



the techno-literacy practices of young children

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ABSTRACT

In many analyses of children's 'emergent literacy' (Clay, 1966) practices, there is little acknowledgement of children's engagement in techno-literacy practices. This article discusses findings from a survey undertaken in a working-class community in the north of England which aimed to identify the 'emergent techno-literacy' practices of a group of 44 children aged between two and a half and four years of age. It is argued that the multi-modal textual competencies and semiotic choices of these 'toddler netizens' (Luke, 1999) should be more widely acknowledged within current curriculum frameworks for the early years.

KEYWORDS *early literacy development, techno-literacy, technology*

introduction

Emergent literacy is now an established part of early childhood discourse. Since Marie Clay introduced the term in 1966, the subsequent four decades have led to a richer understanding of the way in which children's engagement in print literacies from birth are an integral part of their literacy development. Whitehurst and Lonigan suggest that:

... an emergent literacy perspective views literacy-related behaviours occurring in the preschool period as legitimate and important aspects of the developmental continuum of literacy. (2001: 12)

However, many of the influential studies on children's emergent literacy experiences were focused almost entirely on print literacy (Hall, 1987; Teale and Sulzby, 1986). There has been less extensive research on children's

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emergent literacy practices in relation to wider definitions of literacy which incorporate technology and multi-modal ways of making meaning (Kress, 1998). Throughout this article, the term 'techno-literacy' is used to refer to those literacy practices and events which are mediated by new technologies (Bigum and Green, 1992; Lankshear et al., 1997), in addition to those which are embedded within older technologies that are constantly updated to include new technologies, such as television. This article reports on a study of young children's techno-literacy practices in one community and argues that these literacy practices need to be recognized and built upon in the early childhood curriculum.

widening the boundaries

In recent years, there has been an increasing range of work which has served to challenge traditional notions of literacy (Cope and Kalantzis, 2000; Kress, 1998, 2003; Pahl, 1999). It is no longer appropriate to focus on literacy as a paper-based activity when children access text in a range of modes, e.g. on computers, television and mobile phones. In addition, the concept of 'multiliteracies' has served to push the boundaries of what it means to be engaged in encoding and decoding text and the importance of visual, aural and corporeal ways of meaning-making have become recognized within the literacy field (Kress, 2003). Nevertheless, the impact of this work has yet to be traced in the majority of research on early literacy development. In this particular area, there is still an intense focus on literacy as relating to print-based texts (see Neuman and Dickinson, 2001). Whilst such an emphasis does, perhaps, reflect a concern that the early years are crucial in developing a solid foundation for later attainment in literacy, it only serves to marginalize the range of skills which children bring with them on entry to nursery. In addition, the attention to print-based literacy in the early years has sometimes led to an unhelpful emphasis on formal skills relating to the reading and writing of print-based texts (Miller, 2001).

The reasons for this lack of attention to children's emergent techno-literacy skills are varied and complex. In the first instance, teacher knowledge in this area is limited, as the subject is rarely addressed in initial teacher education courses (Hart, 2000). Secondly, many early years educators hold negative views towards the role of media in young children's lives, views which are often founded on traditional conceptions of childhood. For example, Seiter (1999) interviewed 24 pre-school teachers and child-care workers in the USA about their use of media in pre-school settings. Seiter contrasts the attitudes of Sarah, a teacher in a Montessori school who banned videos and Disney films from the classroom and held very negative attitudes towards the media, with the practice of Gloria, who taught in a private nursery. Gloria allowed children

to watch videos and encouraged fantasy play related to the programmes. Seiter suggests that these two contrasting views are located in two very different paradigms in which children are viewed either as active meaning-makers of a range of media or as passive victims who need to be protected from the negative influences of media. The passive construction of childhood is prevalent in many areas of early childhood practice and has led to the American Academy of Pediatrics recommending a total ban on television for children aged two and under (American Academy of Pediatrics, 2001). Although it is recognized that media and popular cultural texts do contain oppressive discourses such as racism, sexism and violence and therefore should not be celebrated in a romantic fashion, it would appear that some of the orientations towards this material are founded on prejudice rather than a considered review of research. Many of these reactions to the media use of young children reflect a 'moral panic' (Cohen, 1987) in which new technologies which are unfamiliar to adults can create a feeling of lack of control (Luke and Luke, 2001). It was ever thus, as adults' reactions to a number of children's cultural texts over the centuries has indicated (Marsh, 2002a).

