Young children's initiation into family literacy practices in the digital age

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Abstract

This article reports a study that explored young children's digital literacy in the home. The aim of the study was to identify the range of digital literacy practices in which children are engaged in the home and to explore how these are embedded into family life and involve family members. Four children, two girls and two boys aged between 2 and 4 years, were the focus for study. Parents were co-researchers in the study in that they made written observations on children's activities and captured practices using a digital camera and a digital camcorder over the period of 1 month. They took part in a series of interviews during the study in which they reflected on this data and were asked about related practices. Findings suggest that children were immersed in a range of multimedia, multimodal practices which involved extensive engagement with other family members who scaffolded their learning and delighted in the children's technological capabilities. The article suggests that, in the light of socio-cultural developments in the new media age, a change in focus from 'family literacy' to 'family digital literacy' is required.

Keywords

In this article, we report and reflect upon findings from a study in which four children's digital literacy practices in the home were captured by parents using a range of media – written observations, still images and video films. Further to this, the mothers of the four children, aged between 2 and 4, were interviewed on several occasions during the 4 weeks of the study. The aim was to identify the range of digital literacy practices in which children are engaged in the home and to explore how these are embedded into family life and involve family members. We use the term 'digital' in relation to literacy to reflect the way in which reading and writing practices are increasingly mediated by new technologies in the new media age. As Eyman (2006) suggests, the phrase '"digital literacy" captures the notion that the literacy practices referred to are enacted in digital

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spaces' (p. 185). We wanted to explore how children's communicative practices draw on a wider range of modes than the written word. Children's acts of decoding, encoding and meaning-making are practised in relation to letters and words, signs, symbols, still images, moving images, sound and movement (e.g. animation, gesture; Kress, 2010). It is necessary but no longer sufficient for children to develop competence in relation to written texts; they also need to be able to engage successfully with multimodal, multimedia texts if they are to acquire the range of skills, knowledge and understanding necessary to navigate the knowledge economy of the 21st century (Lankshear and Knobel, 2011). The implications from this study for research, policy and practice in early childhood education and family literacy programmes are explored.

Family literacy in a digital age

There is a significant and long-established body of work relating to young children's literacy practices in home contexts. A series of studies conducted in the 1980s in Western, industrialised English-speaking countries illustrated how literacy differed across homes in a variety of communities (Heath, 1983; Taylor, 1983; Taylor and Dorsey-Gaines, 1988). This research focused on identifying the wide range of language and literacy practices in which families engaged, in contrast to the previous rather narrow, deficit perceptions many educationalists held of families' practices outside of schools. In this tradition, numerous studies since the 1980s have sought to identify the nature of literacy in homes and communities in order to document evidence of the richness of literacy in out-of-school contexts (see Cairney, 2003, for a review). This work suggests that (a) many young children are immersed in literacy-rich environments from birth; (b) they develop a range of skills, knowledge and understanding in relation to literacy as a result of this engagement and (c) their literacy development is supported and scaffolded by family members in various ways. However, research in this area has focused primarily on children's literacy practices with regard to alphabetic print practices. There is a need to extend this work in order to ascertain in which ways children are engaged with multimodal, multimedia texts and practices in home contexts.

The project reported in this article builds on previous work which indicates that young children are, from birth, immersed in a media and technology-rich environment. In the United Kingdom, Marsh et al. (2005) conducted a survey of 1852 parents of children aged from birth to 6 in 10 Local Authorities in England in which young children's use of popular culture, media and new technologies was identified. The study concluded that many young children were competent users of technologies from an early age and that parents felt their children developed a wide range of skills, knowledge and understanding in this use. In addition, many parents felt that such competences were essential for the digital age and that early years settings and schools paid insufficient attention to new technologies.

Plowman et al. (2008) report on a study conducted in Scotland in which they surveyed 346 families in Scotland and conducted 24 case studies of young children's use of technology in the home. Their study identified that children and parents were active users of technology, that patterns of interaction differed across families due to a range of factors, such as parents' attitudes towards and experiences of technology, and that an increase in technological items in the home does not necessarily relate to amount of use of technology by children. They also suggested that parents scaffolded children's learning with technologies in three areas: 'acquiring operational skills, extending knowledge of the world, and developing dispositions to learn' (Plowman et al., 2008: 308).

