
Digital Literacy: Are the new
technologies changing the way we
read and write?

Albin Wallace

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Abstract

This paper discusses critically whether the new technologies are changing the ways in which we read and write, and examines some of the important issues raised by this possibility for teaching policy and practice. It makes reference to key theorists and draws upon primary, multi-media and other texts to substantiate the argument. As the Group ICT Director of the United Learning Trust, I have strategic responsibility for the educational use of ICT across all our schools and academies, and the implications of digital literacy are key to our decision-making on learning and teaching, especially in the context of reading and writing. The paper examines literacy broadly as a social practice and in some further detail as a digital phenomenon. Ethnography is briefly examined as a research methodology for examining this and the unique challenges it presents as a subject for examination, and a number of specific characteristics of digital literacy such as multimedia and the role of communities of practice are also examined. The paper concludes by discussing the ways in which technologies change the way we read and write along with implications for teaching policy and practice. The topic is a crucial one for me to investigate as not only must we drive ICT from the educational perspective, we must also be open to the opportunities afforded to us by ICT to change and improve the literacy experiences of our learners. From a reflexive perspective, I should declare my position in this essay. After studying linguistics as an undergraduate, I became a primary teacher with a major interest in literacy. Since 1984, I have been involved in the learning opportunities offered by ICT and the unique place it has in education. I will, however, limit my discussion to the effect of Internet-based ICT and its relationship to literacy. It is my conclusion that the advent of Internet Protocol-based technologies inevitably and profoundly impact on current and emerging literacy practices. For the purposes of this essay, the phrase “digital literacy” refers to online reading and writing practices and is not intended to be a synonym for “computer literacy”, which refers broadly to the development of computer skills in general rather than to reading and writing skills.

Literacy as a Social Practice

Literacy is a social practice. This is evidenced by a number of factors. Events in our world are recorded, recalled and interpreted using text and the literacy practices associated with text, often through informal as well as formal processes. Formal reading and writing of letters, memoranda, reports and essays are mixed in our lives with the informal scribbled notes, school book exercises, reading for pleasure and other paper-based forms of communication. Literacy has many manifestations at different stages of individual human and social development and in different contexts. Importantly, literacy practices serve a social purpose and these practices are demonstrated through social structures and the power relationships within them. This is true in the school, the workplace and in other social contexts. The writings associated with these purposes also provide a history of the world within which we live. Thus, literacy has a place in (and to an extent defines) history. The signs and symbols of literacy are the tools with which we communicate. These tools represent a technology which may be viewed as the traditional technology of literacy practice. As Marsh says, “Literacy is a symbolic system used for representing the world to ourselves. Literacy is part of our thinking. It is part of our technology of thought” (Marsh, 2005, p.3). Over the past 100 years, definitions of literacy have moved from being able to write one’s name, to the decoding of text through to personal expression

through reading and writing, the spatial context for this learning being the school classroom. The traditional classroom is itself a complex communications technology. The components of teacher exposition, student responses, oration, silent reading, textbooks, written pieces, tests and recorded scores are all elements of this technology. The new technologies, however, are challenging the ways in which these traditional technologies construct and allow us to interpret literacy. The focus of this paper is to examine the symbiotic tension between literacy and the new technologies, especially those based on the Internet.

Internet-Based Technologies

Internet-based technologies are becoming increasingly the primary vehicle for educational, professional and social written communication, although importantly, Livingstone and Bober report that 16% of 9-19 year olds in the UK make low level or even no use of the Internet for communication (Livingstone and Bober, 2005, p 2). As well as the common applications associated with the World Wide Web and e-mail, applications such as instant messaging, web-logging, videoconferencing and application-sharing are increasing the use of Information and Communications Technology (ICT) for both synchronous and asynchronous communication. It is significant that the old acronym of IT has been largely replaced by ICT, the additional letter representing Communication, which is rapidly becoming the ascendant technology. Although the future of ICT is difficult to predict, current technological developments indicate that devices will be increasingly small, portable, networked, wireless, ubiquitous, personal and hybrid, and will provide the connectivity so vital to this form of communication. Each of these attributes will have a profound effect on the way in which ICT will impact on educational, work and social practices. Rather than being confined to large, desk-bound workstations the technology will travel with the individual and will adapt to their work and learning practices, including their reading and writing. This new generation of machines is exemplified by portable equipment emerging currently in the marketplace.