young children and techno-literacies

Although there have been a number of studies which have provided information about the out-of-school techno-literacy practices of older children (Livingstone and Bovill, 1999; Sanger et al., 1997), there have been fewer studies which have indicated how younger children engage with a range of technologies such as television, film, computer games and mobile phones.

In Marsh and Thompson's (2001) study in the UK, 18 families in a white, working-class community in the north of England were asked to keep literacy diaries for a period of four weeks. These literacy diaries documented the number and titles of texts which three- and four-year-old children read over that four-week period, including televisual texts. Key findings were that, as is the case with older children (Livingstone and Bovill, 1999), televisual texts were a primary source of narrative satisfaction, with children watching television and films far more often than engaging in any other type of literacy activity. However, embedded within children's literacy practices in the home were a range of popular cultural texts such as computer (mainly console) games, comics, books based on television characters and environmental print linked to media texts (stickers, labels, video labels, computer game boxes and so on). This central role of television in pre-school children's literacy experiences in the home has also been noted by Kenner (2000) Orellana (1994) Rodriguez (1999) and Xu (1999). These studies have analysed the place of television and media texts in bilingual children's home literacy practices and all have emphasized how children are active meaning-makers in relation to this material.

Despite the lack of extensive research in the field, the studies above provide indicative evidence that media texts and new technologies are embedded within many young children's lives. In this study, the focus was on children who were aged between two and a half years and three years, eleven months and the primary aims of the study were to identify the emergent technoliteracy practices engaged in by the children and to examine the attitudes of parents towards these practices.

methodology

As so little is known about families' home activities in relation to technoliteracy, especially in communities in disadvantaged circumstances, the study sought informants from one of the Sure Start areas in England in 2002. Sure Start is a government initiative in which there will eventually be up to 500 intervention programmes focused on families with children aged up to four years in defined areas of need across England. The aims of the programme are to enhance the health, education and well-being of children in the area before school-entry. The community in the Sure Start area studied was primarily white and working class, housed in publicly-owned property. An analysis of local ward data indicates that the area was one of poverty and higher than average unemployment.

The aim of the survey was not to achieve a fully comprehensive picture of technoliteracy across all families in the community, but rather to open up a new area of study by gathering the views of those families able and willing to share data with the researcher. Indeed, I would suggest that it was not possible to collect data which were representative of this community, as the concept of a homogenous community on this scale is open to question (Barton and Hamilton, 1998; Moje, 2000) and thus the notion of representative data itself is questionable. In addition, it was not felt to be necessary to collect sufficient data to be able to generalize from the findings, given the epistemological difficulties with the concept of generalization (Richardson, 2000). Instead of seeking to present findings which can be assessed as representative of a particular 'reality' and thus able to be transferred to other contexts, Talburt suggests that:

Inquiry may be most useful by simply offering new ways of thinking and interpreting. In this way, inquiry can understand itself as offering narratives and interpretations that readers engage with in unexpected ways, including 'application' to or speculation about contexts that bear no 'objectively' apparent similarities. Inquiry and interpretation, then, open themselves to multiple conversations rather than closing themselves off as answers to singular problems. (Talburt, 2002: 20)

