Investigating pupils' interactions around digital texts: a spatial perspective on the 'classroom-ness' of digital literacy practices in schools.

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Abstract

This paper complements debates around use of new technologies and literacy in education by proposing a focus on "classroom-ness." It highlights the significance of incidental, everyday and ephemeral practices associated with classroom technology-use. Using examples from a study of primary pupils' interactions around digital texts, it argues that we must acknowledge the distinctiveness of technology-use in classroom contexts but also see the spaces associated with those contexts as continually constructed, relational and heterogeneous. This helps us look beyond binary distinctions - between in/out of school and global/local practices, on/off-screen and on/off-line activity, material/virtual contexts and official/unofficial discourses - to recognise the complex and nuanced ways that children make meaning around new technologies. It is proposed that this theoretical lens – in recognising the complexity of classroom-ness- can help us better understand the barriers and opportunities associated with effective integration of new technologies in educational contexts.

Key words: space, technology, classroom, Massey, literacy

Introduction

Much has been written about the diversity and range of practices associated with new technologies and the need for literacy provision in schools to be more aligned to literacies in everyday life. For some this is about preparing learners for a 21st century workforce (Partnership for 21st Century Skills, 2007) or drawing on experiences children bring to the classroom (Pahl and Rowsell,2012). Others emphasise the need to develop new pedagogies that build on collaborative modes of knowledge generation and see knowledge as distributed between people and sites rather than 'owned' by individuals (Jenkins,2006;Lankshear and Knobel,2011;Facer,2011). A cross-cutting theme in such work is the potential for networked technologies to overcome constraints of time and space enabling new and multiple networks and more distributed and democratic forms of knowledge production.

In response, educators are increasingly finding ways of embedding digital texts within wider literacy provision and using the internet to enable children to create and interact through online media (Davies and Merchant,2009;Walsh,2011). This has been enabled by changing equipment use; in the United Kingdom for example many primary (elementary) schools have stopped locating computers in isolated laboratories and purchased portable devices such as laptops or i-pads to be used flexibly across the curriculum. Despite such developments, there is still work to be done in articulating and implementing appropriate pedagogies that incorporate new kinds of texts (Livingstone,2009). Research reviews and studies of educational uses of digital environments have suggested that new technologies are often integrated in ways that are aligned to existing literacy pedagogies and practices (Burnett,2009;Burnett,2010;Merchant,2010).

Engagement with digital texts in school is, of course, different from engagement in other contexts. Use is framed by curricular learning outcomes rather than personal interests, needs and preferences and can be inhibited by inconsistencies in teacher confidence, unavailability of equipment, accountability measures linked to print literacies, and safeguarding procedures which limit internet access. However, accounts of schools' limited provision- or even celebratory reports of teachers' innovative practice- do not tell the whole story. What *children do* around and with digital texts in classrooms is also significant. We know, for example that children re-work schooled practices for their own purposes and that official and unofficial discourses intersect as children reinterpret school literacy tasks (Dyson,2002;Maybin,2006). Gaining insights into how this happens is, I suggest, important to understanding the distinctiveness of technology-use in primary classrooms. If we are to understand better the opportunities and challenges associated with using new technologies, we need to know more about the practices associated with them in educational contexts.

In this paper, I argue that such understanding can be enhanced by drawing on theories of space to investigate and recognise what I call the "classroom-ness" of digital literacy practices. By "classroom-ness" I emphasise both the distinctiveness of classroom spaces and their hybridity and fluidity. On one hand, I note how children's interactions around digital texts may be a response to their situatedness in classroom settings and so reflect and/or uphold particular space/s. On the other, I draw on Massey (2005)'s work and Leander and McKim (2003)'s notion of 'siting' across on/offline contexts to challenge the notion of 'classroom' as a single space and explore how children's meaning-making is associated with multiple spaces which articulate with each other in different ways. I illustrate this argument by drawing on examples from a small-scale study of children's classroom digital practices. I

argue that this perspective on classroom-ness - emphasising both distinctiveness and hybridity and fluidity - can make an important contribution to highlighting the possibilities for meaning-making that open-up (or not) when children engage with digital texts in classrooms.

Space and educational contexts

This work builds on previous research into relationships between pupils, learning and the physical environment. Some of this has focused on how the material environment-architecture and artefacts - reflects and reinforces assumptions about learning, curricula and the purpose of schooling (Lawn and Grosvenor,2005). Dixon (2007) for example describes how organisation and availability of resources may help construct different kinds of 'literate subjects'. At the same time space can be seen as continually under construction and produced through reflexive interactions between the physical environment, ideologies and social practice (Lefebvre,1991;Soja,1996). As Lefebvre's seminal work on space explores, space is not a fixed background to social action but is socially produced. What people do is influenced by spaces but spaces in turn are shaped by what people do, how people conceive them and what they feel spaces should be like. This reflexive dynamic can generate possibilities for change.

We see this in Jewitt, Bezemer, Jones and Kress's multimodal analysis of a secondary (subject) English classroom (Jewitt et al,2009) which explores how changes to resources generated a "new material culture of secondary classrooms" (Jewitt and Jones,2005). They note how displays, arrangements of desks and other equipment are important to how pupils are positioned and this has implications for how subject English is conceived. It is not just the

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affordances of digital texts but "stuff" (Miller,2010) that is significant to meaning-making. However, Jewitt and Jones also note how teachers draw on artefacts in various ways – as they carry, make, display, and arrange them. In doing so, they improvise with and around available technologies and help create the material culture of their classrooms. Jewitt and Jones argue that, "New material cultures are as much a result of teacher agency as governmental demand" (2005, 205). The character of educational space is not just determined by the policies, values and resource decisions that influence the design of the material environment but is provisional, generated through interactions between teachers, pupils, architecture and available tools.