Especially with the recent development of the new generation Personal Digital Assistants (PDAs) and SmartPhones, portable computing devices have become a hybrid of technologies for voice, text, graphic and video images and are changing the way in which spoken, written and pictographic language is used and practiced (Ito, 2004). When computers were first used in education for the development of literacy skills in the 1970s, the hardware and software were based largely around mechanistic, keyboard driven devices, the learners' relationship being directly with the machines. The very fact that an alphanumeric keyboard was the sole point of entry for the learner rooted the experience in a linear, written mode. The computer provided a stimulus, the learner provided a response and the computer generated feedback accordingly. Most literacy activities were built either deliberately, or through a misguided interpretation of "good learning" on a behaviourist model which usually bordered on operant conditioning in its use of this "feedback" to the learner. The student would interact using (always) keyboard-driven input. The machine processed the data and responded (always) back through a (always) monochrome, two-dimensional screen. The relationship was thus between the user and the computer with the locus of control sitting firmly with the computer program. The paradox was that at this time, literacy acquisition was moving towards a more experiential approach (although the term "acquisition" itself implies a degree of performativity that does not sit entirely comfortably with the spirit of recent literacy practices). In time, during the

1980s, more constructivist models of educational IT applications evolved. Graphics, colour, differentiated sound and text combined in programs whereby students were able to create their own worlds, using the machine as a tool with which to think. Although this model was initially experimentally developed in the mathematics area, due mainly to the work of Seymour Papert (Papert, 1980), Andy Di Sessa (Di Sessa, 1980) and the Logo team from MIT, the model soon found a place in literacy, and programs such as learner-friendly word processing, desktop publishing and literacy software such as Wiggleworks[®] started to make an impact in literacy spaces. These were more open systems, pushing the locus of control back to the user and allowing learners to create or construct experiences using a computer. These “microworlds”, as Papert described them, (Papert, 1980, p. 7) were play and learning places that were characterised by a virtual space, constructivist tools, an often strong pedagogical process and the generation of an aesthetically and intellectually stimulating product, such as a piece of written work or a multimedia presentation. The development of more powerful, graphical user interfaces (GUIs) that incorporated multimedia input and output have combined with communications technology in recent time to create devices that are more in the spirit of portals than machines. They are windows through which the learner looks into multiple worlds, both real and virtual, in order to interact with other users in shifting, fuzzy, global networks. What is real and what is unreal is less certain. This goes beyond the traditional differentiation between literary fiction and non-fiction and challenges ontological preconceptions. Existing definitions of reality collapse in this context and are open to new interpretations. Ontology comes under scrutiny as the technology reflects and to a large extent defines the postmodern world. The Internet is seen by some writers as a number of virtual, parallel universes. It is within these universes that sometimes profound learning takes place. As Turkle says, “When we step through the screen into virtual communities, we reconstruct our identities on the other side of the looking glass” (Turkle, 1995, p. 177).

Learning on the Internet

These online communities, although significantly about communication also contain information that is presented in a unique way that differs from previously printed information. The epistemology of the Internet is one where unmoderated, uncontrolled, inaccurate, apocryphal or deceptive information is sometimes disseminated along with a multitude of rich, diverse and interesting ideas. Livingstone and Bober highlight the need for children to develop key skills in evaluating content (Livingstone and Bober, 2005, p. 2). The search engine Google alone currently indexes over eight billion web pages of information (www.google.com). But this information is often not presented in a traditional, textual manner. The linear flow of text is broken by hyperlinks that form tangents into uncharted, often dangerous areas where content may be unmoderated and inappropriate for children, and the content itself is often transient. The words that are there today may be gone tomorrow. Publishing on the Internet may not necessarily be for posterity. Surfing the Internet means screening information and making quick judgements for the learner and teacher alike. The way in which we read can become more cynical, more reactive and more chaotic, as well as exciting, stimulating and critical.

It is interesting to note, however that most children prefer using communications technology rather than information technology (Livingstone and Bober, 2005, p.2) and the provision of broadband technology into classrooms also brings with it a wealth of literacy opportunities through the use of e-mail, weblogging, chat, and the

deconstruction of instant message texts on the World Wide Web. The classroom is part of a global, virtual, postmodern world where text, sound, still and video image are different modalities that may lead to new definitions of literacy; a digital literacy that not only enhances but to a certain extent replaces elements of the old. Lankshear and Knobel, although speaking of new literacies also call for “research that provides rich and theorized accounts of cultural practices that enable and encourage educators to experience them from the inside, as participants” (Lankshear and Knobel, 2004, p. 3).