This study built on this previous work by involving parents of multilingual children in the collection of data regarding young children's digital literacy practices and examined the intergenerational aspects of the multilingual digital literacy practices. Intergenerational interactions around literacy are central to family life. Gadsden (2000) has argued that there should be a greater

emphasis on the examination of intergenerational literacy practices because literacy is not simply transmitted from older family members to children. Children influence the literacy behaviours of other family members and practices are co-constructed across generations (Gregory and Williams, 2000). A number of chapters in an edited collection by Gregory et al. (2004) outline the role that siblings and grandparents play in constructing children's understanding of literacy. This work outlines how 'parental ethnotheories' (Kenner et al., 2008) – cultural systems of beliefs within families – not only shape parents and children's literacy practices, but impact on textual interactions between children and other family members. In this article, therefore, we aim to address the following research questions:

- What is the nature of young children's digital literacy practices in the home?
- What is the nature of children's interaction with other members of the family and wider networks in their digital literacy practices?

Methodology

The study was conducted in collaboration with four families with children aged between 2 and 4. A case study methodology was employed. The families were recruited through contacts with a primary school, which was informed that we wished to work with the families of two girls and two boys aged between 2 and 4. The families were identified by the head of the nursery as potentially having interest in the aims of the study and were approached initially by this person. Once the parents had agreed to find out more about the project, they were invited to a meeting at the school at which the researchers outlined the project. The parents had opportunities to ask questions and then took some time to consider whether or not they wished to be involved. Once the parents had confirmed they would be involved, they were visited by one of the research team, who introduced them to the equipment and materials they needed and obtained formal consent.

Parents were recruited on the basis that they would be active participants in the project. Their role in the study could be described as that of 'co-researchers'. As will be seen later, their contribution was absolutely vital. Not only did they collect data about family and practices that would have been inaccessible to the research team but, through their insights and dialogue with the team, they also shaped and sharpened the ideas in this article. However, in using the term 'co-researcher' (an in-vogue term in several areas of social inquiry), we do not wish to put forward an exaggerated, romantic view of what parents did. There are many tasks to be undertaken in a research study of which the parents accepted responsibility for some but not for others. Table 1 lists some of the responsibilities that have to be taken in almost any research study. It suggests that while the principal investigators (Marsh and Hannon) had responsibility for all aspects of the research, the research assistants (Lewis and Ritchie) had a restricted, but significant, set of responsibilities in this project. The responsibilities of parents as co-researchers, although vital, were further restricted. In this study, the input of the various participants is marked with a tick in Table 1. The presence of a question mark denotes that this activity is certainly feasible within studies, although it did not take place in this one.

Table 1 indicates that parents had an essential, but not determining, role in the study. In the meeting with parents, we undertook an intensive discussion of the research questions and the kinds of data they might collect that would illuminate the research questions. In this session, we used terminology such as 'digital literacy' and discussed the meaning of this as a group. Inevitably, the findings of the study are limited by the fact that the parents were making decisions about what to film and record, but we were able to establish, through interviews, that the activities that they recorded were not untypical.

Table 1. Responsibilities in the research process.

Responsibility	Principal investigators	Research assistants	Parents as co-researchers
1. Understanding field	✓	?	✗
2. Identifying additions	✓	?	✗
3. Forming questions	✓	?	?
4. Key decisions	✓	✓	✓
5. Securing resources	✓	✗	✗
6. Dealing with problems	✓	✓	✓
7. Collecting data	✓	✓	✓
8. Analysis and interpreting data	✓	✓	?
9. Reporting, publishing	✓	✓	?
10. Responding to critics	✓	✗	✗

Parents were given a digital still camera and digital camcorder for the duration of the project and asked to use them whenever they wished to record their children's digital literacy practices. They were visited by researchers (Lewis and Ritchie) once a week for 4 weeks and the researchers collected the data and asked parents to reflect on it. Researchers asked parents to select aspects of the data that they had found of most interest each week and then probed parents as to what the practices were, the context, why they had found them of interest and how typical a practice they were. Parents were also invited to keep a reflective diary in which they could record anything they wished in relation to children's digital literacy practices.

