

Using mobile thinking to study healthcare students' experiences of using and learning to use mobile phones for academic work.

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This thesis is submitted in partial fulfilment of the requirements for the degree of Doctor of Philosophy.

PhD e-Research and Technology Enhanced Learning

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This thesis results entirely from my own work and has not been offered previously for any other degree or diploma.

This thesis has 49729 words (excluding 5691 in the reference list).

A handwritten signature in black ink, appearing to read 'Mike Johnson'. The signature is stylized with a large, circular loop for the 'J' and a cursive 'M'.

Signature

Michael Rhys Johnson

Doctor of Philosophy, December 2018

Abstract

This thesis adopts a realist ontology, hermenutic epistemology and phenomenological methodology to ask, 'What is learning at university like for healthcare students in a mobile assemblage (mobilage)?'. 'Mobilage' blends ideas from Actor Network Theory and educational theory to provide a wholistic unit of analysis, student-with-a-smartphone, rather than splitting subject/object or fixating on the human or a technology. The study launched with an online survey which gathered background information and advertised an online focus group (OFG) and exploratory meetings, 'mobilage encounters'. The OFG ran with 7 informants over 3 months and there were 10 encounters. Data from these were combined with autobiographical insights in a narrowing interpretive focus on mobilage.

The OFG sought to avoid intrusive informant observation while enabling participation from anywhere, especially *within* mobilage. Weekly trigger messages were sent through Microsoft's Yammer platform, akin to experience sampling/cultural probe methods, yet with the potential for shared responses. Consensus formed around several themes, including the challenges and artfulness of mobile phone-based work.

Encounter data was gathered and used to re-play the encounter into my consciousness, often while walking secluded coastal pathways. These experiences were combined with the data corpus to help create ten phenomenological vignettes, with the goal of re-presencing readers. A discussion section accompanies all but one of the vignettes. Mobilage is a site of struggle for deliberation and phronesis due to the multiple virtual and actual lines and layers of connectivity between psyche and the life-world.

The thesis concludes noting the incursion of technology and economic/pragmatic meta-discourses into academic work. In the face of these challenges, higher education stakeholders must assert the importance of scholarly values and humanistic goals (such as *Bildung* (Gadamer, 1992)) which students are doing to some extent.

Publications derived from work on the Doctoral Programme

The following blog-posts served to expose two thesis concepts:

Johnson, M. (2017a, December 12). What is Networked Learning?: Mobilage. Retrieved 15 December 2018, from <http://networkedlearning.blogspot.com/2017/12/mobilage.html>

Johnson, M. (2017b, December 27). What is Networked Learning?: Mobent. Retrieved 15 December 2018, from <http://networkedlearning.blogspot.com/2017/12/mobent.html>

Johnson, M. R. (2017, March 22). When u forget to turn off ur Bluetooth keyboard #mobentpic.twitter.com/j7f39xCvbG [Tweet]. Retrieved 15 December 2018, from <https://twitter.com/agentjohnson/status/844526055524368384>

The following publications arose from module assignment papers:

Johnson, M. R. (2016a). Information technology implementation in service enhancement: a qualitative case study. *Journal of Nursing Education and Practice*, 6(7), p67. <https://doi.org/10.5430/jnep.v6n7p67>

Johnson, M. R. (2016b). The role of human actors in legitimising informal networked learning of academic digital practice. In S. Cranmer, N. B. Dohn, M. de Laat, T. Ryberg, & J.-A. Sime (Eds.), *Proceedings of the 10th international conference on networked learning* (pp. 516–523). Lancaster University.

Johnson, M. R. (2018b). Success in information technology – what do student nurses think it takes? A quantitative study based on Legitimation Code Theory. *Research in Learning Technology*, 26. Retrieved from <https://journal.alt.ac.uk/index.php/rlt/article/view/2049>

The following discussed aspects of my methodology and methods:

Johnson, M. R. (2018a). Encounters with the mobilage (vital or actual)? In S. Badic, N. B. Dohn, M. de Laat, T. Ryberg, & P. Jantric (Eds.), *Proceedings of the 10th international conference on networked learning* (p. 446). Zagreb.

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For Padrig (1997-2013) and his wonderful mother, Alison

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*1 And in that day thou shalt say, O LORD, I will praise thee: though thou wast angry with me, thine anger is turned away, and thou comfortedst me.
2 Behold, God is my salvation; I will trust, and not be afraid: for the LORD JEHOVAH is my strength and my song; he also is become my salvation.
3 Therefore with joy shall ye draw water out of the wells of salvation.
4 And in that day shall ye say, Praise the LORD, call upon his name, declare his doings among the people, make mention that his name is exalted.
5 Sing unto the LORD; for he hath done excellent things: this is known in all the earth.
6 Cry out and shout, thou inhabitant of Zion: for great is the Holy One of Israel in the midst of thee.*

Isaiah 12, King James Version of the Holy Bible

Autobiographical preamble



One of the main purposes of education is personal development. A doctoral thesis can facilitate reflection on a profound level as the student works out and then explains their philosophical stance, interests and motivation. As part of that process, in this section, I offer the following reflection on my years up to the present: in relaying where I am coming from I seek to understand myself as a student in order to understand others (van Manen, 2014). I explain my own role and development, especially in the context of this thesis. The section accords with recommended phenomenological research practice where, as part of the *epoche*, investigators take stock of their own stance with respect to the questions they seek to address (Maso, 2007; van Manen, 2014).

Some people grow up taking things apart. That never ended well for me, so I turned to *application*, to use that which came to hand, such as old lego (Figure 1).

Figure 1: Junior Johnson making the best of some hand-me-down LEGO

Junior Johnson was born in 1969, the year we landed on the moon, in November, the month of the first ARPANET¹ connection. It was a time of technological ferment and limitless potential – including the Cold War threat of nuclear apocalypse. We were a middle-class family, I had four older siblings. My father was a brilliant and eccentric chartered accountant who loved to help small-business underdogs – he trained with a slide-rule (Figure 2) and so took me along to IT related events.

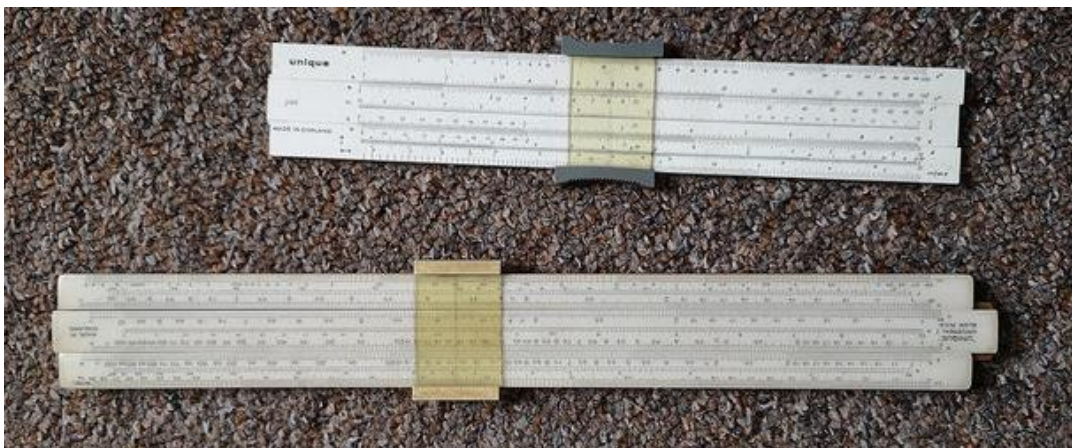


Figure 2: Doug Johnson's slide-rules

¹ Advanced Research Projects Agency Network - forerunner of the Internet.

My mother was a school clerk. Not long before retiring she made a remarkably smooth transition between manual typewriter and word processor, and then on to a personal computer.

I came along as something of a late surprise and thus spent a lot of time watching the TV: loved Sci-Fi (Star Wars was 1977/8), Blake's 7 (1978) and Star Trek ('Motion Picture' was 1979), but also playing outside in dens on the riverbank in lone re-enactments since my nearest sibling (of four) was 6 years senior and no friends lived locally. The plentiful Japanese Knotweed was frequently decimated by my lightsabre (i.e. trusty stick). The technology-focused 'Tomorrows World' was never missed. I audio-taped the BBC's coverage of the first Space Shuttle launch in 1981 and was deeply involved with Scouts. Their 'be prepared' motto was tested on orienteering, pioneering (building bridges, flagpoles, etc. with ropes and poles) and hikes. The more 'financially challenged' among us adopted Necessity as our mother of invention, looking askance at the 'rich kids' with 'all the gear and no idea'.

For knowledge work, in my teens I had my own bedroom, and in University halls (1992-5), and then for my PGCE (1996-7) when stationed away from home – my first encounter with phenomenology through Robert Jackson (1997). Since 2002, when I started a part-time Masters, with a young family of five in a '3-up-2-down semi', I could only get temporary moorings: I used to stand up at some shelves in a bedroom to work in peace during the day, descending of an evening to a lounge armchair. Even after moving to a larger house in 2004, I had no-where to call my own due to other less spatial limitations, such as warmth and Wi-Fi. For the doctorate I have been repeatedly on the move. These many years as a vagabond learner, always ready to relocate, have ingrained my bias for academic practices and technologies which lend themselves to self-contained mobility. My experiences lead me to identify personally with Chris Jones' conviction that, 'increasing mobile technologies and the drive to increase the mobility of learning requires a continued strong [educational research] focus on location, on the spaces that are provided in which learning can take place.' (Jones, 2015, p. 212)

My current role, 'Lecturer in Information Management and Teaching', was created in anticipation of a large investment in new computers and printers in 2001. By then, desktop and laptop computers had become established parts of the academic landscape and featured in seminal research relating to academic work (Crook, 1994). The application of information technology within Higher Education occurred in parallel with its wider uptake in knowledge work everywhere, regardless of its hyped or actual applicability for learning in higher education *per se* (Goodyear, 1999). Ten years on, a variety of portable devices, especially the tablet computer, such as Apple's iPad, launched in 2010, found a ready market in education. However, in the current decade, for students, for its greater portability and connectivity, the smartphone became the device never left at home. This thesis seeks to explore some of the implications of that.

Chapter 1: Introduction

1.1 Research Context and Setting

The context for this research is higher education in the United Kingdom and focuses upon the experiences of healthcare students who have mobile phones, which they may use in the pursuit of their studies. Consequently, the setting for the study is diffuse since a student can undertake academic work anywhere and it must be admitted that a broad definition of academic work could feature a wide range of activities, including solitary contemplation without any technology. Nevertheless, a key concern is to explore students use and learning to use mobile phones for academic work. This theme is related to fields of educational research such as academic and digital literacies.

In this study, healthcare students include nursing, midwifery, physiotherapy and other professions allied to medicine (PAM's), but not medical doctors, dentists, optometrists, or healthcare assistants and technicians, such as phlebotomists. Students were undergraduate or postgraduate, full-time or part time, campus-based or distance learners. They ranged from 18-year-olds to the 'middle-aged'.

In general, academic work in healthcare education is oriented towards optimising clinical practice for the benefit of healthcare service users. Arguably, there is a type of contradiction between a dispassionate pursuit of knowledge and a caring orientation, as I will discuss in Chapter 2. However, at least part of the rationale for basing these vocation-oriented courses in higher education is to infuse and advance clinical practice with the best available evidence and promote innovation.

1.2 Project Inception and Motivation

The idea for this project originated and took shape through my involvement with piloting digital clinical placement documentation with midwifery students, in the spring of 2015. It is hard to overstate the importance of this documentation. In many healthcare fields of study, approximately half the students' time is spent in clinical areas and each element of clinical learning is recorded to evidence their 'fitness to practice'. In some fields, such as nursing and midwifery, this documentation, as part of the programme leading to registration, must be designed and accredited according to the standards set by the profession's governing body. Over the course of their degree programme, students work with academic and clinical staff who must review and validate the documented evidence. For many years I have sought out technologies that could address some of the short-comings inherent in paper-based documentation: paper is unwieldy and students dread losing it. From the school's perspective, paper is vulnerable to fraud and logistically challenging to handle in large volumes. As an IT lecturer, a digital system could embed meaningful digital practice at the heart of healthcare educational activity.

However, to complete digital documentation students require ready access to a suitable digital device. After much debate within the pilot project team about the different ways of equipping students, such as, 'bring your own device' (BYOD), we decided to standardise, although our small budget only afforded very cheap android tablets. After a period of testing to ensure that they would run the MyProgress™ software platform, GoTab7's (see Figure 3 below) were procured.

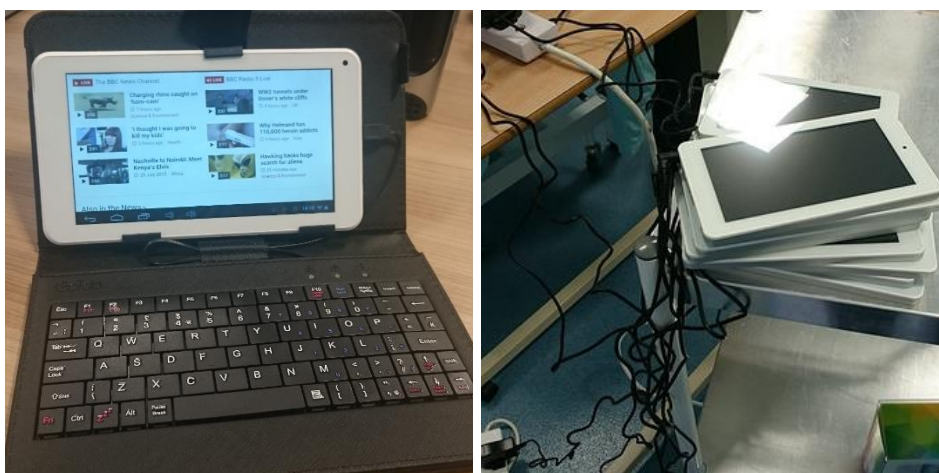


Figure 3: (a) GoTab7 with keyboard case ≈£40 each and (b) in preparation for distribution

These were configured and deployed to students in the autumn of 2015 (Figure 4 below) to be taken out into clinical placements.



Figure 4: Students intrigued to receive GoTab7's for use with MyProgress™ in the simulation suite October 2015

It quickly became clear that what the team thought were 'minimum viable products' threatened the viability of the project itself². The software/hardware system worked well for some students. Others seemed overpowered by a new *but low calibre* device, with lagging processor speed, glitchy operating system and poor battery life, asserting a muscular influence over attempts to use them. This diversity of student experiences caught my attention. I felt drawn to consider the possibilities and challenges students experienced as they used mobile devices, not just for gathering evidence of professional competence, but also for academic work in general, as the project team had hoped. Prior reading about the nature and place of technology in

² For various reasons, including hardware, the project resorted to paper documentation by December 2015. However, it was rescued through the project team's strenuous efforts and a Welsh Government grant that provided students with iPads for a re-launch in October 2016. In May 2018 the system evaluated positively.

education pointed to actor network theory (ANT) as a framework to explore the students' experiences of grappling with the provided tablets.

Thus, in the autumn of 2015 I conducted a literature review to address the following questions:

1. What challenges do mobile devices present to students in higher education?
2. How have students responded?

Qualitative research held promise for addressing these kinds of questions, especially that which captured students' experiences and authentic voice. However, such literature was sparse: much of it using rudimentary surveys or taking an instrumental view of technology, as is typical of the field of mobile learning, or 'm-learning' (Peng, Su, Chou, & Tsai, 2009). The literature search returned variously pertinent data from eleven articles (see Table 1 below for search terms). Appendix 1 gives fuller details of the search design and lists the articles returned, some of which have been influential in this thesis.

Table 1: Search terms seeking literature covering student experiences of mobile devices

- *Experience* – i.e. in opposition to 'effectiveness', to return qualitative results, and/or with verbatim quotes.
- *Student* - to include studies reporting from higher education contexts without excluding students placed in clinical areas.
- *Higher Education OR college* – helped narrow education database results but was not used with healthcare database to avoid excluding useful results.
- *Mobile AND (device OR phone)* – to capture the broadest range of literature focussed on mobile.

The literature review findings were taken to indicate methodological and representational gaps in the literature and a potential thesis project. While constructing the proposal, Hodder's (2014) analysis of entrapment and entanglement between humans and (non-human) things affirmed my leanings towards adopting an ANT perspective because, as Bhatt (2012) concurs, it offered a theoretical lens that avoids isolating technological or human agency. Neither are allowed to dominate: ANT seeks to level out such dualisms. In this study I wanted to authentically represent the complexity I knew was part and parcel of being in the world without falling into conceptual pitfalls, such as superficial dichotomies and determinism, which may pollute research process and outcomes.

1.3 Research Questions: Introducing Mobilage

Given my professional role, as exemplified by the placement documentation project mentioned above, and reading the learning technology field since 2001, my aim was to explore and disclose the everyday experiences of students and I tentatively developed research questions in early 2016. By October 2016, the questions had stabilised as follows:

Main question:

What is learning at university like for healthcare students in a mobile assemblage?

Sub-questions:

1. What academic work are students undertaking in the mobile assemblage?
2. How are students learning to do this?

The main question directs the research towards students' experiences, which implicates phenomenology. As a pre-requisite, finding out and portraying what something is 'like' requires the researcher to conceptualise that 'something', but I wanted to do this without taking an *a priori* position which could compromise apprehending the phenomena's essence and complexity.

From Actor Network Theory, Dant coined the term 'mobile assemblage' (2014, p. 369) just before Crow and Sawchuk, although their version of the concept is closer to classic ANT: 'practices, sets of relations and fluid associations between both human and nonhuman actors.' (2014, p. 188). I liked the ambiguity of 'mobile', which could refer to a device as much as its location, and the link with 'assemblage thinking' ideas of flux and interconnectedness, of 'an arrangement that creates agency' (Müller, 2015, p. 28).

However, ANT is less concerned with human learning (Fenwick, Edwards, & Sawchuk, 2011, p. 177) and I wanted to retain that as a central facet of the research aims, and so I added a third theoretical element: Selwyn et al. (2006) linked adults learning to use information technology (IT) with the concept of *bricolage*. I had used this idea previously (M. R. Johnson, 2008) when considering the haphazard admixture of formal and informal ways in which IT learning happens, as learners draw upon what or whoever is near at hand. Eventually I learned from Cuthell (2002) that applying the concept of bricolage to learning was attributable to Lévi-Strauss. For Strauss, the bricoleur 'is someone who works with his hands and uses devious means compared to those of the craftsman' (Lévi-Strauss, 1972, p. 16).

Yet the bricoleur analogy must be used with caution: as personified by Harper's engineer, Willie, he is repeatedly shown appalled by mechanically inept visitors to his shop, of whom he says,

Some things you just dont pick up, some people. Where if you grow up with it you more or less have that knowledge built in. Some people can grow up with something and it dont - I dont know, there's just something [p121] that dont click right about it. They're not interested in it. If they were interested in it they'd learn it. If you're not interested in something you might as well not get started. (Harper, 1987, p. 121)

Willie believed that there was something intrinsic, or dispositional, about a person which was key to achieving success in his work with machinery. Willie's 'working knowledge' shone out from every stage of a job: his correct diagnosis of the problem, each skilled selection and subsequent application of a likely tool or item from his salvaged hoard. This relied on an intimate and intuitive knowledge of the workshop's miscellany as well as his network of friends and what they could offer.

The learning technology literature is characterised by neologisms, such as 'e-learning', 'm-learning', 'c-mooc', etc. Some of these are of questionable worth, for example, 'e-learning' is ambiguous and implies nothing about learning quality, just that information technology is implicated. M-learning, as a term, can fixate on portable devices or learning that happens on the move, somehow missing broader

and overlapping *mobilities*. At the other extreme, for Kress and Pachler,(2007) mobile learning makes the whole world a site of learning, as if it was not already so.

There is a place for new words: in ‘Being and Time’ (1996), Heidegger famously used *Dasein* instead of ‘human’, to break with previous philosophising. I decided to concatenate ‘mobile assemblage’ to ‘mobilage’ (see Figure 5 below) (M. R. Johnson, 2018a) to break with m-learning (Sharples, Taylor, & Vavoula, 2005) and yet sustain the device, i.e. the mobile phone, the informant and their circumstances together in tension as I went on with the project. Mobilage is thus sensitising theory used with the aim of averting slippage towards reductionism (Sibeon, 1999).

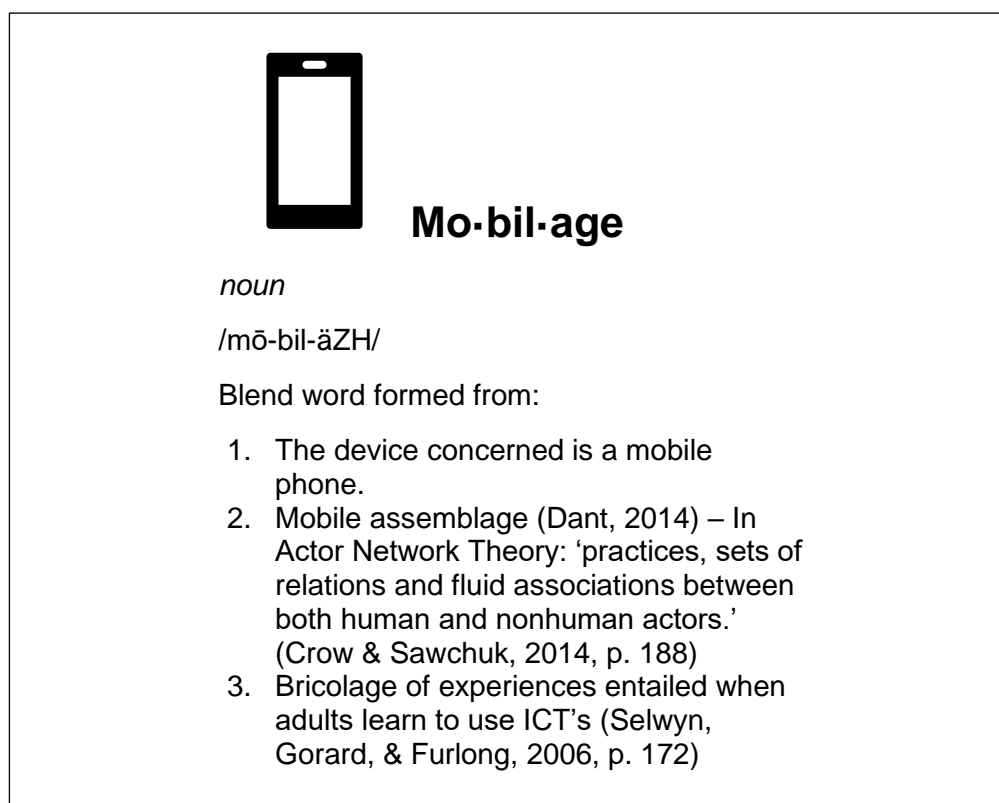


Figure 5: Mobilage defined

1.4 Contribution to knowledge

This research is significant in three ways: there is methodological innovation, it speaks to a pertinent modern issue, i.e. of mobile phones in the context of academic work and adds to the field of educational research around ‘digital literacies’.

Mobilage Methodology

The main research question is investigated through phenomenology to distil insights into the experience of undertaking university healthcare education with a mobile phone. This is unusual when most of the work addressing learning that implicates a mobile phone uses surveys or looks at an aspect of it, such as the effectiveness of a mobile app (for example, Bullock et al., 2015; Kissinger, 2013). Having said that, this project also deployed a survey, principally to invite students to meet with me and/or participate in an ‘online focus group’. Meetings were advertised as interviews but conceived and framed as ‘encounters with the mobilage’.

Pachler et al.'s (2010) 'Mobile Complex' highlights the situational flux involved in learning with a phone and this usefully sets it in opposition to 'technological fetishism', but its theoretical lineage is underdeveloped and it is not used for empirical work.

As a concept, mobilage combines theory from ANT/assemblage thinking and education, just the kind of association encouraged by Müller (2015). Mobilage meets many of Müller's (2015) constituent features of an assemblage, as 'a provisional analytical tool rather than a system of ideas geared towards an explanation of the world that would make it a theory' (Müller, 2015, p. 28). Müller and Schurr (2016) observe that, relative to ANT, assemblage thinking has fewer concepts to 'understand the work of stabilising relations' (2016, p. 220) or for empirical work in general. Mobilage offers that kind of lens.

The term 'online focus group' has been employed to frame the concept but it operated along different lines to a 'normal' focus group. Aiming to elicit information from within mobilage moments: it ran asynchronously over the first three months of 2017 with seven members receiving weekly triggers, adapting a cultural probe, or experience sampling, method. Each aspect of the project sought to collect material that could help build credible, evidence-based phenomenological vignettes to convey mobilage.

Mobile phones in academic work

Smartphones have become ubiquitous in society and central to many people's lives in a remarkably short space of time: the iPhone launched in January 2007. Phones have become a staple for many fields, including languages, geography, and educational research. The field of m-learning began before smartphones existed, Sharples (2000) stands as an early example with school-children using experimental 'HandLeR' tablet devices. Visionary as that may have been, it was typical of a field which instrumentalised technology and objectified learners. In contrast, I wanted to investigate the ordinary everyday use of mobile phones by healthcare students in higher education. Students may enter higher education lacking experience of 'desktop' or 'laptop' information technologies. Use of the World-Wide Web is becoming more popular on a smartphone than on computers, especially for young adults (Dreyer, 2015): the phone's convenience and familiarity may draw students into attempting the extended and intense types of knowledge working activities characteristic of higher education. For Park (2013), a truly mobile device is 'always on and always with' (p186), yet this constancy could have mixed effects. Amongst portable devices, laptops remain valued (Curtis & Cranmer, 2014), precisely because of their physical size, technical capability, connectivity, etc. A phone may appear of, at best, questionable utility for academic work, but some studies indicate that smartphones actually degrade thinking. Although prerequisite to knowledge work, the modern emphasis on 'performativity' in higher education (Macfarlane, 2015) seems to elide thinking. Ward et al. (2017) found that 'cognitive capacity' improved when students' phones were in a different room to them. Rosenberger (2015) explored the phone's psychic status through the phenomena of 'phantom vibration syndrome', in which people imagine their phone is alerting them to an incoming message. Even the suggestion of psychic connections between people and their phones indicates the need for work which looks beyond the instrumental level of describing 'things academics get students to do with their phones', or even, 'what students do with their phones'. Research into smartphone use *per se* is not novel, but this study's nature and context make it so. As mentioned above, mobilage helps the study deliberately avoid homing in on technology, yet smartphones are the study's ostensible technology axis. Nevertheless, when reporting findings, the smartphone varies

according to its position within the 'emergent ecology' (Jones, 2015, p. 212) that students were observed to inhabit.

Contribution to the digital literacies and higher education literature

A phenomenological approach to the research entails a commitment to complexity and authenticity. As such, the work offers insights into what it means to undertake knowledge work in higher education for healthcare students, including an elaboration and critique of concepts and practices related to 'digital literacy'. The incursion of mobile phones into student life needs sober appraisal in an age where economic-pragmatic meta-discourses (Levinson & Nielsen, 2012) seems to be holding sway. This thesis can contribute to public discourse around the place and impact of technology, to inform policy-makers, students and other stakeholders by diluting caricatures of students in higher education, for example, as in the 'digital natives' or 'digital residents' dichotomies which arguably distract from wider social justice issues.

1.5 Organisation of the thesis

Following this chapter, the thesis presents a discussion of philosophical and methodological background as pertaining to the research questions. Chapter 3 presents the conduct of the study's three methods of information gathering: these are presented in turn, including the analytical approaches applied. Chapter 4 features select findings from the survey and online focus group data. The main research question is addressed through a series of phenomenological vignettes in Chapter 5 which seek to represent and evoke the experience of mobilage for readers. With one exception, vignettes are accompanied by a discussion of emerging issues.

A concluding chapter seeks to summarise the essence of the thesis, noting the nature of mobile academic work and the conflict between scholarly values and economic-pragmatic discourses of efficiency and productivity.

Chapter 2: Philosophy & Methodology

In this chapter I will discuss the theoretical underpinnings of the study to explain how these have informed and strengthened its design and development, moving through a consideration of ontology, epistemology and methodology. I will take these philosophical points forward to map out the study's methodological problem-space as a platform for the next chapter which delineates methods.

For Trowler (2012), a study must establish its philosophical and theoretical foundations to steer clear of documented conceptual and practical problems which have blighted past research, including that in higher education. For example, in the very attempt to attain clarity in the purpose and shortcomings of theory it is possible to overcommit to a given position and subconsciously privilege some messages arising from the data over others. I have sought to find a path through such problems through extensive reflection and deliberation.

The research is interpretivist in general. I have not sought to pursue a positivist or empiricist aim of uncovering an eternal behavioural or cultural law. Within interpretivism, clarity over the project's theoretical underpinnings has been emergent over the course of the project.

2.1 Ontology

As seen in the introduction, Actor Network Theory sensitises this research to the kind of situational flux anticipated in mobilage. This fluidity of relationships is taken to its logical conclusion by Mol (2002) to claim that reality is 'multiple' but I find this stretches the meaning of 'reality'. Oliver (2012) makes the same move based on critical realism, which conceives of different *levels* of 'reality' (Bhaskar, 1978). Archer (2002) is more subtle, referring to multiple 'orders' - the natural, practical and social. It is prosaic to claim that reality strikes us as varying from the *subjective* perspective – that different people experience the same phenomena differently. However, with Johnson and Onwuegbuzie (2004), it is obvious that an individual car driver's subjective reality may conflict with that of other drivers, and that such a divergence will likely lead to real physical harm. Part of the appeal of post-humanist theories is their stance vis-à-vis Cartesian dualism. This is arguably useful, given the philosophical monist polar alternatives, in the form of materialism or idealism (Martin, 2013). In this thesis, mobilage is not an ontological claim. My preferred answer to 'The Hard Problem' of consciousness harks back to the ancient Jewish conception of 'soul-body', a radical irreducible unity of being, a 'union of life' (Berkhof, 1996, p. 195). This is consistent with Merleau-Ponty's post-phenomenology of the experiencing 'I' and the body as inseparable, while intertwined within the world (Ash & Simpson, 2016). While phenomenological concepts are employed in the thesis, mobilage aligns with theory that expands phenomenology's focus from the experiencing, or transcendental, subject to learn from post-phenomenological and posthuman insights that decentre human actors, to deal in the embodied realities of people's interactions with the physical *and* the socio-material. This is challenging, and some ANT writing attempts this without demonstrating ontological clarity. In spite of using 'ontology' in the title of her book, Mol falls into obscurantism instead of grappling the concept into a state of clarity (2002, see page 151). Law, critiquing realism, qualifies his language to consider *putative realities*, as constituted by different practices (Law, 2009). Mol depicts performative medical practices while bracketing the inclination to claim one is better or worse than another, perhaps because this could rationalise and foreclose the investigation of highly complex events and interrelationships between actants. This may be pragmatic and enlightening, using theory to help the researcher and those who read them to 'think

otherwise' (Trowler, 2012), but it also leaves the position open to a charge of relativism.

With Jones I take a realist ontology, that there is a 'reality beyond human practices to which we can refer in order to adjudicate between different accounts' (Jones, 2015, p. 233), even if those 'realities' are sometimes ephemeral, such as epistemological frameworks (Maton, 2014). ANT is not the only theoretical framework which finds a role for non-human actants, shaping or resisting human activity. Activity theory does this without ANT's radical constructivism, giving prominence to the mediating role of tools, but also human intentionality, the eliding of which in ANT inevitably reduces complexity and authenticity. Müller and Schurr (2016) argue that ANT should accept a coalescing role for 'desire' from assemblage thinking. As Jones and Healing point out (2010a, pp. 346–347), activity, in the Vygotskian psychological tradition, implicates an actor's circumstances *and* purpose (Kaptelinin & Nardi, 2006). If the framework includes a person's internal state through 'purpose', then others must also be allowed, such as emotions, conscience, memory, nausea, etc., strengthening the case for phenomenology.

2.2 Epistemology

It is expected that epistemology flows logically from ontology and out into methodology. Epistemology is understood as the conceptual position one occupies regarding knowledge, especially the rationale supporting claims about what is considered *valid*, *defensible* knowledge. This is of fundamental importance in any research seeking to create new trustworthy knowledge because how that is established as such varies depending on values, beliefs and assumptions about what counts as 'truth' and what is knowable at all. For the realist, there are truths which can be discovered and identified. The constructivist acknowledges no reality beyond that which is socially constructed, therefore the realist pursuit of 'ultimate truth' is self-defeating. Meanwhile, realists view an entirely socially constituted 'truth' as self-refuting.

For this project, I have taken refuge in Gadamer's position (1992) which rejects the dichotomy of absolute or relative truth, seeking truth through understanding that is equipped with the intellectual tools of our cultural legacy, such as 'common sense' and 'judgement' (Nixon, 2017). In a hermeneutic epistemology, we enact 'engaged knowing', harking back to Aristotle's distinguishing five ways of arriving at truth: consider *techne* and *phronesis*. *Techne* has a definite object in view and, in a goal-obsessed era, should be resisted as it threatens to swamp *phronesis*, or deliberation. For Gadamer, truth-seeking requires 'not distance but involvement, not impersonal observation but personal interaction' (Zimmermann, 2015, p. 53).

In considering the main research question, asking what something is 'like' incurs a hermeneutic challenge: how to access and represent 'experience' when this is essentially private and subjective. But this way of rendering the challenge implies 'scientific' objectivism as the ideal and authentic route to truth. For Gadamer, the limits of our understanding can be analogised through the concept of horizon – a view that expands outwards as far as we can see on all sides. It includes the culmination of our own experience of life-world, 'the whole in which we live as historical creatures' (Gadamer, 1992, p. 247). As we move, our perspective also moves. When we move, we experience, presenting the opportunity for a 'fusion of horizons' in our interactions with others. This concept asserts the possibility of understanding others' experiences and transmitting something of that understanding to and for others. However appealing, 'horizon' is only a metaphor and 'fusion' cannot be taken for granted. It relies upon a suitable methodology.

2.3 Methodology

In this section, elements of the study's problem space are explicated before moving on to relate how methodology evolved from ethnographic to phenomenological.

Learning at university, with a phone, in healthcare

Learning is a highly complex concept which has been explored for many years by multiple fields. It is multi-level, multi-layered and multi-dimensional, as illustrated by Illeris' (2009) model, see Figure 6 below.