It was decided that it would be desirable to have at least 20 families in the

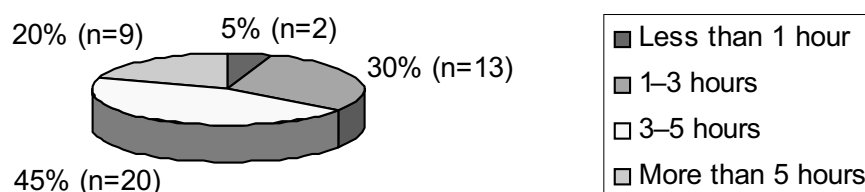
study. Many families in the community studied would, of course, have more pressing priorities than participating in a research study. Therefore the strategy adopted was to invite a large number of families to participate in the hope that this would generate a sufficient number of volunteers willing to share data. The names and addresses of 260 families were randomly selected from a list in the Sure Start database of families with children aged two and a half to three years, eleven months at the time of the study and a questionnaire sent out to them. The questionnaire had been piloted with a group of five parents who attended sessions at the local Sure Start Family Centre. The pilot group responded well to the questionnaire and no changes were made as a result of this consultation. There was no follow-up for non-respondents to the mail-out of the questionnaire (but a prize draw was used to maximize the response rate). Forty-four questionnaires were returned (a response rate of 17 percent). The average age of children in the families who returned the questionnaires was two years, eight months. The questionnaires also invited respondents to volunteer to be interviewed in the home about their children's media use. Twenty-six families responded to this invitation and so the parents of 13 boys and 13 girls were interviewed. This balance in gender was not planned. In summary, the sampling strategy succeeded in reaching a sufficient number of informants (26) willing to be interviewed about techno-literacy practices in the homes of young children and almost twice that number willing to supply information in questionnaire responses.

Questionnaire and interview questions focused on children's literacy practices in the home in relation to a wide range of media such as: books and comics; environmental print; television and film; computer games; mobile phones; and music. Parents were asked about patterns of children's use of each of these media and then parents' attitudes towards this use were explored. Parents were also questioned about their own interaction with children as they used these media and their feelings about the use of such material in nurseries and schools were probed. Questionnaire data were analysed quantitatively using Microsoft Access. Emergent patterns and themes were identified in the interview data using inductive coding strategies (Strauss, 1987). Field notes were completed during home visits, notes which focused on the use of space in the living room with regard to children's artefacts, technological items, and the actions and responses of children during the visit. Selections from across this range of data have been chosen in order to provide indicative examples of these children's multi-modal meaning-making practices in relation to technology. There are three aspects of children's multi-media worlds which are focused upon in this article: television (which includes film), computer games and mobile phones.

television

The findings from the survey indicate that television is the primary source of textual pleasure for the young children in this study. All of the families reported that children watched television regularly. Livingstone and Bovill (1999) surveyed 1303 children aged six to 17 years to determine their uses of new media and found that they watched, on average, two and a half hours of television per day. In Figure 1, it can be seen that 45 percent of the children in the present study watched more hours of television per day than that. This may be a result of the more limited options available to younger children for engaging in other leisure activities.