Nespor's (1997) longitudinal study of one school highlights the complex and multiple factors that contribute to this provisionality. He traces the web of practices – political, cultural, embodied, adult and child-initiated, official and unofficial - that play out around a school (Nespor,1997). He argues that we must avoid seeing a school as a "bounded system" (p.xi) and suggests that "we have to peel back its walls and inspect the strings and rhizomes linking it to the outside world (which is no longer outside)" (p.xi). Spaces therefore may be defined by "articulations" (Nespor, 1997,171) between experiences in different domains and as such are constantly shifting. Educational space is multi-layered and highly complex.

Acknowledging such complexity has implications for how we see relationships between children's identities and school literacy practices. Work in the field of new literacy studies has highlighted the situatedness of literacy, and the reflexive relationships between literacies, identities, and context (Barton and Hamilton,1998; Barton,2007;Street,1984). Various socio-cultural studies have explored how such relationships play out in classroom settings. For

example in her analysis of use of a writing table in an early years setting, Rowe (2008) notes how children co-constructed their literate identities with adults as they interacted around writing activities. At the same time we know from analyses of children's interactions in classroom contexts that official spaces are inflected by unofficial purposes as children re-work and re-purpose tasks for their own ends (Dyson,2002; Maybin,2006). Intersections between literacy and identity are not just confined to schooled versions of what makes a 'good' reader and writer - but play out differently according to different purposes. Children may use their reading or writing as an 'act of identity' (Burgess and Ivanic,2010) in complex ways; whilst physically located in classrooms, their identities may be multiple or 'laminated' (Holland and Leander, 2004).

Investigating 'siting' in on/offline educational contexts

In this article, I draw on Massey's work to explore how a spatial perspective can be used to examine the complexity of meaning-making around digital texts in classrooms. Massey suggests three propositions: space is a "product of inter-relations", "always under construction" and consists of "coexisting trajectories" (Massey,2005, 9). By challenging the idea that space is bounded in terms of location, her work both highlights the significance of individual pathways and practices and recognises the role of broader structural forces. This helps us see classrooms not just as contained within physical boundaries, but connected in multiple ways to other places and the practices and meanings associated with them.

Notions of space are of course further complicated by online activities. Rather than seeing digital technology as generating distinct virtual spaces, studies have emphasised that online and offline environments are always inter-twined and embedded in broader social practices (Leander and McKim,2003; Hine,2000). What happens offline helps construct how online environments are experienced and enacted and vice versa. As Massey writes:

Just as the groundedness of virtuality ties it to a specificity of location so too space and place are altered in their physicality and in their meaning through their embeddedness in networks of communication. The 'virtual' world depends on and further configures the multiplicities of physical space. This has ever been so; the new media in that sense are not new; but they do reconfigure (or have the potential to reconfigure) how these networks will operate. (2005,96)

If this is the case, we need to find ways of capturing relationships between what happens on and off line and avoid seeing these as separate domains (Hine,2000). Leander and McKim's notion of "siting as a productive process" is useful here (Leander and McKim, 2003,213). "Siting" refers to the processes through which spaces are produced. Rather than seeing digital literacy practices as *situated in* particular sites – with location as the background to practice- I argue that we need to pay attention to how literacy practices themselves work to establish or *site* certain kinds of spaces. This helps us understand the kinds of literate identities available and recognise the complexity of meaning-making across on/offscreen and on/offline environments.

Studying siting

In exploring why it is helpful to examine the processes of "siting", I use examples from a small-scale study of technology-use in four primary classrooms in the United Kingdom. In providing these examples, I do not seek to make generalisations but to illustrate how this theoretical lens can help us better understand the barriers and opportunities associated with effective integration of new technologies in educational contexts.

The teachers in these classrooms were all interested in the implications of new technologies for literacy. Two were approached directly whilst two were recruited via an invitation to participants on a Masters course on literacy pedagogy. The age of children, number and length of observations are summarised in Table 1, which also includes information about available equipment and activities observed. Visits were arranged when teachers had planned for children to use what I called 'networked' or digitally connected texts. These included the internet and various online resources as well as shared documents and wikis. During visits, I conducted non-participant observations (total of 2530 minutes) and interviewed teachers and children about their perceptions of lessons observed, their digital practices within and beyond school, and attitudes towards these. I also examined texts accessed and produced. The examples presented here are taken from observation data.

Sessions observed were not necessarily typical of ongoing practice; the teachers told me they used these visits to experiment with new digital resources. The limited time spent in each setting also meant that I was unable to observe individuals in detail or over time and gained only brief insights into the social and cultural workings of each classroom. I was however able to look across a range of events to explore different kinds of relationships between space, practice and new technologies.

I relied on field-notes rather than audio/audiovisual recordings. Whilst this limited the detail of my record and analysis, it enabled me to respond rapidly to changing patterns of interactions, sometimes focusing on the whole class, sometimes individuals, pairs or groups. Like Maybin (2006) and Dyson (2002), I was particularly interested in what occurred in between and around official tasks. This provided insights into how children made sense of tasks set and responded to available possibilities.

Elsewhere I have argued (Burnett,2011a) that it is helpful to see space across on/offline environments in terms of three interconnected dimensions: material, connected and textual. The *material* refers to the physical dimension (bodies, walls, equipment, furniture and so on), the *textual* to the words, images, etc on screen, and the *connected* to the people, places and texts evoked during a literacy event; these might include places and people virtually co-present (e.g. through online communication) as well as thoughts of people and places prompted by texts. In distinguishing between these three dimensions, I recognise that texts are both material and textual (Ormerod & Ivanic,2002) but find the textual/material/connected distinction useful in helping to address the slipperiness of the textual in digital contexts (websites, virtual worlds, etc); this extends beyond what is immediately visible in a text's material form. Importantly, I see material, textual and connected dimensions as inter-related and suggest that together they help us to focus on on/offline and on/offscreen as part of the same socially produced space.

