs. silent listener).

Attending to how children draw from digital technologies to construct meaning and ongoing action and, especially, how this is facilitated within a research project points to the broader issue of children’s participation and collaboration in research. The following section delves into emergent issues when participatory/collaborative research focuses on digital experiences and/or draws from digital technologies.

The imperatives of collaborative research with/around/on young children’s digital practices

Over the past couple of decades, collaborative and participatory research have gained a visible place within academic research, policy and funding in applied settings (Lassiter 2005; Rabinow 2011) and have influenced how children and childhood are reconstructed in research (Veale 2005; Mayall 2013). Digital technologies and devices occupy an interesting place within these debates, and have been presented as potentially fruitful tools to facilitate and mediate collaborative work and research (Estalella and Sánchez-Criado 2015), especially with children (cf. Ergler et al. 2016). Research projects topicaly interested in children’s engagement with digital technologies have incorporated participatory/collaborative aspects into their design and implementation. These two trends intersect in new childhood socialization settings, such as “makerspaces” (Marsh et al. 2017b) or collaborative design efforts aimed at transforming various childhood contexts (e.g. parks, playgrounds and schools). In these contemporary childhood settings, digital tools and experimentation are put to work to develop children’s creativity and/or capacity to act upon their daily contexts. This section engages with some of the research imperatives that stem from different collaborative structures, and is organized in two parts. First, I briefly review debates regarding how collaboration/participation is defined and problematized in research. Second, I draw from these debates to showcase how the dual focus on young children and digital
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literacies intersects in three research scenarios: (a) child collaborative/participatory research that draws on digital technologies/devices; (b) participatory/collaborative research focused on children’s digital capacities; (c) the place of contemporary “digital culture” in the development of collaborative design projects with children.

Current debates around participation/collaboration, particularly in European Social Anthropology and ethnographic-oriented research, seem to cluster around two vocabularies – that of Participatory Action Research (PAR) (e.g. Clark 2010; Aguirre, Moliner and Traver 2017) and that of Experimental Collaboration (XCOL) (e.g. Kullman 2013; Sánchez-Criado and Estalella 2018). In part, these differences stem from the intellectual traditions on which each approach is built. PAR has well-grounded roots in critical social theory (Lassiter 2005; Cammarota 2011), Freirean pedagogy (Veale 2005) and, within policy-oriented research, is presented as aligned with the UN Convention on the Rights of the Child (Pascal and Bertram 2014). XCOL has closer roots to Science and Technology Studies (Kullman 2013; Ruppert, Law and Savage 2013) and contemporary collaborative forms of mobilization, and civic and economic organization (Estalella, Rocha and Lafuente 2013). Both converge around the need to dismantle asymmetrical relationships between researchers/scientific knowledge and participants/everyday knowledge. Yet, in the case of PAR this is more often understood as subverting larger processes of socio-political domination through research (e.g. Irby and Drame 2016), while the impetus of XCOL is more often on how research can trouble the practical consequences built around the distinction between expert discourses and lay-people (Estalella and Sánchez-Criado 2015).

More importantly, for the purposes of this discussion PAR and XCOL construe in different ways how the various dimensions of a research endeavour are negotiated and redistributed among all the parties involved in a research experience. Figure 3.3 visualizes how research responsibilities are reworked in a participatory/collaborative experience. The starting assumption might be that redistributing research work is a one-dimensional displacement of responsibility (along a continuum of possibilities) from researchers to participants (Figure 3.3A). However, more accurately, research should be seen as a complex process that unfolds into multiple tasks/dimensions, each of which can be negotiated independently and redistributed in distinct ways for each project (Figure 3.3B). As a result, a wide range of idiosyncratic research arrangements are possible in each individual project.

Figure 3.3 Redistribution of work in collaborative/participatory research.
In conventional research approaches all decisions rest on researchers. Participants’ engagement is limited to consenting to be a part of a research project and to be “subjected” to the various requirements/tasks the study involves. PAR/XCOL approaches open up participants’ decision-making and control to each of the different aspects that make up the research process. In research with young children, at the very least, a participatory approach will give some control over data collection to children (Clark 2010). More ambitious efforts also understand the formulation of research questions/problems as a co-constructed process and might even move on to contemplate different forms of dissemination/communication of findings in which child participants play a visible role (e.g. Morgade and Mendoza 2017). A possible difference emerges in how PAR and XCOL understand research design. PAR research designs (i.e. the combination of data-collection techniques, the temporal organization of a study, considerations about scope and breadth, etc.) tends to orient participatory projects toward more easily recognizable research paradigms/designs (e.g. an ethnographic project, a case study, a multi-sited project, a comparative project, etc.). Consequently, PAR projects tend to give academic researchers more oversight over research design issues. XCOL tends to have a more open view of research design and might see it as an element that is open to negotiation and emerges as a co-constructed assemblage (Kullman 2015).

