Why it's not all about the learner: a sociomaterial account of students' digital literacy practices

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Abstract

Digital literacies are seen as an important area of current research and practice, but most accounts of this rely on capability or competence models of "digital literacy". These decontextualised, cognitive accounts ignore the insights of New Literacy Studies (e.g. Lea & Street, 1998), which have shown that focusing on a 'free floating' learner, ignoring settings, resources and cultures, and failing to explain important aspects of how literate practice is achieved and enacted.

Adopting a sociomaterial account of learning provides an alternative to these free-floating narratives about student literacy. From this perspective, 'literacy' is an achievement that involves the successful coordination of human and non-human actors – including teachers, other learners, pupils, devices, texts and so on. Drawing on work undertaken as part of a JISC-funded project, we will present a critique of mainstream 'learner-centred' accounts of digital literacy; outline the theoretical framework on which our work has been based; and present a series of case studies that show how an individual's ability to act in a digitally literate way depends on much more than an assumed set of stable, internalised qualities. These cases involve data collected by students through multimodal journalling over a period of 9-12 months, and from in-depth interviews that explored what these meant to them.

This analysis shows that learners' practices are shaped in important ways by the social and material environments in which they are enacted, and that learners are engaged in an ongoing, improvisatory process of both adapting to the environments in which they work, whilst also adapting these environments.

Keywords

Digital Literacies, Sociomateriality, Actor-Network Theory, Higher Education

Introduction

> Removing the agency of texts and tools in formalising movements risks romanticising the practices as well as the humans in them; focusing uniquely on the texts and tools lapses into naïve formalism or techno-centrism. (Leander and Lovvorn 2006: 301)

This paper develops a critique of dominant contemporary accounts of "digital literacies". It identifies recent developments in this discourse, and examines the assumptions and characteristics of two popular models. These are then considered in relation to two theoretical traditions of work, New Literacy Studies and Sociomateriality. This examination is followed by data from an empirical study that involved longitudinal, multimodal data production and interviews with a dozen students from one Higher Education Institution. The analysis of this data shows that digital literacy cannot be adequately understood from a purely decontextualized, cognitive account of learners, but needs to account for the material and social networks in which practices are enacted.

Digital literacies

It is generally accepted that the term 'digital literacy' was coined by Glister, who defined it as '...the ability to understand and use information in multiple formats from a wide range of sources when it is presented via computers' (1998:1). The concept has subsequently been developed by a range of researchers and commentators (e.g. Lankshear & Knobel 2008, Carrington & Robinson 2009, Goodfellow & Lea 2013). It is beyond the scope of this paper to provide a comprehensive literature view of this complex field; instead we will focus on recent attempts to define student digital literacies, which have done so primarily in terms of taxonomies or lists of features.

In recent years, several models of what constitutes 'digital literacies' have arisen in the sector, and have become influential in shaping policy, development and research. In many ways these represent an advance in mainstream thinking about this very complex area of student practice, shifting the focus towards the learner as opposed to the technology. However, we argue that in seeking to define digital literacies in terms of capabilities or features of learners, the field is in danger of losing sight of important aspects of student engagement with technologies as revealed by recent research.

Our point of departure for this discussion is the definition provided by the European Union-funded DigEuLit project, which has proved influential in subsequent attempts to break the concept down into constituent parts:

> Digital Literacy is the awareness, attitude and ability of individuals to appropriately use digital tools and facilities to identify, access, manage, integrate, evaluate, analyse and synthesize digital resources, construct new knowledge, create media expressions, and communicate with others, in the context of specific life situations, in order to enable constructive social action; and to reflect upon this process. (Martin & Grudziecki, 2006: 255)