In considering activity across these three dimensions, I observed how children moved around the classroom and how they interacted physically with texts, equipment, objects and each other (material); influenced by multi-modal analyses of interactions (Jewitt,2009), I noted not only verbal but gestural, postural and positional aspects of meaning-making. I also observed what children did on screen: features added, altered and deleted, screens visited and searching strategies used (textual). Finally I noted any references to experiences from other times and places, including comments, memories or questions related to their lives or to content encountered through online texts (connected).

Insert Table 1 about here.

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I used initial coding of incidents and then repeated re-readings of the data to consider how children drew on resources available to them - texts, experiences, artefacts and each other. I explored how this seemed to be linked to siting, considering who or what was excluded or included, what mattered and what seemed to reinforce or challenge boundaries. I then used constant comparison analysis to identify different categories of events that seemed significant to the kinds of spaces sustained or generated. Wary of research that mines classrooms for data with little regard for teachers' perspectives (Comber,2007), I held a series of meetings with the teachers to review my ongoing analysis and discuss the implications of the work. This process of analysis led to the conceptualisation of classroom-ness described in this paper.

It is worth recognising some of the challenges faced. Defining a field is always problematic (O'Toole,2010) as it implies a boundedness to practice that assumes knowledge of the 'horizon of the lifeworld' (Schutz,1973) and also contradicts the notion of space as hybrid and fluid. This is particularly problematic in studies of on/offline experience (Hine,2000). My analysis involved making decisions about what was significant to individuals and how space was bounded from moment to moment. Inevitably my observations were selective and subjective, limited to what I noticed and deemed relevant. Moreover, my physical presence in the classroom privileged the material; insights into connections with other times or places were partial, inferred through references made and what I observed on screen.

Despite these limitations, this focus on siting did foreground aspects of classroom digital literacy practice that I suggest are relevant to discussions about use of digital texts in educational contexts and I describe these below. I emphasise again that I do not attempt to arrive at definitive descriptions of possible dimensions of classroom-ness or generalisations about technology-use. This would be inappropriate given the limitations of my study and also

in terms of my central argument. The classroom-ness lens may yield insights into different kinds of spaces for learning in different educational settings.   Instead, in describing classroom-ness, I use examples from the study to explore the *kinds* of insights that this theoretical lens can offer.

Some dimensions of the classroom-ness of digital literacy practices

The following examples of classroom-ness relate to minor incidents or events that could be seen as inconsequential. I suggest however that these kinds of incidents are important in understanding pupils' experiences and uses of classroom-ness. I use Massey's three propositions – that space is a "product of inter-relations", "always under construction" and consists of "coexisting trajectories" (Massey,2005,9) - to structure an exploration of some dimensions of the classroom-ness of digital literacy practices.

Space as a product of inter-relations: siting through convergence

Massey's focus on space as a product of inter-relations highlights how spaces are not unitary bounded entities but are the product of relations between multiple activities in different domains that influence how people relate to each other and their surroundings. Space is not fixed but relational. In the classrooms visited, spaces were shaped by decisions made in other times and places. For example a regional organisation managed the schools' firewalls, blocking internet sites seen as unsuitable for school use. All four teachers spoke of resulting frustrations: sites they regarded as valuable resources were often blocked and could only be unblocked with a day's notice. Consequently, opportunities for spontaneous internet use were limited and this bounded the on/offline classroom.

Inter-relations between classrooms and other places, however, were not only forged by administrators, policy-makers, teachers and head teachers. Inter-relatedness was also evident as children drew on skills, strategies and preferences associated with out-of-school use, for example as they chose fonts, changed colours and sizes, re-formatted pages and imported images or searched the internet for sites encountered elsewhere. They also referenced texts from outside school in playful ways, through comments, gesture or song. We see this in the following episode which followed the introduction of a new set of laptops:

> *Introducing the new laptops Y4/5.* As the teacher took the first laptop out of the computer trolley, there was spontaneous applause from the class. He passed the laptops out, one between two. One was given to two boys, Ben and Thomas, sitting next to each other. Thomas stroked the laptop when it was first placed on his table. As he opened it and pressed "on", the word "Stone" slowly dissolved into view. ['Stone' is the laptop manufacturer's logo.] Ben commented, "awesome that". The screen went black again and he sang, "Duh. Duh.Duh," in ominous, suspense-movie tones. Windows Explorer appeared.

The physical stroking of the laptop and the ritual of opening it, switching it on and watching it boot up seemed to evoke a sense of performance which Ben playfully referenced through his "Duh.Duh.Duh". This response connects the event to other times and places; Ben's singing parodied the sense of anticipation associated with using the laptops for the first time whilst also drawing on intertextual references to suspense movies (or at least their conventions). This short episode was typical of many in which children improvised around the task in hand, importing references to popular culture as they joked and played around texts and the equipment that mediated them. In doing so they made use of their own "cultural resources" (Dyson,2002,107) not just in producing texts but in how they used their bodies

and voices. Such episodes suggest a classroom-ness that is not unitary or bounded for children but always connected to other sites and associated experiences. At the same time, the ways they drew on these cultural resources were shaped by their situatedness in classrooms. Whilst most children observed had access to home computers, resourcing policy and practice meant that the opening of the laptops was a special occasion in school. The children's spontaneous applause and Ben's singing were oddly appropriate in the classroom context – where new resources are rare and classroom technologies often lag behind those encountered at home. Materiality was significant - the boys' positioning at the table and the physical opening of the laptop seemed to prompt their response; sitting next to each other facing the screen, they were positioned as audience as the text appeared. This example demonstrates how children's activities and experiences from different times and locations converge in any moment. Classroom-ness is not defined only by dominant discourses but represents something more hybrid. The inter-relatedness of multiple locations - brought into play partly by children's actions and perspectives - means that classroom spaces are constantly shifting. This brings me to another of Massey's propositions: space is always under construction.