In the final week, researchers interviewed parents about children's engagement more widely in practices involving popular culture, media and new technologies and completed an inventory of the technological items owned by families. Each family was given gift vouchers worth £50 on completion of the project. The findings were shared with parents at a meeting held following completion of the project.

It is recognised that this research design is not unproblematic, in that parents are attuned to their children and established patterns in their relationship may mean that the parents focused on specific activities and not others. However, it was felt that the benefits of the close relationship between parents and children outweighed the disbenefits. Parents were able to record activities at times that would not have been accessible to other researchers had this been a standard ethnographic study, such as before breakfast or before bedtime. In addition, the deep knowledge parents held about their children was most informative in terms of understanding how children used digital technologies, why they used them and how that use fitted into the family's everyday lives. In the following section, we provide brief overviews of each child and family.

The children and families

In all four families, it was the mothers who attended the initial meeting at the school and who collected the data. Although fathers have been found to be more actively engaged in their children's home literacy than is commonly supposed from a school perspective (Hannon et al., 2006), it is the norm for mothers to be the ones principally engaged in school-based activities (Reay, 1998).

Grace was a 4-year-old girl who lived with her parents and young brother. Her mother, Angela, worked in the home and her father was a teacher of children with special educational needs. Angela

Table 2. Visual data collected by parents.

	Total video clips	Video clips not related to project	Video clips related to project	Total minutes filmed	Minutes filmed not related to project	Minutes filmed related to project	Total still photos
Angela	14	5	9	23.33	1.12	22.21	90
Hazra	33	2	31	32.49	0.07	32.42	21
Sharana	18	6	12	14.31	0.44	13.47	214
Waeeda	15	1	14	24.49	0.40	24.09	0
	79	14	66	94.42	2.43	91.59	325

described the family's ethnic origin as White. The family spoke English, although Angela and James can speak other, European, languages.

Lubna was a 3-year-old girl who lived with her parents and older brother and sister. Lubna's mother, Husna, described the family's ethnic origin as 'Pakistani'. Husna worked in the home and her husband was self-employed. The family spoke Punjabi, Urdu and English.

Sohail was a 2-year-old boy who lived with his mother, Saira, his father and his uncle (who is living with the family temporarily). Saira defined herself as British Asian with Pakistani heritage, and her husband as Pakistani (he moved to England following their wedding 5 years previously). Saira worked part-time as a civil servant and her husband worked in a factory, and also part-time as a delivery driver at weekends. The family spoke English, Urdu and Punjabi.

Farooq was a 2-year-old boy who lived with his mother, Wafeeqa, father and older brother. Wafeeqa described the family's ethnic origin as 'British Pakistani'. Wafeeqa was the manager of a children's centre at the local primary school. Her husband worked at a bakery. The family spoke Punjabi and English.

The data from interviews with parents and inventories undertaken by researchers indicated that the children lived in media-rich homes. The children were surrounded by a range of print media (books, comics, magazines) and technologies (television, computers, laptops, mobile phones, electronic toys and, in three of the four families, console game players such as the Nintendo Wii or PlayStation). This is in line with findings from large-scale studies of young children's home environments (Common Sense Media, 2011; Marsh et al., 2005; Ofcom, 2014; Rideout et al., 2003).

Data analysis

The parents recorded a wide range of activities. Table 2 outlines the visual data, still images and video film, recorded by each of the parents.

This table indicates that only 3 per cent of the total minutes filmed were not related to the study (and those were short clips, shot as families became familiar with the camera).