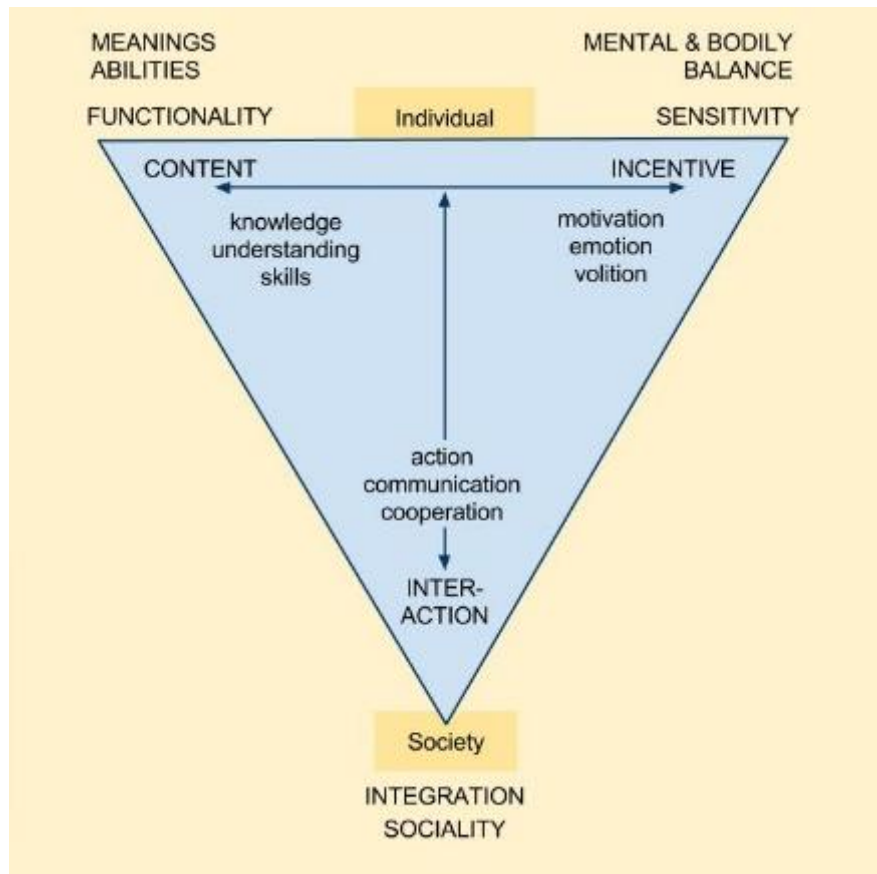


Figure 6: The three dimensions of learning and competence development (Illeris, 2009)

Mehlenbacher (2010) reviewed many published models of learning with technology, based on the acknowledgement that these are two of the fundamental topoi, or 'paradigm mediums' (after Feenberg), of human civilization. He explains that, 'because they form the very core of our systems for understanding, conceptualising, and promulgating knowledge about, with, and into the world around us, they are exceedingly difficult to understand, isolate, parameterize, or control' (Mehlenbacher, 2010, p. 7). Some scholars are content to generalise and move on: Hansen (2018, p. 53) defines learning 'broadly as the development of skills, competence, knowledge and literacy'. Others are more circumspect: for Säljö, learning, 'is not susceptible to any analytically satisfactory definition' (1987, p. 104) and Jones (2015, p. 67) warns that learning is 'too slippery and complex a term to have a single theoretical solution and the addition of networked and digital technologies only adds to that complexity.' Indeed, in this study, I distinguish, with Bhaskar, stratification *within* reality: 'different types of objects of knowledge - physical, social and conceptual - which have different ontological and epistemological characteristics (Mingers, Mutch, & Willcocks, 2013, p. 795). Since learning with technology in higher education incurs these different objects

of knowledge it suggests a multi-methods research design that is cognisant of the multiple methodologies implied, yet without confusing them. In studying learning with technology, it is necessary to consider the physical characteristics of a device, the physical condition of a student's eyes to view the phone in varied physical environments, etc. and yet it is also vital to take a broader view than that. Actor Network Theory attempts to analyse complexity but 'avoid a humanist bias and anterior abstract categories that homogenize and control.' (Fenwick et al., 2011, p. 177) In this, Friesen argues (2018), ANT goes too far, since, 'for better or worse, education cannot be anything else but predominantly *human*.' As Walker and Davies wryly point out, 'only some actants graduate; mobile phones don't sit exams' (2014, p. 316), and, I would add, likely banned from either event. Nevertheless, from assemblage thinking (Müller & Schurr, 2016), for the graduand or candidate, mobilage was a site of epistemic preparation, its event information and maps enabled correctly locating the body at these events, and during brief physical separation, interrupted the student's flow with doubts and cares, if only about silenced alerts.

Following Säljö, defining and researching learning is made slightly easier by focusing on a specific type and context. Even then, learning at university has been studied from many angles and these are partly shaped by the field undertaking the research. For example, cognitive psychologists have studied what is involved in performing 'complex intellectual feats' (Richardson, 1987, p. 3). Educational psychologist William Perry (1998) observed students' progress through their changing attitudes and conceptions towards epistemological relativism and their struggles to adjust to the discipline's prevailing epistemology. From a socio-cultural perspective, Marton and Saljö (1976) used phenomenography to reveal deep and surface *approaches* to learning. Although this was still not learning *per se*, it described what the student did in attempting to access knowledge contained within dense texts which used unfamiliar or esoteric languages of description. Thus, merely gaining entry to the meaning concealed within these resources was crucial to learning. In explaining this challenge Laurillard contrasted *perceptual* learning in natural settings with academic *preceptual* learning: 'we cannot experience structuralism in the same way as we experience dogs' (Laurillard, 1987, p. 202). Furthermore, she adds, the goals, values and rewards in perceptual vs. preceptual learning are far different, so that academic work requires deliberate effort of a particularly *unnatural* kind. Some of this is said to shape students' attempts to memorise disciplinary knowledge, falling short of apparently more arduous pursuit of a deep and broad understanding of their field through genuine scholarship.

Goodfellow claims that, although disciplines and institutions vary in the accomplishment of scholarly work,

there is a general consensus that 'academic' scholarship involves a distinctive methodological orientation to knowledge shared by all who practice it. This orientation values critical reflection, the cumulative aggregation of knowledge and understanding, distinct modes of operation relating to evidence and the warranting of its reliability, and the ethic of enquiry as a primary motivation.
(Goodfellow, 2013, p. 69)

Student activity, has been a focus of recent attention in some quarters of educational research, with a journal on 'Active learning in Higher Education' appearing in 2000. Although 'active learning' could include generative *mental* activity, arguably the concept assumes as much, MacFarlane (2015) discusses how a focus on active learning sets up 'performativity' as proxy for learning in measurable external behaviours, such as attendance and participation, even surveillance of emotional

development. He suggests that performativity, however well-intentioned, works against another key ideal of university education, that of empowering the autonomous adult learner. Another casualty is academic thought, according to Gourlay and Oliver (2018). This is surprising, considering the seemingly obvious importance of the 'thinking' necessary to produce the demonstrations of that, often as defined by Bloom's taxonomy (Krathwohl, 2002). Critical thinking in particular was identified as a vital 'habit of mind' by Conley (2005, p. 173) across the American university disciplines he studied. 'Close reading', also featured (Conley, 2005, p. 219), since critical thinking requires understanding, which often relies upon interpreting texts. Therein lies a challenge, since, as Gadamer points out, with reference to Aristotle's distinction between *techne* and *phronesis*, deliberation does not necessarily apprehend outcomes in advance (Nixon, 2017). As potentially interminable, deliberation is hardly suited to the economic, ie. workforce, instrumentalism that underpins undergraduate nursing education long after the 'upgrade' from hospital-based vocational training (Morrall & Goodman, 2013). This is, by extension, inimical to loftier visions of education, such as *Bildung*, which, for Gadamer,

evokes the ancient mystical tradition according to which man³ carries in his soul the image of God, after whom he is fashioned, and which man must cultivate in himself. (Gadamer, 1992, p. 10)

Regardless of the religious connotations, but difficult to adequately conceive without it, *Bildung* elevates the humanistic aims of education, allotting a central role for student self-cultivation, according to the highest ethics.

In any case, those responsible for student learning and accreditation have a limited arsenal with which to shape a student's approach to scholarship. Goodyear et al. (Goodyear & Networked Learning in HE Team, 2001) plotted a higher education design problem space (see Figure 7 below) to explicate two claims: the three aspects that may be designed and the indirect nature of these designs as realised in the students' experience. Students are members of an organisation, but they form or attach to their own communities. Universities provide physical and virtual study spaces, but it is for students to appropriate them as 'places'. Students are allotted epistemic tasks which they interpret and action variously well. This loose coupling, reflective of the students' status as adult learners, partly explains attraction of encouraging 'bad' students into 'good' academic behaviours through pedagogic tactics such as 'flipped classrooms' that tighten classification and framing (Bernstein, 1975). Nevertheless, learning is a personal phenomenon that can be lost, confused, missed or accomplished, thus the appeal to analogue learning in this thesis as a process of bricolage.

Activity theory, holding that human behaviour is mediated (Kaptelinin & Nardi, 2006, p. 42), would add to Figure 7 considerations of students' intentionality, the rules that govern their situation and the available tools (Engeström, 2001).

³ In an anachronism, 'man' here is made to stand for 'humanity'.

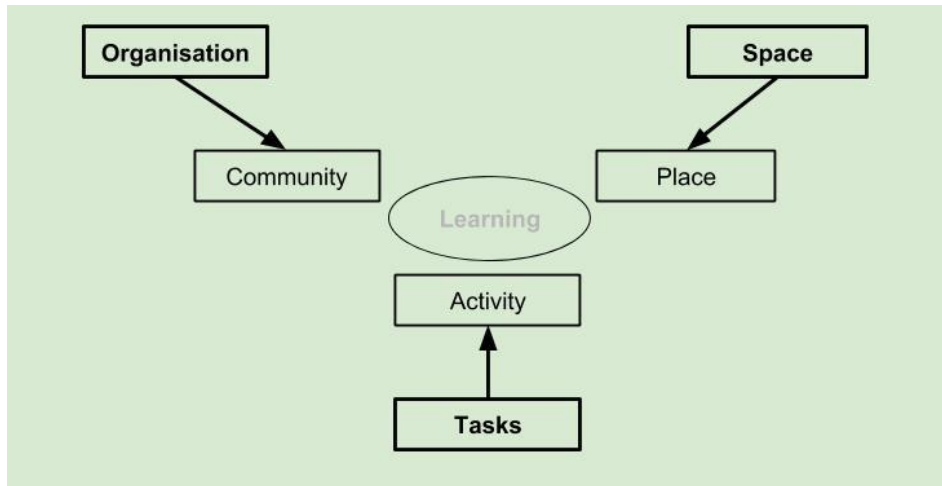


Figure 7: Design - an indirect approach (Goodyear & Networked Learning in HE Team, 2001)

In higher education, one major body of 'rules' shaping student intentionality is assessment (Kember, 2015) and even with the advent and advance of multimedia, much of this effort is directed towards producing texts for assessment through reading and writing (Lea, 2013). This also holds in healthcare programmes, in spite of their emphasis on embodied clinical practice. Markauskaite and Goodyear (2016), argue that 'epistemic fluency' should become a primary concern in vocational higher education, engaging students by designing epistemic tasks generated from and mirroring authentic professional practice-based epistemic activities, for example, undertaking risk-assessment, but also critically disclosing and analysing its ontogenesis, assumptions and relevant implications.

Such an approach plausibly latches onto the students' professional practice trajectory to contextualise and motivate learning, although, akin to much of the aforementioned educational research, it does not ostensibly aim at a student's disposition. Even Mezirow's transformative learning stops short of disposition change. Transformative learning is metacognitive, seeking to challenge assumptions through critical self-reflection, with the hope of improving 'meaning perspectives or habits of mind' (Mezirow, 2018, p. 117).

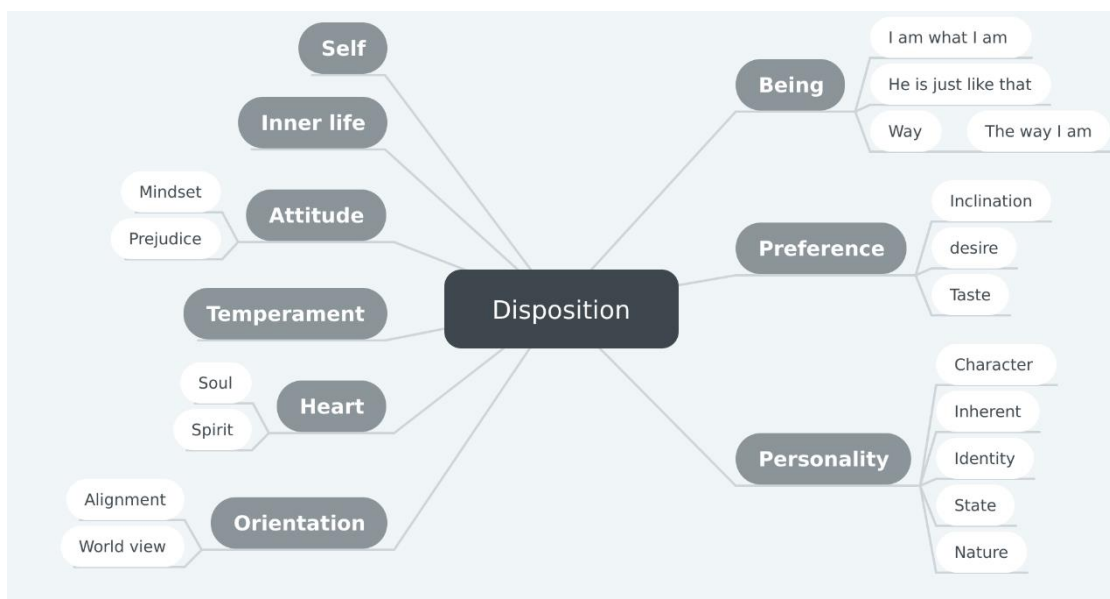


Figure 8: Words related to 'disposition'

Gallagher (2018) uses 'disposition', from Bourdieu's definition of habitus (1977), to denote an individual's pre-reflective orientation *vis-à-vis* the research foci. There are a number of words which hint at this pre-reflective state (see Figure 8) which together imply a common cultural understanding that disposition is 'given', that it is somewhat stable and distinctive for each individual person, but, as pre-reflective, it is also challenging to access, assess or change.

It is unclear where the conflicts and correlations of aspects of disposition might lie. For example, in healthcare, does someone being 'caring' mean that they are generally like that or does it also mean that they tend to dislike technology? Can someone change in their disposition or attitude so that they become more likely to leverage and develop the beneficial aspects of mobilage, whilst circumventing its challenges? Even if we accept the deep/surface dichotomy, the evidence of students moving between these *approaches* to learning is ambiguous (Asikainen & Gijbels, 2017). What could move a person from *being* a determined Luddite, to one who experiments with and successfully enmeshes 'digital practice' with their academic work. Is Shah's highest 'omnipotential' level of technological élan really available to all (Shah, 2014)? Disposition may be important for these examples, but they differ in significance. The notion and presumed benefits of deep learning beats a well-worn path towards scholarship as generative of new, and transformative, insights, fulfilling the Enlightenment goal for an individual's potential self-actualisation and positive contribution to society. Even the most digitally savvy student must grind out their own scholarly victory, the core activities of which may only require modest levels of digital skill. With Selwyn (2002, see also Selwyn & Husen, 2010), these factors condition student relationships with information technology (IT) at university, including *learning* IT.

With a phone

In the autobiographical preamble I referred to Goodyear's (1999) observation that information technology (IT) was being enlisted in knowledge work in society at large. By extension, the ubiquity of smartphones has inserted them into higher education as a potential tool for knowledge work, although it must be recognised that the phone is one tool among many devices emerging this century. Digital technologies enable the separation between content (e.g. text) and medium (e.g. physical electronic device with a screen) which has led a plethora of ways of manipulating content, amongst which the smartphone is pre-eminent. According to sales forecasts (Lomas, 2017), over a billion 5-6 inch smartphones will be sold globally in each of the next few years. One of the central concerns of this thesis is to consider the implications of near blanket penetration of smartphones into students' lives when, as Goodyear noted:

ICT can break down some of the helpful insulation between the protecting spaces and orderly practices conducive to difficult study and the personal spaces and informal practices familiar from everyday life (2008, p. 255)

Phenomenologically, tools are not merely a neutral, or even instrumental, means to an end. In *Being and Time*, Heidegger famously refers to two modes of relation between Dasein and the tools at their disposal. His classic example is of a shoemaker's hammer *in use*. Mostly, the shoemaker is unaware of the hammer, it is 'ready-to-hand', *zuhanden*. If the hammer breaks, the 'spell' breaks too, and the shoemaker becomes aware of the hammer in a different way, reflecting on it as an object 'present-at-hand', *vorhanden*. This would also be the case for someone new to hammer use: the more familiar and skilled the user, the more the hammer fades from attention (Schubert, 2012, p. 117). Heidegger is making a more fundamental point

about consciousness and being-in-the-world, and to use the dichotomy in this way verges on a simplistic instrumentality, but it does provide a starting point, even if one that is sharply challenged when applied to hybrid tools such as a smartphone:

- Innovation in mobile technologies and app development, and the ever-extending range of uses linking with increasing societal awareness of the significance of mobile means that the phone can increasingly be incurred in almost any activity, regardless of whether that activity is also then shared on social media using the phone. The hammer may have a claw to extend its use for removing nails as well as inserting them, but, for the phone, the boundaries between different activities are diffuse and differ as the phone is enlisted differentially by different individuals with devices of varying calibre. Gourlay and Oliver (2018) emphasised the idiosyncratic nature of practices that involved information technology for academic work.
- As a composite technology, it is conceivable that it may be both *zuhanden* and *vorhanden* at the same time, especially since multitasking became possible. For example, speaking with someone through the phone (*zuhanden*) while trying to look for information in a photo gallery or note-taking app, any or all of which can begin to malfunction (*vorhanden*).
- The extended stack of technologies within the phone and without it in terms of infrastructure upon which a given use relies for its fulmination sharply contrasts with a simpler tool such as a hammer. For example, mobile phones are designed to accommodate variations in Internet connectivity. This is dependent on many factors, such as access to effective infrastructure which is itself in constant need of maintenance, subject to 'legacy effects' (additional work required to sustain aging technologies, borrowed from ecology (Cuddington, 2011)), and the pressures of responding to industry-wide innovation. Successful access to said infrastructure is dependent on several factors, such as paid-up personal affiliation and successfully verifying that through authentication (Jones, 2015).
- The degree of attention and grappling required to accomplish a task can recede smoothly or oscillate unexpectedly, even with the same device. Checking the phone alerts, albeit at a glance, perhaps hundreds of times a day can become habitual, routine, or even addictive. This could be because a message is expected and therefore playing on the mind, or because the phone has given off an alert, it may be habit, or accident, perhaps looking around reveals the phones' flashing LED even though the phone has been silenced. In any case, these all demand a transition in consciousness drawing some level of attention towards the phone.
- Although Heidegger thinks of learning as goal directed (Nielsen, 2012) the multi-channel nature of phone communications can interject multiple unrelated goals during the pursuit of disciplinary preceptual learning.
- Industry has a commercial interest in encouraging profitable uptake and use of products and Internet connectivity enables smartphone companies to gather user data and use this to inform and target personalised marketing communications into every handset.
- Phone notification systems are complex, with many apps offering reasons and means to draw and thence hold users' attention. According to the profit maximising motive, vendors have employed 'attention engineers' to secure the maximum advertising revenue-generating incomes (Harris, 2014, 2016; Lewis, 2017). Honing these notification systems to block unhelpful alerts and allow important ones, depending on context, is a non-trivial task made deliberately harder, so-called 'dark patterns' (Forbrukerrådet, 2018).

- Heidegger's shoemaker worked in a relatively simple setting but, even for her, circumstances may vary affording varying degrees of tool awareness. For a nurse, at one extreme their phone may be ringing but completely ignored, obscured by the existential intensity of a visceral clinical scenario. At other times the same phone strongly asserts itself as a bed-side alarm clock.
- A hammer has limited potential as an epistemic tool. As information technology, the phone's combination of portability and connectivity excites learning technologist visions of new possibilities and mobile learning. And yet the phone must be thought of as a sociocultural artefact and each setting incurs new relationships and norms of use (Bachmair, Pachler, & Cook, 2009) where some may be permitted and others risk censure.

At the least, we should note the phone has greater propensity for oscillation than the hammer between *zuhanden* and *vorhanden*, albeit to varying degrees of severity. In another reference to Actor Network Theory, *Dasein* can easily become *entangled* in this oscillation, to the extent that *vorhanden* becomes the 'ordinary everyday', as if the hammer were continually asserting itself into consciousness. To capture this idea of mobile entanglement, I have coined the blend word *mobent* which also chimes with the experience of distracted hiatus. In idiomatic use, 'moment' is an obliquely private affair for an individual, or between two individuals, characterised by elevated, likely piqued, emotion.

Hodder (2014) explains that in its intent to obliterate dualisms, ANT-based perspectives may overlook the potential for *asymmetry*, indeed *dependency*, between humans and non-humans. The expansion of potential affordances offered in modern mobile devices, especially those incorporating post-2G technologies (i.e. after 1991 and the launch of the first GSM (Global System for Mobile Communications) digital mobile network (Elisa Corporation, n.d.)), also invites ever wider dependency upon them, from spell-check to sat-nav. Although the technology depends on the human to actuate those affordances, each are liable for reliance to become entanglement, or even entrapment (Hodder, 2014).

When a mobent occurs, the student may, depending on various factors, such as intended outcome, adopt an alternative coping action using less contingent technology, such as switching to paper and pen to record an idea (Gourlay & Oliver, 2013). With the passage of time and further experience of mobents, users may adapt and respond differently which contributes to shaping the experience. This could include aborting the phone completely in favour of doing nothing at all or investing time into exploring and thus learning how to overcome or circumvent the mobent. In either case, these experiences are laid down in Dasein's personal history of mobilage, contributing to future reactions and resources for that.

Although stopping short of ANT-like networks, Heidegger emphasises the relatedness of things. The experience of being with a phone, would be of merely documentary interest if studying the phone itself or the even the experience of the phone in isolation according to Husserl's method. For Heidegger, a technological tool is part of a totality of useful things which must be understood in terms of the activities they are used for (Heidegger, 1996, paras 64–68). *Dasein*'s everyday engagement with equipment is not underwritten by an implicit theory, nor, Heidegger asserts, can it be (Cerbone, 2008, p. 38). Tacit knowledge is, after all, tacit. Our skilful engagement with equipment cannot be codified and reduced into various series of rules that might then be formally represented. Such formulations 'level' the phenomena's dimensions to the extent that the true phenomenal content as such is lost, simplistically classified, for example, in terms of the activities they are used for (Heidegger, 1996, paras 82–88). In contrast, the concept of mobilage attempts to

reinforce ideas of situatedness, interconnectedness and socio-materiality. I accept Feenberg's (1999) point that Heidegger essentialises technologies, eliding the potential for users to wrest back control of technology. Against the might and ingenuity of global technology firms, Feenberg's case seems optimistic: 'means and ends are linked in systems subject to our ultimate control' (1999, p. 9). The means, ends, links and systems are in the hands of a few giant corporates.

Yet, on the ground, there is a loose coupling: phone and human are interconnected to varying degrees, with some relying slightly on one or two aspects, such as messaging, and others deeply involving the phone 'life-wide', blending different contexts, activities and resources. Thus another axis of mobilage considers the use or otherwise of additional tools or facilities within the students' situation and repertoire. Gourley and Oliver (2018) highlighted the false dichotomy of 'digital dualism' apparent or implied in some research on students' experiences of academic work that privileges digital media above the analogue, even though the student may not treat it that way but move text back and forth between digital and analogue to accomplish their academic ends. The text is everything.

Within healthcare

The choice of healthcare students was a way to circumscribe the research, but it naturally increased the chances of encountering certain common elements between programmes of study. In the context of this thesis, Heidegger's concept of 'care' is helpful, although it is distinct from 'healthcare' *per se*, but care is fundamental to Dasein's being-in-the-world – Dasein *is* care.

In as much as they 'care', healthcare students are likely to do so in a particularly ontic manner. This is in advance of the inherent vocational trajectory or personal interest in any academic field. Applicants to healthcare degrees submit personal statements and attend interviews which, to be successful, must give clear evidence of their suitability and 'calling' to that profession. They must show that they care *about* people and are willing to care *for* them, and go on successfully demonstrating that with increasing sophistication during their studies.

Towards that end, curriculum design is oriented for the preparation for the individual to make a good contribution to their profession, with extended periods of clinical practice placements threaded throughout each academic year. Because of this, each year extends into summer months, well beyond what is usual at university.

Care is so fundamental to healthcare students that essential caring values, attributes and practices are suspected to work against scholarly ones, for example, the *dispassionate* pursuit of an enquiry involving abstract theory and extended immersion in literature towards a goal of knowledge creation. There is enduring disagreement within society, the professions and even the academy about the purpose, validity and effectiveness of degree-entry status to many of the healthcare professions, nursing in particular, because care is thought to be a calling and a disposition, inimical to 'book learning' (Fleming, 2009).

Caring *vis-à-vis* technology represents another axis of interest to researchers, and dissonance for students. For example, Randle (2001) tracked nursing student's developing attitudes and highlighted their propensity to elide and devalue 'basic' patient care, such as washing and feeding, in favour of technologized practices, such as taking observations or administering medicines, practices which align with the higher status medical model of healthcare.

From ethnographic to phenomenological

The initial research proposal looked to ethnography because it offered several appealing values and sensibilities which helped to guide the project's early development: commitment to the complexity of everyday life; 'analysis' seen to begin with the project's inception; reflexive multi-mode fieldwork that privileges participant observation; theorised positionality of the researcher; narrative approaches to representation (Atkinson, 2015a; Atkinson, Delamont, Coffey, Lofland, & Lofland, 2007). These aspects all sat firmly within the preferred interpretive paradigm, although I noted that, for Atkinson, the purpose of ethnography is 'the analysis of social action and social organisation' (Atkinson, 2015a, p. 7), a different aim to that expressed in the research question. I began to come to terms with the phenomenological nature of the main research question as I surveyed philosophy: this included Backhouse's lectures on Kierkegaard (2017), *Plato, Kant, Sartre and Foucault* from Paul Strathern's 'Philosophy in an Hour' series (2012a, 2012d, 2012b, 2012c), and Oxford University Press' 'Very Short Introduction's (i.e. *Continental Philosophy* (Critchley, 2001), *Aristotle* (Barnes, 2000), *Heidegger* (Inwood, 2000), *Wittgenstein* (Grayling, 2001) and *Existentialism* (Flynn, 2006)). YouTube videos contributed to my understanding (e.g., Thorsby, 2016) and in Cerbone's 'Guide for the Perplexed' (2008) I recognised many points of contact between Heidegger and my nascent thesis.

The main research question contains several complex concepts, i.e. learning, university, healthcare, etc., but it is the word '*like*' which orients these concepts as a *question*. Answers to, 'what is it *like*?' questions are necessarily partial, they are bound to be approximations, perhaps using simile and analogy to convey understanding, as is consistent with a hermeneutic epistemology.

Perusing van Manen (2017a) confirmed phenomenology, not ethnography, as my methodological framework. In terms of the practicalities of data gathering, phenomenology is more attainable, making less stipulations about duration and immersion in the field. However, its purposes and goals are more obscure and abstract – challenging the researcher to 'recover the lived meanings' (van Manen, 2017b, p. 812) of a moment, 'without objectifying these faded meanings into positivistic themes, sanitized concepts, objectified descriptions, or abstract theories' (*ibid.*).

There are further advantages of phenomenological analysis and representation via narrative in surmounting the actual. For example, it can deal in thoughts – a central concern for the accomplishment of academic work. It can use words on a page to present an unspoken thought and invoke that for the reader. The aim is not one of categorisation, as in phenomenographic work. Phenomenography takes a 'second-order' perspective to accumulate and delineate the possible range of ways people think in a given situation and explore the relations between them (Marton, 1981). Phenomenology seeks to uncover the phenomenon at a pre-reflective level of consciousness. It is not limited to that which can be observed, recorded or 'counted'. Gourlay and Oliver (2018), who study sociomaterial assemblages, are critical of empirical educational research that is limited to externals: that which is written, clicked, acted upon, or done. This is problematic given the enduring importance at university of personal, solitary reading and thinking.

Heidegger presents a number of *existentials* pertinent to a consideration of thought and any attempt to represent it. For example, 'Dasein transcends to world and Dasein transcends in temporality' (Inwood, 2000, p. 96). While this transcending is admitted to be ineffably pre-reflective, phenomenology permits, if not requires, the researcher to attempt to address an informant's eidetic transcending, to other imagined states,

places and times. Such an approach may address d'Agnese's (2017) concerns that imagination has been occluded in educational discourses, taken up as they have been with what Biesta (2005) terms 'learnification', where education is little more than meeting the needs of the super-agentic individual learner-consumer, playing into the neoliberal agenda for the commodification and marketisation of knowledge (Biesta, 2005). Imagination has a logical place within deliberation, where multiple scenarios are mentally tried out prior to taking physical action (Dorstewitz, 2016). However, Seli et al. (2016) distinguish between intentional and non-intentional mind-wandering, with research into the latter supporting its role for the incubation of creativity (Baird et al., 2012). In the book dictated through blinking, character-by-character to a scribe, Jean-Dominique Bauby (2008) related how months of locked-in syndrome were passed in marvellous flights of fantasy, transcending his hospital bed through time and space, an extreme example of 'being (t)here' (Enriquez, 2011) in its independence from technology.

Research that considers mental journeys could compliment mobilities research that has recently recognised the importance of analysing students' ordinary everyday micro-geographies. Holten and Finn (2018) exposed pejorative discourses that denigrate the status and capabilities of those who commute from their own homes to attend university. Arguably, a phenomenological lens takes this analysis further in, to consider students' experienced (t)hereness, including their corporeal, psychic, emotional and identity movements.

Methodologically, phenomenology requires representations that help readers to also transcend, to times and spaces that would be otherwise intrusive, to say the least. This is useful in exploring mobilage since the phone is a constant accompaniment for many, to intimate place and moment, to bed and deathbed. Apart from blatant ethical access issues, direct observation of these sorts of events may require many weeks of field work to encounter directly, even if they were not altered by the researcher's presence. Indeed, existentialist philosophy holds that the phenomena of interest is unique to that individual's pre-reflective consciousness in a given moment of time and hardly accessible to themselves, let alone an other. However, in the phenomenological 'eidetic reduction' it is arguably possible to 'arrive at the intelligible contour or essence' of the experience (Flynn, 2006, p. 20), and, in keeping with the existentialist method of 'indirect communication', transmit meaning through prose.

Chapter 3: Design & Conduct

In the previous chapter I explicated the philosophical underpinnings of the thesis. In this chapter I explain how these ideas influenced decisions made in design, conduct and analysis.

I referred above to the attraction of ethnography as a preferred means of addressing the central challenge of how to apprehend and disclose mobilage. However, 'classic' ethnographies (Harper, 1987; Hill & Plath, 1998; Nardi & O'Day, 1999) and methods texts, such as Atkinson et al. (2007), Hine et al. (2005) and Boellstorff et al. (2012), make it plain that the usual scale of ethnographic data gathering seemed to put it out of reach for a project such as this thesis. However, Atkinson (2015a) argues that large amounts of data is no guarantee of analytic perspicacity and eventual worth. Indeed, while acknowledging its limitations, an aliquot (2015b) could suffice, as exemplified by Atkinson's craftwork ethnography, with just a day spent in the field (Atkinson, 2013). Although encouraging, the nature of the phenomena required a different approach because it was assumed that students mostly perform academic work on their phones almost anywhere, in short, unpredictable bursts, rather than extended periods of time.

To address this issue, learning, technology and mobilities researchers have embarked on wide-ranging innovation in ethnographic methods, including anything from digital ethnography, the study of 'life on screen' (Turkle, 1997), to walking ethnographies, which gathered device location and usage data (Germann Molz, 2014). Vergunst (2011, p. 214) is not against the appropriation of technologies into ethnographic work, but calls for reflexivity in their use:

Technologies that isolate the researcher from the rhythms and intersecting sensory and material perceptions of movement are likely to result in a loss of sensitivity in fieldwork situations, and present a greater challenge in forming research relationships... The mobile fieldwork skills that result in analytical insight are present in the combination of person and instrument, and are embodied, not technologized. (Vergunst, 2011, p. 214)

Gourlay and Oliver (2013) apparently stray from this principle in their ANT-based ethnography of students' academic work by lending them camcorders for data collection. Fenwick et al.'s (2011, p. 177) approval of ethnography for ANT research could be considered contradictory since post-humanism seeks to decentre the human. The camcorder is not discussed as an actant in Gourlay and Oliver's methods section nor is it ascribed authorship. This device is transparent, domesticated to serve in data collection and its only chance of escape is if research participants find a novel use for it as part of their studies. Don Ihde's (1990) discussion of how another kind of transparency, Galileo's telescope, led to a paradigm shift in science is a cautionary tale against the temptation to unthinkingly adopt the latest technology.

To first appearances, video seems ideal because it can collect 'total data', yet for Turkle (2011, p. 26), ethnography is 'not only about capturing events but about remembering and forgetting, choice and interpretation.' For phenomenology, the lifeworld is both source and object of study and even high fidelity video cannot capture 'prereflective lived experience' – as footage, the experience has been immediately transformed into data (van Manen, 2014, p. 313).

Jones (2015) agrees, data still need to be 'informed by understanding and such understanding still requires human beings to act as a research instrument' (pp. 229-

240), indeed, the 'research instrument par excellence' (Hammersley & Atkinson, 2007, p. 17).

Like a skilled documentary film-maker, the researcher pursues truth through designing potential moments of truth gathering, knowing that, in the event, little or no truth may be disclosed. With limited time and other resources, there was a risk that a modest number of brief mobilage encounters could only feature a small number of analytically useful moments. I therefore looked for ways to allay this risk through a kind of online focus group that could run for an extended period, providing insights from students from within their own mobilage that were physically distant from me. Davis (2017) commends focus groups for phenomenological research, although the online factor will be taken up and discussed below (see page 36).

3.1 Ethical approval

The research proposal was approved by Lancaster University's ethics governance processes as 'low-risk' (documentation relating to ethics can be found in the appendices) since the target population was not considered vulnerable *per se*. Nevertheless, potential ethical issues were assumed to permeate all aspects of research to some degree (Cohen, Manion, & Morrison, 2017): informed, voluntary consent was obtained, and measures taken to protect myself, participants and organisations, from harm in terms of confidentiality and anonymity, data protection, reputational damage, and in the light of eventual publication.