Space as always under construction - siting through improvisation

In describing space as always under construction, Massey notes how practices constantly work to sustain or re-work space and this is evident in children's actions and interactions around digital texts. Some help sustain official spaces. For example, I saw no child deliberately visiting sites other than those selected by the teacher – although it would have been easy to do so- and when they encountered unsanctioned sites, they moved quickly away. However, children also generated unofficial spaces that over-layered or intersected with official ones, for example through:

- *framing interactions around screens* (in line with different purposes and preferences);

- *invading or squatting screens* (through unofficial textual improvisation or error);

- *shifts in patterns of organisation* (as others' on-screen activity prompted physical movement).

I explore each of these below.

Framing interactions around screens

As screens make it easy to see what others are doing, managing public display of texts is an important part of classroom computer use (Merchant,2007; Jewitt and Jones,2010). This was significant to siting as children's responses to the visibility of screens helped them construct certain kinds of spaces, sometimes more and sometimes less individualised than the teacher intended. At times, children worked to minimise public display and create individualised spaces like those associated with writing on paper, e.g. shielding the screen with their arms and using laptop screens as barriers to bound a temporary working space. Even when working in pairs, they sometimes operated as parallel individuals, for example taking turns to type single words or sentences, leaning back and gazing round the classroom when waiting for their turn. They never discussed these arrangements and I saw no disagreements; negotiations about turn-taking were unspoken and seemed built on established routines.

At other times, children worked independently on laptops or netbooks but boundaries between individuals blurred. On one occasion for example, children were working individually on netbooks to write electronic books using a programme containing a template of text-boxes that allowed them to compose stories on a series of pages:

Public texts Y2. One boy, Ashley, had problems logging onto the netbook because he had incorrectly entered the user-name and password.

The boy next to him, David, took control, leaning across to log him in.

David noticed that a girl's story was being projected on the large interactive whiteboard at the front of the class. (She was working at the teacher's computer so her work appeared on the screen). He noticed that she had started writing her story on the space reserved on the template for the title and comments, "She's done it wrong."

Next he looked back at his own screen: "I'm just going to make this text box bigger."

He made the box bigger and then nudged Ashley:

"Hey -look at this." He used a function key to shift rapidly between 2 screens.

A few minutes later, David read what he's written to Ashley, who laughed.

David spotted what others were doing on screens and responded by positioning himself as expert. He did this in different ways, shifting his role from critic to teacher to entertainer. Public display allowed him various resources to recruit to this identity performance – the perceived errors he spotted in others work, the manipulation of his text and his own story. Here we see the reflexive relationship between identity, space and interactions around texts. His comments and actions seemed to generate a social space centred round the group table in which positioning in relation to his peers perhaps mattered more than completion of the task.

Invading or squatting screens

Children's *on-screen* activity also seemed significant to siting. This included various forms of on-screen play, including using function keys to toggle between different screens (as David did), and onscreen doodling and noodling such as varying the size of the log-in box or

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constructing geometrical shapes on the desktop. Sometimes this seemed to be for personal gratification whilst at others about demonstrating a new trick to friends. Again, actions seemed specific to classroom technology use, where children often had to wait for others to log on or locate a site before they received instructions for a task; bandwidth meant that this was often a slow process. Again on-screen display was significant. As they waited, children sought reassurance by glancing at others' screens and checking they were waiting too. Consequently doodling often spread quickly round the class as children spotted others' doodles and created similar ones themselves. This was rarely commented upon and was only ever a minor distraction from the set task.

We could see these spontaneous and ephemeral compositions as a kind of squatting; unofficial texts briefly resting on official homespaces that rapidly dissolved as the lesson moved on and the doodles were obliterated. Relying on abstract shapes and patterns, this play did not seem to subvert official tasks but occurred in the gaps between. Whilst partly enabled by techniques learned in other places, the classroom location seemed significant. These practices emerged as children worked on screen with large numbers of peers with technology.

As children worked on the same internal network, screens were invaded by what others, in the same classroom, did– for example, deleting files, using the wrong log-in code. In some cases this was a cause of irritation. In others it prompted playfulness and banter, as in the following example:

> *Re-naming files Y4/5*. Children were all trying to access the same program. The teacher told them that it had somehow been re-named "lentil" so now everyone needed to click on the 'lentil' icon. One child confessed to having accidentally re-named it. A child from across the classroom shouted: "Good word!" and tried it out in a sing-songy voice: "lentil-lentil." Other children laughed.

Such individual actions and accidents sometimes passed into classroom lore. During one lesson, a boy complained that his laptop had crashed. Another's comment- "that always happens to him"- illustrates how children become familiar with each others' habits, preferences and frustrations. These kinds of interruptions are analogous to those associated with other literacy tools- snapped pencils or lost erasers or rulers. Because children must work together in classrooms with shared equipment, their actions are significant to their peers' text-making practices. These jokes however seemed to contribute to a sense of community as children worked together in an environment where they could see each other's work (on screen) and where the screens they used were not reliably their own (as others could influence what they saw or could do). In this context, unpredictable events were perhaps normalised through humour which helped to sustain established classroom relations.