Video data were classified according to content and then key excerpts transcribed. The excerpts to be transcribed were chosen because they related to the codes developed in the overall analysis of data. The interview data were transcribed. The diary entries were classified according to content, for example, type of activity recorded. The data from all of these sources were inductively analysed using 'constant comparison' (Glaser, 1965) techniques to develop codes based on the research questions, which were grouped into themes (Braun and Clarke, 2006). The themes that emerged from this analysis were as follows: pervasiveness of digital literacy practices in children's lives; children's development of skills, knowledge and understanding in relation to multimodal, multi-media texts and practices; children's engagement with popular culture and the relationship to their

Table 3. Range of practices recorded by parents using the digital camcorder.

Singing/dancing/talking to TV (6)
Watching TV on own (3)
Watching TV with sibling/friend (3)
Watching TV with parent (2)
Using an electronic toy (5 – Barbie Laptop; alphabet recognition toy; Bob the Builder phone; spelling toy; Buzz Lightyear model)
Using mobile phone to talk to imaginary person (2)
Using mobile phone to take photographs (2)
Using a laptop to play a game (2)
Using a laptop with parental help (2)
Watching a film that is projected on a large scale, cinema-style (2)
Attempting operational procedures with hardware (2)
Using mobile phone to talk to real person (1)
Using a laptop to watch video clips on YouTube (1)
Using a laptop with a friend (1)
Using mobile phone to engage in a video call (1)
Using mobile phone to listen to music (1)
Using a digital camcorder (1)
Using a dishwasher (1)
Using a CD player (1)
Using headphones (1)

The number in brackets relates to the number of instances of that practice, not how many video clips relate to the practice, as multiple video clips sometimes related to one instance.

literacy practices; children 's understanding of digital literacy and social networking; and family scaffolding of children's digital literacy practices and intergenerational digital literacy practices.

Family digital literacy: findings and analysis

The data provided a rich and complex picture of the nature of young children's digital literacy practices. In this section, we provide an overview of the findings in relation to each of the themes that emerged in the analysis.

Pervasiveness of digital literacy practices in children's lives

In these four families, digital literacy practices were embedded in children's daily lives. Table 3 outlines the range of practices recorded by parents using the digital camcorder, with the number in brackets indicating the number of times that practice was recorded across families.

The still images taken by parents portrayed a similarly wide range of activities and the interviews with parents confirmed that these practices were generally typical for the children. These data are consistent with other studies which indicate the pervasiveness of digital literacy practices in young children's home lives (Blanchard and Moore, 2010; Davidson, 2009; Plowman et al., 2012; Wolfe and Flewitt, 2010). In addition, the practices were embedded across the languages children spoke at home, thus promoting the children's bilingual/biliterate skills. For example, children used Punjabi when communicating using devices and Sohail's mother reported him using an electronic toy that taught the Arabic alphabet:

He's got an Arabic teacher, like a little laptop, and it teaches you the Arabic alphabet and certain verses from the Qu'ran and certain famous sayings or … I'm not sure if they're sayings, are they, in Arabic and then it translates them into English. (Saira, Interview 1)

Technology has become both transparent and ubiquitous in adult lives (Weiser, 1991) and it would appear that for these young children, transparency and ubiquity of technology was also a feature of their daily existence. Culture and ethnicity were central to these embedded practices. As the transcript excerpt above indicates, technology enabled Sohail to become more familiar with a key text in his religion, the Qu'ran. In addition, for the parents and children who had family members located in diasporic spaces across the globe, technology was important in enabling communication and satellite television enabled access to television channels broadcasting in Arabic. Multilingual digital literacy experiences were thus an established part of life for the bi- and multilingual children in this study.

