# “I wouldn't be able to graduate if it wasn't for my mobile phone.” The affordances of mobile devices in the construction of complex academic texts

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# Abstract

This is a case study of one student’s mobile device use in HE. We draw on data generated by extended interviews to illustrate the learning practices and dispositions the student, now a co-author, evidenced with his smartphone and other devices whilst producing a third-year undergraduate assignment. We describe the process of assembling a complex academic text across multiple mobile internet-enabled devices. We aim to illuminate some contemporary mobile learning practices, and hence contribute to the discourse on pedagogy, assessment, and mobile learning in HE. The paper is timely because although smartphones and internet access are near-ubiquitous in universities, there is relatively little extant research which reports in detail on the ways in which students actually use these technologies in their everyday learning and lives.

## Introduction: background to the study

This case study of one student’s mobile internet-enabled device use in HE examines the dispositions and practices used across multiple devices in the production of a complex piece of assessed academic work. It is helpful to begin by explaining the origins of the study. During the academic year 2014-15, Author O was Year Lead on the Special Educational Needs major component of Author M’s undergraduate Education degree. One of the assignments M completed involved producing an academic conference-style A1 poster communicating a vision of inclusive education. This challenging assessment required him to distil three years of learning onto a sheet of A1 paper, in a way accessible to a lay audience. M did exceedingly well on the assessment, earning a high First grade. He also achieved a First for his dissertation, another complex academic text. Author O was fascinated to learn subsequently that M had completed these assignments almost entirely on mobile devices, and consequently engaged him as co-researcher in order to investigate his learning dispositions and practices. Our contribution, then, is to examine from a student’s perspective ‘what is being done’ (Enriquez, 2011 p.39) with mobile devices, unlike other studies which try to establish ’what works’ from a teacher’s perspective (Ross, 2016 p.2). We aim illuminate some contemporary mobile learning practices, and hence contribute to discourses of pedagogy, assessment, and mobile learning in HE. Although smartphones are near-ubiquitous in universities, there is little research which reports in detail on the ways in which students actually use these technologies in their everyday learning and lives.

### *Mobile learning in HE*

Extant pedagogical research into mobile learning in HE discusses a number of benefits and drawbacks. Some hails the potential for greater student engagement in formal learning settings. A survey at one large English university found that 59% of students were bored in lectures half the time, with a further 30% bored most or all of the time; so most students were bored most of the time in lectures (Mann and Robinson, 2009). Other researchers have found making lectures more interactive by requiring students to use their mobiles to vote on, ask, and discuss questions, increased most students’ engagement, attendance and preparation (e.g. Habel & Stubbs, 2014; Zweekhorst & Maas, 2014). The effectiveness of mobile devices as pedagogical devices in lectures seems to depend on the kinds of interaction they are used for (Biddix, Chung & Park, 2016; Maltese *et al* 2016). Other research attends to learning outside formal contexts. Kearney, Schuck, Burden & Abusson (2014) used action research with university lecturers and trainee teachers investigating their own mobile learning, and concluded that it was characterised by authenticity, collaboration and personalisation. However, Ito (2001) cautions that mobile devices create constraints as well as freedoms, as students’ educational requirements regulate their schedules and attentional economies, shaped by power relationships between themselves, peers, teachers and institutions. Selwyn (2013) reports concerns of academics who view mobile technologies and their ‘always on’ capability sceptically, merely another way of harnessing them to neoliberal ideals of productivity.

### *Tethered yet free?*

Savin-Badin (2015, p.5) uses the term *digital tethering* to describe

both a way of being and a set of practices that are associated with it. Being digitally tethered is generally associated with carrying, wearing or holding a device that enables one to be constantly and continually in touch with digital media of whatever kind.

Here, *tethering* denotes freedoms, not restraints. Noting that students are frequently and fluently using diverse mobile devices to work in liminal spaces that straddle the real and the virtual, Savin-Badin (2015) calls for educators to create opportunities for students to create new learning spaces, exploring, critiquing and questioning the world around them. She argues that promoting such ‘pedagogies of the imagination’ (p.2) is a way of counteracting the invidious marketisation and standardisation of HE.

