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3. Digital Childhoods, Digital Classrooms: The Teaching and Learning of Literacy in a New Media Age

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In this paper, I explore the ways in which contemporary childhoods are changing due to increasing use of digital technologies. This, I will argue, means that children encounter media and new technologies from a very young age and these encounters develop their skills, knowledge and understanding in relation to digital literacy² practices. This has implications for teachers as they seek to develop curricula and pedagogy appropriate for the digital generation. In the first part of the paper, I will outline key findings from a study which aimed to identify children's uses of media and technology in England. In the second section, I move on to outline the practice of one classroom teacher as he develops a curriculum and pedagogy relevant to this digital generation.

DIGITAL CHILDHOODS

Through their immersion in a wide range of media and technologies from birth, children are engaged in digital literacy practices. As research in relation to print-based emergent literacy suggests, simply by engaging

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² In using the term 'digital literacy', I refer to the way in which literacy is mediated through new technologies. Children are encountering letters, signs and symbols on a range of screens e.g. computers and mobile phones.

in daily practices in which print plays a part, children learn much about its role, nature and purpose (Hall, Larson & Marsh, 2003). It is inevitable that the same processes should occur in relation to digital literacy. As children engage with media and new technologies, they will learn about the ways in which print and image 'work' in online and screen-based texts and develop an understanding of the social practices in which these texts are embedded.

Despite our growing awareness of the importance of electronic texts, there have been few large-scale surveys of young children's use of media and new technologies other than the *Zero to Six* (Rideout, Vandewater, & Wartella, 2003) study conducted in the USA. This demonstrated that young children are engaged with a wide range of technologies and have skills in using these technologies from a young age. This paper focuses on data arising from the *Digital Beginnings*³ study, a survey focused on the same age group as the *Zero to Six* study, but conducted in England. This study aimed to explore the changing nature of early childhood in the 'new media age' (Kress, 2003) and to identify ways in which early childhood settings could respond to these changes.

The research study consisted of two stages. In Stage One, a stratified random sample was drawn in order to identify ten Local Education Authorities (LEAs) across England to take part in the study. Ten LEAs were randomly chosen to represent different geographical locations in England (North, Midlands, South) and different types of LEAs (Metropolitan, Shire, Unitary). Twenty maintained and non-maintained early years settings in each LEA were randomly selected to take part in the study, 200 in total. Questionnaires for parents and carers of children attending these settings were sent out, along with questionnaires for practitioners working in these settings. Settings were supplied with a Freepost envelope for the return of all questionnaires. A total of 120 settings returned parents' questionnaires (an overall response rate of 60%) and 104 settings returned practitioners' questionnaires (an overall response rate of 52%).

³ This study was funded by BBC Worldwide and The Esmée Fairbairn Foundation. See <http://www.digitalbeginnings.shef.ac.uk/>.

In total, the responses of 1,852 parents (which represented a response rate of 27% for the parents' questionnaires) and 524 practitioners (which represented a response rate of 45% for the practitioners' questionnaires) were analysed. Whilst these response rates are comparable with other postal surveys of educational practitioners (Atkin, Rose, & Shier, 2005), concerns are raised by low response rates in that non-respondent bias may occur. However, some empirical studies have been conducted which suggest that this is not necessarily always the case and that non-response bias is not always present in responses to surveys with low response rates (Roszkowski & Bean, 1990). In relation to this study, it could be argued that parents were more likely to respond if they had an interest in the topic and, therefore, the media usage of children in these families might be different than in the wider population. Nevertheless, many of the statistics regarding children's use of media broadly correlate with the US study (Rideout et al., 2003), which suggests that the figures are not aberrant.

Nine of the original 200 settings took part in Stage Two of the study. All nine settings conducted action research projects in which they introduced an aspect of popular culture, media and new technologies into the communications, language and literacy curriculum of the foundation stage. In each setting, a focus group of up to eight children, four boys and four girls, was randomly selected in order to evaluate the impact of the intervention projects (67 children were selected for the focus groups in total, 37 boys and 30 girls). Sixty parents of the focus group children took part in telephone interviews before the start of Stage Two, and 33 were interviewed by telephone once the project had been completed. The families in the study were diverse in terms of socio-economic status and ethnicity. The mean age of children in the study was 3 years and 4 months.