This is a broad definition, appearing to cover all areas of contemporary digitally-mediated life, as opposed to restricting itself to notions of meaning. In an attempt to encapsulate what is meant by the term, Martin and Grudziecki employ a long list of active verbs related to 'digital resources', which is a subtle shift away from Glister's 'information'. However, their emphasis remains on the creation of knowledge and on communication, with an acknowledgement of the connection between this and 'social action'. Building on this EU definition, Beetham's (2010) developed a model as part of a scoping exercise for a large programme of UK government-funded development in universities (JISC 2011). As a result, it has become particularly influential in the UK, providing the following definition: 'Digital literacy defines those capabilities which fit an individual for living, learning and working in a digital society'. What is striking about Beetham's definition is the continued expansion of its scope, with the term no longer focused on digitally-mediated meaning-making, but on all spheres of activity in 'a digital society'. The associated model is structured in four layers which are seen as resting on each other (often represented as a pyramid), with 'access' at the base, seen as the first step in "a developmental sequence" (Sharpe & Beetham, 2010: 88), to be followed by 'skills', 'social practices' and finally 'identity'.

This model is insightful in many respects, as it acknowledges the multiple dimensions of this complex phenomenon, and the need for practical access and activities for engagement. It is worth focusing on the use of the word 'skills', however, which is a controversial term to employ in a definition of 'literacies': the foundational definition of 'academic literacies' (Lea and Street 1998) rest on explicit rejection of the then-prevalent 'skills' model of student communication, which is critiqued as insufficiently focused on social, disciplinary and individual practices and identities. It is also noteworthy that these elements are constructed as (con)sequential and hierarchical in their nature, with one seen as resting on another in what is appears to be a causal configuration. The assumption also seems to be that each of these are steps is taken in ascending order of complexity, with identity appearing almost as a 'product' of the preceding levels of engagement. Whilst this may appeal to common-sense notions of what these concepts denote, it could equally be argued that access flows from identity or cultural capital (Bourdieu 1986). Additionally, to separate 'social practices' from other categories is highly problematic, as this term surely subsumes all the others - for example access or lack of access can only take place as part of social practice. A further point of critique is that identity work permeates all aspects of digital engagement, whether 'basic' or 'advanced'. Finally, the development of the model from prior empirical work has, arguably, involved category shifts and changes of emphasis that have not been theoretically or empirical driven. For example, the original derivation of the levels was a response to learners' accounts of enablers and barriers to their development (Sharpe *et al*, 2009: 16). Further, the pinnacle level was expressed in terms of learners' conceptions, and labelled 'creative appropriation' rather than 'identity'. The shift to identity was justified partly in relation to Maslow's hierarchy of needs by drawing an analogy with self-actualization, with the original label becoming less and less visible over time. This development was not driven nor explicitly informed by theories of subjectivity or identity, however.

Another model which has arisen in recent years was formulated by Belshaw (2011) as part of a doctoral study, who proposes 'Eight Elements' of digital literacies, namely: Cultural, Cognitive, Constructive, Communicative, Confident, Creative, Critical, Civic. This first noteworthy point is that his use of the term 'essential elements' appears to explicitly reference the periodic table of chemical elements, as can be seen this slide taken from a presentation available online (Figure 1; Belshaw 2012):
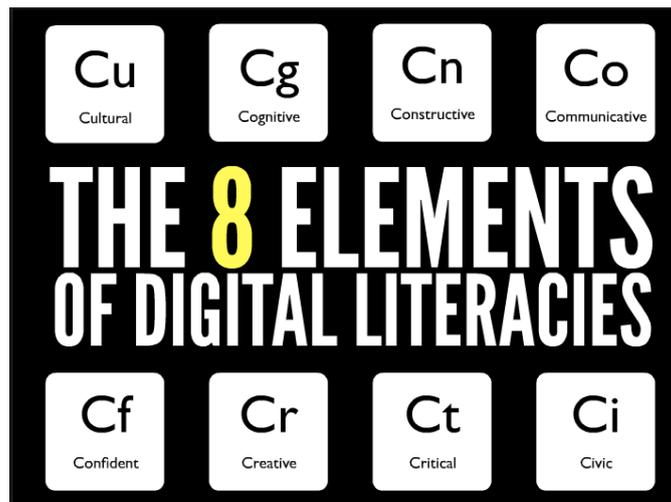
Figure 1: Belshaw's 8 elements of digital literacies

Although Belshaw is employing a lighthearted and engaging metaphor, we argue that his choice is nonetheless revealing and worth exploring in more depth. It rests on the presumably taken-for-granted notion that Digital Literacies is a composite or substance made up of a combination of all of these elements, which are posited as essential and therefore presumably mutually exclusive and amenable to precise definition and delineation. This invites contestation, for example it could immediately be argued that the concept of 'cultural' contains the notion of 'civic'. The terms used in the model are in fact all highly blurred and all open to multiple definitions – and in that respect are very far from 'essential'. It is also worth noting that the 'elements' all consist of a wide-ranging set of adjectives with refer to qualities often regarded as positive and desirable in students in higher education.