Creating spaces for imagination, play and participation are recurrent themes in literature around digital and mobile learning. Imagination, play and creativity are just as important for adults as children, and digital tethering offers opportunities to foster them. In his seminal work on literacy and videogames Gee (2007) argues that play is crucial for deep learning, defined as learning which has a significant and lasting impact on the learner's identity. Ito *et al's* (2010) taxonomy of ‘hanging out, messing around and geeking out’ is widely invoked to explain young people’s mobile learning dispositions, whilst Facer (2011 p.41) pleads for recognition of the importance of ‘playing, fiddling around, copying and watching’ in moving from novice to expert.

Serious play has purpose and educational value. Jacobs (2012) draws on Jenkins *et al*'s (2009) advocacy of play in recounting the ways in which undergraduates’ 'remixing' of texts and genres, such as producing a video clip explaining turntablism[[1]](#footnote-1) using the structure of an academic argument, helped foster the kind of deep learning discussed by Gee (2007). Being socialised into the cognitive skills valued in HE developed students’ reading, writing, and sense of belonging in the academic community. Jocson’s (2015) research goes a step further. She creates a space which harnesses her students’ interests in digital media to encourage them to engage in activist practices. They create blogs, posters, stories and videos which are both pedagogical and political: the processes of playing, making and remixing not only teach the students, but the results are taken out of the university classroom to inform the local community about issues including segregated populations and homelessness. Given the activist origins of Disability Studies, the field which underpinned author M’s course, consideration of such 'participatory politics' (Jocson, 2015 p30) in his work is germane.

### *Researching mobile learning*

Alrasheedi, Capretz & Raza (2015) conclude their systematic review by stating that research into mobile learning in HE is currently fragmented, idiosyncratic and beset with methodological limitations. They note the tendency of researchers to focus on geographical clusters of mobile use, learner profiles, and types of mobile device, and for research to be reliant on individual researchers’ interpretations of mobile learning. Literature reviewed for this study seemed to confirm this pattern, with survey methodologies predominant (e.g. Park & Burford, 2013; Rossing *et al*,2012; Sevillano-Garcia & Vázquez-Cano, 2014; Yang, 2012). Whilst each of these studies enthused about the potential of mobile learning in Higher Education, and noted current barriers and limitations, the survey approach adopted means that the researchers’ own conceptions of mobile learning inevitably determine the questionnaire items and so shape the data created and conclusions reached. Very little research adopts the learners’ perspective in trying to untangle the ‘messy realities’ (Selwyn, 2011 p.164) of mobile technologies in students’ everyday learning and lives. Wright and Parchoma (2011) deliver a stinging critique of the ways mobile learning is currently conceptualised and researched, and call for research which examines learners' self-directed mobile use rather than that under the influence of educators. Although idiosyncratic, our research attempts to address these shortcomings through exploration of author M’s self-instigated mobile learning.

## Methodology & Methods

In contrast to the plethora of surveys about mobile learning, and the handful of ethnographic studies, this project is perhaps best described as an exploratory case study. Other researchers have successfully adopted the case study approach in investigating emergent literacy and learning practices across a range of people and contexts (e.g. Merchant, 2013; Paschler, Bachmair & Cook, 2010). M was ‘the case’, and we sought to explore his mobile learning dispositions and practices in order to understand them better, and begin to think about their implications for HE. Author O approached Author M shortly after the completion of his degree, and proposed co-authoring a research article. We would stress that our relationship was not special or particularly unique when we were teacher and student; rather, it developed through the research itself which began, as we say, once M's studies were complete. An initial semi-structured interview was planned. Author M brought his smartphone and tablet to the interview and quickly took the lead in talking about and demonstrating his working practices, meaning that the encounter was closer to an unstructured interview. Author O’s input mainly involved prompting or probing for extra detail or clarity, as well as video-recording the interview to permit transcription. This initial interview lasted just under half-an-hour. It was followed a week later with a second unstructured interview of approximately equal duration, this time in the university Library where Author M had spent much time preparing his poster. Together, the interviews yielded 10,531 words of transcript. The procedures advocated by Charmaz (2006) for constructing substantive categories were used to analyse this data. After repeated viewings of the recordings to ensure accuracy of transcription, the transcripts were subjected to initial line-by-line open coding by Author O, using NVivo 11. This generated 29 codes and 576 coding incidences. Through constant comparison, memo-writing (Charmaz, 2006), word-frequency and cluster analyses, and checking with Author M, these codes were subsumed into four themes, and the dimensions of the themes derived and validated. We do not attempt to theorise or generalise from M’s case; rather, we suggest that it useful to examine M’s case to help illuminate and speculate on learning practices which are not currently well understood by educators but seem likely to become more commonplace given the near-ubiquity of mobile devices in young people’s lives (Ofcom, 2016; Ross, 2016).