Data from the questionnaires and first set of interviews are drawn upon in this paper. The data from the questionnaires were entered into a database using the Statistical Package for the Social Sciences (SPSS) and analysed using statistical tests (Pearson Chi-Square tests). The interview data were inductively analysed using open coding (Strauss, 1987).

CHILDREN'S DIGITAL LEWORLDDS

As was the case in the Zero to Six study (Rideout et al., 2003) which indicated that young children in the USA were immersed in media-rich homes, children in this study had access to a wide range of media and technologies. They were active users of this media from birth. On a typical day, the mean number of minutes children engaged in screen use (including watching television, watching videos/DVDs, using computers, playing console games and playing handheld games, such as Gameboy) was 126 – two hours and six minutes. This is eight minutes longer than the average time spent on screen use by American children in the Zero to Six (Rideout et al, 2003) study, but this may be accounted for by the year-long gap between these two studies taking place. As media become ever more ubiquitous in children's lives, their use will increase. In addition, the two studies took place at different times of year, which could also account for this difference. The Zero to Six study took place from April to June, whilst the present study took place from October to January. In the winter months, children are more likely to spend time inside the house and, therefore, their screen use is likely to increase. Both of these studies, however, suggest that children in this age group are active and enthusiastic media users and producers.

Television, DVD/video player and mobile phone ownership was almost universal, but the data also indicated that 84% of 0-6 year olds live in households that contain at least one computer and 70% had access to the internet (Marsh et al., 2005). These technologies generated a wide range of digi-literate practices. Young children were reported as engaging in a variety of activities, detailed in Table 1.

The data indicated that children were competent with a range of technologies. In the next section, I will focus on one of these technologies, mobile phone, in depth in order to highlight some of the skills and practices children were developing.

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Table 1: Young Children's Use of Media and New Technologies in the Home

Using TVs and DVDS	<ul style="list-style-type: none"> ● Watching television ● Watching films ● Using the remote control to change channels ● Rewinding and forwarding DVD/ video players ● Playing games on interactive TV using the red button
Using computers	<ul style="list-style-type: none"> ● Playing computer games ● Using art packages ● Using word processing packages ● Using desktop publishing packages ● Surfing the Internet ● Playing games on the Internet ● Printing off pages (e.g. pictures to colour in) ● Using chat room and MSN (with adult as scribe)
Using console games	<ul style="list-style-type: none"> ● Playing a range of console games e.g. Rugrats, Sonic the Hedgehog ● Using PlayStation2 EyeToy, which projects children's images on the screen
Using mobile phones	<ul style="list-style-type: none"> ● Playing with toy or discarded mobile phones to conduct 'pretend' conversations ● Using real mobile phones to speak to relatives (with adult support) ● Pretending to send text messages ● Sending text messages with adults acting as scribes ● Using the camera feature of mobile phones
Other technologies	<ul style="list-style-type: none"> ● Using dance mats ● Using karaoke machines ● Using handheld computers to play games ● Using electronic laptops ● Using electronic keyboards ● Reading electronic books ● Playing with robot pets ● Listening to radios and CD players ● Using digital cameras – both still and video ● Playing with electronic toys (e.g. PDAs, microwave, bar scanners)

Ownership of at least one mobile phone was almost universal. There appeared to be minimal independent use of mobile phones by children in the 0-6 age group, with only 14% of parents reporting that their child

had ever used a mobile phone to make a call and only 1% stating that this had been done independently. However, using phones with the help of others was part of some families' communication practices with their young children:

Sometimes I put a little bit of money on it just for her to play with her friend because she goes away to the caravan with my mum, her grandma on a weekend, so she will text little pictures to us and things.

Play related to mobile phone technology was also a feature in the data. Parents in the interviews described how their children had used toy mobile phones and discarded real mobile phones to pretend to talk to other family members. A significant minority of children in the questionnaire survey had, at some point, played with the ringtones on mobile phones (24%) and it should be noted that to do this requires some dexterity, as the ringtone menu is often embedded in a larger menu on the phones, e.g. 'Settings'. Eighteen per cent had pretended to send a text-message, and this was also described by parents in interviews.