Children's development of skills, knowledge and understanding in relation to multimodal, multimedia texts and practices

All of the practices outlined in the previous section involved the deployment of multimodal skills and understanding, in addition to technological knowledge, such as how to control hardware. Many of the practices involved looking at text and images on screens. Parents reported that their children moved fluently across media in their meaning-making practices and, in some cases, were more confident than parents in this regard. For example, Lubna's mother stated,

I know she's more confident around computers and technology in a way more than me, but it just makes you think, she doesn't even think twice. It's the same as holding a pencil to her, she's got the same natural ease. She would pick up a pencil, she'd play on her computer. I think I would be a bit more intimidated. I need to look at instruction books. I need to get myself psyched up, I don't like having people interrupting me while I were doing it. I would want peace and quiet. I want to know what I'm doing in case I've done something wrong. (Hasna, Interview 1)

The synergies that Lubna's mother notes between her daughter's traditional literacy practices (using a pencil') and digital practices (using a computer) are of interest, given the disjuncture that she notes between these in relation to her own experiences. It was of note that the parents in this study all remarked on the nature of their children's competence in communicating using a range of modes and media, which they felt was distinct from their own history of experiences with technologies. This was the case in the *Digital Beginnings* Study (Marsh et al., 2005), for which the data were collected 10 years ago, and points to the way in which this discourse is one that has been firmly embedded in parental discussions of young children's digital competences for many years, despite the differences that exist in adults' experiences of technologies during this period.

Children's engagement with popular culture and the relationship to their literacy practices

Children in this study had a passionate engagement with the popular icons and characters of popular culture, as has been identified in previous studies (e.g. Marsh et al., 2005). They owned a range of toys and artefacts linked to their popular cultural interests and for two of the four children, many of their reading books linked to favourite characters and television programmes. Grace, for example, was very keen on the television programme 'Dora the Explorer' and Farooq enjoyed the film

'Toy Story'. The children owned various artefacts related to these texts, such as a 'Dora the Explorer' computer game and a Buzz Lightyear toy. This engagement with the 'mediascapes' (Appadurai, 1996) of globalisation is a pervasive discourse in home life but not, unfortunately, in some early years' settings, which creates disjuncture in experience across home and school domains for some children (Levy, 2011).

Children's understanding of digital literacy and social networking

Social networking using technology is not a new phenomenon; humans have been networking around various technologies for hundreds of years. However, there is now widespread engagement in social networking using a range of technologies such as the computer (Internet) and mobile telephones. The children in this study were also involved in these activities and so were becoming familiar with the role of digital literacy in these social practices. While the children were not text-messaging themselves, for example, or pretending to send text-messages from their parents' phones, as has been identified in previous studies (Marsh et al., 2005), there was evidence from the video and interview data that they were aware of text-messaging as a social practice. Hasna, for example, reported that Lubna owned a toy mobile phone:

> … a little pink one, but it's a slide one so she does like that. And I think there is either photos or a video film because she's talking, and she does try to text and she tries to ring people. 'What's the number?' she'll ask me for Salma and she'll pretend to talk to them. (Hasna, Interview 1)

Wafeeqa stated that Farooq recognised the sound the mobile phone made when a text message was received and he liked to look what was happening:

Wafeeqa:	When it goes 'do-do-do' and he knows that mum's … when I get it, he comes over my shoulder and looks.
Interviewer:	Ah ha, so right …
Wafeeqa:	He does, but I don't think he'd say 'Who's texting?' but he knows that it's here.
Interviewer:	He comes to see what's on the screen?
Wafeeqa:	Yeah, he does, he comes over like that and looks while I do whatever else you do.(Wafeeqa, Interview 2)

As research on children's emergent print literacy has indicated (Teale and Sulzby, 1986), this kind of immersion in family practices is a significant element of children's learning about the purposes for literacy in everyday life. It appears that emergent digital literacy practices now serve the same purposes.

Family scaffolding of children's digital literacy practices

As in the Plowman et al. (2008, 2012) study, there was evidence that the parents scaffolded children's learning with new technologies in a number of areas. Green (1988) refers to a '3D' model of literacy, which includes a focus on operational skills, cultural understanding and critical skills. Parents scaffolded children's learning across all three aspects. They did this overtly at times, in that parents utilised didactic pedagogies to teach specific skills. For example, when Saira was asked if Sohail used the laptop with Arabic letters, mentioned previously, on his own, she replied,

> He will do, but I don't think he's learning when he's … well he might be but I don't think he's following it on his own, you know, like I encourage … When I sit with him and I'll say, 'Press the button' and slow

Table 4. Intergenerational digital literacy practices.