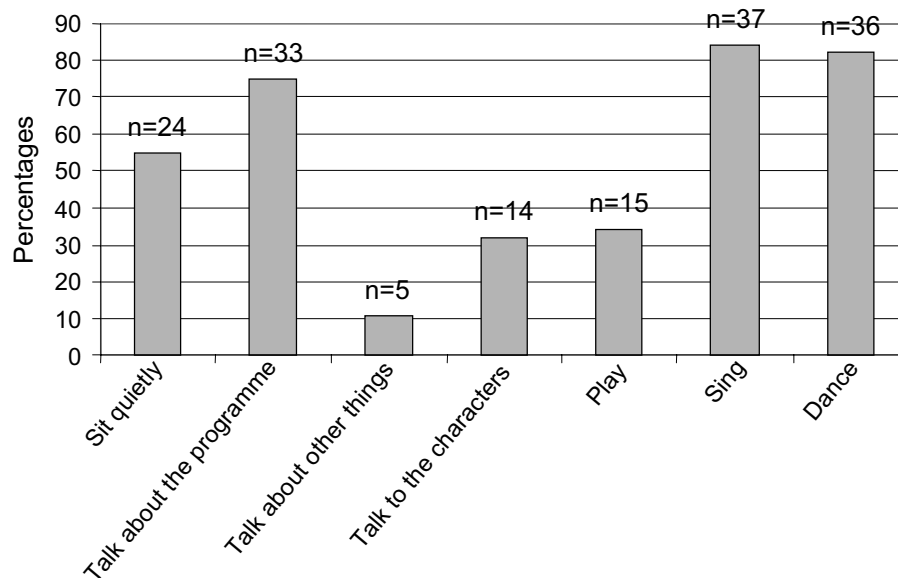
figure 1 hours of TV viewing per day



There has been a range of work which has indicated that older children are not passive viewers, but active meaning-makers with regard to television (Buckingham, 1993; Robinson, 1997). In this study, parents were asked what their children did as they watched television. Only one parent responded that her child sat quietly and did not engage in other activities. Data from the other 43 families all suggested that children sat quietly at times, but they also took part in a whole range of other actions (see Figure 2).

When watching television, therefore, these young children were both audience and co-performers. The data from the interviews and field notes indicated that many children acted out aspects of the programme along with the characters and imitated screen behaviour. Far from being 'couch potatoes' they were, indeed, an extremely 'lively audience' (Palmer, 1986) who produced hybridized texts which reflected a range of elements of their experience and seamlessly integrated media narratives into seminal acts of meaning-making (Dyson, 2001a, 2001b; Hicks, 2001).

The central importance of play in young children's literacy development has been extensively explored (see Roskos and Christie, 2001, for a review of this work). Through play, children make sense of the narratives they encounter in a range of modes and relate these narratives to their lived experiences (Barrs, 1988; Vygotsky, 1978). Brooker (2002), in a study of 16 working-class children from a range of cultural backgrounds, explored home-

figure 2 what children do when they watch television

learning opportunities. She found that parents demonstrated an implicit understanding of the importance of play in their children's development through the provision of toys and activities which could be used in play (Brooker, 2002: 54). Similarly, in the present study, parents were supportive of their children's play and in particular encouraged playful responses to television narratives, describing how they themselves took active parts in this role play under the children's direction. For example, one parent said 'He'll role play it afterwards. You know, he'll be so and so and you've got to be such and such'. Parents frequently stated that children involved them in such play and that they were happy to take on roles in these narratives:

Yeah, he's always Bob the Builder anyway. He's always adapting into one role or the other. But he puts me in the role as well. If he's Tigger, I'm Winnie and Pooh and things like that, you know. We always have to play out the different things, yeah.

John's mother described, as did other parents, how her child needed to have the narrative unfold in a pre-determined way:

Rug Rats – he likes to act that out after he's watched it and we have to, we all get a character. He's usually Chucky, aren't you John? He likes to play Chucky and then we all get a little bit to do and he'll just pretend to do something that's happened in that programme. And we have to respond like they do. And if you get the story wrong, you've had it!

The need to constantly revisit and/or re-present the story as experienced is

also a feature of the readings of other kinds of texts, such as picture books, and is an important contribution to young children's literacy development (Campbell, 1999; Martinez et al., 2003). The fact that the narratives played out in the study were based on televisual narratives may have increased parents' confidence to take part in them; in an earlier study of children's media literacy practices and parental involvement in these, parents reported that they felt more confident with popular narratives than those contained in the unfamiliar, canonical picture-book texts found in nurseries (see Marsh and Thompson, 2001).