Interviewer: Is she aware of text-messaging at all?

Parent: She'll pretend to press the buttons, she wouldn't know obviously how to do one but she does know, yeah.

As was the case with oral use of the mobile phones, parents suggested that their children were sensitive to the literacy practices which occurred in relation to mobile phones and were aware of the purposes of texting:

She can't send one but she knows exactly... She got my phone the other day and she was taking a right paddy because my mam had forgotten to bring – I bought her a castle when we were in America a couple of years ago, and my mam had forgotten to bring it down. She got my phone and said, "Text my Nanna and tell her to bring the castle down." I said, "Well, we will phone your Nanna", "No," she said, "Text her". So I had to text my mam and tell her not to forget this castle, and then she said, "No, I will phone her because she is silly."

Perhaps this pre-schooler knew only too well the difficulties some older adults have with relatively newer forms of communicative practices such as texting.

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Some children were reported as having taken photographs using the camera feature of the mobile phones:

- Interviewer: Well, I'm talking to you on a mobile phone, does Billy watch you using it?
Parent: Yeah.
Interviewer: Does he ever try using it himself?
Parent: Yeah, because I've got a camera phone so he takes pictures with it.
Interviewer: Is he aware of text messaging?
Parent: Yes.
Interviewer: Would he be able to have a go at it do you think?
Parent: He tries to do it, but he can't spell at the moment.

As was the case with computers, some parents reported that their pre-school children were more competent at using mobile phones than they were:

My daughter's got one of these dead complicated ones and I cannot get into the phone book – he [my son] can. He can get into the camera, he can take videos with it, he can do anything.

This sense of the agency and competence of their children was a key observation of the vast majority of parents in the study and not only related to children's use of mobile phones but also computers, console games, television and cameras. However, an important consideration must be the extent to which these skills, knowledge and understandings are being extended in classrooms. There is currently a range of work being undertaken on the opportunities afforded by new technologies to develop literacy in primary classrooms. In the next section, I will briefly outline the practice of one teacher, Peter Winter, as he introduced a class to blogging.

DIGITAL CLASSROOMS

Blogs, or weblogs, consist of online posts which authors place on to web pages, with the most recent entries appearing first. Blog entries can concern a number of things, such as authors' everyday lives (similar to diary entries), news, politics and entertainment, amongst other categories. Blogs enable readers to make comments on the entries,

although this facility can be disallowed by blog authors. This commenting facility means that blogs offer rich potential for social exchanges and collaboration (Lankshear & Knobel, 2006). Blogs can also contain images and links to other sites that enable bloggers to embed video and podcasts (audio files) into their blogs. The practice of blogging is becoming widespread, with estimates that the number of blogs is currently in excess of 60 billion, although the number of active blogs may be much fewer than that.

Peter is an ICT teacher in a primary school in the north of England. He works with classes across the school and undertook the work on blogs with a class of Year 4 children, aged 8-9. The majority of children in the class were competent and enthusiastic users of a range of new technologies outside of school. Peter was aware of this and keen to ensure that the curriculum drew from the students' expertise. Whilst none of the students had previously developed a blog, many were familiar with the use of the Internet for collaboration and exchange of ideas through software such as Instant Messenger. Therefore, when the pupils were introduced to the concept of a blog, they had no difficulties understanding how it worked and very soon acquired the skills and knowledge needed to post to it and send comments.

As the class was involved with a project on dinosaurs, the blog was set up in order to enable the children to post entries on this topic. The structure of the blog was such that it was possible to place links to other web pages on the right hand side of the page.⁴ The links were:

- All About Us
- Google News
- Montenev Primary School, UK
- DinoBlog, USA
- Stay Safe on the Internet

⁴ See <http://dinoproject.blogspot.com/>

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- Natural History Museum, London
- Dinosaur Pictures by Y4PH
- Montenev Internet Safety Rules

There was also a link to previous posts on the site, including ‘End of the Dinosaurs’, ‘Dion Wars’ by Daniel, ‘Baryonyx’, and ‘The Dinosaur Goes Missing’ by Tiggey. Tiggey wrote:

The children were highly motivated by the affordances offered by the blog and soon were posting information, comments and pictures relating to the topic. One contribution to the site was as follows:

Dionsaw by Tiggey

Death of the disosaws about 65 million years ago prehistoric creatures and dino was disappearing from the earth

Another contribution was:

Cetiosaurus an English Doinosaur – Interesting Facts

Cetiosaurus was a huge, long-necked, long-tailed dinosaur with a tiny head and a bulky body; it walked on four legs. Cetiosaurus probably lived near the water. This dinosaur was originally thought to be a crocodile-like animal. It was called “whale-like lizard” because its back vertebrae had a coarse texture (like that of whales). A Cetiosaurus is 18 metres long and eats trees. It is a herbivore.

The blog wove together a range of genres – informative texts, reports, narratives, lists – replicating the textual mix pupils meet in online worlds outside of schools.

The children soon began producing moving image texts which they posted onto the blog. These were films made using digital video cameras, or films made by taking a series of still images and linking

them together using appropriate software. The blogs were representative of a range of multimodal texts children meet outside of the classroom and so connected intimately to their everyday literacy practices. As Carrington (2006:6) notes of blogs, print may act in a primary or subsidiary role and, “Significant or even core content may well be lodged in a visual image or in an audio file or as a collage that draws upon all available modes rather than in the print component itself.” This replicates children’s interactions with a wide range of digital texts such as moving image texts or computer games.

During the course of the project, the children therefore undertook a wide range of digital literacy practices. These included:

- Writing posts to the blog using a range of genres including reports, lists and stories
- Reading the blog and writing comments on other children’s posts
- Searching the web for information about dinosaurs
- Searching the web for pictures of dinosaurs
- Making links from the blog to web pages in which they had found relevant information about the project
- Uploading still images to the blog
- Making moving image texts and uploading these to the blog.

Lankshear and Knobel (2004) suggest that in the new media age, new authorial roles are being developed. Using the phrase ‘the digitally at home’ to describe a generation comfortable with and competent in the use of new technologies, the roles they outline for these digitally at home are: a ‘designer’ of texts; a text ‘mediator’ or ‘broker’; a text ‘bricoleur’ and a text ‘jammer’ (Lankshear & Knobel, 2004). A designer of texts draws on a range of modes and media in creating new texts. A text mediator or broker introduces or mediates texts to others, as in the practice of readers leaving ratings of posts on some web pages so that new readers can locate the highly-rated posts quickly. A text jammer is someone who disrupts the meaning of texts, as in the

practice of subverting the messages conveyed in some texts by parodying them (a practice which is widespread in web sites such as *You Tube*). Finally, Lankshear and Knobel identify the role of text 'bricoleur' as being significant to contemporary communicative practices. Lankshear and Knobel draw on de Certeau's concept of bricolage as being the 'artisan like inventiveness' (de Certeau, 1984:xv, 66) of people's everyday practices in which they draw on whatever is to hand to create texts.

Although Lankshear and Knobel illustrate the concept by focusing on web users' creation of texts within online communities, the principles can be applied to the way in which some of the children in this study created their multimodal texts. One child, included a post in which a s/he uploaded a photograph of a favourite dinosaur character in the film *Toy Story*.

In this way, children drew from their knowledge of popular culture in the creation of posts, creating a range of intertextual references and demonstrating the inventiveness of text bricoleurs.

In the work outlined here, Peter's practice as a teacher demonstrated an understanding of the principles of literacy learning in a new media age, as outlined by Larson and Marsh (2005). These are detailed in Table 2.

The development of the blog enabled Peter to shape pedagogical practices which emphasised the independence and agency of the pupils. The children could experiment with the software and discover what it could or could not do. Because the information to be placed on the blog was the choice of the pupils, the class shaped the topic in the ways they felt to be appropriate. This is not to suggest that Peter did not influence what was happening. He used the class time to demonstrate the software and model using it, to discuss with pupils the principles of critical literacy practices when using the web and to provide direct assistance when pupils had difficulty understanding how to accomplish certain tasks.