Child's name	Intergenerational digital literacy practices in which the child engaged
Farooq	Playing an electronic toy with older brother
	Watching television with father
	Talking on the mobile phone to family member
Grace	Watching television with younger brother
	Using the computer as younger brother watched
	Playing with mum's mobile phone, as mum instructed Grace how to take photographs with it
Lubna	Watching television with father
	Mum instructing Lubna how to read the text on a washing machine
Sohail	Mother, aunts and uncle instructing Sohail how to use a video camera on a mobile phone
	Mother and aunt giving instructions to Sohail when he was accessing YouTube™ on a laptop
	Using a mobile phone to engage in a conversation with an aunt and grandfather

> him down, because when he's on his own he'll just sort of press random buttons and he'll press more than one button at one time, and he's not really sort of learning from it. Whereas if I'm with him and I sort of say, 'Press one button' and make him repeat after it, I think he is … I hope he is learning properly then. (Saira, Interview 1)

At other times, scaffolding was such an integral part of everyday life that parents found it difficult to point out when such teaching occurred:

> I think it is probably quite an untapped tool, the digital literacy, and it happens kind of organically and naturally, which is kind of what I just know; which is why I think to actually teach how, how did you put it 'media literacy', to actually teach that it would be quite dry and to actually do it and be involved in it. (Angela, Interview 2)

Therefore, parents were central to the development of children's growing understanding about multimodal texts and practices, whether they felt they were being overt about this or not. As with traditional, print-based literacy practices, parental engagement in digital literacy was crucial to the children's experiences and could provide a solid foundation for future learning in schools.

Intergenerational digital literacy practices

Much of the interaction with digital technologies was undertaken with other family members. While intergenerational literacy practices have been considered in relation to print literacy (Kenner et al., 2008), there has been limited consideration of the way in which young children's digital literacy practices are integrated into these family practices. There were numerous examples in these four case studies of family members interacting with the children in this study with regard to multimodal texts on screens, which are outlined in Table 4.

In order to consider the nature of these intergenerational practices in further depth, we will focus here on one illustrative example; 2-year-old Sohail's involvement in a video call on a mobile phone. In the following transcript from the video (Table 5), Sohail is engaged in a video call with his aunt, Sureya.

Table 5. Sohail's video call.

Time	Action	Dialogue
00.0–00.08	Sohail makes a noise at the beginning of the clip as he looks at the screen of a mobile phone while sitting on a bed. He has a smile on his face as he grips the phone with both hands. Both of his thumbs are pressed against the centre button on the mobile. A video can be seen playing in the viewer of the mobile phone. A human form can be distinguished on the screen at one point, looking at Sohail.	An individual can be heard talking to Sohail from the phone, but it is not possible to distinguish the dialogue at first.
00.09–00.11	As he speaks, Sohail moves the phone a little closer to his face and turns his head slightly. He then looks back at the screen. His thumbs continue to press on the central button.	The video interlocutor (a female adult) says, 'Who's that?' Sohail responds 'Hama'.
00.12–0.18	As he speaks, Sohail looks at the screen and raises and lowers his right arm.	Talking can be heard on the phone (indistinguishable). Then the video interlocutor says, 'Who's this?' Sohail says '[?…]me'
0.19–0.22	Sohail places his right thumb again on the centre button of the phone. He continues to look at the screen.	Video interlocutor: 'Huh?' Sohail: 'Cama[?]'
00.23–00.28	Sohail waves at the camera. He then clicks the central button with his thumbs.	Talking can be heard on the phone (indistinguishable). Sohail: '[?]'
00.29–00.36	He continues to look at the phone and emits a questioning sound. He retains his thumbs on the button. He pulls the phone towards his face as he says this.	Sohail: 'Mama?'
00.37–00.41	Sohail moves the phone down again and presses the central buttons a few times as he stares at the screen.	Sohail: 'Eh?'
00.42–00.48	He moves the phone towards his face a little and then waves his hand at the screen. He waves again, a little uncertainly.	Sohail: 'Hello!'
00.48–1.02	Sohail pressed the central buttons a few times as he stares at the screen. He then puts the phone to his left ear. He brings it back to chest height, presses the central button again and then moves the phone to his left ear.	Sohail: 'Huh?' Sohail: '[…?] I love you, Zeyna'
1.03–1.17	Sohail looks towards Saira and then down at the screen. He points to the screen. Sohail looks at the screen. He looks at the adult. He then looks back down at the screen.	Sohail: [Shouts] 'Zeyna! Yeah, Zeyna!' Saira, who is filming, says, 'Look at the screen. She's on the screen. Can you see her picture?' Sohail: 'Sureya'