### *Ethical considerations*

There are inevitable power imbalances between researcher and researched, which had the potential to be amplified in what began as a teacher-student relationship. Steps were taken to establish a more equal partnership and ameliorate these effects. Author O promised that Author M would be given equal credit for this journal article, making him a co-author rather than a research subject. Immediately after completing his degree, Author M enrolled on an MA within the same department, and has a long term aim of undertaking a PhD; we felt that being involved in the research project could support his academic development and improve his chances of succeeding in this aim. Funds were secured from our University to pay Author M for his time on the project; this was not disclosed until after he consented, in order to avoid any appearance of coercion with money. We received ethical approval from our University.

## Analysis and Discussion.

We constructed four interrelated themes which help to understand Author M's mobile learning dispositions and practices. They appear to us to be mutually constitutive rather than causal or hierarchical; each depends upon the others. In this section we explain and illustrate the four themes. They are: Interpreting the brief; Constructing the text; Affordances; Nature of learning.

### *Interpreting the Brief*

This theme relates to the way M responded to the assignment brief. Whereas *Constructing the text* emphasises the practicalities of producing the poster, *Interpreting the Brief* illuminates the philosophy of education which underlies the piece. The brief was to design an A1 poster which would:

1. Help people understand what ‘inclusive education’ means in a hypothetical organisation the student pretends to represent.
2. Explain relevant concepts in terms a lay audience would understand.
3. Show how specific inclusive classroom practices are research-informed.

M's conceptualisation of inclusion, and hence his design, is influenced by key Disability Studies scholars and Martin Buber's ideas around the purpose of education, community, dialogue and human flourishing (Buber, 2004 & 1947):

 *... so I was able to take some of the ideas about Martin Buber's philosophy and talk about his ideas of builders [...] and I really liked his idea of community so I wanted the reconceptualisation of an inclusive classroom to be all about community...*

Throughout the poster, M deploys Buber's term *builders* to refer to members of The Hub community, deliberately eliding the usual teacher-student dichotomy to further emphasise his vision of equality. In describing the envisioned relationship between teachers and learners, under the sub-heading *Builders*, M writes that ‘*Subject enthusiasts may facilitate lessons, but they must be willing to shift their relationship and potentially undermine their own expertise and authority...’* This statement relates to M's previous essay on Buber, where he wrote *‘if human flourishing is the goal and the inner layer of education then for Buber dialogue must be the wheels without which...’*, illustrating both the intertextuality and philosophy of inclusive education which underpin M's interpretation of the brief, as well as M’s belief that ‘real learning is continuous, which discuss in detail under *Nature of Learning*.

This ability to work in sophisticated, intertextual ways is supported by mobile access to files across multiple devices in any location. During the second interview, M even unwrapped a 'boxfresh' Ipad he had been given by his that morning by his employer to demonstrate how he could immediately access his files and folders on any device. As such, the interpretation of the brief is not a discrete phase early in the production of the poster. It is instead an ongoing negotiation of form and meaning which arises partly from M’s disposition towards learning, discussed further below, and partly from the mobile affordance of being able to manipulate ideas and texts anytime and anywhere, combining prior learning with new ideas. Determination to reconceptualise education, using ideas from the course, and explain his vision to a lay audience in an innovative yet accessible way was fundamental to M's interpretation of the assignment brief, and so reciprocally influences the practices described below in *Constructing the Text.*

### *Constructing the text*

This theme concerns the practicalities constructing M's poster. M's practices seem similar to those described in Bhatt, de Roock & Adam's (2015) ethnographic study of Sara, an FE student, who uses her laptop to assemble her assignment through a ‘choreography of practices’ (p.5) which relies heavily on intertextuality. M's account depicts a way of working in which the final piece is choreographed through the careful arrangement of semiotic resources derived from multiple sources: he synthesises, plays around with, and remixes (Jacobs, 2012) prior learning from diverse aspects of his degree course with newer material from lectures, directed readings and independent research. Key differences to Sara’s approach are M’s aversions to the laptop, which he perceives as slow and cumbersome, and only works on (occasionally) at home, and to portable storage devices like USB drives. M relies on cloud computing instead. This means he can always access all of his prior work, never lose it, and seamlessly integrate new ideas and research, both within the classroom and beyond it. This way of working is supported not only by the affordances of mobile devices, but also by M's highly organised storage system and his intimate knowledge of that system. This enables him to act on recollections, reflections and new insights very quickly, making amendments and adjustments to his text on the move (Burnett & Merchant, 2015; Davies, 2014). M uses a variety of apps in constructing the text: he both types and dictates text using Apple’s proprietary Notes and Pages apps. He uses his phone’s camera to take the photograph of a brick wall in the Library which constitutes the background of the poster. He imports image and text to a graphic design app called Phonto, then manipulates them to create the design he submits for assessment. As with Sara, M's text is in a state of constant evolution. The artefact presented for assessment is merely a snapshot, freezing a moment in time where the practices ‘attain a particular effect’ (Bhatt, de Roock & Adam's, ibid):