Digital Literacy as a Social and Cultural Practice

Digital literacy is more than just the ability to read online. It means also understanding, creating and interpreting the ways in which the different modalities come together. E-mail is the most well-known example of this. Although commonly used for formal purposes, the use of e-mail also allows a greater degree of informality, sometimes more closely allied to speech than formal writing. Its instantaneous and democratic nature encourages informality. The immediacy and spontaneity of e-mail and instant messaging challenges the way in which we regard knowledge. Gee argues for “.....knowledge as activities and experience before knowledge as facts and information and situated as opposed to verbal understanding” (Gee, 2005, p. 4). E-mail as a digital literacy activity is a good starting point in defining an ICT-based social practice that centres on interactivity and situated learning. This interactivity is also true for other Internet Protocol (IP) based technologies. “In Internet conditions, writing no longer functions- as in the printed book- solely as a medium of knowledge storage, but becomes usable interactively as a synchronous medium of communication” (Sandbach, 2000, p. 72). In writing an interactive piece, whether on e-mail or through other IP-based technologies, language can become fluid and ambiguous with enhanced possibilities for enriched expression, the editable and spontaneous nature of the communications containing signs that themselves refer to other signs. The writing deconstructs with layers of meaning within meaning. The virtuality of the Internet is a feature of postmodernism, with potential benefits for learning. Lyotard, in a sense predicted this in *The Postmodern Condition*. He mused that “it is reasonable to suppose that the proliferation of information-processing machines is having, and will continue to have, as much of an effect on the circulation of learning as did advancements in human circulation and later, in the circulation of sounds and visual images” (Lyotard, 1979, p. 4). In a sense, online writing and reading can be viewed as post-structuralist, as well as being a feature of postmodernism, because of the elusiveness and deferral of online semantic definition. As the meanings of composed online words are thus elusive and deferred, so the very practice of observing these literacy activities is also elusive. Because of the immediacy, transience and this elusiveness of IP-based communication, observing and reflecting upon it as a researcher is potentially problematic. The tools of ethnography may assist with this.

Ethnographic Research

Ethnographic research “is concerned with how people make sense of their everyday world” (Cohen et al, 2003, p.25). There is immediate resonance in this definition with IP-based communications, which are integrally so much a part of the everyday world. Ethnography can be a valuable research tool for examining digital literacy issues (Hine, 2000). The virtual and transient nature of IP-based technologies, however,

presents its own challenges for researchers. These technologies will impact on any research in a number of important ways. The issue of space is particularly problematic because if physical boundaries are largely irrelevant in a virtual world, then at the very least it should be acknowledged that this virtual space within which the ethnographic research takes place is transient, mutable and open to wide interpretations. Likewise the concepts of identity of observed participants are open to challenge given the potential anonymity and aliasing that can take place online, along with the associated use of identity play and avatars (Turkle, 1996, p.354). Wellington points out that “the key research strategy employed in ethnography is participant observation” (Wellington, 2000, p.45). But observing activity in a virtual world is not straightforward. The positions of the researchers themselves need careful consideration because as observers they could be taking on a role of lurkers (one who watches but does not participate) and their impact on the participants and the research itself could not only be unknown, but potentially damaging to the practice under observation. Researchers are beginning to investigate the effect of lurkers on online communities (Nonnecke and Preece, 1999).

Especially with young people, online experiences are increasingly being seen as having as a significant role in their lives as non-virtual (or “real”) experiences (Holloway and Valentine, 2003). The online participants create their own meaning out of their experiences and the associated online social practice can affect offline social practices, generally by extending rather than replacing offline relationships completely. Sometimes offline places are reproduced online where virtual identities are reflections of cultural identities. In fact, offline and online experiences are increasingly constructed together. The researcher carries a significant moral and ethical responsibility when observing and participating in these complex and interwoven online and offline worlds where the ecology is sometimes fragile and finely balanced.

The relevancy of ethnographic research on digital literacy is also extremely time-sensitive. “A researcher..... who returns to an ethnographic study after only a few years may find profound differences in what is reported by subjects” (Kincheloe and Berry, 2004, p. 33). This has particular resonance in ICT in education where change is rapid, uneven, unpredictable and continuous. The multi-modal nature of digital literacy increases the difficulties associated with ethnographic observation, as the modalities observed may change or mutate over time.