Ethics is concerned with good conduct of the research generally. Here are specific examples pertaining to this research:

- In the online focus group and encounter data, sex and professional grouping was randomised and all names replaced with pseudonyms prior to analysis.
- The consent form makes clear that students could withdraw themselves and their data at any time without giving a reason. None did.
- It was considered unethical to capture more data than necessary because this wastes time and resources. My original aims were for 20 interviews, 20 members of the online focus group, and 500 survey responses (a return rate of 15%). In the event, these estimates were unnecessarily high for the purposes of the research.
- My position as a lecturer within the organisation could unduly influence participation, but this risk was limited because, with one exception⁴, I did not have an explicit academic role with them. The main method of mitigating the presumed hegemonic imbalance was through attempting to empower informants, whether online or face-to-face (Heyl, 2007).
- In the encounters, I took photographs, including screenshots of informant's devices, and captured audio from the encounters, which raised the risk of 'incidental data' (Asselin & Moayeri, 2010) entering the corpus and this was duly redacted prior to analysis.
- At the time of writing the thesis proposal, my hands were symptomatic of repetitive strain injury – an occupational hazard. I proposed to out-source transcription to a private firm of longstanding repute at my home university. One of the proposals' shortcomings was needing to supply stronger evidence

⁴ One of the online focus group volunteers requested to join in after I had marked their assignment. It was thought that this would not substantially or materially affect their voluntary contribution, considering the foci and context of the research. This student's activity was useful if infrequent.

and assurances about the transcriber's information provenance. In the event, I decided against verbatim transcriptions for reasons explained below.

3.2 Negotiating access – shaping scope

Pragmatics necessarily played a significant part in shaping the study design. Initially I hoped to invite students from across the university, to get a broad multi-disciplinary sample. I had planned a kind of intervention study: conduct a 'mobile phones for academic use' workshop and recruit attendees for follow-up interviews to discuss what had been learned in the light of the intervention and otherwise. However, the local ethics committee advised me to scale back my ambitions to a single school. This would avoid needing to secure access permissions from as many schools as there were students from each different school. Ethics were also concerned about the high risk of coercion to participate when recruiting from a workshop. Instead, an anonymous online survey, advertised through the institutional virtual learning environment, would provide the necessary distance to guard potential participants from coercion. These decisions helped to delimit the target population within more manageable proportions. However, alongside the envisaged encounters and online focus group, I also wanted to develop a survey which was, as far as possible, consistent with an interpretive methodology.

3.3 Hermeneutic shades

Using multiple methods facilitated reflection upon the differences between them, especially in terms of aspects that could affect the disclosing of mobilage to me. I have sought to portray some of these degrees of difference in Table 2. Shading is darker at the top but not transparent at the bottom. This is intended to emphasise that **all data** is considered to require interpretation, including personal reflections. A key difference is thought to be the degree of personal physical proximity by myself to the phenomena in question. Psychic proximity is how psychically close am I to the person experiencing the phenomena, for example, how well known are we to each other.

Interpretive proximity is seeking to estimate the extent to which I have access to the phenomena experienced and meanings conveyed by informants. Is the interpretive step larger or smaller?

Coordinates of experience (Hektner, Schmidt, & Csikszentmihalyi, 2007) are here classified dualistically (external/internal) although this is intended as an analytical step for the sake of comparison, rather than normative categorisation.

From the temporal perspective, the three methods can be ranked according to time spent by the informant and their physical proximity to me: the survey was completed at a distance in a few minutes; the online focus group spanned three months but remotely, requiring only fragments of attention from members. The ten encounters lasted around an hour each and provided the most redolent experiential material for answering the research questions. Anticipating this, the *order* of data gathering and analysis was held to be important. I did not want the experience of encountering mobilage affected by findings or ideas from the other methods. In phenomenological terms, I sought to insulate my consciousness and memory for the epoché and reduction (van Manen, 2014), to experience each encounter on its own terms, even though each was bound inform the next. Learning from subsequent encounters was inevitable but less troublesome than premature exposure to survey data especially. I am wary of the reductionism essential to quantification and the existential force of numbers (Simons, 1996). I was worried that numerical 'findings' would harm my capacity to 'consider every phenomenon, including the known ones, as if they are presenting themselves for the very first time to consciousness.' (Maso, 2007, p. 139)

The survey had to be disseminated first to begin recruitment which resulted in ten encounters that occurred in December 2016 through early January 2017. Although I regularly checked the response rate, partly to determine the optimal time for a reminder email, I did not look at the survey data until after the Online Focus Group had closed at the end of March 2017.

Table 2: Degrees of interpretive proximity across different data gathering methods

	Medium	Media created	Where was 'data' made?	Duration for informant	Physical proximity	Psychic proximity	Interpretive proximity	Coordinates of experience?
Survey	Internet enabled device, screen and keyboard	Text, Ratings	Unknown – anywhere with a Web browser	Reading blurb, responses averaged 10 minutes	Distant	Response to prose by a known person (email and survey)	Remote	External - nil Internal - some
Online Focus Group	As above but affords multimedia and 'likes'	Images, video, text	Range of spaces: family trips, library, café, home	Maximum 30 minutes per week for 3 months	Distant	Distant, yet multi-method informants were better known. Virtual presence (see Kehrwald, 2010) varied.	Removed Current events less removed than recall of past events	External - some Internal – some
Encounters	Nil, but mobilage present	Images, field notes, audio	With me: cafés library, canteen, hospital concourse, train, family home,	1 hour	Immediate	Shared space/time – but recollections are more distant	Interactive	External - shared Internal - sympathetic
Auto data	Experience	Images, video, text	My settings	Ongoing	Personal	Personal	Reflexive	External - exact Internal - reflexive

3.4 Section i: Survey design

I became more sanguine about an online survey in the realisation that my then favoured methodology, ethnography, also enlisted surveys. For example, Boellstorff et al. (2012) refer to Lim and Nardi's study (2011) where nominal classification of online survey data enabled them to build an organising scheme for key aspects of the field. An online survey also opened participation from an international audience. In the event, 30 responses were attributable to overseas locations (indicated by IP address).

The online survey was approached with low expectations of contributing to the overall thesis. I aimed to garner a baseline of numerical and qualitative data about general phone use for academic work. The survey was not intended to be an instrument that could claim statistical rigor and validity, partly from an awareness of my own limitations but also to retain the project's focus on the main research question. I was also aware that the psychological literature cannot agree on how to measure even basic variables through a survey, such as *levels of use* of a mobile phone, given that any actual use may not reflect the person's awareness of the device even when not in use (Cheever, Rosen, Carrier, & Chavez, 2014).

Survey design and item wording sought to reflect the interpretive theoretical framework. With Heidegger in mind, it had occurred to me that the act of completing a survey is 'ordinary everyday' within the context of higher education. But the data collected by the survey does not capture the act or the experience of doing so, which would be required of material suitable for phenomenological writing since the survey's purpose and items draw respondents' attention to their own attitude towards and use of IT. Indeed, it must be admitted that quantitative surveys are antithetical to a phenomenological methodology which has historically emphasised the need for the researcher to encounter unmediated 'being-with', to capture the 'lived experience', and that reflexively, with in-the-moment responsiveness and sensitivity to the emergent nature of being-in-the-world (van Manen, 2014). Ideally, gathering material ought to be as non-directive as possible to avoid provoking informants into an inauthentic performance. Thus, the short survey for this study, developed in the second half of 2016, was guided by the non-directive principle to allow latitude in responses to questions, none of which were 'required' (i.e. it is possible to prevent survey submission unless mandatory questions are completed). Furthermore, many questions were 'open', inviting free text responses, even though such strategies increased the risk of responses that contained incomplete or unusable data and required much extra classification work.

I regularly use the Bristol Online Survey (BOS) system available at my home university. Qualtrics (provided through Lancaster University) was preferred to BOS for several reasons:

1. Lancaster branding – makes it clearer to students that they are participating in an external research project.
2. Variety of question types and features: logical operators and response re-use;
3. Automated recording of anonymous browser information, such as time taken, IP address, kind of device, etc. that the response was sent from;
4. Automated reporting via system-generated email and extensive in-browser reporting tools
5. Distribution management – this feature was unused because I disseminated the survey through an anonymous hyperlink.
6. EU data provenance, although no personally identifiable data is invited, of course free text responses may allow respondents to identify themselves inadvertently.

7. Highly responsive support systems.

Access to the online survey needed to be limited to the target population. For this reason, the survey was not advertised except through one message to only the target population on the institutional virtual learning environment and one follow-up email again addressed to only this population. To encourage students to read this message, the reminder email was personalised through 'mail-merge', automatically addressing the recipient by their first name. As with the initial announcement, this message also constituted an invitation to participate and links to the information sheet and consent form stored in Lancaster's Box cloud-based system. This meant that, if necessary, I could correct the files' contents after the emails had been sent and recipients would still download the updated versions.

Online survey-based methods are a common choice for social science researchers, for reasons of efficiency, not least in terms of safe passage through ethical governance. They do present other challenges concerning the validity of self-reported data as compared with observational or experimental designs. The researcher has no control over the setting where the survey is undertaken or the state of the respondent. The corollary of negating coercion to participate is that it may contribute to low response rates, compared with telephone or postal surveys. Frick *et al.* (1999) discuss financial incentives for completion where intrinsic motivation may otherwise be lacking. Apart from the financial cost of introducing an incentive from the beginning, there may be an ethical or at least philosophical conflict in terms of scholarly values which eschew financial or any other kind of motivation. The shared pursuit of knowledge should be adequate intrinsic motivation. The informants I met seemed to understand this, they would not accept so much as a hot drink from me. However, I hoped that interest in the research would be stoked by the topic itself, anticipated to be an issue close to the hearts of many in my target population.

Amongst other design recommendations aiding completion rates, Cohen *et al.* (2011) advise against setting questions that enforce responses and, of course, brevity is enjoined. The survey was quite short, Qualtrics provided an estimate for completion time of 10 minutes. Cohen *et al.* (2011, p. 277) warn against assuming too much of respondent's IT capabilities in terms of completing an online questionnaire, although this population, i.e. university students, is likely to contain a relatively high proportion of those who can at least complete an online form, given that they cannot join the university without doing that at least once.

The survey has five sections: brief demographics, details of the phone, activities attempted on the phone, how this was learned, and inviting to the interviews and online focus group. A description of these sections and screenshots of the complete survey may be found in Appendix 2.

3.5 Section ii: Experience sampling in an online focus group

Many recipients of my invitation to participate in the research could not arrange to meet me within the advertised timescale. The target population includes students domiciled overseas for the duration of their programme, and many UK-based students travel significant distances to their campus. Also, data gathering was launched not long before many students depart the city for the winter holiday. I wanted a way to include as many students as possible in the study without obliging them into inconvenience and, having noticed Jones and Healing's (2010b) use of a 'cultural probe' *cum* 'day experience' method (Gaver, Dunne, & Pacenti, 1999; Riddle & Arnold, 2007), linking this with my own experiences with online forums (M. R. Johnson, 2010), the idea for a suitable method took shape. I hoped that an online forum could offer all students, regardless of location, the opportunity to contribute over and above the online survey.

Scollon et al. (2003) discuss 'experience sampling' (ESM), a similar approach to the 'cultural probe', based more in psychology, tracing its use from as early as the 1920's. Scollon et al. go on to delineate variations in the method over time, including those arising from the application of new technologies. Essentially, participants are asked to repeatedly respond to certain stimuli over a stated period of time and self-report that as experiential data. The 'cultural probe' variant of Gaver et al. (1999) performs a kind of market research function for potential art installations in three cities. Kahneman et al.'s (2004) hybrid 'Day Reconstruction Method' requires participants to complete a diary of the previous day's experiences. They claim that a single questionnaire is more efficient and less burdensome for respondents than ESM. In all variants of ESM, including those with proximal foci to this thesis (Gourlay & Oliver, 2013; Jones & Healing, 2010b), data is sent one-way, directly to researchers for analysis. For this thesis, an online focus group enabled the sharing of responses and interaction. This move arguably did more to level-off hierarchies in the research than all my theorising along post-humanist 'symmetry' lines. Indeed, the focus group became valued as an epistemic exchange by all members, myself included.

Neither ESM or online focus group

As mentioned in the introduction (page 14), the phrase 'online focus group' was used in inviting participation, to give potential members an idea of what they were being asked to join. It was assumed, given the audience of university students, that 'focus group', as a concept, implied a defined time physically in the same location with other members where they would be expected to volunteer responses to non-demanding prompts and interact with the group from their own experience and perspective in the presence of a facilitator. This sort of 'common sense' understanding of a focus group has featured in methods texts for some time (Cohen et al., 2011). In the interpretive paradigm, focus groups are an established method for gathering a collective voice. Liamputtong (2011) emphasises their value for symbolic interactionist research, especially in opposition to individual interviews or surveys. The group setting is thought conducive to encouraging and analysing authentic everyday interaction. However, this project is less a study of communication than learning, and of the experiences and practices which learning entails when a mobile phone is part of student life. The distinctive of a focus group is the group dynamic, with the 'focus' of debate taken up and directed by the group, even if the setting and theme is devised by the investigator. This latter point is a strength and a weakness. Focus groups are artificial: this is reinforced by necessary elements such as gaining informed consent, recording the session, the choice of location, the presence of facilitators and strangers, etc. Cohen et al. (2011) state that these factors make group interviews 'of

little use for allowing personal matters to emerge' (p432). However, computer-mediated communication has achieved a level of notoriety for way that deindividuation effects, amongst others, lead to disinhibited publication of personal views (Chester & Gwynne, 1998; Light, Nesbitt, Light, & White, 2000). Krasnova et al. (2010) explores *disclosure*, not the *concealing*, of personal matters in online social networks. Arguably, an *online* focus group could reduce the psychic force of some aspects of co-presence because informants respond from physically remote settings of their own, and typing is frequently an individual and private activity. This private composition and subsequent sharing has similarities with nominal group technique, although in that case a facilitator can manage participation to extract members' contributions but not before each one has written out their thoughts, thus collating individual responses (Van De Ven & Delbecq, 1974). The online forums in Blackboard™ (virtual learning environment) offer a similar feature that withholds viewing the forum until participants have added their own thread. It was felt this would contribute to a draconian online culture whereas I was seeking to inscribe group membership as typical of a community of equals, where values of mutual respect and trust could encourage appropriate levels of sharing private experiences (McConnell, 2006). In Nguyen et al.'s systematic review (2012), these 'scene setting' elements of relationships, mode of communication (comprised of aspects such as level of informality), and context were found to be more important for disclosure of personal information than merely being online.

In virtual ethnographic practice, Rutter and Smith advise caution in defining 'the where that we are studying' (2005, p. 85). The online nature of the group allowed remote and distributed participation: another perspective of mobilage *from that remote locale*, from physical and temporal settings not possible or even available to observe in person. As such, this '*view from the inside*' relies on informants sharing, rather than my personally experiencing their mobilage. As a doctoral student myself, I could have affinity with the group members and the matters they surfaced through the forum. However, I was removed a significant interpretive step which obliged additional caution when analysing the corpus of forum posts. In any case, forum messages could not be considered pre-reflective 'data', as such. At best they provide hints about that.

Riddle and Arnold (2007, p. 4) claim that the 'day experience' method benefits from being less subject to ideological biases than other methods but do not explain why. Perhaps informants are thought to not have ideological biases, although this would only affect one part of the study, data collection and, even then, the role is prescribed and inscribed with the primary investigator's ideological biases. Riddle and Arnold's claim could relate to Hektner et al.'s (2007, p. 6) point that 'an observer', however subtle she may be, adds to the informant's sense of being researched. This is a concern for almost any human research, but that which hails from fields where experimental designs are the norm and objectivity an high aim are especially wary, but they are also not as transparently reflexive as those informed by ethnographic values and sensibilities (Atkinson, 2015a).

ESM advocates counter that participant observation may not address affective, cognitive, or situational aspects, especially when time in the field is limited and phenomenal occurrence sporadic, and still less will data be from the informant's perspective: the experience sampling method (ESM) was designed 'to capture both the internal and external coordinates (or dimensions) of experience' (Hektner et al., 2007, p. 43). ESM attempts this by directly asking participants to record the time and date, location, companions, activity, feelings, etc. In keeping with Kukulska-Hulme's (2009, p. 357) recommendation for mobile learning research, Riddle and Arnold (2007, p. 4) celebrate elevating participants into the role of 'co-researchers' because

memory recall distortion is reduced, the informant being asked to respond to questions about their immediate circumstances. However flattering, it is not clear to what extent participants successfully accede to all that this 'co-researcher' role implies. Within the original ethnographic framework, field-based actors are spoken of as 'informants' respecting their role and humanity. However, if ESM's 'co-researchers' surface anywhere it will likely be anonymously in the acknowledgements: they are not ascribed equal agency, do not collaborate in design, analysis or publication laurels, as may be the case in action or design-based research.

Furthermore, ESM assumes that its participants are sufficiently engaged and in touch with their subjective selves to give reliable answers to the researcher, even when veiled behind the relative anonymity of a paper form. Any spatiotemporal disjuncture between informant and researcher, as in the online focus group meant that it is not possible to gauge how immediate informant responses are, and even then, informants could still stray into retrospection in answering questions about their 'now'. This point may be less of a concern for psychology or cultural research than phenomenology. From a standard phenomenological perspective (e.g. Heidegger's concept of 'thrownness'), when a subject tries to speak of their 'now', it has already passed, and therefore references to the 'immediate' must be considered an interpretive act, even by the subject.

Nevertheless, some funded research projects have enlisted students as co-researchers, providing them with video recording devices (Gourlay & Oliver, 2013; Jones & Healing, 2010b), affording them the intuitive appeal of taking the researcher's eyes with them, but that was not financially possible for me and I did not want video data. The goal to capture video markedly increases complexity for questionable analytic gain (*vis.* discussion above on page 29) and it could overtly favour involvement by those with higher-calibre devices and/or the more technically capable, as well as increasing the risk of unwittingly leaking sensitive information into or out of the study. This risk is somewhat mitigated by asking students to share mainly textual data directly into a private Yammer group.

Microsoft Yammer

Yammer had recently been established as a University-wide service offering an organisation-wide asynchronous group discussion platform. Similar technology has received significant attention from educational researchers for over 20 years (Stahl, Koschmann, & Suthers, 2006) and the use, strengths and pitfalls well documented (for example, Salmon, 2000). Yammer was chosen over other similar tools for the following reasons:

1. Yammer enabled flexible methods of responding through the mobile app, Web browser or replying to email. If an alert email arrives, replying to that posts a reply to Yammer without having to visit the Yammer Web site or app.
2. System-generated email notifications, possibly containing sensitive information, would arrive in university in-boxes rather than private ones.
3. Yammer is a robust platform with fully developed software across a range of systems, especially mobile. It was hoped that the mobile app would encourage responses to the cultural probe prompts '*in situ*'.
4. Technical support was available from central University IT services.
5. Use implied ascent to the University 'acceptable use' of IT policy.
6. Yammer is secure in that users are required to access it using their student login credentials.

7. Participation did not require sign-up to or existing membership of an external social media platform. Using Yammer respected students' potential sensitivities about separation between life as a student and as a private individual.
8. Allows participants to leave without having to seek permission from anyone else.
9. Allows private groups that are not visible to anyone but the participants and central administrative staff.
10. Contributions could not be edited or deleted once posted, except by myself or central University IT staff. This reduced the risk of accidental deletion of data although, after the focus-group closed, these edit and delete options became generally available.
11. Yammer was less intrusive and disruptive to informants' personal use of social media. Yammer participation did not require sharing phone numbers.
12. The university-based context of Yammer meant that participation and the foreclosing of that could be controlled.

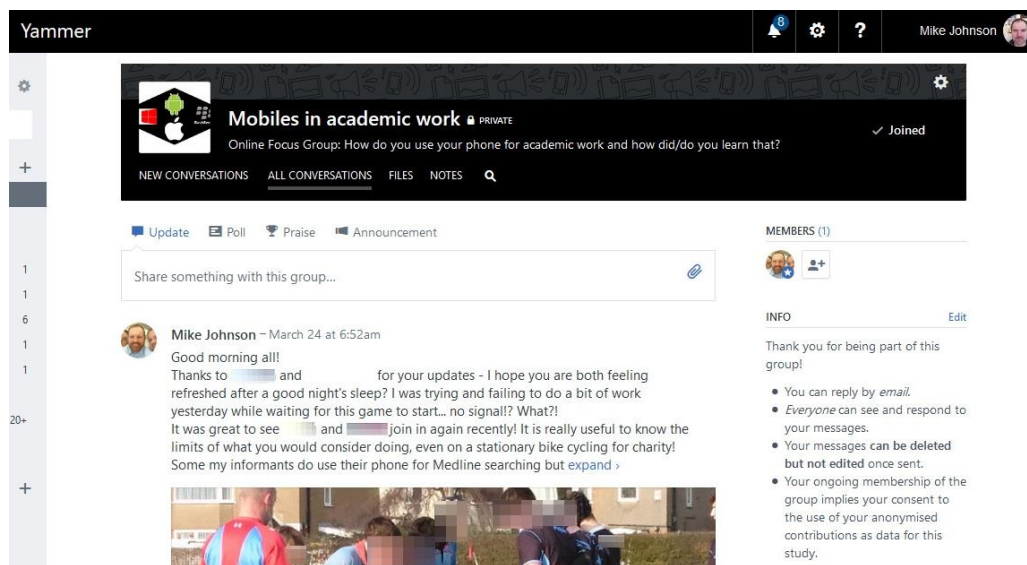


Figure 9: The Online Focus Group's Yammer interface on a laptop

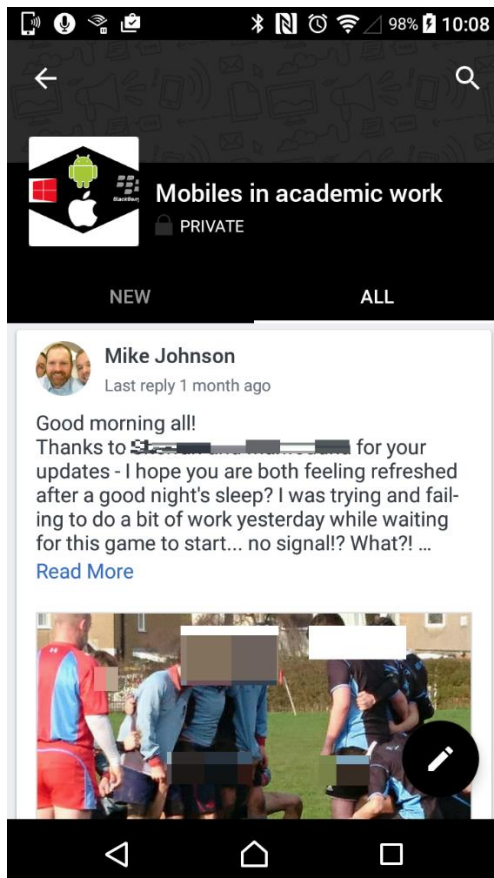


Figure 10: The Online Focus Group's Yammer mobile app interface

Virtual consent

The process for gaining informed consent for online focus group members was paperless to facilitate remote participation. This was more feasible because of the assumptions I could make about the linguistic capabilities of a population comprised of students in higher education. Very few students responded to the announcement on the institutional Virtual Learning Environment; more replied to the reminder email. Before simply adding them to the group, I replied with copies of the ethics documentation, asking candidates to reply with an affirmation that they had read and understood it. I also required them to positively state their consent to participate according to the provided 'terms of engagement' (copy in Appendix 8). I did not hear back from two students: perhaps this further round of email correspondence was off-putting, but, with evident disengagement in the preliminaries, they may have retired early from the study anyway.

I was concerned that students might forget that they were in a research study online and unwittingly reveal sensitive information, especially given the extended term of the focus group. This requires a balanced approach because informants should feel free

to provide their contribution but within the defined perimeters of propriety. The presumption of ongoing consent was made explicit by adding a prominent statement to the Yammer group's interface (see Figure 11).

As a member of this group you are consenting to participate in this study and your anonymised contribution will be confidentially used as data for analysis and future scholarly publication. You may leave the group at any time and ask for your data to be omitted from the analysis without giving a reason. This will become more difficult after the group has concluded so please make your wishes in this regard known as soon as possible.

Figure 11: Ongoing consent notice in the online focus group

However, this was not visible in the mobile interface and overbearing even in the Web browser view. Instead, four guidance statements were added to the 'INFO' field and three links pinned, e.g. to the introductory ethics email (see Figure 12).

INFO [Edit](#)

Thank you for being part of this group!

- You can reply by *email*.
- *Everyone* can see and respond to your messages.
- Your messages can be deleted but not edited once sent.
- Your ongoing membership of the group implies your consent to the use of your anonymised contributions as data for this study.

GROUP ACTIONS

[View Group Insights](#)

PINNED [Add](#)

- [CU Acceptable Use of IT R...](#)
- [Introductory ethics email](#)
- [Avoiding Information Ove...](#)

Figure 12: Web browser view of Yammer Group right-hand panel

Creating a safe online environment

As with co-present focus groups, participants were identifiable to each other and thus participation within the group was contingent on their agreement to respect and maintain confidentiality within the group. Rules of participation were designed to help assure volunteers of their safety and right to withdraw at any point (see Appendix 8). Participants were informed that a breach of these terms, or the University's 'Acceptable Use of Information Technology' policy could lead to removal from the group and their activities notified to their personal tutor. This could include onward referral to the local Fitness to (clinical) Practice panel which could result in removal from programme of study in very serious cases.

As recruitment proceeded it became clear that students at various academic levels, as well as academic staff who were also students would be taking part. I was unsure how this would affect engagement, but a more sanitised and staged revealing of the self could be expected compared with the encounters. Conversely, the research foci could be considered non-controversial, which may have helped individuals to share more freely. However, researchers cannot presume what an informant might consider 'non-controversial'. In two encounters informants looked with intensity into my eyes and asked if the research was truly anonymous before relating what could only be described as modestly 'everyday' observations. As with the survey, which invited individualised responses to open questions, the absence of a wider audience in the encounters meant there was no opportunity for gauging shared agreement. Study can be a solitary experience and yet, for many, a key part of mobilage is communication and social networking (Madge, Meek, Wellens, & Hooley, 2009).

Duration of the group, timing of the triggers

Most variants of ESM feature quite intense participation within a limited time period, such as across a day's waking hours (Jones & Healing, 2010b; Scollon et al., 2003, p. 13). My study intended to gather a more rounded picture of activity, where learning and interaction could take place over months rather than single days. This duration allowed for time to reflect – learning can be realised in a moment but paths of thought can take a while to mature. Three months was equivalent to the length of a module in a programme of study and therefore more than sufficient to allow the group to coalesce as a networked learning community (Goodyear & Networked Learning in HE Team, 2001).

Just one trigger was sent at a random time each week. These were received by email or mobile app, with a consequent loose coupling between the time I sent messages and the time students got them, and then a further delay until they eventually responded. These triggers did not break into members attention in the same way as would a question to a co-located focus group or in participant observation.

At times it felt like floating an electronic 'message in a bottle', much more akin to sending one of Gaver et al.'s packages (1999, p. 22). These contained maps, postcards and disposable cameras (see Figure 13 on page 43). Their work inspired me to broaden the types of questions asked and make use of multimedia in the design of probes.



Figure 13: An example of Gaver et al's (1999, p. 22) cultural probe packages

Threads and Triggers

By the end of March 2017, the forum was comprised of seventeen threads in total (see Box 1):

- 2 pre-launch scene-setting threads
- 2 threads initiated by members (Aisha and Charlie)
- 13 probe threads initiated by the facilitator
 - 8 contained standard questions and a topic for discussion
 - 5 contained standard questions

20161219-0918 Welcome message
 20161221-1753 I thanked members
 20161223-0753 Trigger – 'Half way up the stairs'
 20161231-1222 Trigger – 'I will carry you with me always' (grounded)
 20170107-1135 Trigger - Complex spreadsheets while cycling?
 20170114-1316 Trigger - About sound (grounded)
 20170121-1633 Trigger - More about sound
 20170127-1100 Trigger - Flow
 20170204-2140 Trigger - Using work done on mobile (grounded)
 20170209-1215 Informant – getting an app to read a PDF to me
 20170213-0732 Trigger - Speech-to-text (grounded)
 20170224-1545 Standard questions
 20170225-1200 Informant - TED distractions clip
 20170302-1532 Standard questions (bunch of daffodils)
 20170315-1442 Standard questions - 3rd from last (spring flowers)
 20170324-0652 Standard questions – work everywhere blurb (rugby picture)
 20170329-1324 Standard questions (last one)

Box 1: Details of the 17 online focus group threads

The probe messages contained two parts. Following Riddle & Arnold (2007), members were asked a mostly standard set of questions with regards to academic work:

1. Where are you?
2. Who are you with (do not share names, just relation to you),
3. What are you doing?
4. What are you using?
5. How do you feel about this?

These questions direct members' attention to their current circumstances and experiences, with the expectation that they will explain them for other group members. As acknowledged above, the standard questions were not expected to afford a pre-reflective (i.e. phenomenological) unveiling of mobilage although it was hoped they would provide material indicative of that.

The second aspect of a probe message was designed to foster a collaborative discussion related to the research questions as well as exemplify the kind of open experiential sharing I hoped to encourage in members' responses. Two examples are given below in Figure 14 and Figure 15. This discursive aspect featured in the first eight of the thirteen probe threads. Four of these were prepared prior to launch, but four were grounded in comments made by group members, in recognition of members' contributions and emergent group foci. In February 2017, two members initiated threads, demonstrating their engagement and sense of ownership. I warmly welcomed the extra participation but did not succeed in encouraging more. In March 2017, as participation lagged, I feared that the group was fatigued and decided that responses to the standard questions were the most I should expect, although I did add pictorial ornamentation and comment for interest.



[Mike Johnson](#)

December 23, 2016 at 7:53am

Announcement: Half way up the stairs...

Here's the first trigger! Just about got it in before Christmas. I'm leaning into a narrow window opening, snatching a moment on a grey day between locations and between floors to avoid interruption while I check email and fire off a few.

1. Speaking generally, where are you (physically located) reading this message or where are you going next?
2. What academic work are you doing or will you attempt next?
3. What part will your phone play in the answers above?
4. How are you feeling?

Please answer any/all of the above as soon as you are able with as much detail as you can spare in 5 minutes :)

(please feel free to add pictures, just be careful to avoid taking pictures of people who could be identified)

Happy Christmas and New Year to you all!

Mike



Figure 14: The 1st Online Focus Group trigger: 23rd December 2016



[Mike Johnson](#)

January 21 at 4:33pm

Announcement: More about sound

There are a number of ways that what we hear can powerfully affect us while trying to get academic work done...It's a tired point in the day now. The dog snoring beside me is no help! So I turned to Liszt <https://www.youtube.com/watch?v=Yv5r28O96a8> My yawning stopped immediately! But then, having woken up I find the music is a bit distracting and enjoy the quiet again by turning him off...

I think I am unusual in having used classical music while writing assignments since I was about 13 years old: late night sessions with Brahms up loud into my headphones...

I have also used 'nature sounds' and 'white noise' apps to block out distracting sounds around me when trying to concentrate... Some of this is best through headphones... I have a cheap set of the [noise-canceling type](#).

Have you tried any of these things with your phone? How have they varied from my methods?

If you have time or cannot answer the questions above, please do consider the 'probe' questions:

- Speaking generally, where are you (physically located) reading this message or where are you going next?
- What academic work are you doing or will you attempt next?
- How are you feeling?
- What part does (or will) your phone play in the answers above?

Many thanks!

Mike

Figure 15: Online Focus Group Trigger from 21st January 2017 'More about sound'

Participation and Moderation

As documented in the computer-supported collaborative learning and networked learning literature (Koschmann, 1996; McConnell, 2006), it is one thing to establish a safe online environment but another to make it suitably conducive and engaging for ongoing dialogue. Members should feel comfortable in the anticipation of visiting, and then actually reading and sharing must not become too burdensome. This requires design and diligence. During build up to the launch, I informed student expectations that any response to triggers they could manage was welcomed, however late, and this was reinforced whenever students apologised for lack of input.

Management of a focus group is much different online. There is thought to be a flattening out of hegemonies online due to limited, primarily textual channels of communication. Nevertheless, subtle language cues can still communicate gendered speech (Hodgson, 2002) and a textual message rips virtual air more than a nuanced interjection or gesture when facilitating a focus group in person. I was cautious about over-stepping established expectations of participation since every additional post adds to the 'work' of the group, reading, reflecting and responding, which can leak out across the lifeworld. This is in marked contrast to a contemporaneous co-present focus group where members of a focus group have collectively surrendered their attention to the purposes of the group for its duration, usually not more than an hour in one sitting. The extended time and asynchronous online format did not necessarily negate all spontaneity and there were a few examples of 'close' exchanges; although responses were bound to fall short of the kind of repartee possible in a co-present focus group. In contrast, typed posts were notably reflective as interlocutors cannot interrupt each other.

Cohen et al. (2011, p. 433) suggest that group interviews lift the unit of analysis from individual contributions to the group consensus, achieved through a dialectic sequence of communication. However, in an online group, individual participants are likely to be physically remote from the other members. In this research members arrived at the group expecting to respond to the 'standard' questions about their own situation, as well as possibly interacting with the other members.

Data handling and analytic approach

Online focus group data was extracted from Yammer through a manual process of copy/pasting into ATLAS.ti where each topic thread became a new document. First though, to protect group members' identities, the translation process required anonymising the data apart from my own. Microsoft Word was enlisted to systematically find and replace personally identifiable words and pictures. Informants' avatars, provided media, and text other than names had to be scrutinised for any possible connection with the individuals in real life. Judgements about what should or should not be changed were sometimes finely balanced. For example, unless a user uploads their own, avatar images are system-generated from user's initials and appear with every response across Yammer: these had to be replaced with an image of my own choice or making (see Figure 16 where the pseudonym Benjamin Sanchez is represented by the circle bearing their initials and a teapot image accompanies the pseudonym Chris Wood). However, photos of a phone cover, a member's pet, a location, were left unchanged for the coding stage where these were judged to be sufficiently generic. For publication, these images would be replaced with illustrative ones, as for the 2018 Networked Learning Conference paper (M. R. Johnson, 2018a) (see Figure 16). For analysis, I attempted to retain the 'look and feel' of the Yammer interface in the corresponding ATLAS.ti documents (see right-half of Figure 16).