*O: Do you ever feel like a bit of work is truly finished then?*

*M: No, no [...] what ends up happening is it's crossing over into every piece of work so if I go to my Education second year... I did a History exam on understanding the concept of revolution for developments in the history of education and I have used the final section to basically continue having an argument with myself, so I concluded by talking about 'there needs to be a cultural revolution where people resist expected norms and all children belong in a classroom together' ... the constant arguments that I'm having in terms of other aspects of the course can't help but seep into other areas...that's why I never feel like I've finished a piece of work it's just I'm handing in what I've done so far.*

 M is describing how his intertextual practices and prior learning contribute to his goal of constructing pedagogic text. Word, image, font and layout are choreographed to communicate M's reconceptualisation of education (Fig 1) <<INSERT FIGURE 1 HERE>>. The poster is thus a strong signifier of M's identities (Gee, 2007) as a resourceful, digitally savvy student, and as a social activist. The piece is both cultural artefact and pedagogic device, in that it seeks to educate viewers about an alternative vision of education, and is thus evidence of M's 'participatory politics'(Jocson, 2015).

### *Affordances*

This category describes the capabilities and constraints of M's mobile devices and practices (Wright & Parchoma, 2011). In the initial analysis, the fourth most frequent code was *Immediacy* (37 references)*,* whilst the seventh was C*onstraints* (30)*.* The prevalence of *constraints* as a category perhaps supports the view that mobile devices do not simply bestow freedom and flexibility without consequences, but that they have a role in regulating schedules and economies of attention, and their use is subtly structured by time, space and social conventions (Ito, 2001). M, for instance, would sometimes pretend to be SMS texting under the desk during lectures when in fact he was working on the assignment, adding notes and ideas from the lecture in real time via his phone:

*I sometimes was worried in lectures because I felt a bit embarrassed working off my phone in lectures so I often do it under the table it looks like I'm texting and you've got the risk of people being texting rather than doing it [working].*

M felt discomfort about this way of working, which he alleviated by appearing to conform to the social convention of texting - a practice sometimes encouraged in lectures in order to generate feedback and responses from students (Habel & Stubbs, 2014; Kuzenoff, 2015; Zweekhorst & Maas, 2015), and one so ubiquitous that lecturers often have to tolerate it even if they would prefer students not to do it.

M also lived a hectic lifestyle, often feeling *'frazzled'*, combining being a student with working at a Premier League football club and married life. He spent much of his time travelling between his different commitments, using his devices to work, for example, on the bus. M also felt that the extent of his phone use affected his relationships, isolating him (Ofcom, 2016); interestingly, there was little evidence in his narrative of the kind of social constructivist learning that mobile technologies are often said to foster. Nevertheless, M was extremely enthusiastic about his phone:

*I haven't graduated yet but I wouldn't be able to graduate if it wasn't for my mobile phone...it's been probably the biggest asset on my degree in terms of equipment it's probably been the biggest...*

Prevalent in the narrative is *Immediacy* - being able to act on an idea without delay, to make adjustments and additions to the text instantly, such as in a lecture or on the bus. Other dimensions of this theme are *flexibility, fluency,* and *mobility*. *Flexibility* describes competence across a range of mobile devices, in M's case smartphone, tablet and laptop. *Fluency* refers to the ease with which M moved through real and virtual learning landscapes (Savin-Badin, 2015): the library, the lecture theatre, Moodle, the internet, the bus, his home. *Mobility* refers to the ways practices can be enacted in almost any location (Traxler, 2009) - for example in the case of the picture of bricks which constitutes the background of M's poster, which is a photograph of one of the walls in the University Library (Fig 1).