Shifts in patterns of organisation

At times, disruptions occurred which prompted slight shifts in how children moved around the classroom. The following example (explored in more detail elsewhere- see Burnett,2011b) illustrates how spaces may be reconfigured as texts, bodies, artefacts and environments come together in different ways.

> *Writing a shared text: wind turbines Y4/5*. Having previously discussed arguments for building wind turbines, the children were working in groups, each with a laptop. The teacher made a shared document available via the class blog, containing a table with two headings: "for" and "against". He asked the children to use pre-selected internet sites to research possible counter-arguments and note these on the table. Anyone could amend the content at any time. The table was also projected onto the interactive whiteboard at the front of the class.

At one point, the phrase "block the radar" was added to the table. I watched one group's response to this. It initially caused a stir as they did not know what it meant. Realising that someone else had typed it, Thomas, wandered round until he found the group responsible and asked them to explain. Ben, from the second group, stood up to do so: facing Thomas, he used his arms to represent the turbine and mimed how radar could be blocked by the moving blades. This occurred in the (usually unoccupied) space between the tables. Once happy with the explanation Thomas returned to his original table and passed it onto the others there, repeating the mime Ben had used.

Prompted by the appearance of "block the radar", Thomas left his usual place to search for the author. Whilst online collaboration in out-of-school contexts may often be characterised by anonymity, in the classroom he wanted to know who wrote the comment so he could quiz him about it. The resulting collaboration was not the online collaboration intended by the teacher – Ben found out what he needed from talking rather than through the shared online text. However, it did generate a shift. In many primary classrooms, official spaces are upheld partly through organisation of children's bodies – they sit at certain tables and are permitted to move only for particular reasons and this has implications for who they interact with and how they do so. This event disrupted this; children's activity in the textual dimension prompted interactions that ran counter to usual conventions and seemed to briefly help construct another space. This physical movement also generated affordances for communicating meaning, allowing the meaning of the text to be transduced (Kress,2003) from screen to group discussion to gestural re-enactment as information about the wind turbine was mediated in different ways.

Co-existing trajectories: fluidity and hybridity in siting

The examples discussed so far exemplify the kinds of classroom-ness that emerged as children drew on resources and opportunities available to them- official and unofficial. They emphasise how actions in the material and textual environment are significant to this but also how spaces are hybrid and fluid as different purposes map onto each other in different ways and play out in practice. In this section, I explore another aspect of this hybridity and fluidity, focusing on Massey's third proposition about "co-existing trajectories". Massey's description of place as a "meeting place" is helpful. For her place is not a unitary concept but involves the coming together of different activities and experiences around a particular location. In exploring how this was relevant to these classrooms, I consider how children moved through and between multiple spaces.

Children were at once members of their group, their class, their school as well as other groups linked to interests or perceived learning needs. This was evident in the frequent interruptions and intrusions that occurred; it was common for visitors to arrive – children, teaching assistants, head teachers and so on – to fetch children for activities such as music lessons, reading aloud and play rehearsals. These interruptions emphasised that children were members of multiple communities rendering classroom boundaries more fluid. The expectation that children respond appropriately to these changing boundaries worked to reinforce a particular kind of institutional space: a busy, complex, lively space in which children ultimately do what (and go where) they are told. These changing boundaries however were also over-layered by experiences of other times and places, as in the following example:

> *New Zealand Earthquake (Y5).*The children were sitting on rows of chairs in front of
> the electronic whiteboard. The class was investigating the 2011 New Zealand

earthquake. The teacher began by asking where New Zealand is and one child told her that it is next to Australia. The teacher took a plastic blow-up globe from the shelf behind her and pointed out United Kingdom and New Zealand. As she did this, a child entered from another class and asked if anyone had a PE kit she could borrow. *["PE kit" is a term used commonly in England to refer to the clothes worn for physical education or sports lessons.]*One child volunteered hers, fetched it and passed it over.

Meanwhile the teacher continued with the lesson. She projected Google Maps (http://maps.google.co.uk/) onto the screen in front of the children and zoomed in on New Zealand. One child asked, "Shall we turn the lights off?" The teacher agreed and the child did so. As they looked at the map, the teacher invited the children to make comments about what they saw. Responses included:

> "In Year One we used to have this person called Keaton and he lives in New Zealand and he might be killed."

> "My next-door neighbour- he might be able to move out there."

> "My mum's got an i-pod – she can see the whole world and it spins round."

> "And I went on Google Earth at home and you can play with it."

This incident is situated in different locations. For example (and not exclusively), the children were simultaneously in:

- the teaching area in front of the board (arranged to support the teacher in leading and managing discussion);

- the classroom (associated with shared responsibility for the material environment – illustrated as the child offers to turn off the lights to make visible an image on the electronic whiteboard);

- the school (with its assumptions about communal property as demonstrated by the willing sharing of PE kits);

- area surrounding school (with connections to home and friends);

- the United Kingdom (defined in opposition to distant New Zealand);

- the world.

We could see these locations in ever widening concentric circles: the classroom within the school within the locality within the country within the world. However, we also need to recognise the fluidity with which relationships between these locations were experienced. The blow-up globe and Google Maps were introduced to help explore the wider world beyond the classroom just as Google Earth (earth.google.com) and the i-pod mediated encounters with the wider world at home. These artefacts and texts however were used within local sites and used in ways that reflected and shaped these local spaces; playing on Google Earth or watching a spinning Earth may feel different and mean different things at home and at school.