Table 5. (Continued)

Time	Action	Dialogue
		Saira: 'Is it Sureya? What's she doing?' Sohail: 'No, it's Zeyna'. Saira: 'Is it Zeyna?' Sohail: 'Mmm'.
1.18–1.24	Sohail presses the central button on the phone a few times. He then points to the screen. He points to the screen again and then presses the button again.	Sharana: 'Show mummy'. Sohail: '[indistinguishable]' Saira zooms the camera into the phone screen.
1.25–1.31	Sohail presses the button a few times. He still has the phone in front of him, looking down at the screen. He jabs at the screen. He moves his head forward and presses the button.	Saira: 'Show mummy, show mummy … Is she there? Show mummy'. Sohail: 'There'. Saira: 'Show mummy. Is she there?' A person can be seen on the screen.
1.31–1.35	Sohail points to the screen. He lifts the phone up until it is at eye level to his left. He shows the screen to Sharana, holding it up, pointing to it.	Sohail: 'She's there… There!'
1.36–1.47	Sohail brings the phone back down in front of him and looks at the screen. He points to the screen, turning it towards Saira. It is possible to see the top of a head. A face then comes into view. Sohail presses the button decisively, twice, drawing his index finger back to his face each time.	Saira: 'Show mummy'. Sohail: 'Down there'. Saira: 'Who is it? Is it Sureya?' Sohail: 'Yeah'. [quietly] Sohail: 'Sumera?' [louder]
1.48–2.01	Sohail then holds the phone with both hands again and clicks the central button with his thumbs a number of times. He then places the phone next to his right ear. He shows the screen to Saira. Sohail clicks the central button.	Saira: 'Is she there? Is she still there? … …Let me see, let me see the phone – show mummy the phone'. Sohail: 'Sumera? … He gone now'. Saira: 'Has they gone now?' Sohail: 'Yeah'.
2.02–2.07	He throws the phone towards Saira and it lands on the floor. He points to the phone in front of him. Sohail stands up and raises his arms, moving towards the camera.	Sohail: 'Here you are, mummy'. Saira: 'Thank you'. Sohail: 'Phone there'. Saira: 'Thank you'. Sohail: 'It's mine, it's mine!'

This extract indicates that 2-year-old Sohail was able to identify the affordances (Kress, 2010) of this particular technology and understand the basic protocols of a video call. For example, 23 seconds into the call, he waves at his auntie, realising that she would be able to see as well as

hear him. This was not an isolated incident. Saira explained that her father used this means of communication regularly with Sohail:

> My dad always video calls. I don't video call people basically because it costs me too much from my phone but my dad always, whenever he rings me and he wants to speak to Sohail he always video calls me, yeah, and speaks to Sohail. And my dad does it as well when he's out somewhere and he sees something, he'll ring and then he'll point the camera at whatever it is he's showing Sohail. He did it at the train station once and he was showing Sohail the waterfall … (Saira, Interview 2)

This interaction indicates the significance of these intergenerational digital literacy practices in terms of scaffolding children's understanding about literacy, or in this case multimodal communication, as a social practice. Older family members can be instrumental in offering children meaningful opportunities for communication which develop their skills, knowledge and understanding across a diverse range of modes. In addition, as Gadsden (2000) suggests, this is not a one-way process. Young children can prompt parents and other family members to re-think aspects of their communicative practices and these exchanges are significant in locating literacy and multimodal practices within positive emotional landscapes, providing benefits for all.