Multi-Modal Discourse Analysis

Technology allows the blending together of different elements of communication that may include image, text, sound and video. This use of multimedia requires higher capabilities of multi-modal operation by both the practitioner and the observer/researcher. The convergence of the different, constituent technologies makes the acquisition of the necessary operational skills increasingly necessary. It also encourages creativity in expression of meaning and the opportunity to exercise multiple intelligences.

Literacy should be examined from the perspective of actions that carry communicative meaning, rather than viewing literacy as merely a function of reading and writing linear text. In an analysis of these technological multi-modal interactions

Norris notes that “.....we need to extricate ourselves from the current mythic transcription conventions that are insufficient to explain these image-gesture-utterance aggregates, which are so very common in our everyday lives” (Norris, 2002, p. 118). These “image-gesture-utterance” modalities also correspond to the “graphic-video-sound” elements of multimedia, which again draws attention to the hybrid nature of emergent ICT.

Although language as speech will continue to be the major mode of communication (albeit often enabled by technologies such as SmartPhones), language as writing will continue to be displaced by images in an online world. The images may be static, iconic, simulated, video-based or a combination of all of these. The images reflect and create a world of new images. As Kress notes, “The world told is a different world to the world shown” (Kress, 2003, p. 12). Moral and practical challenges also present themselves in observing IP-based communication that paradoxically is both intimate and private, and also public. This is especially true given the locus of power in this form of communication.

There is a shift in power brought about as there is a move from the dominance of the book to the dominance of the screen – but this is, of course only in some people’s lives, and there is often a very strong mismatch between teachers and pupils (Lankshear and Bigum, 1999). The virtual world of communication is both everywhere and nowhere. Moderated and unmoderated communities of practice emerge in the classroom, the school, within and across social, linguistic, cultural and political boundaries. They too, are new dimensions within which digital literacy takes place.

Communities of Practice and Affinity Spaces

There is a difference between those who grew up in the context of digital literacy and those who come to digital learning from a background of socialisation in physical space. The difference is that “One.....affirms the world as the same but just more technologised: the other.....asserts that the world, because of the operation of these new technologies, is radically different” (Lankshear and Bigum, 1999, p. 458). The communities of practice for the latter group embrace the new technologies more fully. It is not a matter of doing the same things differently, but creating a whole new paradigm for communication and interaction.

The central features of a community of practice are that participants share experience, the community is dynamic and evolving with the creation of new knowledge in the context of a common language and it has a common purpose. Lave and Wenger define communities of practice as “a set of relations among persons, activities and the world, over time and in relation with other tangential and overlapping communities of practice” (Lave and Wenger, 1991, p. 98). The communities may also be characterised by their narrative, informal, fluid and peer-driven nature. They are also appearing increasingly as online phenomena.

Whether formally established, or spontaneously occurring, the literacy practices of the communities challenge the way in which literacy is viewed. “Distances between the uses of reading and writing in school settings and the kinds of literacy embedded in new social practices continues to grow” (Merchant, 2005, p. 56). Sooner or later these distances may close. Inevitably the practice of reading and writing in school settings

must respond accordingly as the interactive elements of ICT are further adopted, adapted and appropriated by learners and schools.

There is therefore a link between information and communications technology, literacy and interaction. The current curriculum however, has at its core basic skills associated with print-based text and a focus on skills of print literacy. The growth of online communities challenges this. “The social capital resident in communities of practice leads to behavioural changes, which in turn positively influence performance” (Lesser and Storck, 2001, pg. 831). Notwithstanding the blatant performativity inherent in the language, there is a clear assumption that the gathering of experience together with the resultant changes in activity will increase the learning outcome. Digital communities of practice are inevitable and literacy practitioners need to exploit, or at least be aware of the learning opportunities offered by these virtual spaces. However, communities of practice are just one way of looking at the social phenomenon of shared, online interaction, weblogs, e-mail, chatrooms and other IP-based, social, communication opportunities. The affinity spaces described by Gee examine online practice in the context of online games, and although dominated by a male-oriented lexicon and metaphors, also provides a useful framework for examining online practices that promote digital literacy (Gee, 2004).