### *Disposition towards learning*

This theme describes M's beliefs and dispositions as a student. Alongside technologies and course materials these habits and dispositions shape the way he thinks, works and writes. In the initial open-coding, the third most frequent code was *Real learning is continuous* (45 incidences). This began life as an *in-vivo* code (Charmaz 2006) - something M said early in the first interview: *‘I think that real learning is continuous and you're sort of constantly chewing over ideas...’* Other examples of this belief in continuous learning, which contributes to the constant evolution of M's poster, include:

*‘I'm on the bus it's me looking at pictures it's me looking at ideas it's just a constant... I think the learning it doesn't take place when the essay is written the learning takes place before the essay is written and the essay is just a reflection of that’*

*‘I think an assignment should be a reflection of your thought process’*

*‘I think an essay should be a reflection of your reflections’*

M also discussed how students' fear of assignments influences their ways of working; whereas many respond to the anxiety of looming deadlines by procrastinating, he works continuously towards completion, in part to avoid this anxiety:

*Yeah the main reason I did it this way for things like my dissertation which is over six months...is because it was it wasn't restricted to this fearful thing of opening up my computer because what I hate personally [is] the way people talk about how I’ve got a week to go and I've got an assignment I've got to sit down and cram I just...think that shows a fear of assignments as opposed to an opportunity to showcase what you know…*

Also noticeable in M's account is an emphasis on reflection. Students are often characterised as being 'always on', tethered to their digital devices (Savin-Badin, 2015). However, what emerges in M's narrative is the importance of setting time aside for reflection. M would often spend a quiet hour early in the morning in the Library, reflecting on his work. This hour was essentially a quirk in his schedule - he happened to have the time free after dropping his wife at work, and chose to use it in this way. However, it seems significant that M opted for this period of deliberate reflection, rather than succumbing to the myriad temptations anyone might face with a free hour early in the day:

*...the reason I did it is just because my life was hectic and so… I very rarely typed anything in that reflection I was just sitting there I would go through them [ideas] it was really helpful for my dissertation because I could go through again and just sit there and think...*

*Metacognition* was another common initial code (12 incidences). Together with *reflection*(40 incidences) and being *digitally savvy* (16), this perhaps suggests a sense of self-awareness and agency which supported the development of M's way of working, and the confidence to attempt a reconceptualisation of inclusive education in responding to the assignment brief.

## Conclusions

Mobile devices are increasingly prevalent in many students’ lives. Our research was motivated by trying to better understand the ways in which such mobile devices may be used to produce complex academic texts. Through exploring M’s mobile learning practices and dispositions, we have established that it is indeed possible to create high-quality, sophisticated academic texts using mobile devices. In our analysis, the nature of M's text is dependent on four mutually constitutive sets of beliefs and practices: the philosophy which underpins his interpretation of the assignment brief; the learning practices which are used in constructing the text; the affordances of mobile devices; and M’s disposition towards learning. The practices and dispositions evidenced seem to support definitions of mobile learning which taken into account the mobility of technologies, learners and activities (Traxler, 2009). A question arising from this study concerns the extent to which students see their mobile devices as central, rather than peripheral, to their learning in HE. This has implications not only for teaching and learning but for university-wide IT infrastructure and resourcing. Further research could usefully investigate the prevalence of the sorts of practices and dispositions we discuss here with both individuals and groups of learners. Researchers may also wish to explore the role of mobile devices in creating spaces for imagination, play and multiple modes of participation, as advocated in Savin-Badin’s (2015) conceptualisation of digital tethering. M does seem to be someone who is 'tethered' to his devices, but this tethering entails constraints as well as freedoms. A degree of social isolation, a requirement to be highly organised, and feeling 'frazzled' were costs against which anytime, anywhere capabilities and the potential for deep learning must be balanced. An unexpected finding was the centrality of reflection, which was at least as important to M's learning as any device. These introspective aspects of M’s account stand in contrast to much of the rhetoric around the social construction of learning supposedly engendered by digital technologies. They imply that, as ever, much of the work of educators should be about helping students cultivate their curiosity and self-awareness, and not just trying to equip them with knowledge and skills. Educators may therefore wish to consider providing opportunities for students to reflect on their ways of working and learning, and how they are influenced by relationships with mobile technologies.

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#### Figure caption

Figure : Mission of The Hub

1. An advanced form of DJing [↑](#footnote-ref-1)