Sohail's experience also illustrates the salience of parental ethnotheories (Kenner et al., 2008) in relation to digital technologies for the shaping of children's experiences. For Saira and her family, digital technologies were central to their communicative practices and their shared theories around these practices were important in the kinds of family digital literacy practices in which Sohail took part. While Saira had concerns about Sohail watching too much television, she did feel that technologies were important for his future:

> I'd encourage Sohail with the computer and I'm happy that … because that's the way forward, you know. And hopefully if he's encouraged at a younger age he'll be more confident and familiar with it for use in school and university hopefully, and work. (Saira, Interview 1)

Saira's views were similar to those held by the mothers of the other three children and in these case studies, it was clear that the parents' ethnotheories in relation to media and new technologies were such that the families were positively shaping their children's social and cultural practices in relation to multimodal practices. In the case of the multilingual families in this study, the ethnotheories drawn upon to frame their children's digital literacy practices were similar to the theories utilised by Grace's (monolingual) mother, but obviously shaped by their own linguistic and religious practices. The data from this study indicate that intergenerational digital literacy was prevalent in these family's activities, informed by specific cultural experiences and contributing to the fabric of everyday life.

Conclusion

The literacy landscape is changing for everyone and for very young children, this means that their initiation into literacy as a social practice is initiation into the practices of *digital* literacy. While this study involved only four case studies, the findings resonate with those from large-scale surveys of this age group's digital literacy practices (Common Sense Media, 2011; Marsh et al., 2005; Ofcom, 2014). What the data in this study do is to illustrate the way in which such practices are ubiquitous across these families' lives and indicate that they are embedded across languages. As was suggested previously, in the 1980s, the concept of 'emergent literacy' (Teale and Sulzby, 1986) was developed in order to indicate the way in which children developed understanding about literacy from the first months of life from these family interactions. This study suggests that in the

21st century, 'emergent digital literacy' practices are developed in multilingual, multimodal and multimedia communicative acts and the children in these families are acquiring complex knowledge about the way in which communication takes place in a digital world.

There are numerous implications for research, policy and practice in considering the findings of this study. In relation to research, we would like to make three key points. First, there need to be longitudinal, ethnographic studies of multilingual children's immersion in digital literacy practices in order to trace in detail their emergent understanding, skills and knowledge across domains. Case studies such as those presented in this article, while offering valuable snapshots, are not sufficient for developing a full knowledge of what children are learning about literacy and multimodal communication in a digital age. Second, further research should focus on the intergenerational nature of the multimodal communicative practices in which children engage, given its significance for developing skills, knowledge and affective orientations towards literacy. Third, this study indicates that it is possible to engage parents as active participants in the collection of data regarding their children's experiences in the home. In future studies, it would be appropriate to draw on models of co-production in research (Durose et al., 2011) and enable parents to participate in framing research questions, collecting data and disseminating findings.

With regard to policy and practice, the implication of findings from this study and from others cited previously is that early years' settings and schools should build on the digital literacy skills, knowledge and understanding that children acquire from a young age in order to extend their learning and prepare them sufficiently well for employment and leisure pursuits in the knowledge economy. Finally, family literacy projects have, traditionally, focused primarily on print-based practices (Brooks and Hannon, 2013). We suggest that the findings from this study indicate that this is no longer a sufficient approach and that family literacy programmes should attend to the way in which literacy is being transformed in a digital age if it is to be meaningful and relevant to families (Rowsell, 2006). Ultimately, the 2- to 4-year-olds in these case studies will be leaving school in the second decade of the 20th century and that should give us pause to consider the nature of the world in which they will then be engaged in. Considering the pace of change over the last decade with regard to technology, it is not possible to predict the range of practices in which children will be engaged – but they will almost certainly involve flexibility, innovation, creativity and problem solving. These are the skills that need to be embedded in the language and literacy curriculum for our youngest children if they are to be successful communicators in the digital age.

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