Figure 16: Slide presented in the Networked Learning Conference 2018 showing anonymised online focus group data

The documents in ATLAS.ti were then coded in layers to allow navigation and analysis:

- All contributions by an individual.
- Data relating to the three research questions.
- Greater interpretive weight was attributed to quotes that appeared to be describing unfolding events (self-reported simultaneous, or SRS) than past events (self-reported recall, SRR).
- 'Interaction units' (Davis, 2017, p. 94), where contiguous discussion was related to a particular topic.
- 'Conversational turns' were descriptively 'open coded'.

These coding layers, as well as simply re-reading the corpus, aided a constant comparison analysis method in order to elucidate emergent themes (Davis, 2017) pursuant to answering the research questions.

The actual conduct and findings of the online focus group will be covered below in chapter 4 (see page 78).

3.6 Section iii: Encounters not interviews

To reprise some phenomenological methodology from Heidegger, Dasien is *being-in-the-world*. Research conducted by Dasien inevitably implicates *being, a priori* - for Heidegger, merely invoking a *copula* (who *are*, where *were*, why *is*, etc.) cloaks, and begs, the question of Being, behind the subject and object that frame the ostensible research question. Heidegger argued, 'the question of Being', the *seinsfrage*, was primordial (1996, p. 23), the 'darkest of all' (1996, p. 23), i.e. the most elusive concept to sense. As mentioned above (page 23), the shoemaker becomes aware of their hammer when it breaks, shifting from 'ready-to-hand' to 'present-at-hand'. It is hard to capture the experience of a hammer 'ready to hand', it somehow always 'flies below the radar' of consciousness.

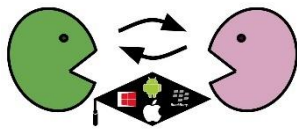


Figure 17: Icon developed for marketing the 'interviews'

It may make intuitive sense to argue that interviews of various sorts *are* an unremarkable everyday feature of university life, whether for admission, supervision, or participating in research, and yet, in the case of this study, drawing attention to ones' phone as an object of study, and reflecting upon that in an interview is fundamentally different to using it in a pre-reflective way in an interview, 'as a matter of course', as during an everyday conversation, for example, to look up a Website or check social media. Heidegger thusly commends circumspection, instead of being drawn in to consider the dimensions of the phenomena in question; rather, the only hope is to encounter the experience in progress. Van Manen cites Serres, 'Nothing is quite as easy as naming, describing, conceiving' (Serres 2008, cited in van Manen, 2014, p. 164), and the interview method had to sensitively balance these considerations while yet properly addressing the research questions.

In 'For Ethnography', Atkinson (2015a) is critical of the way that the interview has supplanted participant observation in ethnographic research. Interviews are themselves 'a form of social action' (2015a, p. 97) and the data they provide is inevitably coloured by the 'act' of recalling memories and relating these at interview. However, in a self-confessedly polemical book, Atkinson perhaps goes too far in contending that interviews '...furnish no opportunity to study the techniques and skills that social actors deploy in the course of their daily lives...' (2015a, p. 92). Indeed, Maso endorses 'a kind of open interview' to pursue a shared empathetic exploration of phenomena (Maso, 2007, p. 141). With the lofty aim of horizon fusion (Gadamer, 1992), 'mobilage encounters' attempted epistemic exchange, sharing knowledge, learning from one another, one of the highest forms of empowerment an interviewer can bestow on their informant (Heyl, 2007, p. 377). In contrast, in Holton and Harmer's study of students using a walking tour app, field notes seem dislocated from the observed participants, with researchers having to make educated guesses to interpret gestures and other activity at a distance (see Holton & Harmer, 2019, p. 138).

Informants and Field settings

Although I aimed to interview twenty students, I am grateful for the ten informants who volunteered. They included range of academic, gender, age, ethnic, and disciplinary spectrum, summarised in Table 3 below. However, given the predominance of white females in the undergraduate student population, these were notably absent, and undergraduate was under-represented in general. Informants

names, gender and discipline have been changed to protect anonymity in the body of the thesis.

Table 3: Demographics of encounter volunteers

Academic level	UG 3, PGT 3, PGR 4
Age group	18-24 1, 25-34 5, 35-44 2, 45-64 2
Gender	Female 6, Male 4
Ethnicity	White 6, Asian British 2, Asian/Overseas 1, Black/African 1
Nursing or Allied Health	Nursing 7, AHP 3

The ‘mobile’ aspect of the mobilage phenomena implicates diverse contexts, indicating a need, ideally, to take in a range of naturalistic field settings and attempt to disrupt interview formalities and hegemony, and as far as possible, to strike up an ‘ordinary-everyday’ style of conversation. Tactics planned to promote this aim included meeting informants in a setting of their choice which could be taken as typical of a locale where they might conduct academic work on a phone and, if possible and permissible, sitting alongside informants rather than opposite them. Encounters aimed at fusion of mobilage horizons rather than ‘participant observation’. Observation, as such, was not primarily conditioned by my intention to objectively look upon someone else’s mobilage and collect data about it. Rather, although the research questions framed the intent and purpose of the meetings, observation was what I could do because I was there, sharing the air.

Ten meetings were held in the following locations:

- Informant’s home, living room 11am - a 30-minute drive from my base.
- Commute home - walking from the informant’s office, taking their 20-minute train travel with them.
- Two used university meeting rooms 12.30pm and 3pm
- Office belonging to the member of academic staff being interviewed
- Hospital canteen 4pm - deserted
- Hospital concourse 10am – busy milieu
- Hospital concourse café 4pm – busy milieu, incidental music and gushing milk steaming
- Independent café 1pm – quiet, incidental music and conversations in the background
- University café 9am – quiet except for one loud couple

In most cases, even the more public settings were moderately quiet. The university meeting rooms felt too sterile for what I was trying to achieve. On the contrary, two of the meetings which took place in public locations were perhaps too ‘everyday’, influenced by the incursion of other people known to either or both of us.

1. An acquaintance on the same commute joined in discussing aspects of student life quite different to the research questions. Although this was considered unfortunate at the time, it does highlight one of the threats to accomplishing academic work in public: the social norms at play in public contexts require us to prioritise the maintenance of human relationships.
2. Someone known to me drifted into the café and disturbed my concentration significantly. We did not speak but they were bearing a painful emotional burden *and* they knew I also had experience of the same thing. This illustrates the Heideggerian *existentiale* of ‘care’ that permeates being and travels with us. It can be difficult to calm and focus psyche anyway, without bumping into redolent reminders of powerful perplexing events.

Conduct

I sought to encourage informants not only to *describe* but also *enact* mobilage:

- Evoking mobilage through a map sketching exercise (Gourlay & Oliver, 2013).
- Invoking mobilage through enacting digital practices *in situ*.

I encouraged students to discuss difficulties and complexities and how these were overcome in the different learn-places/transits. This mapping aspect of the method is inspired by Gourlay and Oliver (2013) although this sometimes deteriorated into writing lists which may have been cognitively easier but arguably less evocative for the purposes of eidetic recall (see samples in Figure 18)

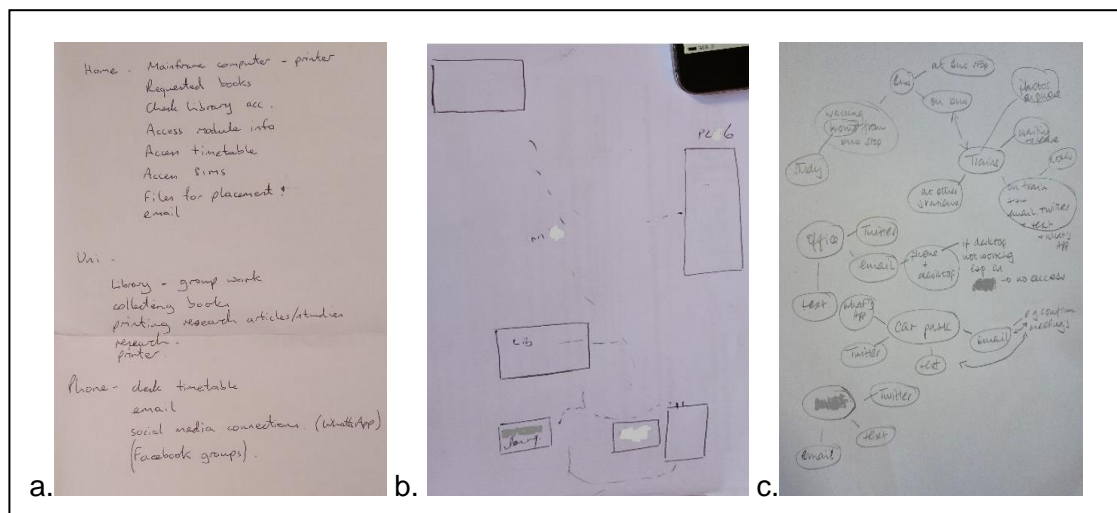


Figure 18a-c: Learn-places - Mo's list, Arlo's map, Ian's mindmap

50

I recorded brief field notes, supplemented by a photograph of the interview locale, in such a way as to avoid eroding the participant's confidentiality. These images were expected to help with recollecting the encounter for analysis. The field notes were primarily reflective, written after the encounter because I wanted to avoid losing eye-contact, or for our conversation to be unnaturally restricted by note-taking.

The consent form asks the participant if they were willing to be contacted to arrange a second interview. I decided not to pursue this because it became apparent that the encounters provided adequate material for the study and I did not wish to further inconvenience the students.

Two reflective questions gave cause for methodological angst:

- Had I really 'encountered the mobilage'?
- Was I witnessing 'pre-reflective' activity?

I was more confident about the first than the latter question: yet meeting the constituents of mobilage, as 'student-with-a-phone', was no guarantee learning would happen or, if it did, be noticed such that it could help answer the research question.

The extent to which I could witness and notice the 'pre-reflective' in mobilage was a recurring concern that was only relieved after reflecting on Ian's audio recording. To my frustration at the time, Ian not only asked to halve the encounter duration, but he went on to spend twelve minutes enthusiastically mapping learnplaces on paper. The recording features long periods of scribbling and paper-flipping⁵. Later in the recording the informant refers to their preference for paper and pencil for optimal note-taking. I realised that the extended mapping and listing had disclosed a genuinely pre-reflective epistemic activity and I have tried to distil something of this in Ian's vignette (below).

Vignettes

One of the principles underlying the research proposal was a commitment to the complexity of protean contingent personal human phenomena. It was thought that this could be best represented by narrative means, as favoured in ethnography. The size, purpose and nature of this thesis indicated vignettes as a suitable and flexible form, as opposed to an extended unitary account. Other narrative forms, such as parables or fables were considered too restricted in scope.

Van Manen (2014, pp. 250–254) uses 'anecdote' for phenomenological prose and lists seven points which define their narrative structure. For example, 'An anecdote is a very short and simple story'; 'An anecdote often has an effective or "punchy" last line; it creates punctum' (2014, p. 252). Although I am in sympathy with these points, and the theory and purpose behind them, vignettes allow more flexibility in form and content, e.g. images and even computer code. Vignettes, like anecdotes, are brief, focused and illustrative rather than comprehensive. As such, they have been put to a range of uses in qualitative research, e.g. as stimulus material in interviews (Mann, 2016) or thematic portrayal, as in Ackland and Swinney (2015). In this thesis, vignettes serve various purposes: analysis through reflexive fabrication of composite

⁵ This informant gave express permission to release the (anonymised) recording of them scribbling and this may be obtained from <https://soundcloud.com/mike-johnson-321/an-informant-scribbles-with-pencil-on-paper>

accounts; concealing informant identities; representation through evocative prose and generally exhibiting material that aids answering the research questions.

Analysis through writing

I first encountered the generative dialectic potential of writing through studying the field of learning technology. Writing and sharing text online sets up the potential for double-stimulation (Hakkarainen, 2009) where externalised ideas are thence available for reflection and further refinement, as exemplified in Goodyear's work with collaborative reflective writing cycles (Goodyear, 2005).

Before committing to vignettes in this thesis, I essayed to write one. It was an account to convey the essence of a 'day in the life of' my own mobilage. A lengthy and demanding editing process ensued, revealing tensions and contradictions in meaning-making as I progressed towards what I hoped was, for readers, fidelity with the mobilage phenomenon.

In developing that first formative vignette, I observed that the process required dialectic grappling with the phenomena. This is far different to the work incurred by re-reading and coding transcripts, as I have done in previous qualitative research. The phenomenon itself was encountered in real life but the interview and everything in it was irretrievably veiled in the past. Any recording or verbatim interview transcript may be a faithful and enduring record, but it is not the thing itself. The act of transcribing from audio recordings and coding is sometimes thought to bring one 'closer to the data' but the data is not the phenomenon. I have experienced moments of euphoria in the process of transcription and coding at gaining a new insight. But I have also become suspicious of these moments precisely because of their emotive impact – did that impact make the 'new' insight more apparent than real? Transcription and coding can facilitate conversation or thematic analysis, but I am less confident that these processes can disclose 'being'. Although, once gathered, the *data* does not change, *time* passes, the researcher is in a state of perpetual becoming (Heidegger, 1996, p. 278): my consciousness churns on, and the particular experiences that coincided with data gathering cannot be re-experienced in exactly the same way again. Reading even just one word at different points in time is like peering one-eyed into an old tin kaleidoscope (such as in Figure 19) - looking down its two-dimensional tunnel at the same lumps of refracting plastic falling around: the pattern is always different and wonderful.



Figure 19: Kaleidoscope. Dan Pope on Flickr (Creative Commons licence)

What we can do is evoke the most redolent memories of the phenomenon into consciousness in order to create text which aims to evoke an approximation to the phenomenon each time a vignette is read. In representation, the aim is more than 'speaking for', but also 'returning to presence' – *re-presencing* (van Loon, 2007, p. 279). Even so, I endorse Munro's warning that accounts, at best, may '*afford* their interpreters meaning – much like a chair affords the possibility of sitting rather than that it contains any sittingness as an intrinsic property.' (Munro, 2012, p. 77)

These conclusions vindicated my earlier decision to collect visual mementos of the encounter: contextual cues through photographs, however mundane, of the meeting location, handwritten contextual observations, in addition to the audio recordings. These were played back into consciousness by looking at the visual artefacts (see Figure 20 for an example below) and repeatedly listening to the audio recordings.



Figure 20: Contextualising encounter memento

Thus, I decided against verbatim transcription as an unhelpful ossification of the phenomena. It is a deliberate move to avoid the trap of obsessing over a transcript in a way that raises its experiential status above that of the phenomenal moment past. Nevertheless, listening to the recordings became clumsy when I needed to navigate them so a descriptive index was created for each encounter, enabling annotations along the recording's timeline. The index was simply new line of descriptive text every 30 seconds of audio. These were rendered in Evernote (see Figure 21 below) since ATLAS.ti did not allow editing of documents, such as transcripts after importing into the project. I needed greater flexibility as I gathered ideas about how to create a vignette worthy of my informant and our encounter.

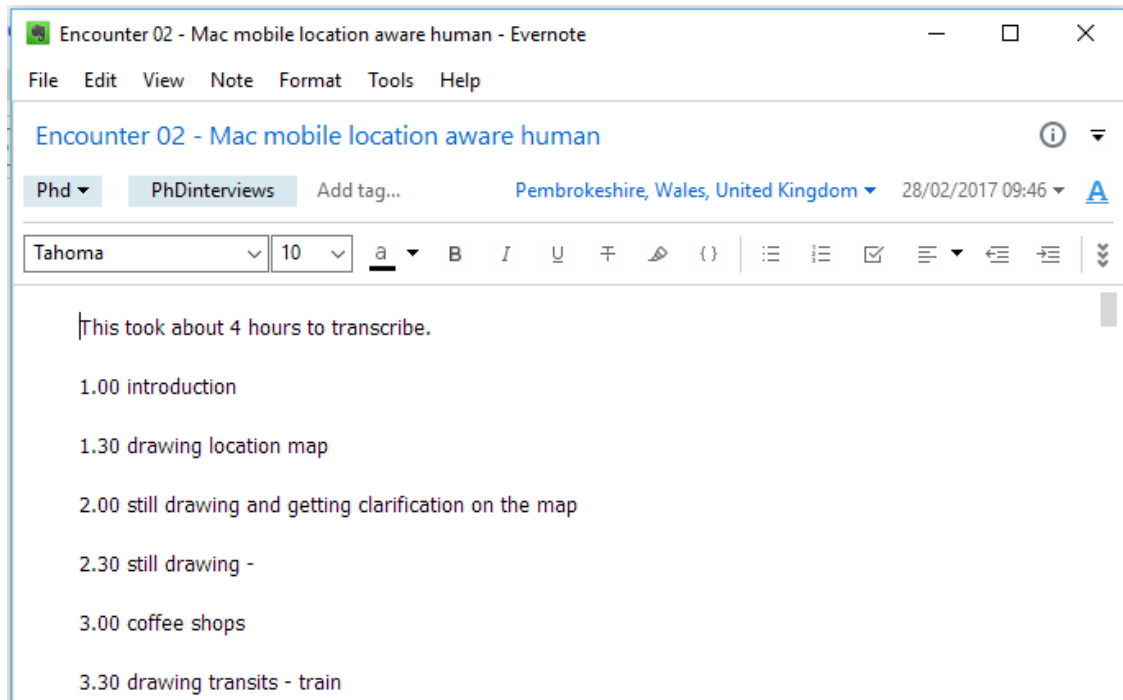


Figure 21: Example of indexical transcript note in Evernote

For analysis, I noticed that the environment for listening to encounters was an important consideration. If I could not alter the environment, I needed to alter my physical position to obtain the most conducive setting to advance the work. With the recordings stored in Lancaster University's 'Box' cloud service, the Box mobile app enabled secure access to the encounter audio anywhere from my encrypted phone. Listening had to be solitary work, but I also needed the facility to pause and make notes before an idea faded. Driving any distance, walking the dogs, café's, etc. could divide my attention, limit my freedom to take notes and serve up unhelpful distractions. A friend allowed me the use of their holiday let for thesis work and so I could spend time walking along coastal paths alone (see Figure 22) - the invigorating scenery was ideal for listening while exercising. Nor was my attention distracted by navigation since the path was given. It was a sweet spot between soporific and stimulant settings, away from the computer yet still able to process the digital



Figure 22: Pembrokeshire Coastal Path (the rock Gwni in the left middle-distance) provided ideal, and glorious, analytical settings

recordings, pausing betimes to make a note, perhaps using speech-to-text in Evernote if the wind was gentle enough. But mobilage made these walks far different from Heidegger's hikes through the hills to his remote hut in Todtnauberg (Sharr, 2006). Blair (2014) observes how Heidegger chose, 'Socratic solitude that sustained reflection and inquiry of a sort he believed possible only in concert with the natural landscape... In Heidegger's understanding, technology inhibits *aletheia* and the disclosure of being.' (Blair, 2014, no page) Often a turn of the path proffered a breath-taking vista, not just to inspire but to photograph and maybe share online, reflex considerations which never troubled Heidegger's thought. I envied his historical and physical isolation even if, from a global perspective, I was humbled by the awareness that the supported freedom to work out such methods manifests great, if not gratuitous, privilege. This is clear enough even from possessing a high calibre phone and the capability to exploit its subscription apps.

On returning to the flat (see Figure 23), these several notes could be titled (with the time and subject), gathered under a single unique tag (e.g. enc06) and an index note of titles created. These titles could then be re-organised by category (for example, informants' use of photographs). Any further thoughts that arose when not deliberately thinking about the encounter would be recorded in Evernote and parked at the top of the relevant encounter transcript note for consideration at a later point.



Figure 23: Llanunwas, Pembrokeshire, looking on and out

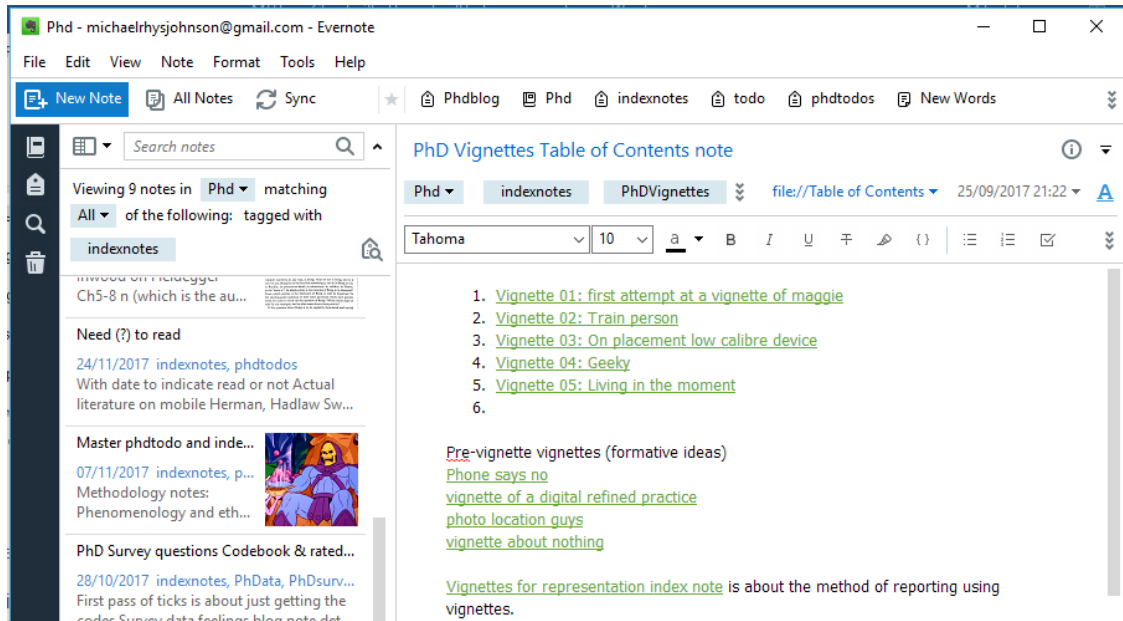


Figure 24: Example of an index note in Evernote making use of internal links

However, Evernote is not the best solution for managing and analysing the entire corpus of material. ATLAS.ti was chosen for this. In ATLAS.ti, transcripts can be synchronised with audio playback for ease of navigation, coding and annotation (see Figure 25). Therefore, both Evernote and ATLAS.ti, were used in concert. This kind of listening could only be done at the desk, differing sharply in the finer-grained level of audio-textual scrutiny from ideational listening while walking. Access to the software and a conducive setting for this aspect of analysis were no less expressions of privilege than other aspects. For example, as this thesis project drew to a conclusion, I became aware that my use of ATLAS.ti was bound up with the Lancaster University licence and this would soon lapse, leaving the data possibly trapped.

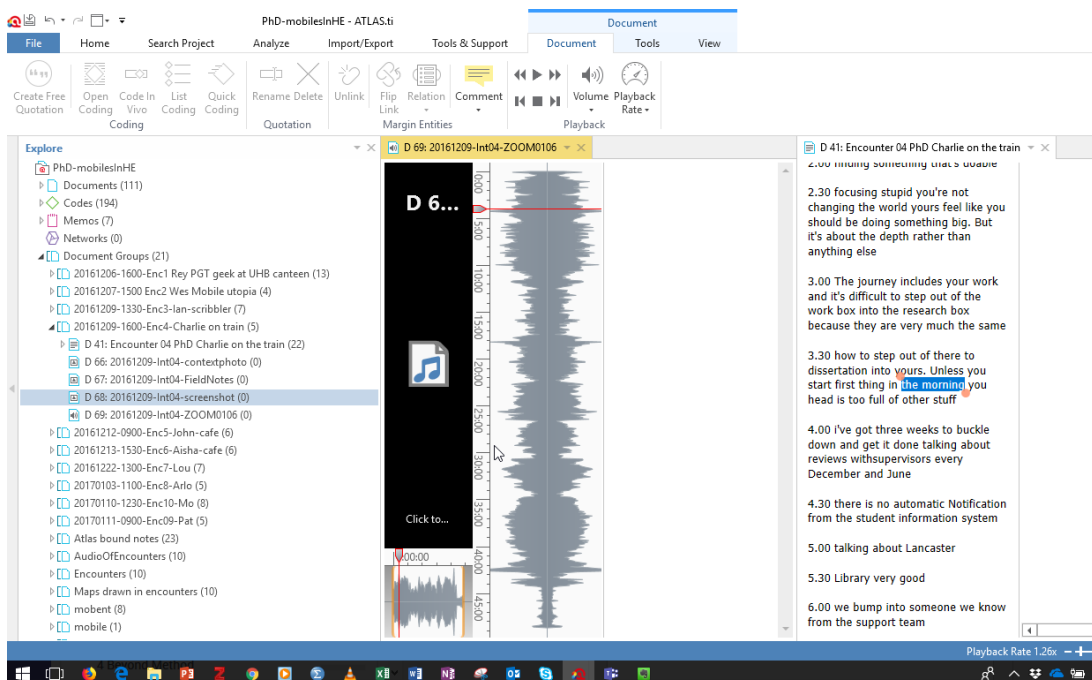


Figure 25: ATLAS.ti interface showing synchronised audio and transcript

...and re-writing

As I gained a better purview of the encounters, I noticed elements of them which could be plausibly knit together. For example, two informants, Wes and Charlie, carry out academic work on their frequent train journeys and their academic level and socio-economic status is similar. Wes and Charlie contributed to both the online focus group and the encounters. Charlie agreed that I could accompany them on their commute. I tried to combine the individual experiences into a brief evocative first-person account. The approximately 100-word account went through numerous versions before it seemed to achieve fidelity with the combined experiences of myself and the two informants. A worked example of one sentence follows showing something of the organic way the narratives evolved.

Boarding the train, Wes is firmly in control of their expensive technology and moves quickly to use the travel time to set up their mobile office.

Noticing alerts, phone flipped into sharing connectivity, tethered to a shiny Surface Pro, its distractions are tamed once more.

Sometimes it would take a period of weeks for a sense of disquiet about a particular word or phrase to be resolved by an idea for an amendment.

Another time I noticed that the vignette had too much Wes and not enough Charlie. Charlie repeatedly personifies her phone, including referring to it as 'my little friend', so this was added.

Charlie also cares less about her technology than Wes and is less likely to verbally caress its make and model, so 'shiny Surface Pro' was removed. I liked the double-meaning implied by 'tethering' as in, sharing connectivity between devices but also controlling something by tying it down with rope, but this could be missed, and "hotspot" is the term used by Apple and Android phones. I felt I could reflect more of the context as well as depicting a protagonist for whom every second counts – knowing that a wi-fi hotspot takes a few seconds to become usable, it is switched on while they look for a suitable seat to start working, thus 'Climbing aboard...'

Climbing aboard noticing alerts and an empty seat (always a relief) I flip my little friend to 'hotspot', taming his distractions

There were two further aspects of this which required amendment: technical and eidetic. I had written 'taming his distractions' but later realised that 'flipping to hotspot' does not stop distractions in the form of notification alerts. If this was me, I would take the additional step of switching to 'do not disturb'. This would already imply 'taming his distractions' so these words could be removed. I also wanted to tweak the sense that, context and content depending, alerts can be ephemeral so inserted the word 'inconsequential'. The new version of the line then read:

Climbing aboard noticing inconsequential alerts and an empty seat (always a relief) I flip my little friend to 'hotspot' and 'do not disturb'

There is a tension here in selecting the voice of the first person or that of an observer, neither of whom have privileged access to the pre-reflective. Nevertheless, the acts of 'climbing', 'noticing', and 'flipping' are pre-reflective and the writing can only ever be evocative of that at best (van Manen, 2014).

A friend in need

As I experimented with the first attempts at writing vignettes I became nervous that this method of analysis and representation was heavily reliant on my own ability with language to 'strike a chord' with my reader. I felt I needed help to accomplish some level of third-party scrutiny and validation, and thus it had to be someone in addition to my supervisor, outwith the supervisory hegemonic relationship. The third party would have no formal interest in the success of the work, only its improvement as a 'critical friend'.

A friend who used autoethnography in their doctorate had spoken of the importance of a critical friend in that method to challenge and advise them and was ideally placed to help my work. The vignettes were written up using a simple template to a shared googledrive folder. The template included a number, a title, some introductory text, the vignette itself and a couple of summary questions to score out of ten: 'cringe factor' and 'phenomenological impact'. With these I intended to signal my openness to critique, however, 'cringe factor' was unused and instead my friend's comments affirmed that the writing enabled a reader to imagine being the informant featured in each vignette.

Sharing in this way increased the sense of an astute audience, prompting more reflection and iterative editing. The template was also refined through my critical friend's influence, who wished to know more about the relevance of each vignette to the research questions. I responded by enlarging introductory sections.

Qualitative research

While reflecting on my method, 'critical friend' input and in anticipation of the viva, I felt the need to explicate vignette composition. I was asking a lot of readers to trust that the vignette was empirically based. Much qualitative research has lived in the shadow of quantitative work where numbers can give an appearance of precision and rigour (Eisner, 1997; Hammersley, 1992; Simons, 1996). Qualitative research has attempted to replicate that rigour through various commitments, such as using only empirically grounded data in findings and representation and only reporting the exact words of informants to substantiate emergent themes. At worst, the method becomes a prosaic reduction of the data into dominant themes, supported by the most subjectively pithy quote or amusing turn of phrase. This is attractive to systematic reviewers who can latch onto these quotes and combine them into 'meta'-findings, cutting through the methodological commitments of the authors (Bergdahl, 2019).

Fabrication and anonymity

Although the research gained ethical approval categorised as 'low risk', every effort was made to defend contributors from the negative consequences of a breach of confidentiality. Theses no longer merely gather dust on library shelves. With Internet publishing comes global availability of the entire text and additional circumspection is required to protect informants' identities, especially in a study such as this that works with rich data from a relatively small number of informants.

For example, a pithy idiosyncratic phrase, ripe for use in findings, could be enough to induce a reader's train of thought leading to identification. This issue has been discussed by Internet researchers whose data is already publicly available, for example, in online chat-groups and discussion forums where strings of words can be triangulated from the research report back to the original source. To counter this threat, Markham (2012) argues for combining parts of the data corpus into 'fabricated' composite narrative. Saunders *et al.* (2015) also aim to rigorously assure anonymity

but imply that composite accounts do not retain data integrity as well as alternative measures, such as using different names for the same informant's contributions. However, interpretive integrity may be attained through the researcher's affinity with the phenomenon rather than by reciting data as a sop to positivist scientism. Markham (2012), citing Atkinson and Delamont, argues that representation is always an interpretive act and Gallagher's discussion takes this approach to personalise an imaginary narrative through a 'composite of characteristics drawn from the author's own work in digital education' (2018, p. 189). Phenomenology does not attempt to provide empirical generalisations (van Manen, 2014, p. 256). Nevertheless, the reductive interpretation involved in fabrication can also reduce complexity when 'even the subtlest poem destroys what it names' (van Manen, 2014, p. 371). These problems must be addressed through adequately reflexive writing and, with a commitment to eschewing deception, fabrication becomes a method for distilling and elevating elements of the whole data corpus rather than isolating them through a kind of thematic taxidermy.

Not just informants' words

In loosening the constraint of only using informants' words, I am no longer on a 'pithy quote hunt', and I aimed instead to render an empirically based account that is plausible and evocative. Fabricating these narratives opens up a host of prose forms and linguistic devices, without being obsessed by factuality, for example, the precise order that words were used by informants. In this, I am leaving myself open to the charge of ventriloquism, putting words into informants' mouths and even events which did not strictly occur in the individual's actual life history. However, the phenomenological vocative method expects authors to take these risks (van Manen, 2014, p. 249). The calling is higher than reportage or making empirical claims.

Vignettes were composed of the following:

- Anonymised data where names and other identifiable aspects are replaced.
- Verbatim words of the informant, whether recall, description or expression.
- My observations of the informant and the context.
- My own autobiographical experiences of essentially the same phenomena.
- Embellishment for the purposes of composition or, very occasionally, correcting the sense. For example, where an informant mentioned using a very large A5 'artist' paper pad, 'A5' was replaced with 'A3' because A5 is small, the size of half an A4 page, and thus clearly not the 'very large' size intended. Keeping 'A5', because of a commitment to verbatim fidelity, needlessly confuses and distracts the informed reader, and any amount of narration to highlight this change violates the narrative flow.

As these last two points represent a departure from the realms of normal research rigour and into the realm of narrative and phenomenological research, I will offer a further justification.

As we met, informally situated in a café or train journey, the individual and I exchanged views and reflections on our scholarly practices. There was an epistemic exchange too – learning happened. Both informant and investigator could occasionally be heard to exclaim surprise at inception occurring there and then. Thus, the intertwining of autobiographical elements in the vignettes reflects the dialectic way the data was generated. To the empiricist, the most contentious parts of the vignettes will be my fictitious embellishments. However, these are used with diligent reflexive attention to the encounter data, aiming to faithfully and plausibly fictionalize the account to evoke the particular instantiation of mobilage.

To make the composition process more transparent, I have created a detailed 'explainer' for Vignette 09 'Space' (Figure 26 below).