In this regard, the list is reminiscent of rather aspirational neoliberal 'graduate attributes', and focuses on the student as human subject as opposed to practices. This raises questions regarding the status of practices that incorporate some but not all of the elements. According to this model, for example, an under-confident student writing an essay using online sources is not engaged in digital literacies, as one of the 'essential elements' is missing. Belshaw's model could be interpreted as an ideological wish-list that positions a student as a particular kind of subject, but does not refer to meaning-making practices - or indeed the digital - directly.

These models, and others like them, exhibit several similarities. Firstly, despite having been derived from empirical research, arguably the nuanced nature of the data has been rendered less visible in the move to abstract 'transferable' models. This creates an impression that digital literacies are in some sense quantifiable, relatively stable, generic and transferable entities, i.e. taxonomic. As a result such models can create an impression of digital as abstract entities, whose defining features then tend to be identified as residing in the individual. This we would argue is a particular issue when such frameworks come to be associated with 'graduate attributes'.

It is also worth noting that the models are composed of a combination of cognitive, attitudinal, capabilities and attributes. Aspirational, qualitative adjectives are used, which we would argue can be used to support an underlying ideology of the graduate as a quality-assured 'product'. Ironically, given that much of the original work was learner-centred, there is then a danger that the ongoing use of such models can result in learners and their situated digital practices being occluded. In order to theorise our critique, we will refer to two bodies of literature and theory in the following two sections - New Literacy Studies and Actor-Network Theory.

New Literacy Studies

The notion of 'academic literacies' was proposed by Lea & Street (1998) as an explicit challenge to the dominant 'skills' paradigm of student writing and communication. This perspective came out of a broader strand of work known as New Literacy Studies (NLS) (Barton, 2007), and sees student writing and other forms of communication as situated social practices centred on meaning-making. Textual practices of all kinds (linguistic, verbal, multimodal involved in reading, writing and speaking) is positioned as central to students' study practices and lives. In this perspective (which has its roots in social anthropology and applied linguistics),

cultural, disciplinary and individual practices and texts are seen fundamentally unstable and in flux. They are also seen as context-specific and under ongoing contestation. The emphasis here is on social actors, involved in joint emergent via struggles for meaning-making which are seen as co-constitutive of identities and learning. This reflexive relationship between textual media and knowledge practices in higher education has been recognised in media theory (e.g. Kittler 2004). Since the academic literacies model was developed, the media systems of the university have changed significantly, leading to a situation where the material campus is now largely saturated with digital mediation, and the status of 'face-to-face' as a non-digital category has been placed in radical doubt (e.g. Gourlay 2012). There has been a recognised need to explore the ramifications of devices and digitally-mediated semiotic practices on meaning making. NLS has responded to this with a series of studies and publications which seek to apply this theoretic perspective to the digital (e.g. Lankshear & Knobel 2008, Goodfellow & Lea 2013). An NLS definition illustrates the contrast between this conception and those described above. Gillen and Barton define digital literacies as 'The constantly changing practices through which people make traceable meanings using digital technologies' (2010: 9). The emphasis here is still on situated social practices and meaning-making, rather than decontextualized characteristics of learners.

We will argue with reference to our data that this model reflects more accurately the experiences of students engaged with technologies in their studies, and will propose that this emphasis on situated meaning-making should be present in mainstream definitions and accounts of digital literacies. However, we would like to add a further theoretic strand to this critique. Although the NLS perspective restores the focus on meaning-making and situated practices, arguably, it does not adequately theorise digitally-mediated semiotic practices, in particular the relationship between the student, text and device, the multiply distributed nature of digital literacies and the materiality of literacy practices (Gourlay, Lea & Hamilton in press).