At the same time, however, we gain insights into how children's felt experiences beyond the physical classroom space were significant to meaning-making within it. Studies of children's perceptions of place have shown us how children's experiences of educational environments are inflected by personal and individual resonances, linked for example to past events and relationships (Clark,2010; Kelloch,2011). These children's responses show how their classroom experience of texts can be similarly inflected. In their responses to Google Maps, the children referred to next-door neighbours and old friends and seemingly made sense of

distant events through felt connections to familiar experience. They also referred to their wider experience of texts (Google Earth) and equipment (the i-pod). Multiple connections and resonances mean that classroom internet use – like other classroom activities- is always patterned by other uses in other sites and other experiences evoked by texts encountered. Classroom literacy practices may be experienced differently for individuals and characterised by intersections between what each brings to each moment (Burnett,2011b). Rather than seeing locations within concentric circles, we could see these circles as constantly shifting, foregrounded differently and intersecting with each other in different ways at different times. Different locations dissolve into each other and merge so that places are felt in different ways.

Conceptualising the classroom-ness of digital literacy practices: boundedness, fluidity and hybridity

Massey's tripartite conceptualisation of space - as "product of inter-relations", "always under construction" and consisting of "coexisting trajectories", I argue, prompts us to acknowledge two seemingly contradictory ideas: that classrooms are distinct sites for digital practices, and that classroom spaces are fluid and hybrid. We can, I suggest, see how these two contradictory ideas intersect by investigating what happens as children interact around digital texts, as in the examples provided above. Interestingly all the incidents described here are incidental and ephemeral. They are not unique or remarkable but the kinds of events that occur every day in classrooms whether or not children are using new technologies. By focusing on such examples we see how children's responses to digital texts are framed by locally negotiated meanings but also connected to other times and places and exist within intersecting and longer trajectories. A focus on classroom-ness can help us see how technology-use reflects and helps construct the fluid and nested spaces associated with

everyday classroom literacy practices. We see how what happens in the material, textual and connected dimensions produce each other in multiple and complex ways.

Leander and McKim, provide us with a variety of ways of conceptualising siting across on/offline spaces. Two of these- boundedness and flow- are particularly useful here. Looking at boundedness emphasises who or what is included in a literacy event and who or what is excluded. A focus on flow foregrounds the "paths of literacy practice" generated as individuals move between different resources, purposes and media. I argue that in exploring classroom-ness we need to recognise both boundedness and flow. A kind of settling occurs as particular aspects are foregrounded and a space is bounded to privilege some people, resources and meanings and exclude others. At the same time, flow is inevitable as each moment resonates with other times and locations.

Of course dominant discourses of literacy education and primary practice as well as frameworks and restrictions introduced by policy- makers are significant to the spaces generated through and around new technologies in classrooms. We see this in various studies of classroom practice, new technologies and teacher identity (Burnett,2011c; Honan,2010; Merchant,2010). However we cannot conflate classroom-ness with regulation. Classroom-ness does not just arise from what is or is not officially sanctioned. It is constructed through classroom practices that are partly inflected by pupils' preferences and purposes. This raises questions about how different spaces – and the identities and activities associated with them - are foregrounded and backgrounded.

In considering this complexity it is useful to re-visit some of the binaries that have patterned our discussions around digital literacy practices. These include those linked to where things take place, such as relationships between:

- global/local (Prinsloo, 2005; Barton, 2010);

- in-school/out of school (Marsh,2003);

- on-screen/off-screen (Leander and McKim,2003).

Also, our perceptions of the status and power relations associated with different kinds of activities:

- institutional/vernacular (Barton and Hamilton,1998);

- official/unofficial (Maybin,2006;Dyson,2002).

And in turn our perceptions about how activities are experienced and enacted:

- individual/collaborative;

- material/virtual (Hine,2000).

As has been argued (Bulfin and Koutsogiannis, 2012), such binaries can over-simplify our understanding of the locatedness of literacy. Much has been written about the slippery relationship between the global and local and how the "global" is, as Livingston (2010,781) writes, "'local" at every point." Prinsloo (2005) explores how new literacies are recruited as 'placed resources', noting how new technologies are used in ways that are site specific but also also inflected by global movements. Barton (2010) meanwhile argues that the local is always global- as literacies flow across sites mediated through equipment and networks that work across global domains. A focus on the *classroom-ness* of digital literacy practices highlights a similar kind of slipperiness in relation to the global/local and other binaries. It helps us see how events at school are inflected by what happens elsewhere and how the official and unofficial mingle in children's digital practices. This in turn illuminates how power relations associated with different identities – as pupils, as peers, as friends- intersect

in different ways and children are positioned differently- and orientate themselves as readers and writers differently- at different moments. It may also help us see how opportunities for collaboration present opportunities to achieve individual purposes and how individual actions can generate new ways of working together. Perhaps most pertinently we may also see how, as Massey (2005,96) writes, "The 'virtual' world depends on and further configures the multiplicities of physical space"; we see the "groundedness of virtuality" - as online environments are inevitably experienced within the material classroom and through embodied meaning-making– but also how children's responses to what happens online and onscreen may trigger different relationships with the physical environment.

Edwards, Ivanic and Mannion's notion of "scrumpled geographies" (2009,496) is useful here; they note how different possibilities are folded into any event. From this perspective, we could see places as folded into places, so that different spaces for literacy are latent within each space being produced. For Edwards et al, what is interesting is "the work that goes into mobilizing and stabilizing certain situations as contexts" (2009,496). This is important as it has significance for how children position themselves in relation to digital texts in the classroom. A spatial perspective on classroom-ness I suggest, provides us with a lens through which to examine and evaluate this mobilising and stabilising.