Digital Literacy Activities

The different literacy activities facilitated by the new technologies bring about a closer relationship between language and pictures. The synchronous and asynchronous exchange of writing through e-mail, blogging and wiki changes the relationship between the author, the text and the reader as the new literacy activities take on a life of their own.

Weblogs are relatively new devices, combining the intimacy of a written diary or “log” with the public exposure of the “web”. Weblogs can be a new vehicle for improving literacy through the traditional practices of story-telling and dialogue but in a virtual, digital context. The creation of an online, personal space linked to an online community with its resultant collaboration can be a powerful literacy tool across all disciplines and each curriculum area. Weblogging is already recognised as a valuable literacy practice. “Blogs can be used to promote reading and writing, to showcase the work of students or to exchange ideas among students” (Huffaker, 2004, pg. 5).

Wikis (“What I Know Is”) are websites that allow a user to add content whilst permitting that content to be edited by another user. The most well-known example of this is www.en.wikipedia.org. Burry et al have undertaken research on wiki and found that “wiki is a much more effective way to communicate, develop ideas, create, collect and access shared documents than using electronic mail, mailing lists, web logs, instant messaging or chat” (Burry et al, 2004, pg. 9). Despite the boldness of such a claim, again, the communications element of ICT appears as the emerging and dominant focus.

Recent commissioned research explores the importance of the communications element of ICT in considerable depth. “Children’s motivation for going online centres on new opportunities and identity play. While the conversational context is often mundane, being readily in touch with their friends is important to them” (Livingstone and Bober, 2003, p.2). It should be noted that conventional ICT (i.e. the personal

computer) is not necessarily the prime vehicle for communication. Smart phones with their increasingly multimedia (i.e. sound, text, graphics and video) capabilities are in the ascendancy. Livingstone and Bober note that the “Mobile phone is fast overtaking the desktop computer as a prioritised means of communication” (Livingstone and Bober, 2004, pg. 33). These technologies are impacting collectively on the way literacy is acquired and practiced.

Are Technologies Changing the Way We Read and Write?

The issue of digital literacy is not just one of skills and capabilities. “The interaction of different modes and of different possibilities of expression in multimodal texts and multimedia production poses questions not just at the level of text, but also at the level of cognitive processing: new demands are made cognitively (and no doubt affectively) by the new technologies and by their textual forms” (Kress, 1998, p.76). The abstract concept of virtuality is implicit in digital literacy. The concrete and the virtual worlds blur, and new ways of thinking emerge.

Reading a text in the conventional, printed format often implies defined start and finish points, whereas on the web, reading is often non-linear; beginnings and ends are arbitrary and thus relative to the author’s, reader’s and the text’s positions. Hypertext, synchronous communication and threaded discussions are examples of this. Cyberspace does not physically exist in and of itself. It cannot be touched but its contents can be read and interpreted. “Yet, the non-linear discourse- made up of texts, sounds and images- could create a ‘sense’ of place” (Mitra, 2003, p.5) and these new, online places will continue to develop as spaces where reading, writing and interaction occur. The ways in which on-line materials are read are changing reading practices.

Merchant argues that new writing technologies should be embedded in the literacy curriculum in ways that recognise children’s experience, identities and the literacy practices that surround them. He suggests that out-of-school identities, social practices and their associated literacies need to be incorporated into classroom life in order to provide an education that is accessible and relevant (Merchant, 2004, p. 342). This has implications for both policy makers and practitioners. Doubtless the new technologies are changing the way we read and write. This is not to imply that the printed word (especially books) will disappear. This is neither inevitable nor desirable. Although online communication will enhance and challenge many forms of traditional literacy, the book as a printed object (especially fiction) will continue to be an accessible, cherished and valuable tool in literacy. Although public library usage is declining, the steady sale of fiction in bookstores is a healthy indicator of the state of this traditional literacy practice. There is some way to go, however, in considering the implications of digital literacy for teaching policy and practice.