Sociomaterial perspectives

> If you can, with a straight face, maintain that hitting a nail with and without a hammer, boiling water with and without a kettle...are exactly the same activities, that the introduction of these mundane implements change 'nothing important' to the realisation of tasks, then you are ready to transmigrate to the Far Land of the Social and disappear from this lowly one. (Latour 2005: 71)

In this quote, Latour prompts us to notice the crucial but often overlooked role of material objects - or 'nonhuman actors' - in everyday processes. These material assemblages are similarly overlooked in educational theory, as Fenwick et al point out:

> Humans, and what they take to be their learning and social process, do not float, distinct, in container-like contexts of education, such a classrooms or community sites, that can be conceptualised and dismissed as simply a wash of material stuff and spaces. The things that assemble these contexts, and incidentally the actions and bodies including human ones that are part of these assemblages, are continuously acting upon each other to bring forth and distribute, as well as to obscure and deny, knowledge. (Fenwick et al, 2011: vii)

Latour sees technologies as 'mediators', as opposed to intermediaries. For him, an intermediary is '…what transports meaning or force without transformation: defining its inputs is enough to define its outputs', while mediators 'transform, translate, distort, and modify the meaning or the elements they are supposed to carry' (Latour 2005: 39). This perspective seems to offer theoretical purchase on the materiality of devices and technologies in a way which NLS has not done until now (see Gourlay, Hamilton and Lea forthcoming). This allows us to see digital literacies as emergent through networks of human and nonhuman actors and constitutive of 'context', spaces and places.

Methodology

In order to study students' use of digital technologies in their studies, a nested design was adopted, as part of a JISC-funded project undertaken at a large UK postgraduate institution specialising in Educational research. The student body at the institution is predominantly mature and postgraduate, and many combine study with work and family responsibilities. Students are from diverse countries of origin and a broad range of education cultures. Most have been out of formal education for several years. Consequently, they may never have used the kinds of digital technologies that are regarded as mainstream in higher education, although they have well-established repertoires of digital practices from personal or professional settings.

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The first phase of research, a secondary analysis of existing data on student satisfaction, identified preliminary areas of practice and concern, but lacked detail. However, it highlighted differences in experience between groups of students following distinct programmes of study. This was used to design the second phase: four focus groups, one each with students following PGCE courses (the UK qualification to teach in compulsory education), taught Masters courses, taught Masters courses studied at a distance, and doctoral students. Participants were recruited to ensure diversity of gender; age; home/EU or international and full-time/part-time status. All participants were studying education-related topics (including pedagogy, the economics of education, educational development, etc). Each focus group opened by inviting students to sketch the places in which they studied and the resources they used; this formed the point of departure for the focus group discussions. Transcripts from the focus groups were analysed thematically, revealing that study took place in diverse settings; using a broad array of technologies; and involved extensive use and production of (multimodal) texts, with the library playing an important role in the provision of these. This was used to structure the third phase of work, which forms the basis of the analysis offered in this paper.

The final empirical phase of the project was a longitudinal study. Three students from each group (see Table 1) assembled multimodal journal records of their day-to-day practices and interactions with texts and technologies in a range of settings, producing images, videos and textual notes of everyday objects and processes. These were discussed in an iterative series of 3-4 interviews, over a period of around nine months, so that the images and artefacts served not only as objects of analysis, but also as stimulus for in-depth exploration of subjectivities, challenges and issues, following an 'Interview plus' approach (Mayes, 2006). (Students studying at a distance were interviewed over Skype, with discussions referring to previously-shared digital resources.) Participants were encouraged to focus on the 'messy' micro-level day-to-day lived activities, networks and the material/spatial aspects of practice, in order to move beyond neat, decontextualised accounts such as those generated by stand-alone interviews, which rely on self-report and may lead to abstraction (Gourlay 2010).