Conclusion

Given the current policy context it is imperative that we find ways of conceptualising and investigating the complexity of meaning making around digital texts in educational contexts. National policy statements have called for radical revisions to curriculum and provision: for example in the United Kingdom, the Secretary of State for Education has argued for using

new technology as "a disruptive force. It innovates, and invents; it flattens hierarchies, and encourages creativity and fresh thinking" (Gove,2012). In the United States, The National Education Technology Plan (2010,8) calls for technology to "enable 24/7 and lifelong learning." Such ambitious statements, however, need to be tempered by ecological understandings of educational practice which explore what happens when different policies, preferences and priorities intersect.

A focus on classroom-ness offers a way of exploring such intersections. It provides a lens through which to critique what happens in educational contexts and consider: who or what is included or excluded from any practice; what is seen to count in any literacy event; and how these different values and perspectives intersect. It alerts us to the flows that occur across on/offline and on/offscreen literacy practices and the kinds of experiences and feelings made available as this happens. This draws attention to how official and unofficial practices and identities merge with each other in different ways and prompts us to question who is empowered by these spaces and what modalities they are able to recruit to meaning-making. Of course there is potential to go much further than I have gone in my small scale study: to document how individuals are involved in siting over time, the kinds of spaces they co-construct and how they position themselves and are positioned by others in relation to them. There is also the potential to look more closely at how specific technologies are utilised – and the different ways that their affordances are used to reflect and help construct different kinds of spaces. More detailed and extended ethnographic studies, including fine-grained multimodal interaction analysis (Jewitt, 2009), will be useful here.

If we accept that there is a spatial dialectic – if we see relationships between space and practice as mutually constructive - then attention to space can also provide new directions for action (Soja,2010); as Massey (2005) argues, how we think about space matters to how we

see the world and our role within it. A focus on the heterogeneity of space can help us understand barriers but also recognise new pedagogical possibilities. It prompts us to consider how we might draw positively from classroom-ness. Rather than seeing classrooms as inevitably impoverished sites for digital practices – where access and use is bounded and curriculum constraints limit what is possible- we can focus on developing those distinctive dimensions of classroom-ness that help generate productive sites for engaging with new media. These may include the sense of community and shared engagement generated as large groups of children work alongside adults in classrooms and which can be used to foster experimentation, collaboration and creativity. It also includes recognising how spaces constantly shift as a result of children's diverse experiences, perspectives and relationships and identifying the new possibilities that emerge as this happens. This is increasingly important as we move towards greater integration of mobile technologies, media rich virtual environments and opportunities for participation (Jenkins,2006) that will further challenge how we see classrooms and how we plan and organise for learning.

References

Barton, D.2010.People and Technologies as Resources in Times of Uncertainty. *Mobilities* 6,no. 1:57-65.

Bourdieu, P. 1990.*The Logic of Practice*. Cambridge: Polity Press.

Allison, G.W. 1999.The implications of experimental design for biodiversity manipulations. *American Naturalist* 153, no. 1:26–45.

Barton, D. and Hamilton, M.1998.*Local Literacies*. London: Routledge.

Barton, D. 2007. *Literacy: An introduction to the ecology of written language*. Oxford: Blackwell.

Bulfin, S. & Koutsogiannis, D.2012.New literacies as multiply placed resources: expanding perspectives on young people's literaciesacross home and school. Language and Education. 26, no.4:331-346.

Brandt, D. and Clinton, K.2002.Limits of the Local: Expanding Perspectives on Literacy as a Social Practice. *Journal of Literacy Research* 34, no.3:337-356.

Burgess, A. and Ivanic, R.2010.Writing and Being Written: issues of identity across timescales. *Written Communication* 27,no.2:228-255.

Clark, A.2010.In-between spaces in postwar primary schools; a micro-study of a 'welfare room' (1977-1993). *History of Education* 39, no.6:767-778.

Comber, B.2007.The work of women teachers in primary literacy education: knowing and doing.*English in Education* 41, no.2:7-26.

Davies, J. and Merchant,G.2009.*Web 2.0 for Schools: Learning and Social Participation.* New York, NY: Peter Lang.

Dixon, K. 2007.A space to write: the construction of the writing subject in early schooling. *English Academy Review* 24, no.2:85-101.

Dyson, A.H.2002.*The Brothers and Sisters Learn to Write: popular literacies in childhood and school cultures*. New York: Teachers College Press.

Edwards, T., Ivanic, R.and Mannion, G. 2009.The scrumpled geography of literacies for learning.*Discourse: Studies in the Cultural Politics of Education* 30, no.4:483-499.

Facer, K.2011..*Learning Futures: Education, Technology and Socio-Technical Change.* London: Routledge.

Foucault, M.1975.*Discipline and Punish: the birth of the prison*. Trans. A.Sheridan. New York: Vintage.

Gove, M..2012.Speech at Bett Show. Accessed 17th July 2012 at URL:

http://www.education.gov.uk/inthenews/speeches/a00201868/michael-gove-speech-at-the-bett-show-2012.

Hine, C.2000.Virtual Ethnography. London:Sage.

Holland, D. and Leander, K. 2004.Ethnographic Studies of Positioning and Subjectivity: An Introduction. *Ethos* I,no.32:127-130.

Honan, E. 2010.Mapping discourses in teachers' talk about using digital texts in classrooms. *Discourse: Studies in the cultural politics of education* 31, no.2:179-193.

Jenkins, H.2006.*Confronting the Challenges of Participatory Culture. Chicago: MacArthur Foundation*. Accessed February 22nd 2012, at URL:

http://digitallearning.macfound.org/atf/cf/%7B7E45C7E0-A3E0-4B89-AC9C-E807E1B0AE4E%7D/JENKINS_WHITE_PAPER.PDF.