Implications for Teaching Policy and Practice

Where will the developments in digital literacy lead? Certainly, the increasing prevalence of small, portable, personal, wireless, networked and ubiquitous technologies will contribute to greater levels of autonomy in the ways in which literacy is practiced, and continued collaboration between online participants. There will be a wider audience for learners’ creative literacy output with a knowledge flow

that is bottom-up. Schools will create rather than broadcast knowledge in an environment that focuses on localised learning in a global context. The production of digital literacy examples of work will increase. Merchant notes that “Digital media and the new forms of communication provide rich possibilities for redefining interaction and the establishing participation and production that reach out beyond classroom spaces” (Merchant, 2004, p. 355). This will provide challenges for policy-makers in the re-engineering of learning spaces. There are some warnings, too. The global nature of the Internet inevitably and axiomatically places the learner in a wider world of literacy practice and “traditional classrooms and traditional bureaucratic education systems cannot provide society with what it now needs. The agenda of the new learning is to meet the needs of the knowledge society in a globalised world” (Kalantzis and Cope, 2004, p. 3).

At the practitioner level too, teachers will, as always, continue to use critically the opportunities digital literacy offers and continue to exercise their discernment. Indeed, “.....teachers have not been tempted to embrace technology in their class and lecture rooms unless offering enhancement to their ongoing pedagogical practices” (Weiner, 2004, p.2). Notwithstanding the inherently anarchic nature of IP-based technologies, the teacher will have a crucial role in the development of digital literacy.

From a political perspective, experiences based on a digital literacy provide the opportunity for conservative and radical viewpoints to converge. “The progressives are right in that situated embodied experience is crucial. The traditionalists are right that learners cannot be left to their own devices, they need smart tools and, most importantly, they need good designers who guide and scaffold their learning” (Gee, 2005, p. 15). Innovative online practices that are linked to a supportive framework of teachers will help maximise the opportunities presented by digital literacy practices.

Policy changes for teaching should include a refocusing of literacy practice as a social practice that needs to change and evolve over time. This should accommodate the emerging digital literacy and a recognition of literacy as a means rather than an end. Especially with the emergence of new technologies, literacy as a life-long learning experience should be embraced by policy makers. Assessment too, will be touched by, if not completely re-engineered by ICT. Those responsible for literacy testing will need an approach that values all modes of literacy and take into account the context of multiple literacies when assessing an individual’s skills.

Literacy practitioners, especially teachers, need to recognise and teach different literacies beginning with the needs of the learner and an acknowledgement that all teachers are literacy teachers and all literacies, including digital ones need to be valued. Alongside this, there is a need for a recognition that situated and multiple literacies also need a variety of teaching approaches. Digital literacy and its associated activities bring this to the fore.

Recent research into literacy and the Internet makes some very specific additional comments on the topic. Livingstone’s key findings, based on both qualitative and quantitative research methodologies include specific policy recommendations related to literacy and the Internet (Livingstone and Bober, 2005). There is an identified need for ICT literacy skills and capabilities development with an improvement in levels of internet literacy. Culturally, there needs to be a shift from just receiving to also

creating content, and there is the need for the design of educational websites to encourage computer literacy.

Independent of formalised and mandated changes to teaching policy and practice, new technologies will continue to exert their own influence on both formal and informal acquisition of literacy. The unmoderated, fluid and often anarchic development of IP-based technologies in general and the Internet in particular will continue to place multimedia literacy devices in the hands of practitioners, learners and their families. How they use them are yet to be fully seen. When text messaging (SMS) became available on mobile phones, it was intended to be used as an ancillary function to the voice medium. Yet, amongst young people, it rapidly became the primary function of the phone, even with the development of its own lexicon, syntax and spelling conventions. This was unforeseen, yet rapidly developed into an international literacy that sprung spontaneously into existence without moderation, imposed rules, or an adult-developed and controlled structure. It became, and still is primarily a literacy for young people, largely irrespective of their socio-economic background or conventional literacy levels. Multimedia literacy may yet develop in this way. Already it is clear that digital literacy extends beyond text, involves the construction of information from multiple sources and is a multi-dimensional, interactive skill. The challenge for educationalists is to embrace the spirit of online learning and implement strategies that are sympathetic and conducive to literacy practice. Other researchers have also recognised that “it is essential that we also recognise the need to develop different approaches to pedagogy” (Watts and Lloyd, 2004, p. 58). As an anarchic activity, digital literacy practices are inevitable, as can be seen in the use of SMS. An embraced, ecological response for education must be strategic, and approached with an open mind and open eyes. Literacy practices as formal, educational activities are traditionally driven by the education systems within which they take place. Yet communications technologies evolve in response to a broader context. Young people will experience new communications technology well in advance of its embedding in formal educational settings. We must not let the opportunities for digital literacy pass us by.

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