Table 1: Participants in the journaling study

Pseudonym	Category	Gender	Nationality
Bokeh	Distance Masters	M	British
Danny	Distance Masters	M	British
Django	PhD	F	British
Faith	PGCE	F	Taiwanese
Frederick	PhD	M	German
Juan	Masters	M	British
Lara	Distance Masters	F	British
Louise	PGCE	F	British
Nahid	Masters	M	Bangladeshi
Polly	PGCE	F	British
Sally	PhD	F	British
Yuki	Masters	F	Japanese

The first interview explored students' current practice, invited a 'digital biography' covering historical uses of technology for learning and introduced the devices to be used for data collection. The 'Interview plus' component for this initial discussion involved asking students to draw maps of their study practice, building on the approach used for the focus group, and then developing this through the interview by asking questions about the networks and devices used in different domains; the associations between spaces, tasks and times; the resources drawn upon; feelings of support, control or frustration; and so on. The subsequent interviews focused on themes and issues identified in the focus groups, including use of the VLE and the library, and the consumption and production of study-related texts. Across the course of the interviews students took increasing responsibility for curating, presenting and analysing their own data, adding a valuable layer of interpretation to the dataset. The interviews were transcribed, and transcripts were mapped to the images, videos and resources that students discussed. This multimodal dataset was analysed thematically, drawing on visual methodologies (e.g. Rose, 2012) to interpret images and videos further. The study received institutional ethical clearance and followed approved procedures for informed consent, including guarantees of anonymity and confidentiality, and the right to opt out at any point.

Findings

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Neither free-floating nor taxonomic

Students' interviews provided powerful accounts of the ways in which their ability to act in meaningful ways were impeded by the situations in which they were placed. For example, one PGCE student described how her ability to print materials for a class was impeded not through some lack of skill, but through issues of professional identity (and the cultural capital that represents) that set priorities for access:

> In my school […] our staff room was equipped… one, two, three, four, five, six, seven… seven computers now we can use and only one of them attached with a printer. So, actually we've got six PGC students over there, so it's, kind of, everybody wants to get to that computer where you can use the printer. […] So, it, kind of, sometimes feels a bit crowded. And when the school staff want to use it, well, okay, it seems like we are the invaders, intruders? (Faith, Interview 2)

Moreover, the participants identified dozens of resources (such as iPads or laptops) and services (such as library databases or Google Scholar) relevant to their studies; their accounts showed that any functional, taxonomic list would be partial (other students may well use different resources and services), over-inclusive (for example, GPS was relevant to students undertaking fieldwork but not others), plagued by problems of granularity (should Facebook, Academia.edu and Twitter all be counted as 'social networking', or classified separately?) and time-bound (expertise in earlier versions of SPSS was no guarantee of being able to use current versions).

More than just human

The use of maps and images to ground the interviews generated rich accounts of a range of actants that were attributed with agency in relation to their studies.

> My third half of my brain is Google scholar. (Frederick Interview 2)

This kind of example led to rich descriptions of the kinds of heterogeneous networks that students relied upon – and were implicated in – in order to study successfully.

> …It's not necessarily the working with, sort of, the traditional practices, but much more about the, you know, our physical bodies in space, rather than… And thinking about online environments as being… the iPhone, or whatever it is, connected to a projector, or working then with the iPad, and connecting, so you've got this kind of circuit within a physical space. (Django Interview 1)

(The issue of how these networks were created will be returned to subsequently)

Following the principle of symmetry, not all such actants were viewed positively; some participants provided accounts of struggles or dependency rather than enhancement.

> I think they (the technologies) control me as well, because I can't really do anything without them (Faith Interview 1)

Some participants went so far as to describe technologies as malevolent, raising particular concerns about the ways in which they would take and distribute personal information, for example.

> I feel like, also that Google is equally watching you. You know, they're all watching you, they're all trying to sell you things […] You know, I don't want my friends to spy on me, I don't want my friends to know what I listen to on YouTube. (Sally Interview 1)

Not just digital

Whilst students' accounts presented a picture of study as digitally saturated, non-digital resources remained important. Some students found that they supported particular practices, such as annotation, better than digital technologies currently do; they also carried emotional resonance for them.