Jewitt, C.2009.(ed.)*The Routledge Handbook of Multimodal Analysis*. London: Routledge.

Jewitt, C. and Jones, K.2005.Managing Time and Space in the New English Classroom. In *Materialities of Schooling, ed. M*.Lawn and I. Grosvenor, I., 201-214. Oxford: Symposium Books.

Jewitt, C., Bezemer, J., Jones, K. and Kress, G.2009.Changing English? The impact of technology and policy on a school subject in the 21st century. *English Teaching: Practice and Critique* 8,no.3:8-20.

Kellock, A.2011.Through the lens: accessing children's voices in New Zealand on well-being. *International Journal of Inclusive Education* 15, no.1:41-55.

Kress, G.2003.*Literacy in the New Media Age*. London: Routledge.

Lankshear, C. and Knobel, M.2011.*New Literacies: Changing Knowledge and Classroom Learning* (3rd ed.). Buckingham: Open University Press.

Lawn, M. and Grosvenor, I.2005.(eds.)*Materialities of Schooling*. Oxford: Symposium Books.

Leander, K.and McKim, K.2003.Tracing the Everyday "Sitings" of Adolescents on the Internet: A Strategic Adaptation of Ethnography across Online and Offline Spaces. *Education, Communication and Information* 3,no.2:211–40.

Lefebvre, H.1991.*The Production of Space*. Trans. D. Nicholson-Smith. Oxford: Blackwell.

Livingston, D.2010.Keeping Knowledge in Site. *History of Education* 39, no.6:779-785.

Livingstone, S.2009.*Children and the Internet*. Cambridge: Polity Press.

Marsh, J.2003.One Way Traffic: Connections between literacy practices at home and in the nursery. *British Educational Research Journal* 29,no.3:369-382.

Massey, D.2005.*For Space*. London: Sage.

Mavers,D.2007.Semiotic resourcefulness: A young child's email exchange as design. *Journal of Early Childhood Literacy* 7,no.2:155-176.

Maybin. J.2006.*Children's Voices: Talk, Knowledge and Identity*. Basingstoke: Palgrave.

Merchant, G.2007.Writing the Future in a Digital age. *Literacy* 41,no.3:118-128.

Merchant, G.2010.3D virtual worlds as environments for literacy learning. *Educational research* 52,no.2:135-150.

Miller, D.2010.*Stuff*. Cambridge: Polity.

Nespor, J.1997.*Tangled Up In School: Politics, Bodies, and Signs in the Educational Process*. Abingdon: Routledge.

Ormerod, F. and Ivanic, R.2002.Materiality in children's meaning-making practices. *Visual Communication* 1,no.65:65-91.

O'Toole, P.2010.Locating space in qualitative research: questioning culture through the corporeal. In *New Approaches to Qualitative Research: Wisdom and Uncertainty, ed.* M.Savin-Baden and C.H.Major, 12-130. London: Routledge.

Pahl, K. and Rowsell, J.2012.Literacy and Education. London: Sage.

Becta.2009.*Harnessing Technology: Next Generation Learning 2008-14*. [Online.] Accessed 6th April 2010 at URL:

http://publications.becta.org.uk/display.cfm?resID=37348&page=1835 .

Partnership for 21st Century Skills.2007. *Partnership for 21st Century Skills Framework*. Accessed 22nd February 2012 at URL: http://www.p21.org/ .

Prinsloo, M. 2005.The new literacies as placed resources. *Perspectives in Education* 23,no.4:87-98.

Rowe, D.W. 2008.The Social Construction of Intentionality: Two-Year-Olds' and Adults' Participation at a Preschool Writing Center. *Research in the Teaching of English*, 42,no.40: 387-434.

Schutz, A. and Luckman, T.1973.*The Structures of the Life-World*. Trans. R.M. Zaner & T.H. Engelhardt. London: Heinemann.

Scollon, R.2001. *Mediated Discourse: The nexus of practice*. London: Routledge.

Soja, E.1996.*Thirdspace: Journeys to Los Angeles and Other Real and Imagined Spaces*. Oxford: Blackwell.

Street, B. 1984. *Literacy in theory and practice*. Cambridge University Press.

Street, B. 1995.*Social Literacies: critical approaches to literacy in development, ethnography and education*. Harlow: Pearson Education.

United States Department of Education (USDE).2010. *Transforming American Education: Learning Powered by Technology. Draft National Educational Technology Plan 2010*. Accessed 22nd February 2012 at URL http://www.ed.gov/sites/default/files/NETP-2010-final-report.pdf .

Walsh, M.2011. *Multimodal Literacy: Researching Classroom Practice.* Sydney: e:lit.

Acknowledgements

Table 1 Overview of visits

Year group	Equipment	No. of visits	Sample Activities
Year 2 (aged 6-7)	Class sets of Wi-fi netbooks booked out by class	4	Creating shared texts, e.g. concept map Creating Interactive books Planning multimedia texts
Year 4/5 (aged 8-10)	Class set of Wi-fi laptops booked out by class	4	Researching geographical terms & posting suggestions on Primary Wall (http://primarywall.com/) Creating shared text Creating texts and posting on class blog Using online film clips as stimulus for writing
Year 5 (aged 9-10)	Class sets of Wi-fi netbooks booked out by class	4	Researching issues and events using Internet Collaborating to produce PPt presentations based on research
Year 6 (aged 10-11)	3 networked PCs in class Class set of PCs in computer laboratory	3	Researching issues and events using Internet Reading blogs on internet Using online film clips as stimulus for discussion