The use of space in the living rooms of the 26 families visited also indicated that the television was a primary text within the home. In many of the homes visited, the area around the television appeared to be demarcated as a space for celebrating and extending the children's relationship with the screen. Often, children's dressing-up clothes, toys or books which were associated with television characters were situated there, ready to be taken up by children when necessary. For example, Keiran, aged three years, seven months, loved to wear his grandmother's high heel shoes as he watched *101 Dalmations*. The shoes were always kept next to the television. His mother stated:

He re-enacts it. That's why we've got my mum's shoes over there. [To child] Cruella Deville, aren't you? You are Cruella Deville, aren't you? [To interviewer] And he re-enacts everything that he watches in 101 and 102 all the time . . . and then we'll re-enact it but we'll re-enact it for about two weeks. Honestly, if he's really found it funny or something he can talk and talk and talk and talk. And he talks about the same thing over and over again.

An early 20th-century Dutch analyst of play and culture, Johan Huizinga, suggested that one of play's most important features is its 'spatial separation from ordinary life' (Huizinga, 1976: 60), realized either materially or ideationally. He drew parallels between play and ritual and contended that they are both connected in a range of ways. Rituals, for example, often draw on particular artefacts which play a specific role in the performance. In this study, parents contributed to children's television-related play through their provision of space and material objects which were used in ritualistic ways, as is the case with the shoes of Keiran's grandmother, described above. Thus the relationship between play, ritual and performance can be seen as complex and central to the development of responses to televisual narratives for many children in this study. As suggested earlier, the links between language, literacy and play are well established and parents in this study generally provided implicit support for this through their unquestioning acceptance of, provision for, and involvement in these responses to televisual narratives.

In addition to the recognition by parents of the importance of play as a response to television narratives, families also suggested that television had

contributed to the development of a range of skills by their children, including linguistic, mathematical and social skills (see Marsh, 2002b). For example, the mother of three-year-old Dale felt that television had been instrumental in the development of his knowledge of the alphabet:

- JM: Do you worry about the amount of TV he watches?
Mother: No, because he learnt all his alphabet off the telly. You know, from watching 'Wheel of Fortune', he just picked up the letters and it came to the point when he knew every letter, and he knows the adult alphabet, not child's . . . and he knows all his colours, shapes and the lot.
JM: How old was he when he started watching the 'Wheel of Fortune'?
Mother: Oh, about two and by the time he went to nursery at three, Dale went to nursery at three and he knew all his alphabet.

Whether or not Dale had developed knowledge of grapheme/phoneme correspondence through television viewing was not verified by this study as the aims of the study did not include attention to this aspect. However, there is a range of research which suggests that such learning can indeed occur (see Singer and Singer, 2001). What is of interest here is that the data in this study provided evidence that this group of parents valued highly the role of television in their children's lives and saw it as facilitating imaginative, social and cognitive development. This positive stance towards techno-literacy has also been noted in an Australian study in which 60 parents in 79 early childhood settings in Australia were interviewed (Makin et al., 1999). Seventy-one percent of the parents identified technology and popular culture as important to their child's literacy development, yet the majority of staff interviewed in the settings did not consider that these practices were relevant to children's literacy development in the nursery. This is a situation which obviously needs to change if early years settings are to build adequately upon children's early learning in the home.

computer games

Of the 44 families surveyed, 32 stated that they owned either a computer or a console games machine, or both. Of the 26 children whose parents were interviewed, 14 played PlayStation games and half of these were girls. In this under-four age group, therefore, there was little evidence that boys were more likely to play console games, although there is evidence that boys do dominate use in older age groups (Livingstone and Bovill, 1999). However, gendered patterns were noticeable. Many of the 14 families who stated that their children played console games described how men in the family had inducted young children into the genre:

Well, he's always – his dad always had a PlayStation so he's also like had it from being a baby. His Dad would have him in his lap and Dan liked to sit and play,

thinking he were playing it. Daddy'll sit behind her and she just pushes arrows to go forwards or sideways as he presses the button.

Yeah, my husband plays with her on it. She obviously didn't know what she were doing. He were just – she just started playing with him.