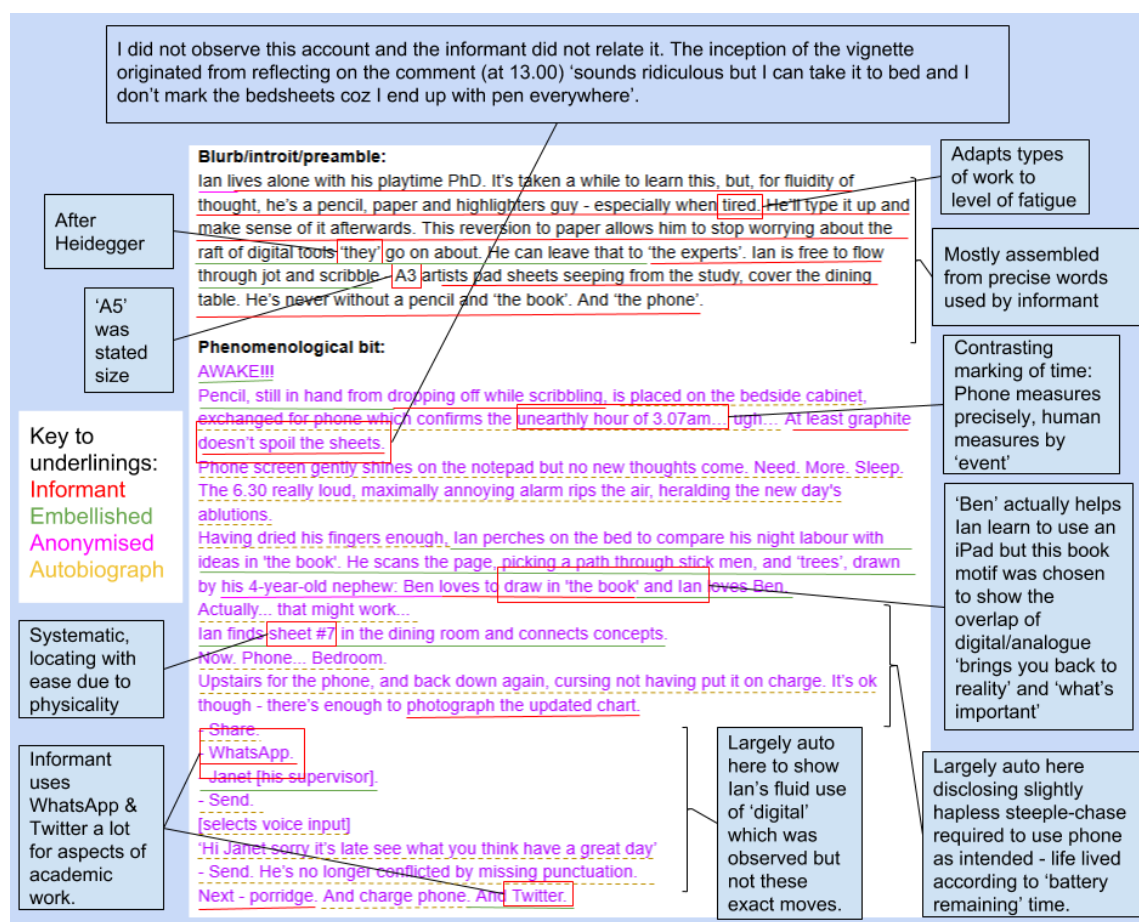


Figure 26: Composition explainer of Vignette 09 'Space'

Writing Gender

As mentioned below, in Section 4.1, when presenting survey demographic findings, healthcare has been a gendered profession. This is also the case with are aspects of information technology: for example, in software development, just over 16% of the UK workforce are women (Honeypot GmbH, 2018). Wisart and Ward hint at a 'gender effect' in their survey finding that teachers, in a male dominated sample, reported being more confident in use of IT than the female dominated sample of nurses (Wishart & Ward, 2002). As befits a complex concept, the literature is ambiguous about gender effects in learning technology (Gunn, French, MacLeod, McSporran, & Conole, 2002a, 2002b). Undeniably, gender is a contextual factor in this thesis, and I felt challenged to deal fairly with it as I depicted informants in vignettes, not least as a man writing women informants' experiences. In a commitment to authenticity and complexity, I wanted to at least avoid reinforcing stereotypes. Initially, I tried to use gender-neutral pseudonyms and pronouns to give the reader no clues to prejudice their interpretation. This became untenable where grammar had been contorted to preserve neutrality. The approach then evolved from a simplistic attempt to erase gender to one where gender differences are acknowledged. Enduring inequalities in the societal division of family labour arose from Chris's Online Focus Group data (see below, findings Section 4.2) and, without violence to informants or their data, such experiences must be heard in the fabricated vignettes too (see, for example, Section 5.10, Vignette 11 and its discussion).

Vignettes start to breed

If only to be fair to my informants I initially aimed to create at least one vignette per encounter. As the work progressed, I found that the same encounter suggested many vignettes. This was especially the case once I had relaxed the naive criterion that a vignette could *only* feature what I had directly observed taking place in terms of the mobilage during the encounter. Nevertheless, that privileging of observation-based material was still important and yet, if strictly adhered to, would have excluded many important potential details central to the research questions. I decided that vignettes could use detail based on informants' self-reported experiences, albeit with care. After all, the nature of the enquiry was not highly sensitive and although self-report will invoke a measure of performing the self, I never left an encounter feeling that the student had been anything other than sincere.

The inception of a new vignette relied upon many subjective and variable factors such as my own state of alertness, the environment, remnants of ideas from reading a research article, etc. For example, one vignette began as I prepared to shut down my laptop, closing MS Word, I spotted one phrase highlighted randomly – 'the morning'. It spoke to me. I remembered how important this informant had said their mornings were and I began to imagine them finally getting to settle down – everything in place to let them proceed effectively. I started to imagine their dog, paws on threshold, a picture of their dog was provided in the OFG data – I had swapped that out for anonymity purposes but now made a brief note in Evernote to include a picture, if possible, of a dog halted by a wood-block floor.

With experiences like this, I became increasingly anxious about the apparently infinite number of potential vignettes that could emerge from the data. To recover a sense of control and overcome some inherent subjectivity and variability, I systematically coded the material by research question in ATLAS.ti, allowing me to gather up these fragments of data and consider each one for whether it had found a place within the thesis, perhaps by inclusion in a vignette.

Returning to presence

In considering appropriate media for rich and complex representation, originally, multi-media held some appeal. Wright (2014a) sought to reflect the multimodal nature of his research with extensive use of images. I was studying a Master's in advanced learning technology during the rise of digital video (2002-2008) when it was somewhat fashionable to dismiss text as 'boring' compared with multimedia, and, now, in 2018, virtual reality is becoming mainstream. However, the reporter Alistair Cooke famously preferred radio to TV because the pictures were better. In a similar way, McLuhan (2001) refers to text as 'hot media' for the detail it *omits*; it respects readers' ability to reconstruct a scene in consciousness, borrowing from imagination to vividly fill in the gaps. For van Manen (2017a, p. 777) phenomenology's outcomes are 'fully-fledged reflective texts that induce the reader into a wondering engagement... help the reader recognize the meaningfulness of certain human experiences and events.'

A phenomenological appreciation of textual narrative is a natural precursor to attempting to create phenomenological textual narrative. Apprehension of phenomena to consciousness differs between text, images and in real life. They are experienced differently. In real life we are more or less free to direct attention amongst a narrow selection of the myriad inputs on offer at every passing moment. In contrast, although we are somewhat in control of the speed with which text itself is read, our attention is routed through the meaning conjured by each word in the

authored order and pace that the embedded meaning presents to consciousness. Those words and meanings get overlaid in sequence, allowing writers to recreate unfolding eidetic experiences for others. As phenomenological prose, the vignettes aim to invoke 'wonder'. A range of creative writing techniques can help to achieve this within a brief span:

- Alliteration lends a poetic aspect, helping to frame the text as polymodal, inviting readers to expect/treat the text as evocative.
- Juxtaposition and counterpoint can arrest and challenge readers to reflexively find the intended meaning of paradoxically arranged words.
- Underlying metaphor/allusion can convey a veiled meaning as an undertone rather than bald statements; useful where the aspect to be comported needs to hover almost subliminally as one of many in a given situation.
- Sentence length, structure, flow and pace are important variables for inviting emphasis.
- Type face and format is another realm of semiotics to consider, conveying, for example, level of formality.

However, as may be apparent, the aim of 'fully-fledged' narrative (van Manen, 2017a, p. 777) haunted the work. The metaphor of a fledgling taking to the air was of limited use since writing has no objective equivalent to achieving flight. Each fresh glance at a nascent vignette nudged the kaleidoscope's barrel and I came to realise that the phenomena, and my apprehension of it, had infinite permutations and unfolding: the vignettes would never be finished. I took comfort from Gadamer: 'Thus, essential to an experience is that it cannot be exhausted in what can be said of it or grasped as its meaning.' (1992, p. 67)

3.7 Section iv: Auto data

In keeping with principles of phronesis (Gadamer, 1992), I have reflectively journaled the process of carrying out the thesis project. This has helped me to fill gaps especially in observational data because I could not attain constant co-presence with informants. Nor did they cover every aspect of an experience to provide data for eidetic narrative. Although the phone accompanies us everywhere, the occasions of use for academic work are not as extensive. I did not have enough time to spend extended periods in the presence of informants waiting for something interesting to happen. Although an informal approach and primarily informal settings were chosen for the encounters, it would be easy to accuse them of being concocted or unnatural. Partly because of this, at the time, they were not as effective as I felt I wanted them to be in terms of directly answering the research questions. I had to consciously check the desire to manipulate the encounter into one where the informant would straightforwardly show me what they did on their phone and tell me how they learned that. I tried to keep in mind that I was trying to naturalistically evoke mobilage.

Auto-ethnography is an emergent strand of qualitative methodology that depends on regular mentorship to help ground and orient the researcher. Although there is a sense in which the entire interpretive work emanates from myself, I have not adopted auto-ethnographic methods in full and auto data *per se* makes a limited contribution to the corpus in this project. The auto data amounts to:

- Personal insights and contributions, including field notes and media, related to the encounters and online focus group.
- Reflective notes about the processes of academic work, such as 'mobents': whenever I noticed a mobent occurring I would try and capture it to build a collection of these, perhaps through taking a screenshot. Many such mobents seemed to be caused by poor connectivity.

- Videos of myself enacting knowledge work with a mobile device <http://bit.ly/mjphdyoutubes> These are also in some sense 'performed' for camera. However, the spur for capturing them was rooted in a reflective observation, and a disposition towards this.

3.8 Multi-method contributions

Of the ten encounters, three informants volunteered for the online focus group (see Figure 27 on page 64). Apart from Jay, whom I met once in an academic setting, the other three OFG members remain unknown to me in real life, in fact Wafa is based overseas.

The online focus group started as the encounters ceased - the last three took place in the first weeks of January 2017. Orgad (2005) discusses online research and concludes that meeting online participants in real life is conducive to rigour and fidelity in analysis and reporting.

Any research involving human participants, incurs a risk of deception or simply altered behaviour. Online research methods have been used to study controversial topics and hard to reach groups where, arguably, the objects of study are high stakes and the risk of deception by participants accentuated. It was thought that this study's university context and foci would make it less prone to deliberate misrepresentation by participants. Nevertheless, there may be a tacit desire to portray oneself positively, such as more scholarly, technologically advanced, etc. Turkle's (1997) work illustrates how people engage in 'identity play' online.

Where individuals were involved in both methods, this helped me to understand participation or the lack thereof. When general activity in the OFG waned, it helped me to have already learned about Wes, that they did not make much use of their phone for academic work, preferring instead to use an ultra-portable laptop. Wes only posted 3 times in 3 months – twice in the first week and then not until a one-line reply at the very end. Knowing about their working habits I could understand how they would have found it difficult to add to OFG exchanges about phone use.

However, meeting the person does make it easier to envisage and thence represent them. I have made the point that reading a transcript is not the same experience as the encounter itself. This must be even more the case when digital text and media from an online focus group are presented to consciousness, whatever can be said in favour of 'telepresence' (Kehrwald, 2010).

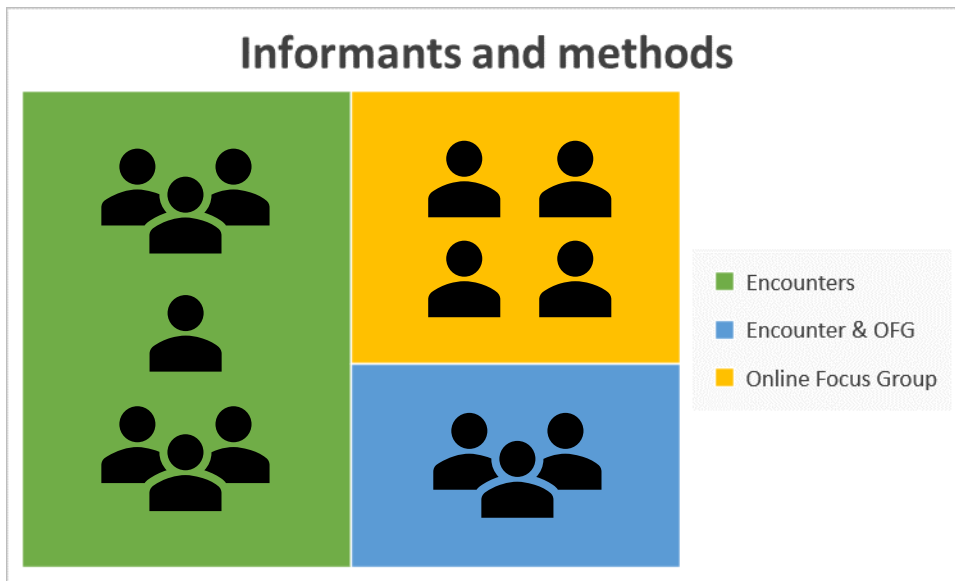


Figure 27: Split of informants between encounter and online focus group methods

3.9 Chapter conclusion

In this chapter I have sought to relate how interpretive methodology has led to the methods adopted for gathering data in the design and implementation of a survey, an online focus group and mobilage encounters. The online focus group allowed consensus to build between informants from their own perspective and setting. Encounters were intense moments of data gathering and a rich resource for analysis and reflection towards answering the research questions. Auto data was key to aiding reflection towards representation of otherwise hidden aspects of mobilage. In the next chapter I will present findings from the survey and online focus group as background data to the phenomenological vignettes.

Chapter 4: Findings

This chapter will report summary data from the survey and identify emergent themes from the online focus group. Analysis of survey data is limited to summary observations in order to preserve methodological consistency and focus within this thesis on the main research question. Encounter data manifests within phenomenological vignettes in the next chapter.

4.1 Section i: Survey findings

Demographics

The survey did not attempt to gather extensive demographic details. Tables in this section (Table 4 to Table 7) indicate that although many aspects of healthcare higher education are represented, responses are dominated by undergraduate female Adult Field student nurses aged under 35. Within these, the bi-modal age range is apparent, differing from 'normal' undergraduate intakes which are dominated by people from the younger age bracket. The age distribution for MPhil and Doctoral students are typical of healthcare where even top performing undergraduates are likely to spend years in clinical practice, perhaps completing a part-time Masters, before starting research degrees. The data roughly matches the demographic of a school of healthcare professions however, the dominance of one sub-population, the Adult Nurses, is a limitation of the data that needs to be considered when interpreting later findings. However, statistically, healthcare in the United Kingdom is a gendered workforce. The National Health Service publishes staff statistics which show that around 80% of the Nursing and Allied Health workforce are female (NHS Digital, 2019). A recent count showed that just a fifth of physiotherapists were men (Health and Care Professions Council, 2018).

Table 4: Survey Respondents by Age and Gender

Age group →	18-24	25-34	35-44	45-64	Total
Female	108	105	45	42	300
Male	9	17	9	7	42
Own Term	0	1	1	0	2

Table 5: Survey Respondents by Age and Level

Age group →	18-24	25-34	35-44	45-64
Undergraduate	108	94	31	15
Post-grad Taught	9	29	15	24
MPhil/Doctoral	0	0	9	10
Total	117	123	55	42

Table 6: Survey Respondents by Level and Year of Study

Year of study →	1	2	3	4	5	6	7	Total
Undergraduate	93	68	68	4	3	2		238
Post-grad Taught	37	24	6	2			1	70
MPhil	2		1			1		4
Doctoral	5	3		3		1	1	13
Total	137	95	75	9	3	4	2	325

Table 7: Undergraduate Respondents by Programme

BSc Intra and Perioperative Practice	1
BSc Community Practice	1
BSc Stand Alone Module	2
BSc Clinical Practice	3
(blank)	4
BSc Radiotherapy and Oncology	5
Bachelor of Nursing (Child)	6
Bachelor of Midwifery	13
BSc Operating Department Practice	13
BSc Occupational Therapy	20
BSc Physiotherapy	22
BSc Diagnostic Radiography and Imaging	23
BSc Nursing Practice (Overseas)	26
Bachelor of Nursing (Mental Health)	28
Bachelor of Nursing (Adult)	81
Total	248

IT attitude

Figure 28 shows a summary of responses to the IT attitude question as percentages by age-group. Older students were more likely to select the words further down the scale which reflected lower levels of enthusiasm, but a high proportion of 35-64-year-olds selected the 'keen' category. Indeed, combining the top two levels of the scale shows consistently positive choices across the age-groups. Although younger students were more likely to select the top item of the scale, almost a third of 18-24-year-olds chose 'Ambivalent', a greater proportion than older age-groups. No student selected the 'Strategic User' or 'Non-User' categories. Eight of the nine 'other' responses grappled with the oversimplified categorisation, adding comments such as, 'I use IT frequently but I'm not interested in learning more' (25-35, Female, Undergraduate Nursing) and 'Love IT to a degree - love most of IT however still prefer to use pen and paper when i can' (18-24, Female, Undergraduate AHP). In a pensive response, one student replied:

I can and do use technology but I wouldn't say I have a digital life, I use it for professional reasons and things like whats app for personal but I am not addicted and I maintain a real (face-to-face) relationship with people. (Female, 45-64, PG Cert AHP)

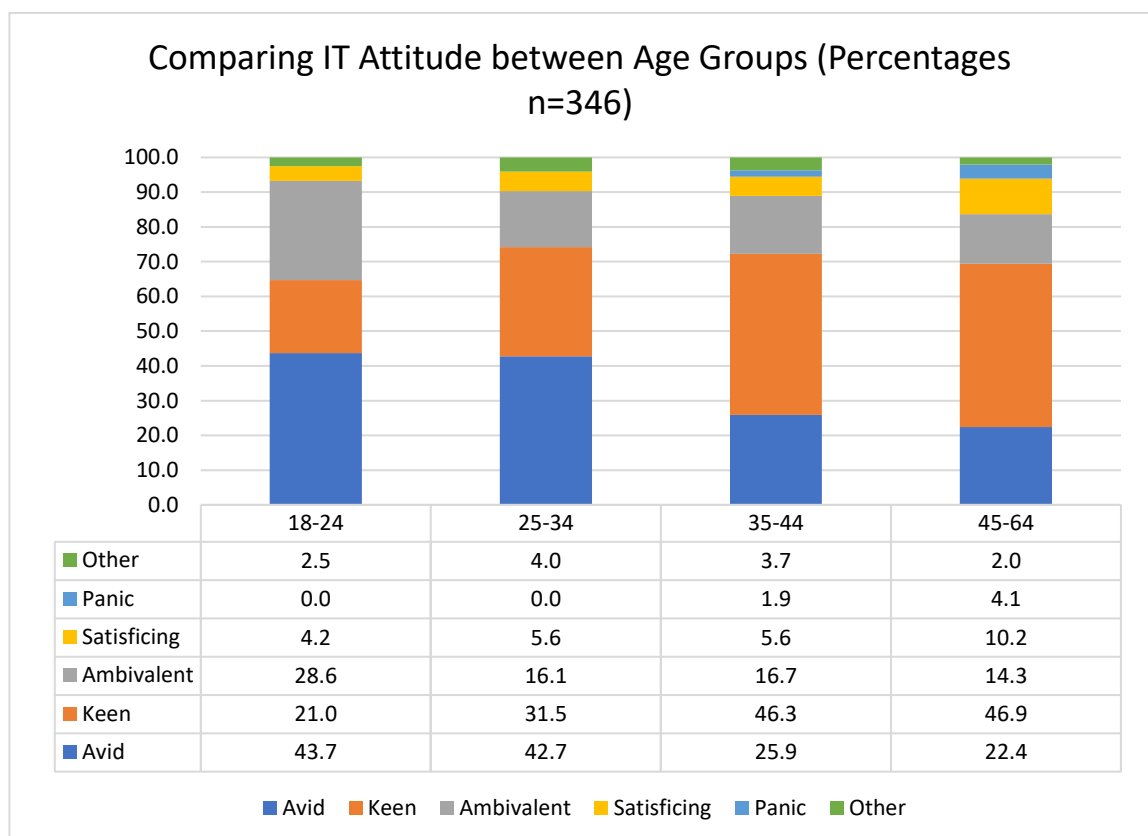


Figure 28: Comparing IT attitude with age group

Phone

Around 20% said their phone's age is older than 2 years which may impact on its calibre for these students (Table 8 and Figure 29). Apple (57%) leads Android (39%)

in a majority share of users, and iPhones tended to be newer devices than Android phones (see Figure 29 below).

Table 8: Phone operating system and age

Months	Android	Apple	Blackberry	Unsure	Windows	Total	%
< 12	58	95		2	1	156	45.7
< 24	46	63	1	1	5	116	34
> 24	29	36		1	1	67	19.6
(blank)	1	1				2	0.6
Total	134 (39%)	195 (57%)	1	4	7	341	

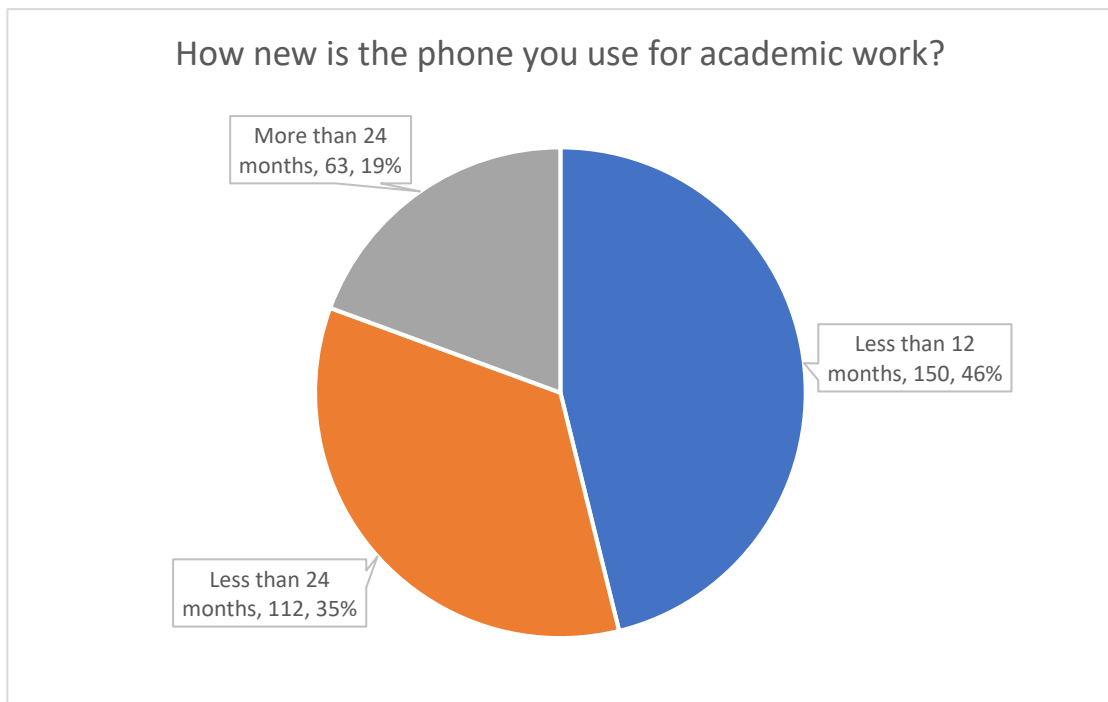


Figure 29: How new is the phone used for academic work?

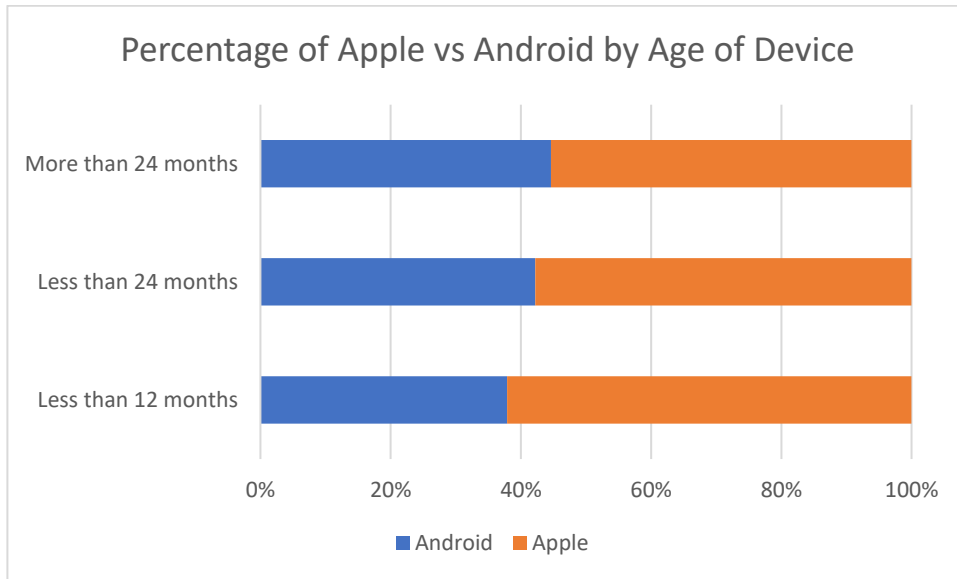


Figure 30: Percentages of device age - Apple vs. Android

How easy do you find it to...?

Predictably enough, when compared with year of birth, older students tended to report finding basic phone use less easy (see Figure 31). However, as a self-reported measure, self-perceptual aspects, such as confidence with IT, complicate any conclusions that may be drawn from this finding.

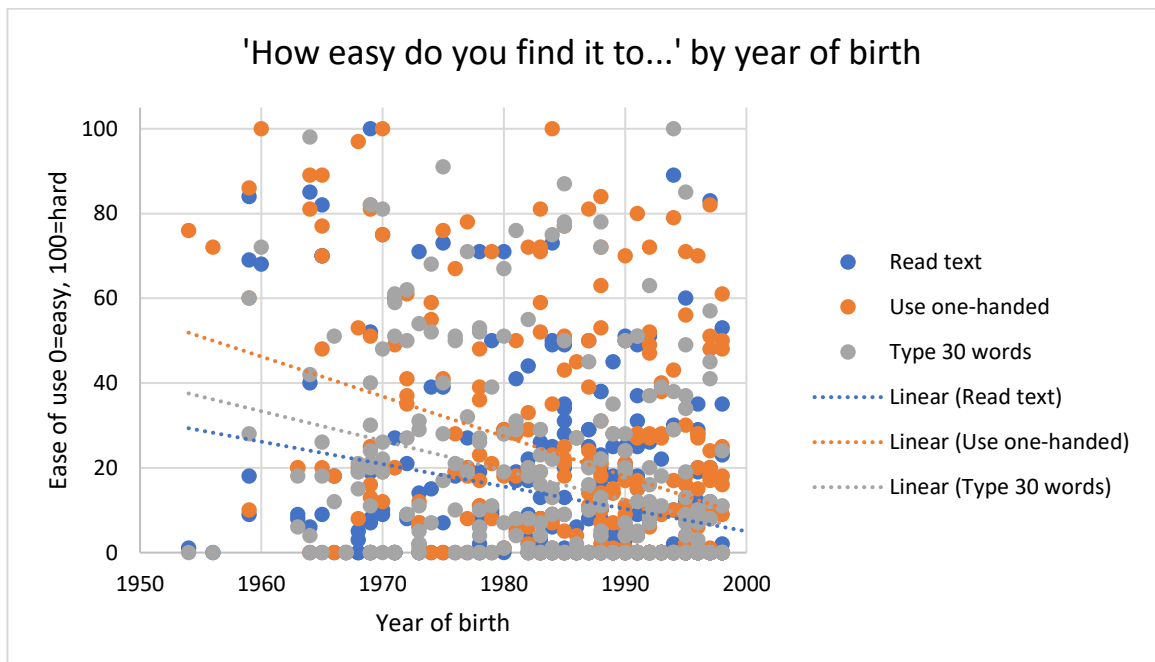


Figure 31: Ease of three aspects of use by year of birth

Why do you have this phone?

This question offered respondents three single-line fields and asked them to list three reasons in order of importance.

Coding the free-text responses was challenging because participants interpreted the question in a range of ways. Apart from 14 responses that were too ambiguous to interpret, answers were:

- Use-specific e.g. 'taking photos'
- Agentic, i.e. the expression of choice or the lack of choice, such as 'ethical decision' or 'low cost'
- Device specification or applications, where a particular feature was named, such as 'physical keyboard' or 'speed'.

Some responses straddled these categories making further analysis difficult. For example, general terms, such as 'Familiarity' or 'Preference', appear to be 'agentic' but could conceivably have expressed an aspect of the other two categories.

Effectiveness and ease of use for fundamental academic tasks

This question offered students five typical activities related to academic work and learning and asked them to rate each for effectiveness when performed on a phone (see Figure 32, Figure 33 – and the aggregated data in Table 9 below). 59% reported that they had not tried 'Writing for an assignment' and most of the rest thought that a phone was ineffective for this. However, the question does not ask about or distinguish the more fine-grained activities which contribute towards assignment writing, such as note-taking and curation of material. Phones were rated as most effective for sharing knowledge with other students and learning from audio/video. Responses were equivocal for 'searching the library catalogue' and 'reading journal articles'. The number of students who responded to individual activities varied considerably with less than half rating 'writing for an assignment' compared to 'reading journal articles', for example.

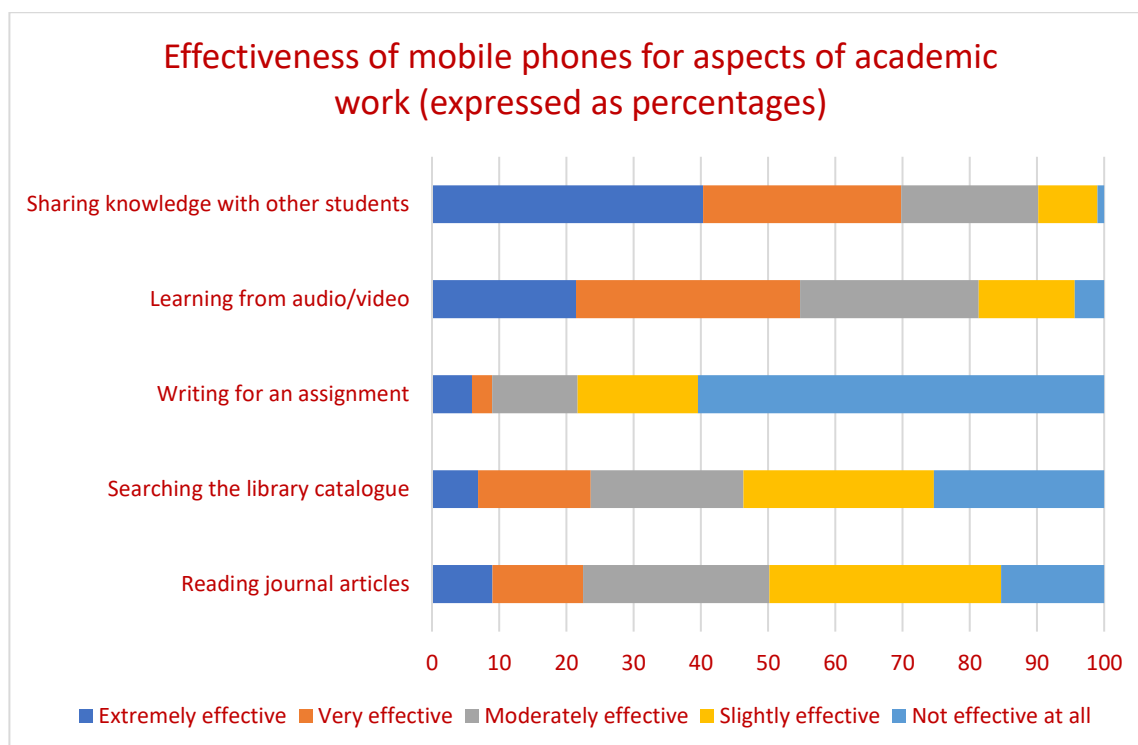


Figure 32: Effectiveness of five academic practices on a mobile phone - percentages

Table 9: Effectiveness of five activities on a mobile phone - aggregated responses

	Extremely effective	Very effective	Moderately effective	Slightly effective	Not effective at all	Totals
Sharing knowledge with other students	119	87	60	26	3	295
Learning from audio/video	54	84	67	36	11	252
Writing for an assignment	8	4	17	24	81	134
Searching the library catalogue	16	39	53	66	59	233
Reading journal articles	24	36	74	92	41	267

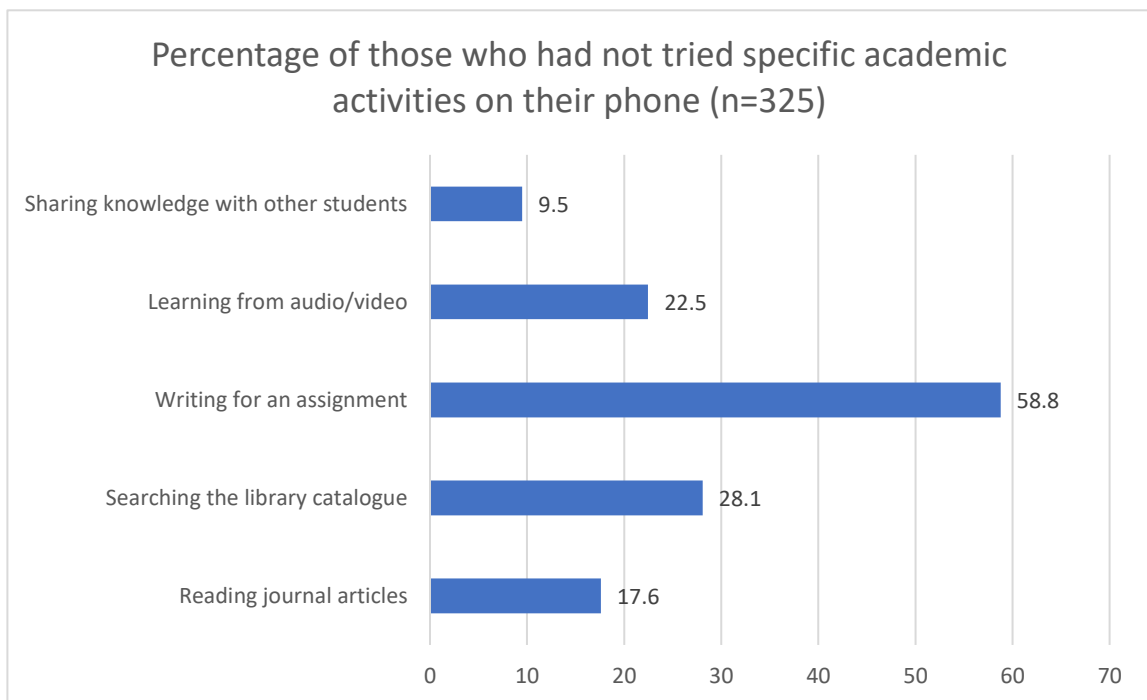


Figure 33: Proportion of students who had not tried specific academic activities on a phone

Are there any things which make academic work more difficult for you on a mobile phone?

Respondents were asked to name up to three things which make academic work more difficult on a phone, using free-text fields. A broad range of responses were reported, and these are worthy of separate thematic analysis elsewhere. The factors which were not too ambiguous could be allocated one of five categories to gain an overall picture (see Table 10). Over two-thirds of responses mentioned the limitations of mobile phones, especially compared with a larger device. This could be, for example, screen size, compatibility, difficulties with multitasking, etc.