Children’s mobilities is an area that illustrates well how a turn to digital technologies for research and considerations about children’s participation in research intersect to generate/contribute to emerging topics of interest. A line of research drawing from sensorial and multimodal perspectives focuses on how participants understand and experience their social worlds as they engage with and move about their daily environments (Pink 2008). A variety of digital tools (e.g. geo-localization and mapping technologies, digital cameras and audio/video recorders, etc.) have facilitated developing this line of research but this does not necessarily mean that they are implemented from a participatory perspective or that they provide more insight into children’s perspectives. Yet, technologies such as user-friendly wearable video-cameras have been pointed out as digital tools that: (a) give much more control over data collection and documentation to children; (b) provide access to a distinct “first-person” perspective and sensuous experience that adult researchers would probably not be able to grasp through other adult-controlled audio-visual data-collection instruments.

Green (2016) discusses methodological issues involved in using wearable cameras in a project on pre-school children’s experiences in nature. She details how wearable cameras provide data that is much closer to “walking in the shoes of the child” (p. 282), including a sense of scale from children’s perspectives regarding the natural environment and children’s relations with adults. Yet, as control of the wearable cameras is given to the children and incorporated into their ongoing social relations and activities, they also become enmeshed in the dynamics of peer relations (including conflict and exclusion), or may be creatively used for purposes not foreseen by researchers (e.g. playing “wearable camera ‘bull fights’”).

An interesting area of collaborative research on children’s digital skills is the implementation of robotics in education (Benitti 2012; Toh et al. 2016). Projects that engage students in the design and construction of robots, most often using commercially available play robot construction kits, such as those designed by LEGO, are structured around the iterative stages of the engineering design process (Bers et al. 2014). Robot construction experiences have also been developed for early childhood settings and early primary education, and published studies provide some sense of how teachers and students have to plan, discuss, design, build, test and revise the robots they work on in class. Noticeably, research in this area – often led by scholars with an engineering background – follows quantitative and semi-experimental approaches and, thus, published reports are often “thin” in the information they provide.
regarding classroom dynamics or how the robotics/engineering experience is mediated by larger educational-institutional processes.

An example in which a robotics program is incorporated into a well-established early childhood curriculum is the case study by Elkin, Sullivan and Bers (2014) discussing the implementation of a robotics curriculum in a Montessori early childhood classroom. Building on a pedagogical tradition that places manipulation, experimentation and collaboration at the centre of the curriculum, the study shows how the teacher was able to incorporate robotics and robot construction into her classroom within a wider narrative theme that structured children’s projects and final presentations.

Finally, collaborative design projects are more oriented to the co-creation and redesign of objects, spaces or processes to have a “real” impact on the lives and experiences of the participants involved in the collaborative experience (e.g. Sánchez-Criado, Rodríguez-Giralt and Mencaroni 2016; Pink et al. 2017). In addition, particularly in the case of work with children, this approach to collaboration often involves alliances between researchers (inside and outside academia), civic organizations (e.g. NGOs, public centres, educational consultants, etc.) and the “target” institutions/spaces of the participating children (e.g. a school, a neighbourhood, etc.). In these networked set-ups, an array of digital technologies (computers, audio/video recorders, 3D printers, social media, digital repositories, etc.), which are seen as the tools of contemporary collaborative digital culture, are put to work in the service of the project.

An example of this action research approach is provided by González-Patiño, Esteban-Guitart and San Gregorio (2017) describing the collaboration between a school in Madrid, a municipal cultural organization centred on digital culture and civic participation (Medialab-Prado Madrid) and a diverse team of researchers aimed at helping primary school children redesign spaces and furniture in their school. The research involved creating a “digital hub” (González-Patiño, Esteban-Guitart and San Gregorio 2017: 143) for this community, child-led workshops in the municipal organization, collaborative design and decision-making work inside and outside the school, and the prototyping of alternative desks, chairs and storage facilities for the school with the material resources of Medialab-Prado.

In short, a collaborative approach in many ways encapsulates some of the ideals of contemporary research with young children: it responds to calls to make academic research socially relevant, it is respectful of children’s voices and is aligned with current conceptualizations of childhood and, finally, it is gaining momentum within policy and funding. However, there are important challenges to collaborative research worth pointing out to close this section. First, sustainability can become a major issue. The more complex the collaborative device/assemblage – in this respect, the three scenarios discussed above are increasingly complex – the more vulnerable the project is to the unstable material conditions of the organizations involved or actors’ real possibilities to sustain commitment with a collaborative project.