Table 2: Principles of Literacy Learning in a New Media Age

1. Teachers need to be aware of the implications of the changing nature of literacy in that word and image are becoming more specialised in terms of their functions in texts (Kress, 2003).
2. The historical shift from an emphasis on word to image has been accompanied by a move from book to screen, which has implications for the kinds of texts we privilege in schools (Kress, 2003).
3. Schools have traditionally focused on print-based texts; however, the texts they encounter outside of school are increasingly multimodal in nature and teachers, therefore, need to understand key concepts of multimodality (Kress, 2003).
4. Learners need to develop skills in relation to the design, production and analysis of multimodal texts (Kress, 2003; Lankshear & Knobel, 2004).
5. Teachers need to develop an understanding of the needs of learners as they construct, deconstruct and respond to multimodal texts. Pedagogical shifts are needed if teaching and learning is to develop in ways appropriate for a technological age (Lankshear & Knobel, 2003; 2004).
6. Technology should not be used simply to replicate traditional literacy practices. The affordances of various hardware and software need to be utilised and the resources used to analyse and produce a range of multimodal texts (Lankshear & Knobel, 2003). The principle should be *transformation* of curricula and pedagogy rather than *enrichment* (Burnett, Dickinson, Malden, Merchant, & Mayers, 2004).

Source: Larson and Marsh, 2005, p. 79

Peter did have some initial concerns regarding the safety issues. For example he worried about the fact that anyone could make comments on the children's posts, thus risking the posting of offensive comments, or comments which requested children's personal information. But the blogging software enables a blog manager to review all comments

before they are posted on the web. In addition, Peter felt that the blogging process would enable children to put into place the school's Internet Safety Policy and provide them with a real purpose for using the policy. Thus, children were reminded not to use their own names whilst posting and to immediately click off offensive websites if they accidentally linked to them. This enabled the development of authentic practices within the classroom and was a good preparation for Internet use outside of the classroom.

Finally, the blogging developed children's critical literacy practices. Critical literacy involves readers and writers asking questions about texts in order to determine the relative positioning and power dynamics of readers and writers. Luke and Freebody (1999) suggest that critical literacy involves: breaking the code of texts; participating in the meaning of texts; using texts functionally; and critically analysing and transforming texts. The blogging practice also developed the following skills:

Breaking the code of texts: children drew on their knowledge of spelling, grammar, understanding of genre and understanding of visual grammar in the construction of the blogs.

Participating in the meanings of texts: children composed meaningful texts in collaboration with others, drawing on their cultural resources.

Using texts functionally: children used the blogs for different purposes and were able to determine fitness for purpose. In developing the blogs, they understood the way blogs worked, the varied the social and cultural functions they perform.

Critically analysing and transforming texts: children were able to analyse critically each other's blog posts. They also drew critically on a range of web-based texts as they developed links and images for their posts.

This classroom activity has been outlined in order to illustrate the potential of digital literacy activities for engaging children in pedagogical practices that relate to their out-of-school worlds and enhancing the skills, knowledge and understanding necessary for navigating these worlds successfully. Blogging is just one of the practices made possible by the

development of social software (Owen, Grant, Sayers, & Facer, 2006) – Internet-based programmes which enable exchange of information and promote collaboration. Other software that is being used successfully by teachers includes podcasting sites, Wikis and photograph-sharing sites such as Flickr. The value of work such as this is that it enables children to engage in practices that are part of their everyday online worlds and extends their understanding of the possibilities.

CONCLUSION

In this paper, I have explored some the practices taking place in digital childhoods and have outlined the approach taken in one classroom to the development of curriculum and pedagogy appropriate for this digital generation. The pedagogical practices outlined in this paper are important because they develop skills, knowledge and understanding in relation to new authorial roles (Lankshear & Knobel, 2004) which are emerging in the digital age. They build on children's extensive experiences of digital media in the home (Marsh et al., 2005; Rideout et al., 2003) and provide the opportunity for them to bring together the varied strands of their experiences and understanding. This is essential if the communication, language and literacy practices of contemporary childhoods are to be successfully supported and extended by educators who are cognisant of the wider social and technological changes taking place and sensitive to the political, economic and cultural climates in which these are embedded. Such digital borderlands constitute the terrain on which new literate identities are being forged and, as such, need to be carefully mapped if they are to be navigated successfully by young children and the adults who journey with them.

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