In this study, it was fathers, brothers and uncles who modelled game playing for young children; only one mother reported playing the PlayStation games with her daughter. In some interviews, the mothers indicated that they knew little about playing the consoles:

He uses the buttons. We've not got a joystick. And he does think he's playing with it – controlling the cars, you know. Daddy helps him because I don't know how to do it.

The disinterest in playing the games expressed by mothers obviously did not deter a number of the girls from playing on PlayStation. However, the way in which gender was constructed in relation to the use of these texts was important in terms of the messages given and the potential for reinforcing essentialized gaming identities. The children were joining highly gendered communities of practice (Lave and Wenger, 1991; Paechter, 2003) in relation to PlayStation games. These media texts were most often used in collaboration with males in the family, in contrast to the way in which traditional print-literacy practices are primarily associated with female members of families (Millard, 1997).

There is emerging work which suggests that console games encourage the development of a wide range of spatial and problem-solving skills and are often based on sound learning principles (Gee, 2003). As argued elsewhere (Marsh and Millard, 2000), these games are embedded within the intertextual media universe (Kinder, 1991) of young children's lives and so they are texts that integrate with the wider popular culture interests of children. Engagement with such games, therefore, may motivate children to read across categories. In an earlier study of children's media literacy practices, for example, three- and four-year-old children were engaged in reading computer games covers and magazines (Marsh and Thompson, 2001).

Data collected in this study indicate that many children were developing skills which would help them to navigate computer games successfully. No longer is it acceptable to view children as 'pre-readers' and 'pre-writers', given their communicative competences from birth; similarly, it is clear that the children in this study were not 'pre-game players', but navigating the narratives in a meaningful way and developing the competences needed to become more skilful players (Marsh, 2003a). They were carefully scaffolded in this development by parents and siblings. In many cases, parents described how their young children were set up on the systems so that they thought they were playing the games when they were not. Handsets were not plugged in, for example:

- Mother: He was always pretending he were playing the game even though he weren't.
- JM: Can he do anything with the joystick?
- Mother: No. He just plays.
- Mother: Well, they got all sorts of different games and he just gets the control and says 'I want to play it'. So we give him the control that's not plugged in.
- JM: And do his brothers play it?
- Mother: Yeah. And that keeps him quiet.
- Mother: She has watched her sister playing and she'd have a little dabble on the PlayStation. While Michelle's playing, she'll have the other control and pretend to play but she doesn't actually.

In this way, caregivers and siblings colluded in the construction of children's identities as successful players of PlayStation narratives. This supportive acculturation into this particular communicative practice could impact greatly on children's self-esteem and confidence in the use of these games in the future. However, these games were just one aspect of children's communicative practices which were recognized and encouraged by parents, as demonstrated by the earlier discussion of television and play. Nevertheless, when children begin to attend nursery, only very selective areas of their home literacy experiences are normally focused upon – largely story-book reading and writing on paper (Marsh, 2003b). Thus, the literate identities of these young children as they begin formal schooling will, no doubt, have to accommodate to this selective focus and this may lead to the marginalization of their competence in the use of electronic media such as PlayStation games.

mobile phones

Gillen states that 'when reference is made to ICT in curriculum documents . . . it is relatively rare to see the telephone included' (Gillen, 2002: 28). This is also generally the case in relation to analyses of young children's techno-literacy practices. Yet the ubiquitous place of text-messaging in contemporary social lives must inflect itself at some level on the literacy practices of very young children. Certainly, traditional 'Loveheart' sweets which contained short messages or acronyms on them and played a popular role in many childhood games now contain text-message acronyms and messages, an indication of the way in which the text-message genre pervades the iconography of contemporary childhoods. Toys have always played a vital role in inducting children into the socio-cultural practices and values of a society (Agamben, 1993; Barthes, 1993; Marsh, 2002a; Sutton-Smith, 1986) and many children own artefacts such as toy computers, laptops, DVD players and mobile phones from an early age. Of the 44 children in this survey, 36 owned toy mobile phones, from an average age of 12 months. Although none of the children used text-messaging, many were aware of it and knew when a

message had arrived for their parents. The mother of Kay, aged two years, nine months, stated that:

If the phone beeps, 'Mom, you've got a message!', like that – that's all they ever say, yeah. They know what the beep's for. They're more bothered about tones and rings. You know, the ring tones what you can get on it?