Second, from the perspective of academic researchers, collaborative research can also raise ethical issues regarding authorship and dissemination of information (Elisenda Àrdevol, personal communication, 14 November 2017), particularly when the time-frames of researchers and participants/other organizations are not well aligned.

Conclusions

This methodological review has discussed a number of emerging and more established issues in relation to research in the area of young children’s digital literacies and practices. The discussion is very much skewed toward qualitative and interpretive research traditions (Erickson 1986) – but see Marsh et al. (2017a) on the importance of large-scale survey research and Messer and
Kucirkova (2016) for a discussion of experimental and quantitative approaches to children’s engagement with digital technologies. As argued in the introduction, this choice reflects both the current prevalence of qualitative research approaches in this area and, more importantly, the reflexive nature of current qualitative research committed to methodological innovation/experimentation and critical self-appraisal of the research process. It also reflects the preferences and expertise of the author of this review, so it is perfectly possible that other reviewers would provide alternative portraits of current research.

In addition, a review centred on digital technologies both as object of study and a research tool within childhood studies runs the risk of becoming quickly dated. Digital technologies change rapidly and innovations are soon appropriated by children and researchers; thus the social realities and practices captured in this review might be very different in, for example, a decade. In this scenario, I would like to think that the focus of the discussion has not been on presenting the latest technological device/solution but on the emerging analytical and epistemic issues that need addressing as research practices are transformed. These substantial questions have more durability or, at the very least, how they are currently addressed may provide a template regarding how to reflexively engage with future research scenarios.

One way of thinking about how changing digital technologies affect research is by considering whether the transformation can be understood primarily as tied to “efficiency” or might have a more qualitative/ontological impact. Digital technologies and the digitalization of multiple tasks makes processes much more effective: reducing time, simplifying/eliminating issues of storage, increasingly reducing technological costs, augmenting exponentially computational and analytical capabilities, etc. Yet, the more relevant questions might be tied to how these transformations impact on our understanding of children’s social realities and practices, and the sorts of research questions we formulate. For example, returning to the discussion around observation, the use of wearable cameras in the history of video-based interactional research (Erickson 2011) might not just solve issues of accessibility and cost. It could be seen as providing data that reconstrues more substantially how we understand the interactional order by giving access to sensorial and embodied experiences that are very difficult to grasp through researcher-held or static video-cameras (however complex the recording set-up is).

Other transformations in how digital technologies can be used in research (not discussed at length in this chapter) may also raise substantive questions. The digitalization of information and content provides researchers and other analysts with insurmountable quantities of information (big data), raising questions about how and why this data is scrutinized (e.g. Reyes 2014). These issues are shaped in particular ways in the case of contemporary children, who are born with a digital footprint that will develop and grow throughout their lives, opening up opportunities for new research questions as well as important ethical and policy concerns (e.g. Livingstone, Carr and Byrne 2016; Currie 2013). In another area, the development of Virtual Reality applications might allow researchers to create experimental environments for children with a degree of control and sophistication that involves a truly qualitative leap regarding what is currently possible within a laboratory setting. Yet, doing so requires addressing a number of design and safety concerns in relation to how immersive technologies are used with/by young children (Yamada-Rice et al. 2017).

To conclude, I should note it is impossible to be completely comprehensive. A methodological review that attempts to move beyond describing the frequency with which different research designs/techniques are used will necessarily be selective. Hopefully, I have provided some food for thought regarding key questions qualitative researchers interested in the digital literacies, practices and experiences of young children must confront when setting up their research projects.
Acknowledgements

I would like to thank Rosie Flewitt very much for her careful editorial feedback, as well as the anonymous reviewer for the detailed comments made to earlier versions of this chapter.

Notes

1 This database is a collaborative review and research tool in which authors and researchers can input the reference to their works and provide extended details of methodological aspects of their studies. In addition, the database is public, with raw data that can be embedded across a variety of platforms and extracted for analysis by any user. Access the Database Input Form at: https://docs.google.com/forms/d/e/1FAIpQLSeUi2-SNXPsAiHlKj6Oq-V2x6r9oSggQotUH1-crGXBplfZJw/viewform. For an example of how the form can be embedded and examined see: www.infanciacontemporanea.com/2016/02/25/rmdbsearchtool/

2 Transcript and images kindly provided by the authors (Bjork-Willen and Cekaite 2017) from a currently unpublished analysis and used with permission for this chapter.

3 In fact, one systematic literature review on robotics and schooling uses as exclusion criteria for the review that the “Article does not provide a quantitative assessment of learning” (Benitti 2012: 979).

References


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