Table 10: Name factors which make academic work difficult on a phone

	Main factor n=289	2nd factor n=205	3rd factor n=123
Access / connectivity issues	17 (5.9%)	18 (8.8%)	13 (10.6%)
Mobile phone limitations	240 (83%)	159 (77.6%)	85 (69.1%)
Distraction / Interruption	6 (2.1%)	8 (3.9%)	8 (6.5%)
My capability	7 (2.4%)	9 (4.4%)	2 (1.6%)
People around me	3 (1%)	3 (1.5%)	3 (2.4%)
Ambiguous	5 (1.7%)	6 (2.9%)	1 (0.8%)
Not answering the question	11 (3.8%)	2 (1%)	3 (2.4%)

Favourite Apps for academic work

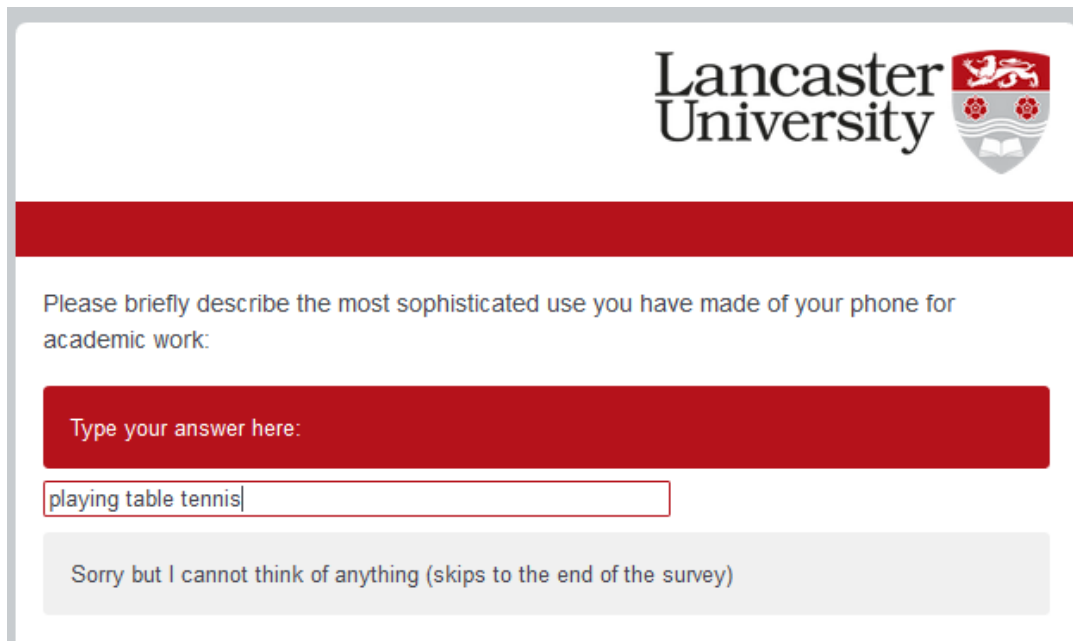
This question allowed three free-text choices and, even after categorising and collating the data, students gave 48 distinct responses in naming their 'favourite app'. Table 11, featuring the top 20 apps, was derived by simply aggregating the total number of times that type of App was mentioned (the full list is given in Appendix 3). Fourth place is 'Null – No use made' where responses indicated that they had no favourite or did not use their phone for academic work.


Table 11: Top 20 Favourite Apps for Academic Work

Rank	App Category	Mentions
1	Uni – VLE	110
2	Browser	45
3	Citation Management	43
4	Null - No use made	41
5	Health Ed App/Site	39
6	Search	36
7	Word Processor	33
8	Notes	30
9	Collaboration & Communication	28
10	Reading	27
11	Email	24
12	Academic - Databases	21
13	Social Networking	20
14	Presentation	17
15	Video	17
16	Spreadsheet	16
17	Academic - Journals	10
18	Cloud Storage	10
19	Reference	10
20	Uni - App or Website	10

Most sophisticated use

The purpose of this question was to set up further questions concerning how that something was learned. However, the responses are worthy of summarising here. There were 203 typed responses to this question. 15 of these were discarded because they contained data that was impossible to code (e.g. 'the writing lines'), one referred to a tablet device, and 10 replied that they could not think of anything. This latter option was added after piloting the survey with non-population students. 93 selected this 'opt out' which routed them to the end of the survey (see Figure 34 below).



Lancaster University 

Please briefly describe the most sophisticated use you have made of your phone for academic work:

Type your answer here:

playing table tennis

Sorry but I cannot think of anything (skips to the end of the survey)

Figure 34: Question - 'Most sophisticated use' as it appears in the survey

41 respondents entered more than one item of 'use' although two of these were expostulations about the difficulties of using a mobile phone for academic work. There were 232 distinct items which could be ascribed to 41 codes in 7 clusters (for full details, see Appendix 4):

- 1-Search (e.g. for journal articles)
- 2-Managing Information (receiving, 'parking', or sending Information)
- 3-Manipulating, Developing Information or Knowledge
- 4-Managing Self & Others (e.g. calendar/scheduling)
- 5-Sharing & Interaction (epistemic exchange, including polling software)
- 6-Content (e.g. watching video)
- 7-Facilitative (e.g. wi-fi tethering)

These clusters aimed to be descriptive rather than interpretive although there is significant scope for an unwanted reduction in complexity through conceptual ambiguity or multi-purpose use. For example, 'revision' was coded as '60 Content', and Email, which could be used for almost anything, was coded amongst the '5-Sharing & Interaction' cluster.

Regardless of cluster, for analysis, the 41 codes were allocated a 'sophistication' rating. This was informed by the dictionary definition of 'sophistication' (Oxford English Dictionary, n.d.), but also grounded in the responses themselves, combining technical difficulty as well as an element of innovation in the application of a smartphone for academic work. The 41 codes were reduced to just four sophistication ratings, deliberately placing outliers at the low and high ends of the scale (levels 1 and 4) with a finer line separating the middle two levels. Level 2 takes basic smartphone features and puts them to use in academic work (e.g. concept definition search). Level 3 is more involved, complex, technical, applied, and/or innovative (e.g. journal article search). Level 4 uses are unusually innovative.

It is acknowledged that this classification, although grounded in the data, is an interpretive reduction and could include elements of a student's organisational, epistemic and scholarly sophistication.

Perhaps the dominant narrative around smart-phone use is the assumed technical supremacy of younger students, particularly Generation Z (Sulleyman, 2017). Taking the broad ‘sophistication’ levels and comparing by student age group, the following was observed (see Figure 35):

1. The proportion of high-level sophistication decreased with age and there were no examples of this Level 4 sophistication in the 45+ age-group.
2. Level 3 sophistication has an increasing share of the age-group scores from 18-24, 25-34 until 35-44.
3. Level 2 sophistication dominates the 45+ age-group although, of the other three groups, the proportion (78.6%) is most similar to the youngest age-group (70.9%).

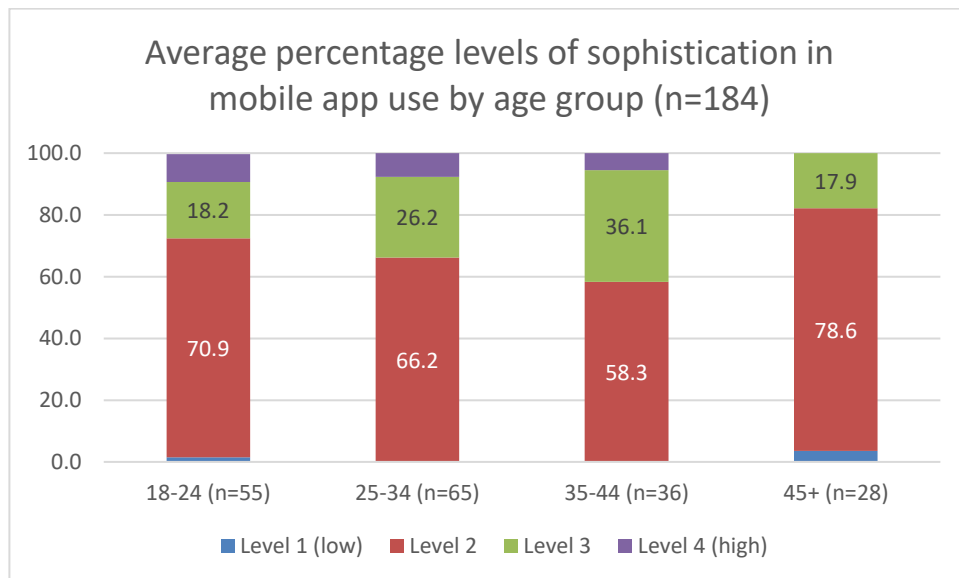


Figure 35: Level of sophistication in reported app use by age group (n=184)

How regularly do you do this?

Students were asked how often they performed the ‘sophisticated use’ and while many had adopted the practice into their daily routines, 17% had abandoned it. 38 responses gave a reason for desisting. Ten students explained that their sophisticated use was related to a particular assessment type or period (see Figure 36). Others said they had run into difficulties or realised that a larger, more capable device was more effective and only took to their sophisticated use as a last resort. The sense of learning through trial and error is consistent with the next responses.

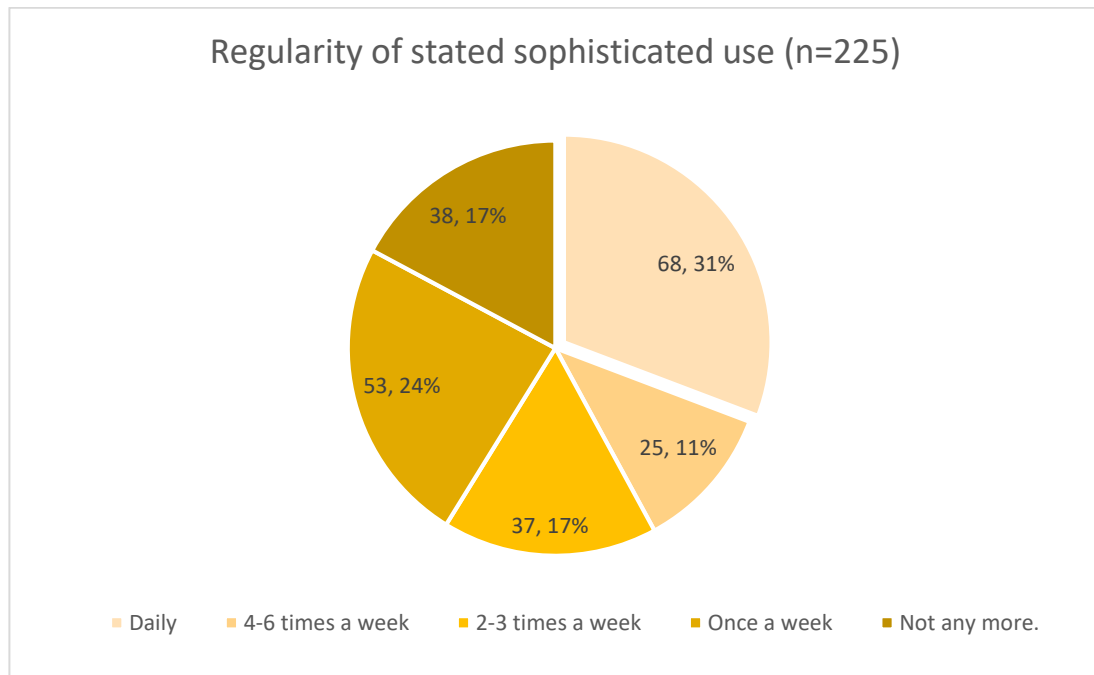


Figure 36: Regularity of performing the 'sophisticated use'

How was your 'most sophisticated use' realised to be possible?

Participants were asked an open question about how they came to realise their most sophisticated use was possible and a single-line field was provided for their free-text response. However, there were indications from the data that the question itself was 'freely' interpreted. For example, a frequent response was that the participant 'already knew' but this does not elicit the original source.

The item's inclusion was informed by an assumption from the affordances literature (as discussed by Jones, 2015), i.e. that the recognition of a use can be an important precursor to attempting and learning how to then accomplish that activity. There were 169 responses. In summary, if they were not already aware of their stated use from 'general knowledge' or 'prior experience', there was a mix of extrinsic, intrinsic, self-taught, necessity or dissatisfaction prompting students to find or develop another method.

How did you learn your 'most sophisticated use'?

In opposition to the previous free-text option, the survey offered a multiple-selection item asking, 'How did *you* learn to use your phone for x?'. See Figure 37, below. There were 224 replies and many selected more than one option. 36 students used the 'Other' option to provide free-text detail. For analysis, these were interpreted as follows:

1. Some could be added to existing categories.
 - a. 'induction' was added to 'Staff showed me'.
 - b. 'leaflets instructions from library' and 'tech reviews' was added to 'I read about it'
2. One response related to insight from an expert in a photography store. This was added to the 'Staff showed me' category and 'Shop assistant' was added to the follow-on question categories for staff role.
3. The category 'Friends showed me' was broadened to 'Friends or Peers showed me'.

4. The following additional categories were created:
 - a. I already knew-always known
 - b. Information on the phone interface
 - c. It is general knowledge (incl. 'Common Sense')
 - d. Reflection-intuition
 - e. Transferred from existing IT knowledge
 - f. unusable data

The striking features of the responses to this question is the popularity of 'trial and error' and the importance of friends or peers. This result caused me to reflect on the original project plan to offer a 'smartphones for university' workshop as a learning intervention, the results of which I could then investigate. From the sample, students appear more likely to read about their most sophisticated use than learn through staff, which may be partly attributable to the lack of formal provision. However, since the mobile is a constant companion, idiosyncratic practices are likely to emerge through practice at any time, not necessarily when staff are at hand.

The data should not be taken to imply that trial and error was indicated to be the preferred or even a 'good' method of learning.

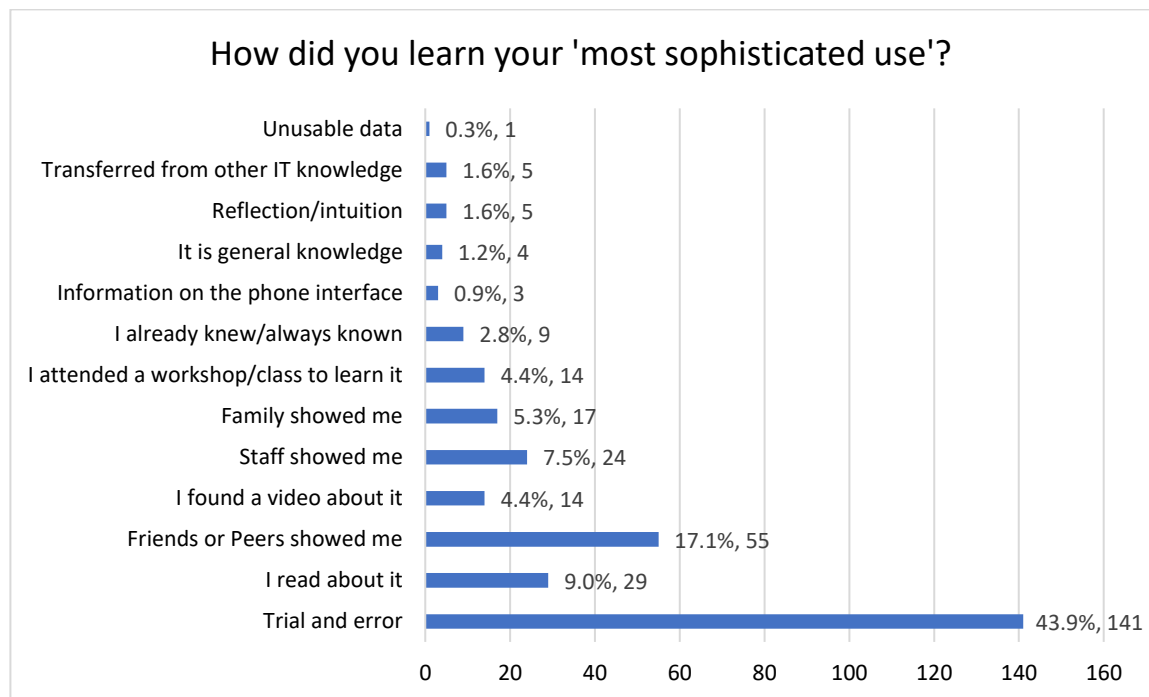


Figure 37: How did students learn their 'most sophisticated use'?

If 'staff' were indicated to have helped, students were invited to state which role the person who helped them occupied. 20 responded to this question with some selecting multiple roles. Lecturers were mentioned most, followed by librarians (see Figure 38 below). One student mentioned that staff in a technology shop had recommended editing video on a phone rather than using a larger device as it was easier and cheaper.

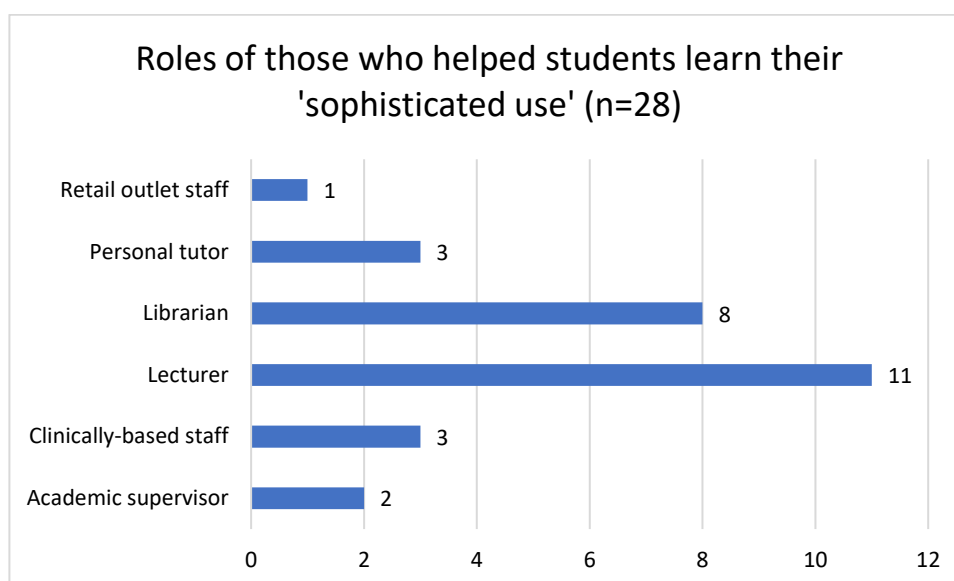


Figure 38: Who helped students learn their 'most sophisticated use'?

4.2 Section ii: Online focus group findings

As mentioned above (page 36), the online focus group ran for 3 months: late December 2016 through March 2017 with seven volunteers, somewhat below my target of twenty but meeting Davis' ideal of between five and eight members for co-present groups (2017, p. 1). For analysis and reporting, names have been changed and gender randomised, but educational level, field, ethnic derivation of name, and staff status, align with students' actual identities (see Table 12).

Table 12 shows the divergent levels of posting by individual group members. Not all of these were direct responses to triggers. Only Aisha, Charlie and Chris consistently engaged for the entire online focus group duration.

Table 12: Online focus group informants' involvement and number of posts (* indicates academic staff)

Pseudonym	Level & field	Involvement	OFG posts
Aisha al Harthi	Postgraduate research - AHP	Encounter & OFG	19
Benjamin Sanchez	Postgraduate taught - AHP	OFG	7
Charlie Jones*	Postgraduate research - AHP	Encounter & OFG	15
Chris Wood	Undergraduate - Nurse	OFG	20
Jay Adams	Postgraduate taught - AHP	OFG	12
Wafa al Balushi	Undergraduate – Nurse domiciled overseas	OFG	5
Wes Davies*	Postgraduate taught - Nurse	Encounter & OFG	3

After publishing my call for recruitment, interest seemed minimal and I was not sure that an online focus group would be viable. Again, in early March, when most members ceased contributing, I doubted there would be enough useable data to work with: see Figure 39 for activity data: messages read far exceeded messages posted.

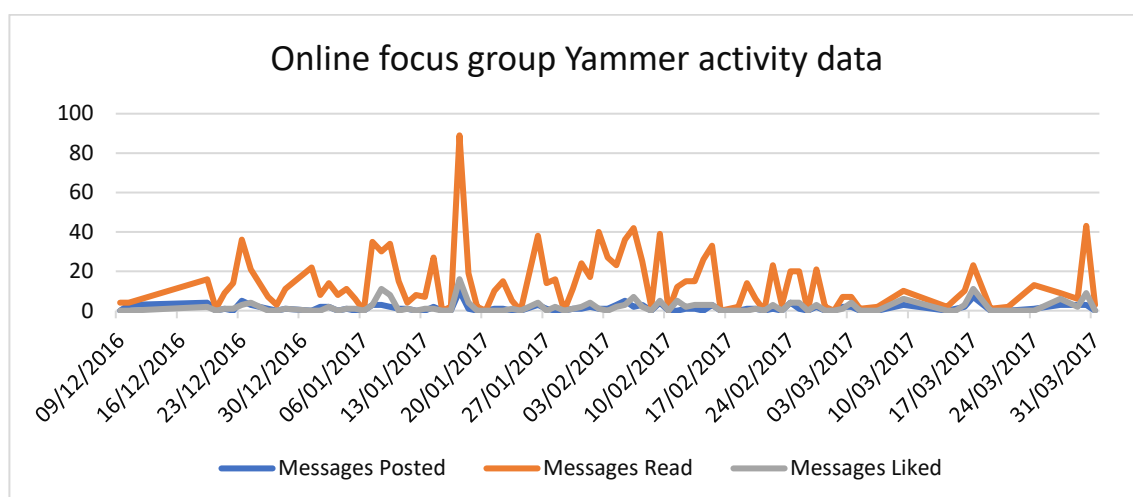


Figure 39: Online Focus Group activity data, December 2016-March 2017

More engagement would make a stronger case for generalisation, but I have already disavowed that aspiration. Given the prior assumption, that an aliquot of data could help answer the research questions, I have taken selected OFG material into the vignettes, especially responses to the standard questions asked in each trigger.

As mentioned previously, focus group findings would normally deal in the consensus view of the group. Davis, discussing co-present groups, is able to infer meaning from body language (kinesics), tone, rate, volume, the *vocalities*, of speech, and audible non-verbal cues (2017, p. 61). Online, a typed response or a 'like' (there was no 'dislike' option) were the only available cues. That made it important to try and maintain a receptive atmosphere that welcomed any type of message and any level of participation. The 'like' is a feature of many online social media platforms, giving users a quick means of responding without having to type, although these actions are open to interpretation by the reader and may be taken to constitute a variety of messages, not just 'liking' (Greteman & Burke, 2017). However, in analysing interactions, I decided that a 'like' could not be taken to infer consensus without supporting evidence in the post 'liked'. For example, group members regularly 'liked' other group members' responses to the standard questions, from which a range of meanings could be inferred, including, 'sympathy', 'acknowledgement', even 'enjoyment', but not 'consensus', since replies to the standard questions did not amount to propositions, they were a multi-part list describing the member's situation. Even where consensus was apparent, it was not always relevant. Each reply to the first trigger showed consensus that 'seasonal greetings' were in order because everyone was looking forward to the holidays. Thus, the following narrative synthesis of members' consensus views as pertaining to the research questions is offered. Another less obvious level of consensus may be distinguished in the data simply in terms of similar experiences which arose at non-contiguous parts of the data. These can be drawn into the topics that arose from explicit consensus.

Work on the move is tricky

Students were responding to a trigger that featured an advert for Google Sheets, a spreadsheet application (see Figure 40). In the image, four cyclists, in full road-bike garb, ride along an open road towards a mountain wilderness. The caption reads, 'With Google Sheets, you can create, edit and collaborate wherever you are. For free.'

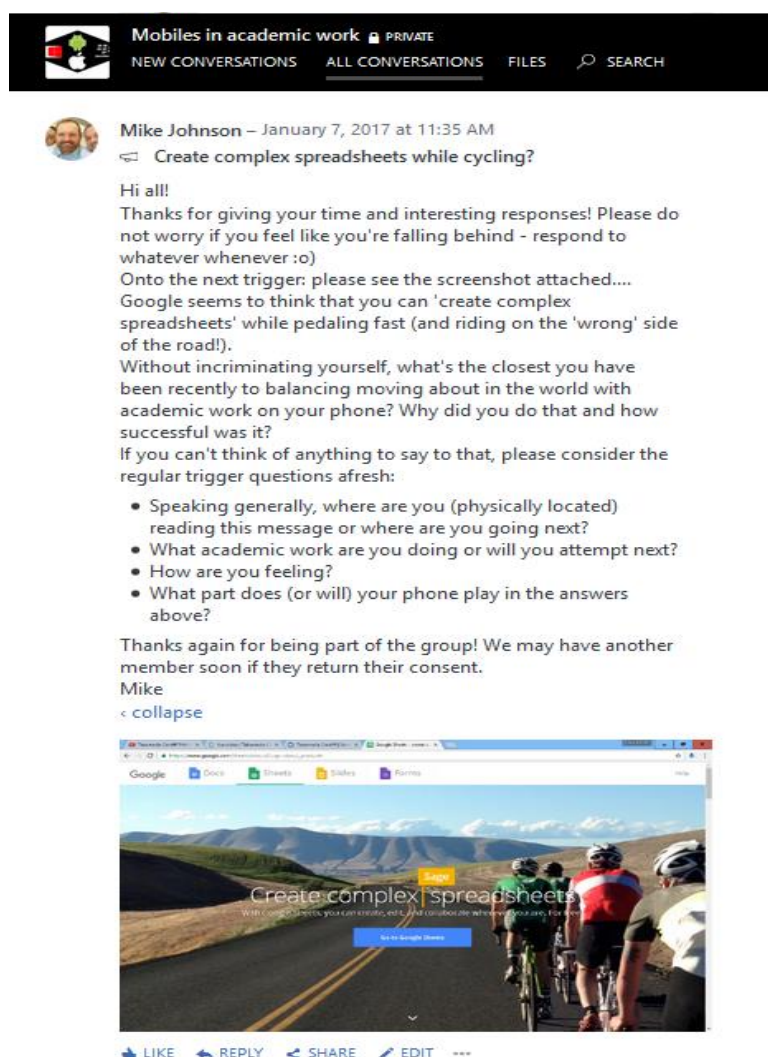


Figure 40: Online Focus Group Trigger 7th January 2017 - create complex spreadsheets while cycling?

Members were unimpressed by this. Aisha recalled riding a bus drafting an important email to her supervisor and becoming so engrossed that she missed her stop;

'It was ok though as walking back and getting wet is a good thing.'
(Aisha 7/1/2017 6.27pm)

She usually used her phone 'for any planning or organisational matters' (Aisha 7/2/2018 8.05pm), the *administrivia* of academic work. Academic work *proper* requires bodily stillness and unhampered attention. Like Wes (7/1/2017 8.46pm), I too read, comment and email from an exercise bike. Static exercise equipment provides a way of maintaining health and wakefulness while progressing aspects of academic work. Sedentary work with visual display units (VDU) is unhealthy (Health and Safety Executive, 2003).

The limitations of the phone's interface, for input or output, mean it is generally relegated to transient roles, such as basic Web search or recording fleeting ideas, in lieu of access to a bigger device. When her laptop broke in March, Aisha resorted to her phone, redrafting a paragraph that could be emailed for later inclusion on her return to the library-based computers (Aisha, 24/2/2017 at 4.52pm). In lectures, Benjamin (6/2/2017 10.29pm) took pictures of the slides he needed to remember but then, once at home, downloaded the full PowerPoint file to his computer.

The punctilious accuracy academic discourse requires makes extended writing while moving fraught with risk - not to 'life and limb' as much as to precious time wasted correcting sub-standard work. Although the online focus group was an informal setting, participants regularly strayed from accurate spelling and grammar. Benjamin responded while... 'cilycling on a stationary bike' in the Students Union where he was taking part in a marathon fundraiser (Benjamin 17/3/2017 4.01pm).

Wes had gone paperless, having invested in a suite of high-calibre mobile devices to enable effective mobile working in any setting and avert technical glitches. The others limited such frustrations by moderating their aspirations for accomplishing academic work on a phone. For example, Benjamin preferred to write ideas or reminders in a paper notebook, 'everything is kept in the same place and I do not need to search for my notes in different places.' (6/2/2017 10.29pm). Chris captured the group's mood in a Joseph Ducreux image macro (see Figure 41). She only borrows some of the meme's essential features though which should adopt an 'archaic rap' prose form.



Figure 41: Joseph Ducreux image macro shared by Chris 5/2/2017 8.13pm

For Chris, from the wide physical dislocation of clinical placements:

my mobile is a lifeline back to university and academia.' (Chris 5/2/2017 8.11pm)

A 'lifeline' that enriches while it adds to an already stressful existence. For her, 'on the move' appeared to be less about travel than a breathless juggling act to advance several overlaid lifeworld projects from a single physical location:

I was in the kitchen, trying to access my emails, my research, work out blackboard on the mobile (next to impossible) glue gunning sequins to a tin and painting a fairy post box whilst cooking duck. I was Whatsap'ing a fellow student with her literature review and trying not to fall over either of my cats. The duck was dry but that was the only casualty! (Chris 8/1/2017 11.57pm)

Chris' mobilage was a blur. Yet, in my experience, she typifies a section of the nursing student population: mature (over 23 years old) female students with multiple

challenging roles including raising children, preparing family meals, managing a household, while resolutely aiming at successful undergraduate studies, including supporting her peers. Even the attempt could be deemed heroic, but this verges on patronising away the many disadvantages to her academic pursuits compared to the likes of myself and Wes with ample space. Compare Chris' frenetic kitchen with the hallowed acres available to a ruminating Oxbridge undergraduate (see Figure 42).



Figure 42: Downing College grounds

It was sad, but hardly surprising, to read that Chris was falling short:

Academic work is going to be a resubmission of first essay, practicing for maths resit and generally trying not to panic! (Chris 17th March 2017 9.11am)

But her resilience was remarkable:

In kitchen, with my cat, researching ways to throw a birthday party on a budget. Pinterest is vital for this and I can only use it on my phone! Next assignment is due in in Mya and am already half way through it.

Phone plays a big art as I have email alerts set up for research links

Currently eagle eyed on mailbox awaiting decisions on extenuating circumstances and exam board provisions so everything very much up in the air.. (Chris 2nd April 2017 1:42pm)

Constant companion

My little pal is having a rest and a recharge :) (Charlie – 3/3/2017 8.09am)

Charlie's comment begins as if referring to a dear friend, and then uses verbs which can apply to human and non-human 'idling'. In common parlance, a companion is usually a person. The Latin root is, *com*, 'with', and *panis* 'bread'/'food'. This is not to imply that a person's companion *is* the bread, the inanimate object, but *the person you eat with*. In an anthropomorphism, the phone is at least that. This topic is inspired by Wafa's phone cover, a picture of which was volunteered by him in response to the first trigger (posted on 23/12/2016). Wafa added:

'My phone beside me as usual :) with a cover written on it (I will carry you with me always).' (Wafa 26/12/2016 at 4:44pm)

The slogan on Wafa's cover is imbued with delicious ambiguity: the message source could be the student or their phone. Coming from the student, it seems like a public declaration of devotion, akin to a fandom tee-shirt. The worn edges of the patterning tell of much attention and handling. The term reads like a line from a pop song, or a hymn of adoration, a hyperbolic aspirational ejaculation that bears little resemblance to the material realities of phone ownership. For example, many students (81% of survey responses - see Figure 29 on page 68 above) said they had possessed their phone for under two years: it seems unlikely that students would carry all their previous phones 'always'. Indeed, the cover itself is replaceable and is unlikely to fit Wafa's next phone.

However, taken as emanating from the phone, 'I will carry you with me always' expresses something of the person's reliance, if not dependence, as when Aisha's laptop broke and her mobile filled some of the gaps:

my mobile is my hero these days (Aisha 27/3/2017 7.21am)

A friend in need is a friend indeed. Yet dependency was discomforting for Chris:

Cannot use my mobile as it's charging, feel far too tied to it so it's a welcome break! Chris 2/4/2017 1.39pm

The charging phone was somewhat screened from consciousness, providing a 'welcome break'. In contrast, Wafa replied while redrafting an assignment:

My phone is charging and I can't wait for it to be 100%:) (Wafa 11/1/2017 6.19am)

Tending to the phone, setting up reminders and communication channels through it, form a self-inflicted nexus of *care*, a confluence of lifeworld ties that must be managed to maintain and stabilise mobilage. Essay composition may be a mainly mental and private accomplishment, but Wafa had to keep up with the cohort's open channel:

I am at home working on [a new] module alone. My phone next to me and I am using it frequently as I have to follow the group comments and suggestions in what's up group. feeling upset as I have to submit a draft [for a new module] and resubmit [a failed module]... (Wafa 30th March 2017 9.52am)

But smartphone use invites multiple channels, academic, professional, personal, and trivial, each adding a layer of psychic noise. Aisha checked email 'so I don't feel

guilty' (23/12/2016 7.13pm). Especially since Blackberry days (early 2000's onwards), the facility to access email through a phone has burdened humanity with a double-bind. Knowing messages are building up, I can try to ignore burgeoning levels of gnawing guilt, knowing that, if I give in, I will either temporarily reset this guilt back to zero or else messages may demand further attention of varying types and degrees (Freeman, 2009). Either way, this psychic eddy affects deep work (Newport, 2006). For these sorts of reasons, Kikahara & Sørensen (2001) reject Castells (2000) 'networked society' thesis in favour of Mol and Law's (1994) metaphor of 'fluid' topology of social interaction, 'There is no centre and no peripheral in the fluid' (2001, p. 408) – its 'noise' seeps inexorably, multi-channelled and multi-voiced, into consciousness.

I checked my emails a while ago. I also checked my calendar (my recent best friend) to see what sessions or task I should be doing next week. (Aisha, 24/2/2017 at 4.52pm)

It is important to approach textual analysis with circumspection. The exact meaning of 'best friend' in the Aisha's comment is unclear: It seems hyperbolic and shows how personification can operate in a rhetorically loose association, even towards a single app, and one with no apparent human attributes that could enable 'befriending'.

Actor Network Theory seeks to ascribe agency to non-human things. However analytically useful this might be, anthropomorphism challenges the free attribution of concepts such as 'intentionality' to 'things' that are commonly ascribed human relationships, attitudes, faculties and abilities.

Movies

This topic title is a play on the concept of movies, the moving image. Survey responses agreed that mobile phones were effective for the consumption of audio or video to support their learning (see Figure 32 on page 70). Video is arguably a more exciting medium than text, and buzzwords such as 'podcast' have embroidered the packaging of spoken words. Ironically, the way these are consumed can be quite didactic and 'passive', the frequent criticism of lectures (Clark, 2007). Being able to pause and restart is crucial when there are only moments to fill and even those are subject to unpredictable interruption. Interrupting playback to make notes can bloat the time required to review a recording of speech that, in its ephemeral form, could only be snatched at in passing.