Some children watched as their parents read and responded to text-messages and were thus becoming acculturated into the world of electronic print mediated through mobile phones. It is inevitable that the family context is a key site for the induction into text-messaging practices because, as Alexander et al. suggest:

family life is embedded in recurring activities and mediated by particular discourse practices, and . . . young children come to orient themselves within particular systems of meaning by participating in these everyday social practices. (2001: 379)

In addition to mobile phone practices within the home, toys, sweets, adverts and television programmes all reflect this technological landscape of text messages, ring-tones and emoticons and thus the communicative practices related to mobile phones are firmly embedded within many contemporary early childhood arenas. That is, of course, the *out-of-school* habitus of contemporary childhoods.

conclusion

Throughout the article, it can be seen that these young children's engagement with a range of contemporary texts and artefacts contributes to our understanding of 'emergent techno-literacy'. These practices should be valued and the place they play in the development of children as competent users and producers of media texts and artefacts acknowledged in curriculum frameworks for the early years. In their Australian study of the literacy practices within 24 families, Cairney and Ruge (1998) identified four distinct purposes for the use of literacy in the home: for establishing or maintaining relationships; for accessing or relaying information; for pleasure and/or self-expression; and for skills development. In this study, techno-literacy practices were firmly embedded within each of these four areas. Television played a central role in families' relationships as parents and siblings watched television together, talked about television, played games related to television with each other and fought over control of the viewing space. Young children were also engaged in accessing information as they read teletext and computer game covers. Literacy as a means of pleasure and self-expression was strongly evident throughout children's engagement with television, computer games and mobile phones and this pleasure was recognized and

celebrated by parents. Literacy as skills development was embedded within children's techno-literacy practices, whether that related to learning grapheme/phoneme relationships from watching television or reading text on the screens of computer games. In short, children's home literacy events within this study could be mapped on to existing literature in the field, differing only in the extent to which techno-literacy practices were involved. Thus, as we explore the nature and extent of family literacy practices in these first decades of the 21st century, the place of multi-modal techno-literacy practices must be more firmly acknowledged (Carrington, 2001).

Further, this article has sought to challenge the common conception of 'emergent literacy' as focused solely on print literacy (Whitehurst and Lonigan, 2001). There is increasing evidence that 'emergent literacy' encompasses a range of multi-modal practices (Makin and Jones-Diaz, 2002; Marsh, 2003a; Marsh and Thompson, 2001; Pahl, 1999) and thus the term should include this range. However, at the same time as this argument is made, it is important to acknowledge that the term 'emergent literacy' itself is open to question because of its assumption that early literacy practices are antecedent to the next, more competent, stage. For example, Whitehurst and Lonigan suggest that 'Emergent literacy refers to the developmental *precursors* of formal reading that have their origins in the early life of a child' (2001: 12, my emphasis). The children involved in this study were not involved in techno-literacy practices which were 'emerging' into anything else, they were important acts in their own right and involved the orchestration of a complex range of skills, knowledge and understanding. Of course, these practices do form part of a trajectory in relation to levels of competence as yet beyond the reach of these 'toddler netizens' (Luke, 1999), but they stand in their own right as literate practices which demand respect and recognition as complete acts in themselves. In these contemporary communicative practices, we see not emergent threads, but the powerful 'material objects, traces, and leavings' (Gell, 1998: 222) of the 'self-in-practice' (Holland et al., 2001: 32) as it forges subjectivities appropriate for the material, cultural and economic conditions of the 21st century.

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