> My favourite way of studying something is sitting down with a book and…a pen and some yellow paper and taking notes…. And then I will use the technological side as well, because… Yes, I like combining the two, but I also like to be… the demarcation lines between them, you know, if

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I, if I have a reading to do then I can, then I almost, I invariably print it off and highlight. (Juan, Interview 1)

This 'demarcation' was important: moments at which texts passed from printed to digital, and from digital to print, were important in the study process. These included shifts in practice (such as moving from skimming to reading in depth) and in status (such as from raw data to a form suitable for analysis; or from draft to final, bound and submitted dissertation).

Co-constituted spaces

The sketched maps and images created as data by participants drew attention to the range of spaces that they used for study. As with texts, both digital and physical spaces remained important, with moves between the two signalling important moments of transition. Again, participants described emotional responses to different environments.

I'll only work at the computer usually to actually do the final part of writing an essay. I enjoy… the image of being, sort of, in a dusty, you know, sort of, wooden shelved, kind of, old library, where it's, sort of, cosy and warm, that's, you know, I like that and that's a part of the experience of studying that I enjoy. (Juan, interview 1)

A recurrent theme was well summed up by the title one participant gave to her montage of images (Figure 2): "less bound by space".
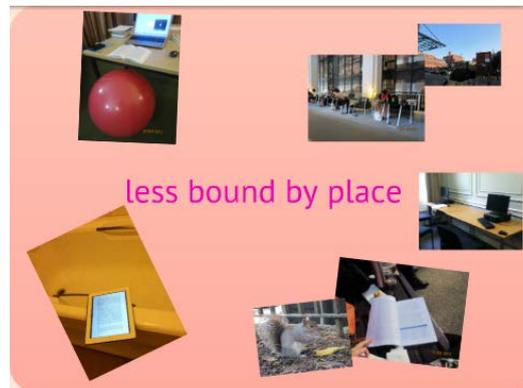
Figure 2: A students' curated image data showing the variety of places where they study

For some of the participants, the portability of devices meant that they could create spaces for study in lots of different locations; this led to a romanticising of the digital as transcending the physical.

That's really interesting how much I use the iPad for a start everywhere and anywhere...And I have the information there all the time constantly, and I just feel as though I don't have to be anywhere physical at all anymore... (Django, Interview 3)

However, as the frequent accounts of studying on public transport demonstrated, students were not 'free' of spaces; instead, they were better able to create study spaces, to engineer the conditions they needed to study. This usually involved digitising or collating texts, carrying them around, then unpacking them in new locations (e.g. getting out an iPad on a train) so as to make use of them. This sense of being "less bound" was achieved through careful preparation and the purchase of devices (iPads, laptops, ring binders) that helped curate resources. Moreover it was not always successful; participants who used cloud-based file storage were not always able to access this whilst on the move, for example.

Discussion

Mainstream accounts of digital literacy create an impression of learners as 'free floating', romanticised agents, unencumbered by material concerns. These accounts have been valorised as learner-centred. While this focus on learners is undoubtedly important, the critiques advanced in the first section of this paper, drawing on NLS and

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Actor-Network Theory, suggest that accounts that ignore the settings in which learners try to study can risk inadvertently promoting a neo-liberal agenda that frames graduates as individualised products.

The study presented here used qualitative data generated by and with students, which in our analysis we argue undermines the validity of such decontextualised accounts. Analysing these empirical cases using concepts drawn from sociomaterial theory demonstrated that, for these students, successful study involves the creation and coordination of sociomaterial assemblages that span material and digital alike. This was particularly visible in the acquisition, curation, destruction and creation of texts, especially as part of assessed work. While existing spaces (the library, home) were confirmed as important sites for study, participants' accounts of the adaptation of existing spaces – whether a seat on a train, a laptop on a sofa or books on a library desk – emphasised the dynamic, improvised and even ephemeral nature of these achievements.

In doing so, it demonstrates that learner-centeredness need not lead to neglect of sociomaterial considerations. This has implications for future work: close study is needed of students' experiences, including the resources they work with and the settings they create.

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