The benefit for phone-based consumption of audio and video above text is that neither are dependent on the larger screen size for intense reading, where, for example, following consecutive lines on a shuddering bus requires locomotive determination. Charlie, Benjamin, Wafa, and Aisha agreed that scientific articles are hard to read on a phone – thus when Charlie discovered an app that reads articles aloud it was, 'going to revolutionise my life!' (9/2/2017 12.15pm).

Media that is primarily audio-based, as for many TED talks, allows the eyes to attend to something else, such as scanning the environment, while the ears take in knowledge.

I watch TED talks using my mobile most of the time while doing laundry (not really academic!). I was listening to Kevin Jones talking about how curiosity is the key for science and medicine. It is an insight about how we (in medicine) think about science. (Aisha 22/1/2017 4.11pm)

It is hard to establish how much this multichannel work is a forced choice because of lack of resource or just part of a culture that urges us to maximise productivity, or a disposition towards making the most of time. However, where education policy or practice rejoices in 'flexible' provision, this inevitably forces academic work into the dark corners of life – make do, rather than make optimal.

Members did not mention discipline-specific content. This may be because it is hard to source. The Nursing Standard, a large circulation 'trade journal', only began producing podcasts in October 2017 (McKew, 2017). The emotional and empathic learning and work of healthcare students was apparent in Chris's use of 'The Moth' and TED programmes which...

deal with real life problems and inspiring situations which can lead you to research further for academic reasons (Chris 17/1/2018 9.24am)

Yet media did not have to be directly relevant to the student's discipline to be useful. Aisha explains:

TED talks may not have a direct link to my research however, they allow me to see things from a different angle. Nevertheless, there are many personal development topics like time management, creativity, etc which I think totally fit with the academic work (Aisha 17/1/2018 8.33pm)

The shorter audio talks were also more feasible for students with lower calibre phones:

I like the bite sized chunks you can listen to , as some programmes tend to be too large to download on my phone (Chris 18/1/2018 5.12pm)

Personal sound stage⁶

The triggers on 14th and 21st January 2017 seeded discussion around the issue of ambient sound when studying. Psychological research, such as Furnham & Strbac (2002), and Kotsopoulou & Hallam (2010), seeks to unpack some of the complexities of the auditory channel's effects on concentration. These include the so-called 'Eysenck effect', where extraverts find noise less distracting. Rauscher (2002, p. 269) related her 'horror' that their earlier finding of a temporary improvement in visuospatial task scores (Rauscher, Shaw, & Ky, 1993) had 'spawned a "Mozart Effect" industry', the meme that listening to Mozart enhanced intelligence. Online focus group students were unimpressed, showing good understanding of what worked for them in order to accomplish academic work: they wanted silence, with one exception. Chris disclosed that her hearing impairment amplified minor disturbances so always wore headphones:

'to synthesise my thought processes... Headphones and audiobooks/Spotify are a godsend!' (Chris 5/2/2017 8.11pm)

In contrast, Aisha could not even 'bear a headphone to mask the outside noise.' (Aisha 22/1/2018 4.11pm). Sharing accommodation made it more difficult to achieve

⁶ A 'sound stage' is a studio used for recording media where sound can be controlled.

silence. Charlie's partner had ceased playing video games and Benjamin used earplugs but preferred to escape loud flatmates altogether by working in the library.

Learning

The trigger sent on the 4th February 2017, 9.40pm, led on from a previous message by Jay where they described finding interesting articles on the phone and emailing for later reading (Jay 2nd February 2017 11.36am). The group was asked to share how they processed items found while searching on their phones. Chris worried that curation fed a predilection for 'busy work',

Saving things all the time yet rarely reading them is somehow convincing me I am working!! (Chris 5th February 2017 8.05pm)

The group response was a studied reluctance:

trying to keep apps to a minimum as beyond a few must haves (Kindle/Audible/BBC) lots claim to be useful yet aren't? (Chris 5th February 2017 8.07pm)

Charlie's attributed her reticence to age and a preference for 'old' methods:

I like referencing freestyle lol.. so I don't think there is much hope for me adopting new ways of working in this respect. (Charlie 5th February 2017 10.32am)

Yet, as we have already noted (page 84), Charlie was excited enough about finding a way of having their phone read research articles to them that she initiated a new thread to share the news (9th February 2017 12:15pm). Also, she replied enthusiastically to the 'Speech-to-text' trigger' (13th February 2017 7.32am),

this is brilliant.. Picked up my speech so simply..with a cold, no mistakes.. will definitely be using this and will be passing this on to my students.. (Charlie 22 February 2017 6:29am)

Such varying responses from the same person are uncomfortable 'outliers' for research that categorises humans and their digital behaviours. Charlie's age disqualifies her from being a 'digital native' (Prensky, 2001). But this specious memetic dichotomy has already been roundly debunked (Bennett & Maton, 2011; Gourlay & Oliver, 2018; Jones & Czerniewicz, 2010). With reference to Bernstein's (1975) analysis of the hegemonies in the 'pedagogic device', it is open to question who should define what counts as adequately successful IT use if students manage to graduate without achieving 'digital residence' (White & Cornu, 2011) in multiple aspects of their life-world. Just because someone has done something with digital finesse, does not set the bar for every student. We have seen how (page 67) the presuppositions behind the 'IT Attitudes' survey question was gently rebuked by eight thoughtful 'other' responses. Perhaps she is transitioning from digital visitor to digital resident in this sphere (White & Cornu, 2011). In fairness to the latter, less prescriptive metaphor, it is said to be possible to be both visitor and resident for different contexts of technology use. White and Cornu's model may be subtler than Prensky's but it is still essentially a dichotomous description which stalls in the face of the ambiguities and contingencies of human behaviour. Perhaps Charlie's responses reflect her need to squarely accommodate a potential new digital academic practice within their existing panoply of 'known good' life-world practices, and the horizon of expectations for success offered by the new practice. Adjustments to working practices that appear 'large scale', use unfamiliar apps or seemingly arcane

processes need more than a suggestion in a forum to secure significant reconfiguration of effective, tried and tested, *working* practices, even if that may seed adoption in the future.

In the rush to commodify learning (Noble, 1998) or research *observable* practices (Gourlay & Oliver, 2018), subtler aspects, such as 'growing awareness', can be overlooked. Aisha had started a thread to share Tristan Harris' TEDx talk about interface design that worked *with* users, rather than *exploiting* them (Harris, 2014). I shared a related article in reply and Aisha added:

Thanks for the link. We sometimes take it for granted that because it [an IT interface] is meant to be in this way, we adopt [adapt] ourselves. We have options when it comes to technology but we should be thinking of the best options (I am more aware of this recently)
Thanks to Mike (Aisha February 27 at 4:20pm)

Non-use

The standard trigger questions, especially, 'What part does (or will) your phone play in the answers above?', regularly provoked quite muted answers to the effect that students were not, at that time, using their phones at all, still less for academic work. It was apparent that those with reliable, comfortable, suitable conditions for academic work, whether at home or in the library, eschewed undertaking much academic work on a phone – laptops are better (Curtis & Cranmer, 2014). Jay informed us that, having submitted her assignment, academic work had diminished, so her use of the phone for that had too (Jay 27 March 2017 2.05pm). As we observed above, at other times, such as on clinical placement, the phone was, 'a lifeline' (Chris 5 February 2017 8.11pm). This sessional aspect to knowledge work promotes skills atrophy (Ohlsson, 2011), including IT skills, which is a moving target exacerbated by frequent changes in software and hardware. These changes can include tariff hikes and shifting platforms (e.g. Google+, Delicious) that require contortionist-like migration to preserve valuable content and to assure continuity of the digital practice that a particular, now discarded, tool supported. With no long-term personal trajectory that foresees regular reliance upon particular digital knowledge working tools, it is not surprising if students take a conservative, strategic line towards experimenting with unfamiliar practices.

Mixed messages from university staff did not help. Even when pedagogy incorporates the use of mobile phones, this only made for a sharper clash when other lecturers enforced blanket bans, leaving Chris exasperated:

Due to consistent complaints of misusing phones(i.e watching tv on catchup) all phones are asked to be turned off so it is quietly sitting ignored beside me (Chris 17 March 2017 9.14am)

And, just a few seconds later:

Feeling quite oppressed as some lecturers actually like us to use phones for Kahoots etc and as I have a hearing impairment and my laptop runs down quickly I like to have the powerpoints up to focus on(some tutors fly through their prezis quicker than I can write!)
(Chris 17 March 2017 9.15am)

4.3 Chapter summary

In this chapter I have sought to present the findings from the survey and online focus group arms of the study.

The survey, with its several free-text questions, did not have the rigour necessary for statistical testing. Nevertheless, some variables appeared to offer interesting correlation that could be investigated further in future work.

A wide range of use is being attempted by a small minority of students, but all preferred larger devices which do not have to compromise so stringently on physical size or technical capabilities. Video/audio was popular, as was quick searching for concept lookup. There are many things that cannot or are not done. Dedicated apps played a significant role, having information at the fingertips was useful, if permitted – in class or on placement.

Of those who responded to the 'most sophisticated use' question, students aged 28-24 were more likely to report sophisticated uses in the highest of four categories. However, the 35-44 age group reported the largest proportion of the next level down.

Learning this 'most sophisticated use' was dominated by 'trial and error' (43%). Friends and family were also important (22%). Staff played a minor role (7.5%). Others indicated they were self-taught, perhaps translating ideas from use elsewhere.

The online focus group yielded several themes from quite limited data. The group agreed that academic work whilst mobile was difficult, certainly more so than IT firm's marketing would suggest. As a constant companion, the phone could fill in the gaps when other, preferred, IT was unavailable or just more complicated. Students agreed that there was a detrimental flip-side to this benefit that had to be carefully managed, but essential communication flows made this challenging and seemed to seep into the subconscious.

Textual work was especially difficult such a physically limited device, making audio and video resources preferable. These do not require the same level of input/output precision and allow students to observe their environment while listening. In the absence of sourcing discipline-specific content, students enjoyed broader offerings which they could relate back to their profession, even affective learning. Students were reticent about developing more sophisticated applications for, and greater reliance upon, the phone in academic work, although these did arise – speech to text or a way of having a journal article read aloud were met with some excitement.

In the following chapter, I present a series of phenomenological vignettes, seeking to effect an eidetic impression of what learning at university is like for healthcare students in a mobile assemblage.

Chapter 5: Vignettes

The previous chapter presented the online focus group findings in what might be considered conventional for qualitative research, relating a synthesis of themes. Phenomenological research, dealing in human experiences, must go further than presenting interesting figures, facts, themes and theories. It must, through vocative texts, attempt to *re-presence* (van Loon, 2007, p. 279) the reader within mobilage. This chapter presents a series of such texts as vignettes.

The vignettes are numbered and arranged according to their genesis. The first vignette has not been included because it was a trial written from my own perspective. Van Manen commends this as a 'good starting point for phenomenological inquiry' (2014, p. 313). I was aware of risk with this mode of representation in various ways. Although I have written reflective text before (I have always kept journals), this writing genre was new to me and I knew that success rested heavily on my own compositional abilities. Vignette 01 was very personal, taking a 'day in the life' approach. I was pleased with the timbre of the resultant text, but, at 1150 words, while it draws out many aspects of mobilage, it was too long to work as a vocative 'glimpse', alongside the others. Multiple short accounts convey something of the breadth of mobilage experiences, and, furthermore, I am not a healthcare student. The vignettes are *representative* of mobilage and, as such, resist generalisation into themes, aiming to preserve, if not celebrate, complexity. There were ten encounters and each one features to some extent.

Each vignette varies around a similar structure, with a brief blurb describing context and protagonists, followed by phenomenological narrative. The protagonist's spoken or inaudible words appear in blue type. Subsequent commentary seeks to draw out the pertinence of the vignette in terms of its contribution to the research questions.

5.1 02-Online

Wes (50) is a lecturer in healthcare, married with grown-up kids, studying a doctorate part time. She's savvy: in control of most things except aging. There is a ruthless compassion about her use of time. The half-hour commute is usually harvested for various bits of work, for which she's invested lavishly in a hybrid tablet PC and a phone with a very big screen. She also carries an iPad for good measure. We join her and many fellow-zombie commuters in the chilly gloom of her homeward platform...

Thinking: *On time... but will the train be...?*

Standing thinking waiting.

Dusky downtime before downlinetime.

Phone shivers with notifications pleadingly from her bag

Thinking: *I'm not waving you around out here pal. Anyway, I forgot my glasses and my arms are too short*

No, this is thought tumble time.

Ground rumbles: felt before smelt...

In one movement, she climbs aboard negotiating bodies, luggage, furniture, inconsequential alerts and an empty table space (always a relief). Sighing into her seat, she flips her little friend to 'hotspot' and 'do not disturb', and he's ready for tethering as she unfolds her workhorse to crack on.

Discussion

Wes is equipped with the full range of premium mobile devices, allowing her to make the best selection to maximise the accomplishment of frictionless work on the move in any situation. Her 'threshold of indignation' matches that of Saffo's Hollywood starlet, with no patience but lots of cash (1996). Wes only pays for technologies that do not get in the way.

Wes has no expectation that her employer would afford all that for them and the facility of a fully functional, highly mobile office blends across her work-life balancing act.

Wes has learned to optimally meld mobilage to suit her situation, considering personal security levels, amount of available time, whether moving or stationary, standing or seated. An expert learner, Wes understands that standing thinking, or even deliberately not thinking at all, is legitimate and contributory towards knowledge work.

Being a mature and experienced learner, Wes knows what works for them when, to take best advantage of mobile IT. Nevertheless, age does not come on its own, and failing eyesight makes reading from a small screen more difficult. A research article is



Figure 43: Police dog plus handler. Image Royston Ford (2009) creative commons licence



legible on a 10" iPad but, unaided, her long-sightedness takes the phone out of range, beyond 'arm's length'. Any of this is made more difficult by the varying availability of seats on the train. (2009)

This mobilage could be analogised with a 'police dog and handler' (see Figure 43) for the highly focused, ecological sensitivity and adept control exerted by Wes over her phone. The relationship is one of partnership, with push-back from notifications pushed-back while boarding the train as Wes prepares to interact with her laptop.

If noise becomes a problem too early in the journey, she might also run a 'Nature Sounds' mobile app through noise-cancelling headphones to block out auditory distractions. Nothing can stall her locomotion, the inertia she has accumulated enabling her to push on with work on the move, mobilage

gliding along, in ecstatically becalmed flow (Csikszentmihalyi, 2002). And the phone is in 'sit, stay' mode, routing data for the laptop and building, not disturbing, Wes' working micro-climate.

5.2 04-No-one needs an hour

Three months into a Masters and three years after qualifying as a nurse, Rey (25), is in a nearby café within the hospital's bustling main entrance atrium, preferring less formal settings, at arm's length from the lecture theatre or library. Phone (battery 50%), notebook, pen, and latte (20%) help make the most of the lunch hour no-one really needs. We join her flicking through a smorgasbord (Figure 44) of items in Google Drive. These include a letter supporting her brother's UK residency, a make-up voucher, letters from a TV cooking competition her mother applied for, chiffon samples, some fairly sensitive documents from work... and the latest find - a useful-looking drugs trial PDF. Her flamingo pink A5 notebook is open at the back to record extracts. She adroitly transfers the study details to a new page: author/date, trial name, sample size, results, p-values, etc.

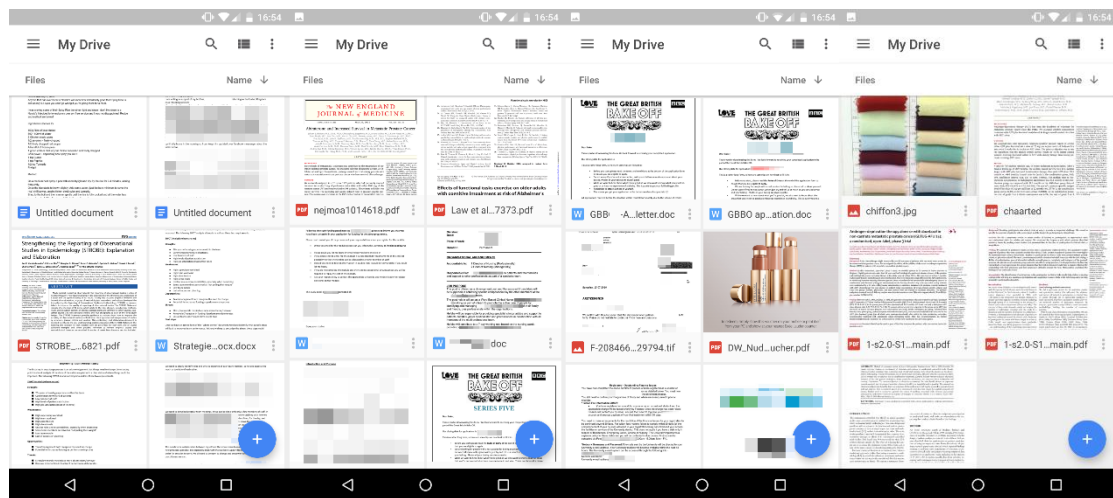


Figure 44: Rey's Google Drive smorgasbord

As she finishes the note and drink, thoughts turn to the morning's lectures on qualitative research...

Boring and pointless... - give me numbers any day... at least I found this...
[article]

She looks around –

The place is buzzing today... dunno where Jen went...

Continues skimming - the references section now - a chathead pops up

Ahhh NO...! No thanks Mark [swipes up], not now.

She swaps rueful glances between 17% battery and empty cup - dual signs that it's time to get back to class and her power-bank.

Oh! Nearly forgot!

Scribbles "Viera 2007 - bias RCT", and she's off.

Discussion

Rey's statement that, 'no-one needs an hour', for lunch between lectures, is ironic considering how productive she is during that time. This and her liking for neat quantitative results, chimes with discourses of efficiency and an impulse to be 'doing', perhaps influenced by nursing's 'culture of busyness' (Thompson et al., 2008) that dismisses deliberation as unproductive. Similar talk, scaled up, calls for undergraduate degrees to be awarded for 2 consolidated years of study (Department for Education & Skidmore, 2019). Their advocates' vision for higher education that prepares students for the workforce could be construed as instrumental, pandering to

mercantile interests, rather than a concern for what might be emancipatory for the student, still less their society. The drive towards efficiency is consistent with the 'productivity' genre of apps, yet, even there, the digital promise may be well short of the reality. Digital technology struggles to match 'instant-on' scribbling... The psychic climb up to zuhanden scribbling on paper vs. doing the same on a phone have different gradients.

Viera 2007 – bias RCT

In fact, the time and effort required to accomplish the same with the phone is similar (see <https://youtu.be/q4-a-3HWso>) but achieving that sits atop a slew of conditions: of embedded technical knowledge, sufficient phone calibre, and developed curation habits, that must harmoniously coalesce for arguably negligible benefit over pen and paper. This starts to explain how the phone-based practice is beyond the horizon of what many will adopt or even attempt. The idea worth noting is ephemeral, and the priority is to externalise and reify it in a way that is as nigh-effortless in the recording as in later access. Digital aide memoirs require a habit, one that overlooks the noise and interference from a digital interface. The visceral hand on pen on paper, offers an unparalleled mediated immediacy compared with the fuzzy 'fly-by-wire' machine-code interpreted screen prods and swipes.

In contrast to Wes, for whom technology must be transparent, Rey seemed to relish geek-style combat. An early Android™ adopter, she's used to grappling at the 'bleeding edge'. With an app-developer husband and father 'in IT', yet having recently completed her first degree, Rey knows what she likes, how she works best, understanding the best locations for getting work done and copes well with minor or even quite assertive distractions, wherever they come from. What she cannot ignore is a dwindling battery - a feature of an aging phone (i.e. 2 years of intense use). So, phone calibre is disappointing but at least what she is attempting is now possible, in contrast to the earliest smartphones which she had owned. Rey said that 'Phones do everything now, so why wouldn't they?', which was typical of many survey responses in answer to how students learned their 'most sophisticated use'. In the gap between her study stints, phone calibre had risen to enable a transfer of affordance across IT devices. So Rey blends the strengths of paper and digital, wary of the latter's pitfalls.

A proposition of technological advance implies a promise of greater procedural efficiency and outcome effectiveness given that someone with prerequisite ingenuity has brought the technology to market, has designed it for a purpose, with enough thought, investment, and opportunity cost to be worth the effort. For Lou, another informant, the phone in her hand conveyed the designers' expectation for her to discover and realise the promised benefits. Yet this requires something of a leap of faith, and the student must calculate their own opportunity costs of adoption versus a myriad competing priorities and litany of extant related practices. Students arrive at higher education with their own knowledge work strategies and processes, primitive or honed. However imperfect, they find a place alongside wider life-world necessities and preferences. Rey's father had commended Jabref to her, for automating reference management and citation, but 'things that make it more complicated are not for me. Lot of input to get the required result', she said. Rey enjoyed manually typing references because it was simpler, and the outcome was more within her control. The eventual cost or benefit of learning an alternative practice is hard to predict and, ere long, could turn out to be detrimental in terms of reliability, ease of use, and welshing on the promised benefits of greater efficiency.

Scholarly practices are built upon technologies which, in turn, depend upon layers, or a stack, of pre-requisite features and conditions. Table 13 borrows from ergonomics and interaction design to compare the case of making a quick personal handwritten

note while using pen and paper or a smartphone. The digital practice is more involved and contingent. Phone developers have sought to smooth away the difficulties of touch-screen interaction with the rise of voice-controlled ‘assistants’, such as Apple’s Siri. However, even with a new phone, Google’s ‘assistant’ dealt me a mobent (see screenshot in Figure 45), claiming there was ‘No notes app installed’, offering no way of informing it that there were in fact three fully functioning notes apps (Huawei native, Evernote, and OneNote). But even opting for speech input is to invite an inordinately high draw-down from of attentional energy to ensure that the phone has sufficiently interpreted the request for the recorded words to function later as an aide memoir.

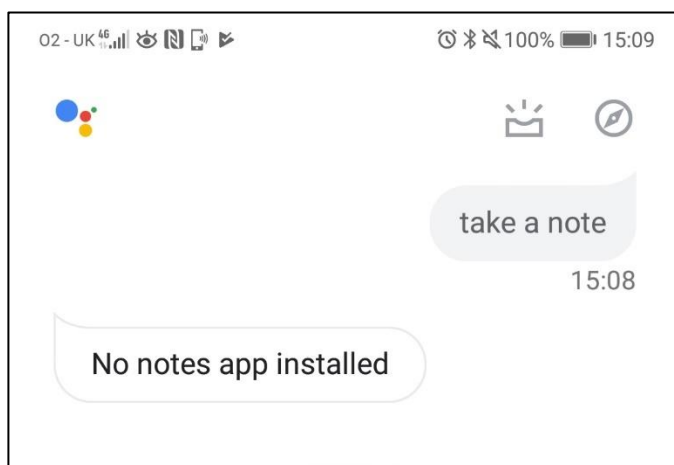


Figure 45: Mobent - 'No notes app installed'

For healthcare students, these considerations and the grappling they entail, pale compared with learning discipline-specific practices where the weightier matters of human wellbeing, and professional accountability for that, demand a high priority.

Table 13: Comparing analogue vs. digital handwritten note-taking stacks

	Pen and Paper stack	Phone stack
Prerequisite Infrastructure	Adequate lighting. Comfortable setting Moderately stable carriage if in transit Minimal movement Supportive surface Dry environment.	Wi-Fi/cellular signal Current operating system Suitable app., most phones have a built-in app but may not accept hand-written notes requiring an element of research to select a suitable one. To leverage cross-platform and backup, a cloud-based account (secured by login with all the complexity of maintaining a hackable online account)
Prerequisite operational knowledge	Reading and hand-writing	Knowing that hand-written digital notes are possible. Obtaining the app. Reconfiguring the phone to enable quick access to create notes. Quick method of unlocking device. Interactional flexibility to keep the device active while making a note – pausing causes screen to fade requiring various techniques to bring it back into service depending on the time taken pausing to think means that you

		lose access to the note in progress and the ability to reflect on its composition. Steps required to re-join activity after screen locks.
Requisite kinaesthetic capability of user	Legible handwriting. Can be performed unsighted Search – physical navigation	Quickly awaken/unlock phone. Accurately load correct app. Accurately select handwritten note. Screen writing with finger must be performed sighted. Alternatively, typing, two handed, precision of keyboard entry – thus the emergence of voice-activated ‘google assistant’ note taking. Save note – possibly add categories/title for later search. Requires backup to cloud to achieve platform independence Search/categorisation/ presentation sharing
Financial investment	Minimal ~£30 per year	Phone ~£30 per month App bundled or paid (~£3 per month)
Coupling practice to media	Loose – possible to write on hand if no paper available but any scrap of paper would be adequate. Almost any pen.	Constrained – requiring an app of which there are several and each one has different features. Pre-customisation of the phone prior to routine use. Need to repeat this if phone is reset or replaced.
Time to start activity	Retrieve and open pen and notebook to required page.	Wakeup device, call app – specific type of note, authenticate again (if enabled)
Feedback/noise from the device	Positive haptic writing feedback	Simulated haptic feedback, at best. Laggy & imprecise, requires adapting to the interface and interactivity of finger/stylus on screen Potential for requisite updates to app or phone which may interrupt or negate the activity.
Anticipation of success prior to the attempt	High. Pen usually gives ‘feedback’ if it is getting low on ink.	Always hedged to some degree because of the number of dependencies and potential for distraction.
Navigation	Fixed, linear, chronological	Complex – need to learn sorting, categorisation, tagging
Physical properties	Light and robust	Light but fragile
Independence	Months or years	Battery – limited lifespan of device ‘built-in obsolescence’
Usability	Planar perfunctory	Mediated by the interface, complex
Cognitive purchase	Stable predictable physicality	Mediated through a fluctuating screen
Threats	Loss	Theft, fraud, identity theft, distraction

Long term viability as a technology	Stable	Uncertain
Long term re-use of stored content	Not portable or searchable. Depends on effective information management	Portable and searchable although older material requires substantial on-device storage and/or adequate processor speed and connectivity for effective search. Results soon become too numerous to cope effectively with without prior application of information management techniques.
Storage	Small space/disposable.	On-device is inherently risky in the event of memory fault. Off-device access requires possible (eventual) paid subscription.
Potential for distraction	Depends on prior use of pages but some scope for serendipitous re-discovery of previous work.	Inherent/native to a device designed to alert the owner.
Ease of backup	Copy contents of note. Take a photo using phone.	Syncing – requires learning the interface to understand when this has been successfully completed.
Sustainability	May be 'ethically sourced'. Recycled materials, and recyclable	Draws together toxic and scarce resources. Exploits inequities in global labour markets. Difficult to recycle.
Exit strategy	Not necessary/frictionless	Complex – compatibility, changing financial arrangements

5.3 05-Living in the Moment

This is Mo (40), a third-year undergraduate nurse with well-honed study skills. Mo takes a ruthlessly strategic short-term attitude towards information management, building a new 'study nest' per module, he tears it down once the work is submitted and the module complete. But the phone is vital for contact with the rest of the cohort.

In this fabricated account, we join MJ and Mo on a visit to the corner of the family home where Mo does most of his academic work. We top the narrow staircase.

'Welcome to the cockpit'

So this is where it all happens...

'Yeah.'

An impressive array ('carnage' his word) of highlighted and annotated A4 paper surrounds a small chair and desk in the corner of this 2 down, 3 up, including vertically arranged around a large screen and in a printer-paper box on the floor.

'Yeah, much to the wife's disdain... Nah! She's as good as gold... but we're almost done now anyway.'

Hovering directly above the screen is an 8-week plan for the current assignment.

So how much of this stays after you submit?

'Practically nothing - I pull it all down and I've got a file for year 1, a file for year 2... but I've never looked in them... and...' 'NEXT!'

He laughs.

'Living in the moment!'

So, do you work on the move much, do you use your phone for academic work? Ah no - you said you drive in...

'Yeah - so not so much - checking timetables... - I work on the mainframe here really... But it is really important for support... because, our WhatsApp groups and our FaceBook groups are, pretty key... being connected like. And especially on a course where there's not a massive amount of academic supervision. It's helpful. Even for silly little things - you think - "Ah - someone's gonna know this" and you put it out to the group and... sure enough they do... or arranging lifts to college... To be fair it's been great like - we've stuck together the four of us all the way through.'

Discussion

Mo is mildly amused at the idea of using a phone for academic work although he will confess to reserving library books on it when a lecture really drags. His work, and what it takes to succeed, are well understood and the end is in sight.

A modular course design has long-since hardened his attitude to the research he finds along the way. The distinctiveness of each twelve-week module negates its further usefulness. There is simply no point in learning sophisticated strategies and technologies for curation. Even the paper he decided to keep remain untouched since the day it was filed.

He's remained close with a group of mature students who met on a local access to higher education course. Their carpool campus commute excludes recourse to phones for academic work, but it has provided a buffer-zone for the group to share

freely on the road through a long tough degree programme. And when they're not together physically, WhatsApp constitutes an extension of this group, a virtual inner sanctum, alongside several other wider circles of predominantly phone-based groups. Even then, as Madge *et al.* found, social media is more 'about' work than for it (2009).

As can be seen in the next vignette, nursing is demanding in many ways, not least in terms of perplexing 'emotional labour', first defined by Hochschild as, 'The induction or suppression of feeling in order to sustain an outward appearance that produces in others a sense of being cared for in a convivial, safe place' (1985, p. 7). In the aftermath of terrible events in Stafford (Francis, 2013), calls for nurses that 'care' (Dominiczak, 2013) indicate a society's expectations of this, but research into staff turnover and burnout (Delgado, Upton, Ranse, Furness, & Foster, 2017) has shown just how deep nurses have to dig to emerge from each shift with any intention to return the next day. Indeed, Health Education England (2014) has recognised that the problem is especially acute for newly qualified nurses, only improving two years post-qualifying. Prominent among a list of recommended strategies for enhanced resilience is 'positive and nurturing relationships and networks' (McDonald, Jackson, Wilkes, & Vickers, 2013, p. 136), and when clinical placements necessarily disperse university-based groups, such as Mo's carpool, virtual groups fill some of the void.

5.4 06-Holy work

Arlo (35) is another undergraduate student nurse who makes almost no use of his phone for academic work. He has a running app and uses messaging – that is about it. After all, even the sight of a phone on the wards is not considered professional – he retreats to the toilet to text his wife.

Arlo is on his final placement, in a side room of the rehabilitation ward, with an elderly lady he's looking after. She has just passed away and he is taking a moment to reflect...

It's good she had her own room.

So still now...

'ARLO! - YOU CAN'T USE A HOIST TO MOVE HIM!!! - you'll 'ave his hip out!'... I remember it like it was yesterday but it's *two years ago*...

Same ward, rehab, but *this is complex care*...

May her rest in peace...

She hadn't spoken for days - we couldn't feed her without choking but nor could we starve the patient or make her thirsty...

The team agreed we should risk feeding but, 'What is the policy...?'

OK so the registered nurse has to do it - so I have to check the documentation - what kind of food this patient can take because I don't want to be a murderer, and I have to document everything and I have nurses with me if anything happens I'm covered, and slowly, very gently, in a careful situation, put the spoon in her mouth to try to feed... OK...

She was 90... she's passed away - no family... no document about... her wish...

Who will decide this...?

What's her religion... Muslim? atheist? [shrugs] So we will discuss again... But it is a special responsibility, to give the best dignity you can with people... It's so sad...

And it is sad. Who wants to die alone in hospital? It falls to the nurse to care for people at their most vulnerable and lonely, to uphold dignity right through their final days and afterwards.

Discussion

This discussion is brief, out of respect for the deceased. This vignette shows mobilage in total eclipse – with no place for questions of academic work on phones or otherwise. In fact, university in general seems distinctly unreal compared with these kinds of experiences. As the saying goes, 'no-one dies in education'.

5.5 07-Settings

Here is Ali (27), finishing a full-time PhD. With that slim stipend she's barely afforded an old windows phone with very few apps. It is mainly used for email and googling the odd reference - it also carries her diary, thanks to a previous association with a computer science student. She doesn't consider herself very technologically advanced and sometimes it's easier for people to just show you what to do... A new job elsewhere beckons, when, at last, she'll be able to upgrade, whereas previously she only wanted to *downgrade*, to a trusty brick phone.

Ali hates writing. She's got to have a quiet room for that, and a big screen - thankful the grant at least paid for those... We join her trying to concentrate, sat on her office table, but squirming because the heating's on for winter and any amount of sun on the windows turns the room into a furnace...

Sun SO hot!

Brain *bursting* – grabs phone on the way out to

Break time!

Outside

Fresh!

What is that going to be? [a new installation has been taking shape next to the path for weeks]

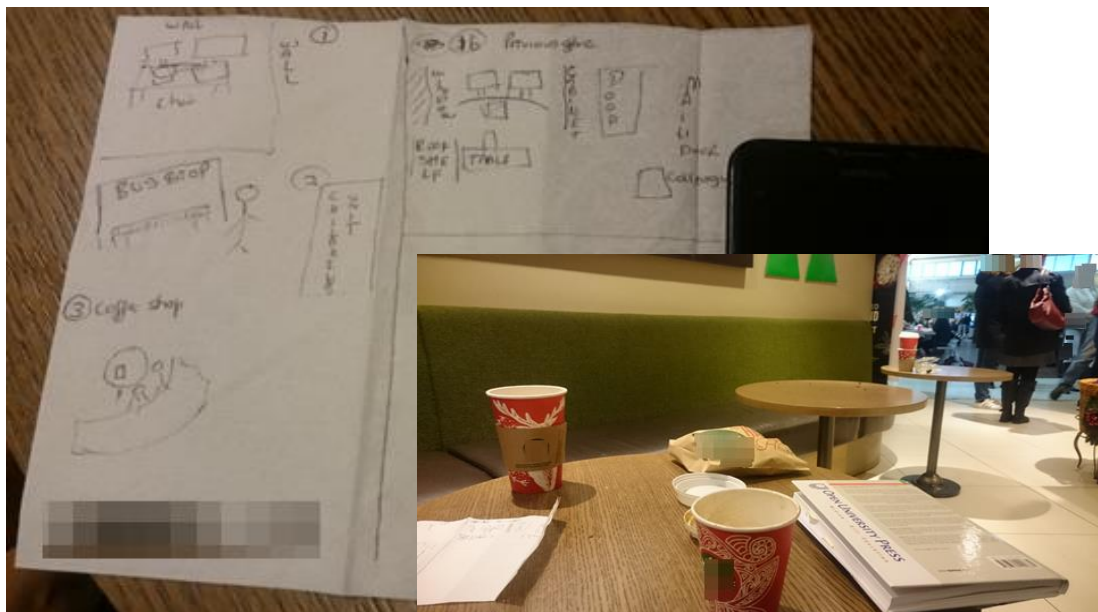


Figure 46: Ali's learn-place sketch (on a napkin) and the busy café where we met to percolate some thoughts

Inside, she muses... about the café's hubbub (Figure 46) - today serving cheesy jazz dreaming of a white hot chocolate Christmas...

hmmm lipids... must check that reference - 4 bars but 'cant connect' (again!?)
– no pen - ugh!

Anyway, it's time to go, so, right on cue, the browser comes racing back to life displaying the university's home page. At least the search term is still there meaning she doesn't have to sing about lipid profiles all the way back to the office.

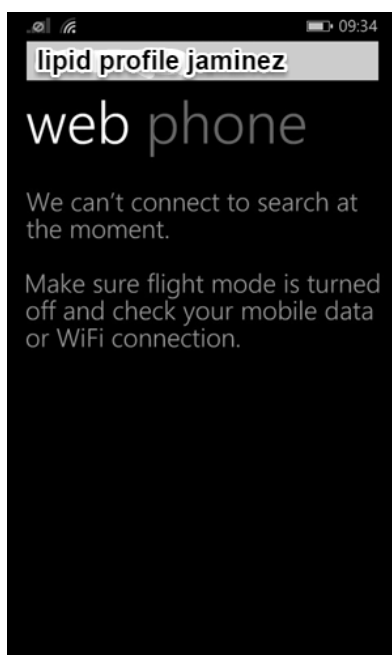


Figure 47: Ali's mobent...

Discussion

Ali valued the different types of available settings and, where possible, adjusted her physical position within each for comfort and to suitably cultivate different types of knowledge work. Her office is good for extended concentration, but it can also be stifling, not just because it is a sun trap. For Ali, the café provides a counterpoint, it 'feels more alive, in a way. I feel under less pressure when I'm here as opposed to sitting in the office. I feel like I am much less stressed more controlled, and I have a clear head' (Ali, 26.30). A measure of hubbub provides a setting where thoughts can roam, coalesce and percolate. The café is a 'thinking zone' (Ali, 8.30) for creativity and that is where being able to run a quick Web search on her phone comes into its own. Ali was dismissive of other settings, such as micro-waiting for a bus, or even riding one, for this kind of work: the anticipated time to critical disturbances was out of her control and likely to be short, but also she did not want to lose everyone around her. Bus time was 'muse' time (Ali, 44.30).

Mobents may be temporary, but without being able to act immediately, the moment seizes up, rather than being seized upon: the poor responsiveness of a phone to the intended micro-task defeats its *raison d'être*, igniting a frustrating hiatus that is antagonistic to ideation, instead of simply allowing the student to flow through their pensive lines of thought, or life in general. Having arrested her attention, a less savvy user might wrestle the technology into obedience or get sucked in to check for new updates of various kinds. But Ali had deleted Facebook to free herself from the 'compulsion to look – and I don't want to' (Ali, 43.30). In this way, communication channels were strongly filtered (Eriksen, 2001), restricted to messaging friends and family. Instead, Ali blithely admits defeat and heads back to the office; the new idea, temporarily held in the browser's search bar. The phone was good for that much.

Even though she had tried to separate academic from social life, and considered the phone as not for academic work, that was in distinction to an iPad, funded by their research grant and solely used for that. But the reality is less clear cut. She regularly followed-up research-related ideas with her phone and admits to occasionally forming them in an email to herself.

It was not just dubious technical reliability that fuelled Ali's ambivalence to phones. She would identify with 'Sally', in Gourlay and Oliver's study (2018, p. 73), who felt threatened by the intrusiveness of technology. Ali recalled how stunned she was when convinced that an acquaintance seemed to know the contents of private WhatsApp conversations. Since then she's suspected that phones are horribly insecure. The ambiguities of phones in mobilage is interminably complicated for us. Some of this is a product of deeply embedded design decisions, at the code level. This is illustrated by a segment of 'pseudocode', provided by a friend who is a mobile App developer. Pseudocode is a way to quickly and succinctly visualise the processes of a computer program without having to attend to the syntax necessary for it to run successfully.

Dropbox app

```
viewFile("MJThesisChapter1-intro.docx");

function viewFile(String fileName){
if(isCachedAvailable(fileName)){
renderFile(fileName); //available offline, so just show the file
} else {
downloadFile(fileName); //we need to go and download it
}
}

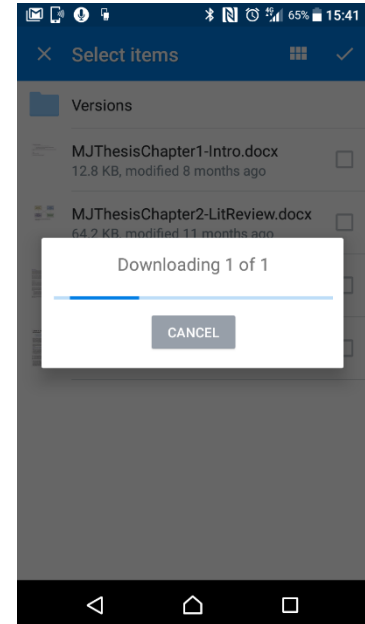
function downloadFile(String fileName){
displayDownloadSpinner();
while(OS.hasConnectivity){
url.open();
File localFile = url.read(filename, bytes);
}
}

function displayDownloadSpinner(){
displayModalView();
Button cancelButton = new Button();
Listener cancelPressed = new ActionListener(){
closeNetworkConnection();
break;
}
cancelButton.addActionListener(cancelButton);
}

OS:
OSConnectivityMode.setConnectivity(Network.noSignal); //start with
no signal

while(true){ // repeats every second

Array availableSignalsAndStrengths[][] = antennae.getFrequencies();
//a 2-dimensional array; signalType, signalStrengthInDecibels
// e.g. [["4G"][2]], [["3G"][4]], [["2G"][5]], [["GPRS"], [3.6]]
if(availableSignalsAndStrengths["4G"] > 0)){
// we have 4G
OSConnectivityMode.setConnectivity(Network.4G);
} else if(availableSignalsAndStrengths["3G"] > 0)){
// we have 3G
OSConnectivityMode.setConnectivity(Network.3G);
} else ...
}
```



Box 2: Pseudocode for Dropbox mobile app downloading a file

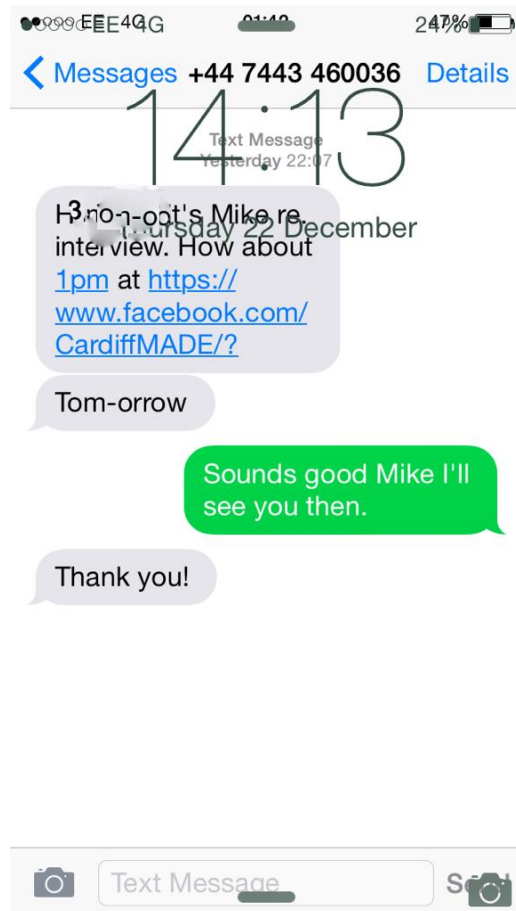
The code in Box 2 depicts an approximation to the processes underlying the mobent which struck when, stood in a shopping mall, I tried to view a document from Dropbox but I had not made it an 'offline' file. This was a connectivity issue – the phone was high calibre, location was promising, task perfunctory for all actants. It was not a large file but hung downloading via low speed 'H' signal - I waited and waited (at least 60 seconds) but noticed that the phone had switched to the faster 4G network, and it was still stuck... still stuck... 4G came and went, came and went. Eventually I caught it settling on 4G so selected the back button to reverse out and try again. It downloaded instantly.

Although a simplification, the pseudocode evidences the delegated human intentionality of a mobile phone operating system developer who made the assumption that phone users would always want the fastest network. The code instantiates that assumption so that it attempts to prioritise the highest speed network available, although, if Wi-Fi is detected, *that* is preferred. So optimal speed is dependent on availability of various speeds of signal which can fluctuate in strength. The highest speed network may move in and out of range and this can make the phone seem to dither.

In the mobent described above, an Actor Network Theory account may depict *everything* as agentic, especially the phone. However, from a realist perspective, the phone's part is merely reacting according to the delegated intentionality extending from the developers' rational technical assumptions (Jones, 2012), seemingly tenuous yet instrumental connections.

5.6 08i-Neverynote

Lou is an undergraduate (20) nursing student, back in uni for 2nd year after a clinical placement. She cannot afford an expensive phone but has a lower calibre iPhone on contract. We find her in a lecture where



Evernote's benefits to academic work are being explained (Evernote is an app for collating and organising knowledge). She thinks...

I've heard of this...

Looks dispassionately at her aging face-down phone, but scowls at Steph absorbed in catch-up – again!

No room for it...

Sounds complicated...

She flips it over, wondering about its untapped potential, for £30 a month!

Soft siren strobe beckons

As usual, she obeys. A press of the home button reveals that netball training's back on and the desktop re-reminds of a tutorial later (see Figure 48).

Me and technology have never really got on... I enjoy other things.

Figure 48: Lou's wallpaper features a screenshot of the next thing to remember

Discussion

As with Charlie (see page 86), to the digital natives/immigrants hypothesis (Prensky, 2001), Lou would be another kind of Popperian 'black swan' (Magee, 1985), perhaps **purple**. In the vignette, judged from her attitude towards the lecture content, Lou appears modestly ambivalent about technology. As noted previously (page 92), a sense of needing to realise the inscribed hopes of phone designers, was an obligation repeatedly stoked by the monthly contract fees. Yet these twin drivers were unable to draw Lou away from what she confessed was 'quite primitive' use (Lou, 22.30). Any amount of obligation is conflicted by the harsh realities of the low calibre phone begrudgingly afforded and its inadequate amount of space to cope with more than two apps. More importantly, Lou's sense of low-techiness, 'never being into video games and computers and how they work' (Lou, 25.30) belies the sophistication of developing a unique method for helping her to remember and attend to things of different importance and immediacy. However, in the fraction of a glance it took to notice the pulsing alert, perhaps *nano*-waiting is closer to it, Facebook ably serves up a fragment of netball news. In micro-waiting (Gasparini, 1995; Isaacs et al., 2009), we turn, in momentary boredom for diversion to our phones, taking advantage of a temporary enforced halt in accomplishing a life-world project or task, such as advancing to the till along a shopping queue. In contrast, *nano*-waiting is the dark

matter of mobilage, filling every moment with constant sub-conscious anticipated calls out of any level short of total concentration.

In cases such as the tutorial, she would make a note or open a message and take a screenshot of it. Lou then makes that picture the phone's background wallpaper (see Figure 48 above): normally this space features the manufacturer's overdesigned backdrop, or amateur pictures of pets or the family holiday. For Lou, it puts the next single most important event squarely in view every time she looks at her phone. This seems to be a significant advance on tying a knot in one's handkerchief. As with some of Gourlay and Oliver's informants (2018), Lou had developed an ingeniously idiosyncratic practice, albeit the result of many missed appointments. Lou's rejection of further exploiting the phone, including through apps such as Evernote, was less to do with a defective 'IT attitude' or skill deficit:

It's just something that I understand about myself that I don't know if I make the effort to actually go and do it and learn about it. Also I use my phone for a lot of things, work wouldn't be the first one...
(Lou, 23.30)

In a kind of sedimentation, Lou's mobilage features sub-practices that found a way through the obstacles of low device calibre and lukewarm resolve to take on a whole new way of doing things. It is reflective of Kahneman's (2012) two-speed thinking, where effortful System 2 concentration must be triggered, in preference to the enjoyment of 'cognitive ease'. Students are not always easy to 'help' for reasons known best to themselves.

5.7 08ii-In Lectures

This vignette picks up on the previous one, Lou's still in the IT lecture...

The lecturer drones on, and Lou... noticing Steph AND now Laura on Netflix sharing earbuds, drifts off, back to her recent placement – a Substance Misuse Unit. Dan, infamous gnarly charge nurse and anti-phone warrior, was about.

In a quiet corner, Lou examines a promising naloxone article she'd googled on the bus ride in.

A distant shuffle becomes nearby movement becomes incoming footsteps!

Gulp!

Feels hair standing up

Cant screenshot to background - 'email tim' is there...

She swiftly shares the link with herself into Messenger, vowing to look at it later, hides phone as Dan arrives.

Lou tries a chirpy 'Oh hi Dan – whassup?'

Dan crackles urgently in Liverpudlian, 'What you doin here Lou - Di's kickin off agen... come on'

And then we're back - at the lecture - light relief - phew!

But the memory of Di's 'unusual' aftershave wafts her back to Messenger to review the naloxone link, as the lecture dwindles to a summary.

Discussion

Still in the lecture, Lou is distracted back to an incident that occurred while on a recent clinical placement. The bus journeys can take 30 minutes, easily enough to take on some academic-related googling although this sometimes exhausts her 3Gb data allowance.

Lou's strategy for using the phones background image to remind them of a single important upcoming event is challenged by needing to quickly park something else. Plan 'B' is to share the article with herself on Facebook Messenger, although she also saves screenshots or articles to the phone's gallery, or simply keeps them in a Web browser tab. This would seem less safe for long term curation and less likely to surface again than if she used a dedicated app, such as Evernote with its reminder function, semantic search, and content organisation features. However, for Lou,

the big thing for me having it make sense and be easy accessible and something that's just going to remind me, that's always going to be there, something I do every day. Rather than having separate bits which I might have a tendency just not to look at. But having it right there in front of me like having it on my screen saver phone or having it in messenger, you know I know it's in the forefront of my life in technology (Lou, 38.30)

With Facebook also providing Lou's preferred communications hub, these parsimonious practices are a good match for her needs. Not least because her locations of learning are transitory in time and space, and troubled by various actors, from the well-meaning to the aggressive to the dissolute.

5.8 09-Space

Ian lives alone with his playtime PhD. It has taken a while to realise, but, for fluidity of thought, he is a pencil, paper and highlighters guy - especially when tired. He'll type it up and make sense of it afterwards. This reversion to paper allows him to stop worrying about all the digital tools 'they' go on about. He can leave that to 'the experts'. Ian is free to flow through jot and scribble - A3 artists pad sheets seeping from the study, cover the dining table. He's never without a pencil and 'the book'. And 'the phone'.

AWAKE!!!

Pencil, still in hand from dropping off while scribbling, is placed bedside, exchanged for phone which confirms the unearthly hour of 3.07am...

ugh...

At least graphite doesn't spoil the sheets.

Phone screen gently shines on the notepad but no new thoughts come.

Need. More. Sleep...

The phone puts out its 6.30 really loud, maximally annoying alarm ripping the air, heralding the new day's ablutions.

Having dried his fingers enough (walking back from the bathroom), Ian perches on the bed to compare his night labour with ideas in 'the book'. He scans the page, picking a path through stick men, and could-be 'trees' drawn by his 4-year-old nephew: Ben loves to draw in 'the book' and Ian loves Ben.

Actually... that might work...

Ian finds sheet #7 in the dining room and connects concepts.

Now. Phone... ah - bedroom.

Upstairs for the phone, and back down again, cursing not having put it on charge. It's ok though - there's enough to photograph the updated chart.

- Share.
- WhatsApp.
- Janet [his supervisor].
- Send.
- Selects voice input

Hi Janet sorry it's late see what you think have a great day

- Send. He's no longer conflicted by missing punctuation.

Next - porridge. And charge phone. And hello Twitterverse.

Discussion

Ian has been in and back out of digitally enhanced knowledge work. He loves Twitter and rejoices in the efficiency of WhatsApp for group communications. But handwriting with pencil and paper offers immediacy, direct haptic integrity and purity, no 'interference' or latency, low entanglement, insulation from 'the virtual' and all its

psychic clutter, traces of graphite are literally etched - unfading stone on wood - and tend to stay that way. Handwriting is personal (as are Ian's nephew's indented scribbles – try that in OneNote!), along with voice and gait, it is unique to the individual as much as physical features like fingerprints and retina. The typed word is blandly homogenous.

Of all the informants, Ian had the most capacity to spread his work over a physical domestic space, to such an extent that this included the bedroom, from whence he had to retrieve his phone to send the latest work to his supervisor. This contrasts sharply with, for example, Mo (07-Settings vignette), who, confined to a corner of the house, built himself a per-module cockpit, tearing it down after submission. The shape of these spaces reflect their different life circumstances as well as the dimensions of the tasks undertaken. Their projects were far different in magnitude, including time-frame, giving Ian's purpose the longevity needed to weave-develop idiosyncratic knowledge working practices. Noting Ian's finger drying, to succeed, these practices must include an embodied sensitivity to a technology's haptic requirements as much as what might be thought of as 'digital capability'. Mobilage does not like the wet.

5.9 10-Prep a presentation

Aisha (overseas, doctoral, 28, nurse) is happy. Last week she was given a desk to work at - library nomad no more. Bag in one hand, phone in the other, she walks (carefully - to avoid things like lamp-posts) the short distance from home to meet her supervisor and give a brief presentation about her study. This phone dates back five years to 2011 - the previous phone couldn't do screenshots so that puts a date on her refined use of the phone's gallery. Her newer phone had broken so, resurrecting this one, she was surprised to view photos from 2014... one of which had recently helped to correct a date discrepancy on her CV. She prunes the gallery (Figure 49) in 'idle' moments to make it an efficient off-line time-sequenced memory aide... including but not limited to...

#45 photo of an empty flat, table, chairs - from when she moved in 3 months previous

#43 screenshot of washing machine programmes (it was on a USB stick provided by their landlord but she googled the model number and captured just this bit from the bloated PDF manual) - shared with family to avert the peril of stained clothes – they now have no excuse.

#40 photo of another phone displaying a phone number

#41 A photo of a list of teacher's names - handy for contact with the childrens' school

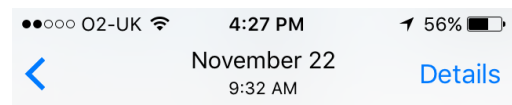
#40 Screenshot of a journal article title and author's names - a prompt for where to start searching next time she was at a computer.

#39 Screenshot of a fast-food bill (the kids had used up all the husband's data on youtube videos so he had phoned her to order something and she sent the bill back by SMS so he would know how much to pay the delivery guy)

#38 Screenshot of a PDF article - an important one - a reminder to revisit.

#28 Screenshot of part of an email. Outlook email app had worked for a few days and then stopped making it hard to use as a database, the web version required connectivity. But the screenshot of part of a long email was in any case more efficient for keeping that salient part to hand, and avoided copy-errors when recording in the calendar app.

#22 Photo of a flier calling for research participants - she'd noticed it during the lunchbreak and shared it with a friend - good opportunity for them.



Arterial stiffness
measured by carotid
femoral pulse wave
velocity is associated
with disease severity in
chronic obstructive
pulmonary disease

Halit Cinarka, Servet Kayhan, Aziz Gumus,
Murtaza Emre Durakoglugil, Turan Erdogan,
Ibrahim Ezberci, Asiye Yavuz, Sevet Ozkaya
and Unal Sahin

Respiratory Care July 2013, respcare.02621; DOI:
<http://dx.doi.org/10.4187/respcare.02621>



Figure 49: Aisha's gallery

Cars zip by. With a steady gaze at her phone screen, peripheral vision tuned to the floor beneath her cosy boots, Aisha reviews photos of paper-based notes, and articles which will inform the presentation, rehearsing it non-verbally, paving a mental path through the material.

Given what's also in her photos, much is seen but deftly ignored.

Apart from the one of the walk with the kids the other week, over which she lingers for a smile, narrowly avoiding a tree.

Discussion

According to Wegner and Ward (2013) memory is being farmed out to the Internet. For Aisha it simply does not need to go that far. In fact, the phones' own gallery has worked well for that. Even having to revert to a previous phone has only emphasised the resilience and effectiveness of this strategy.

Note Aisha's silent work - mediated by technology - silent and on the move. The photos are so deeply embedded in daily practice that they are invisible as such.

The purpose for the photos changes over time... in fact their instrumentality blends together, even if the immediate purpose evaporated long since, they now provide a visual handle to facilitate navigating back and forth in the gallery. She spies a photo of a fast-food bill and knows at a spinal level how fast to flick through, past that one, on to the photo she wants. This also provides serendipitous joy, including the excuse to glance, perhaps more slowly, past photos of the family at play. Google, Apple, Facebook, etc., would love to know about this but, apparently, it is all off-line. They design-in these kinds of dopamine spikes but Aisha's gallery is good enough for that too – 'all natural' joy.

5.10 11-YinYang

If there is a dichotomy between digital and analogue practices, superficially, **Pat** and **Fran** represent its polar extremes. However, both have issues, hang-ups and advantages over each other in their knowledge-working practices.

When we met, Pat (45, PGCE, nurse) wasted no time to make it clear that she is firmly, if not ideologically, wedded to paper for academic work. It was almost a way of hanging on to the 'art'. A self-confessed Luddite, she excels with spreadsheets and word-processing for report writing is core to the day-job. Pat's phone was a low calibre Sony, and barely functional. A separate device was treasured for audiobooks – great company on a solo commute. Pat marvels at the availability of information on the Internet, having previously studied in the days of hand-searching paper resources. This is not going to translate easily to the rubbish phone which never has enough space. Crammed with dog pictures, it jostles alongside an iPod in the same rucksack pocket.

Yin

Pat's sat in a coffee shop, toiling over a paper journal article. Shakes her head, thinks, 'I'm very poor at reading... how did I miss *that?*' She reflects on the way she can read and sing lyrics in church, bypassing the mind, and here her eyes have skated over this stealthy paragraph at least four times without comprehension... Resolute, she tries again, really scrunching eyes this time in case it helps.

She stops to highlight a line in one of three colours - this time **yellow**.

What does yellow mean again...?

She flips to the front of the article to write the page number and salience of the freshly highlighted words. This triggers a fleet-of-thought trip to 'the box' at home where all the other articles are kept (in no order) and the one about learning styles being racist... Will have to have another look - writes a reminder of this into a notebook.

Ah [waves] - 'Hi Fran!'

Fran thinks I'm silly.

But if I'm too organised I lose the spontaneity... shuffling for stuff is time to think - and anyway, Fran seems to lose stuff just as much as me...

Yang

Fran (48, doctorate) is dedicated to the bleeding edge of trying to do everything on his phone. His life is full of various responsibilities - all of which are take lumps out of his ability to separate time for the thesis. A friend has taken pity, letting him stay in the seclusion of his holiday flat out of season to get on with it.

Fran paces the flat, library book in hand, phone in the naughty corner on 'DO NOT DISTURB' (under any consequence). One or two people have the landline so if it's desperate they can call. Plus, he's booked leave, and the out of office reply is on, so really, he should not worry about someone contacting him or being missed. Indeed, he's staying two hours from home to concentrate - friends and family know that and are rooting for him. He's aware that every extra week not written up costs his household £80 in tuition fees.

A sentence arrests him. Being the obsessive kleptomaniac, he wants to record the quote and a comment about it.

In trepidation, he reaches for the bag of cats phone but the first screen glance is greeted with relief because it's on airplane mode. Thanking his earlier self for that, he thumbs between screens, sneaking past the alluring diary and album widgets, to the 'new note' shortcut. Voice keyboard engaged, he recites the quote verbatim, and page number, hits ok because, remarkably, there were no typos, and places the phone face-down again - the recovery position. Onwards.

Nose back in book, he finds his place and remembers what he wanted to record about the quote...

Discussion

For Fran, there is genuine sense of threat produced by the prospect of reaching for the phone. With so much stacked up to defend the time laid aside for this work, does he risk spoiling it all by invoking the phone with all the potential distractions wasting time and attention, into the otherwise heavily analogue experience of reading. This time he escapes. Meanwhile, Pat considers life on her side of the digital academic fence. Words are material – why shouldn't the medium they're read from be too? She's 'all fingers and thumbs' with paper, nevermind the phone!

When discussing naturalistic field settings for the encounters I mentioned chance meetings with individuals who disturbed the accomplishment of attending to data gathering in the field. Yet even in solitude, whether financially gratis or not, opening a channel to an 8-hour nature-sounds movie on YouTube carries with it a similar risk in terms of the potential for falling for a tailored advert-laden alternative and before you know it, 30 minutes has passed. 30 precious minutes. Of life.

In his 'How to be a straight A student', Cal Newport's (2006) advice is to make paper copies of all sources, including reference lists. In 2018, he still thinks this (Personal email, 2018).

Fran's method is based in the expectation that an all-digital approach to academic work is going to reap benefits eventually – probably, hopefully, in the long term. Having harvested several life-times-worth of information, all backed up and searchable, there is a real risk that, like his own brain, the vast proportion of it will remain untapped potential. And this is where metaphors about curation break down since the marketing promise to fulfill 'a need you did not realise you had' is only a need for organisations whose mission it is to retain an archive across generations. Fran could be accused of seeking to make the scholarly digital, rather than the other way around (Goodfellow, 2013). It may be that the individual's behaviours reflect their gender stereotypes with technology, the geekily obsessed male, the nonchalantly averse female. However, they both demonstrate equal agency and success. If anything, Fran is more stressed and conflicted – accepting this psychic bruising as collateral damage, just part of life at the bleeding edge of technology.

5.11 Chapter summary

We can notice certain commonalities between the vignettes. For example, Rey, Lou, Ian, Aisha and Fran use photographs to idiosyncratic advantage, for efficiently sharing complex visual material or as a surrogate memory. But these are people, and it is their life histories and trajectories, their dispositions and life-wide goals which feed into their technology use to accomplish academic work. Mobilage included developing an awareness of what could be done where, from psychic, physical and sociomaterial perspectives. The sheer gravity or embodied realities of what many healthcare students encounter in clinical settings, and their ostensible allegiance to 'caring professions', could help foil technological fetishizing. But so too does the way that several informants blend and bend mobile technologies with humanity. Citing Cooper (2002), Pachler et al. state that 'mobile technologies require a re-definition of what is private, what is public and what is intimate' (Pachler et al., 2010, p. 62). Wes tamed these questions long ago, for Arlo they were not in the room, for Pat they were never asked.

Chapter 6: Conclusions

The thesis began with a reflection upon my own personal history, disposition towards IT, and experiences of learning with and through them. My studying situation has often encouraged developing a physically and technologically mobile approach to knowledge work on a budget. I therefore had considerable sympathy with the students being given tablets that were low in cost and calibre to pilot electronic placement assessment documentation. Students tried to make them work but the devices bit back. It was a far cry from the 'slick' discourse often associated with technology marketing or the more enthusiastic genre of implementation reports emerging from the cosseted settings of better-funded pilots. I started to extrapolate these ideas to consider educational implications of attempting knowledge work on students' own, often humble, devices. The dialectic symbiosis and struggle, the temporal epistemic challenges, between a student and their phone in a mobile assemblage, shortened to *mobilage*, set up an intriguing site for research which chimed with prior reading in actor network theory and educational literature.

Mobilage is this thesis' main contribution to knowledge. As sensitising theory it helped me to non-dualistically circumscribe an assemblage of technologies, their epistemic features and the situated healthcare student in action, if not motion.

I felt I knew what mobilage was like for myself, but what of other students? And especially healthcare students, often mature, with multiple roles, a strong clinical practice identity and workforce trajectory. What is mobilage like for healthcare students attempting academic work?

Such questions indicate researching the 'lived experience' in all its protean complexity. I became aware that some approach these sorts of goals from ethnography but also phenomenology. The latter seemed a closer fit, given the orientation of the enquiry, narrow unit of analysis and modest expectations around the scale of information gathering. Phenomenology also challenged me to go beyond naming themes or categories of experience to disclose pre-reflective aspects of the phenomenon. Furthermore, the research must also unveil the phenomena's essence, not just credibly representing informants, but *re-presencing* readers through prose. To achieve this meant reconciling issues such as:

1. philosophical: squaring a realist ontology with an interpretive epistemology through Gadamer's 'truth seeking' that emphasises *phronesis* (Gadamer, 1992).
2. methodological: translating Gadamer's horizon fusion into encounters with mobilage, positioning the informants, as far as possible, as equals, and transforming the gathered information into fabricated vignettes (Gallagher, 2018; Markham, 2012).

I was suspicious of anything that I felt could reduce complexity in the conception, analysis or representation of mobilage. Analysis of survey data, ancillary as it was to the main research question, was delayed until after information gathering had concluded. The online focus group aimed to gather information from informants speaking out from within mobilage, and naturalistic settings were chosen for encounters and an informal style of epistemic exchange was attempted. Recordings were not transcribed but repeatedly listened to, as this was thought to be more evocative for analysis that relied on re-presencing my own consciousness. This was 'slow work', but not as Eriksen (2001) recommends – the encounters were played back through my phone and notes were recorded there too. Writing up these notes and other data into vignettes could not be done well on the move. Indeed, important work was done when the phone was out of reach and resolutely out of mind, such as when pondering how to write a conclusion that would remain faithful to my anti-

reductionist principles. A solution to this problem emerged while trundling the two-plus hours towards my Pembrokeshire 'hut' seeking seclusion, using our veteran 'Axel' (Figure 50), recently donated by my elderly mother-in-law. And Van Manen agreed:

'A high-quality phenomenological text cannot be summarized.' (van Manen, 2014, p. 355)

This thesis is not 'a high-quality phenomenological text', although I have aspired to that in the vignettes. Therefore, it is necessary to reprise aspects of the argument.



Figure 50: Citroen AX at Llanunwas

Driving such a vintage car ruled out working and freed up thinking: what would the same journey be like in self-driving car? Would it free my hands and eyes to perform knowledge work (Macfarlane, 2015)? But this is freedom to do, to be efficient, not necessarily freedom to learn (Rogers, 1994) or roam in creativity. In another alterity, Jean-Dominique Bauby (1952-1997) related his life with locked-in syndrome in a book he wrote by blinking: (2008). Perhaps as *immobile* as can be while conscious, yet this constraint liberated his mind to explore the reaches of imagination. For myself, I can exercise my privileged capabilities and position in the global north to instantly get Bauby's book, hear it read by an actor or watch the movie. In theory, I can do this anywhere and at any time. In practice, mobilage opens a myriad calls on my attention and many contingencies which could foil me in the pursuit. Who is more mobile, more free, to think?

The drive and argument for efficient working takes force from commercial motives, especially profit-maximising, and valorising systems of audit, part of an economic-pragmatic meta-discourse (Levinson & Nielsen, 2012) which global technology firms are hard-pressed to disguise. Newer 'literacies', such as digital literacy, aim to enlist and equip workers for the 'information society' (van Dijk & van Deursen, 2014) but arguably threaten scholarly values and emancipatory educational goals, such as

Bildung. Mobile phones are in the vanguard of economic-pragmatic pressures to eradicate productivity 'friction' from all areas of life, so that workers *can* edit complex spreadsheets from the seat of a road-bike in their leisure-time. Many of my informants understood that this kind of thing was absurd, yet would bow to the pressure to check email, just to clear their consciousness of mounting curiosity or concern. This psychic background noise is a burden which threatens phronesis and must be off set when considering the net product of potential technological efficiency gains. Louis Zamperini's experience provides a sharp contrast to life on the same planet as 'attention engineers', whose job it is to get and sell as much of your precious *lifetime* as possible. After his B-24 Liberator bomber splashed down into the Pacific, 27 May 1943, Zamperini spent **47 days adrift** on a life raft (photograph source Chitwood, 2014, ©Universal Pictures). Box 3 contains an extended quote from Hillenbrand's biography (2012). Alone on the ocean, with nothing to distract them, the men experienced unparalleled clarity of thought.

The submitted version of the thesis contains an image from the 2014 Universal Pictures movie 'Unbroken', directed by Angelina Jolie.

The image was retrieved 1 November 2018, from the Collider website:
<http://collider.com/unbroken-movie-images-jack-oconnell/>

The image depicts a small life-raft becalmed and adrift on a vast ocean. The image emphasises the isolation of the airmen's predicament.

Given how badly the men's bodies were faring, it would seem likely that their minds, too, would begin to fail. But more than five weeks into their ordeal, both Louie and Phil were enjoying remarkable precision of mind, and were convinced that they were growing sharper every day. They continued quizzing each other, chasing each other's stories down to the smallest detail, teaching each other melodies and lyrics, and cooking imaginary meals.

Louie found that the raft offered an unlikely intellectual refuge. He had never recognized how noisy the civilized world was. Here, drifting in almost total silence, with no scents other than the singed odor of the raft, no flavors on his tongue, nothing moving but the slow procession of shark fins, every vista empty save water and sky, his time unvaried and unbroken, his mind was freed of an encumbrance that civilization had imposed on it. In his head, he could roam anywhere, and he found that his mind was quick and clear, his imagination unfettered and supple. He could stay with a thought for hours, turning it about.

He had always enjoyed excellent recall, but on the raft, his memory became infinitely more nimble, reaching back further, offering detail that had once escaped him. One day, trying to pinpoint his earliest memory, he saw a two-story building and, inside, a stairway broken into two parts of six [p.125] steps each, with a landing in between. He was there in the image, a tiny child toddling along the stairs. As he crawled down the first set of steps and moved toward the edge of the landing, a tall yellow dog stepped in front of him to stop him from tumbling off. It was his parents' dog, Askim, whom they had had in Olean, when Louie was very little. Louie had never remembered him before.

Box 3: *Unbroken* (Chitwood, 2014; Hillenbrand, 2012, pp. 124–125)

How far removed is this from Chris' contortions in mobilage as she simultaneously tackled multiple lifeworld obligations. As this thesis project moved through analysis of survey, online focus group, and encounter data, it became increasingly apparent that the experience of using and learning to use a phone, however enmeshed, urbane, frenetic, frustrating, fragmented, dissonant, sophisticated, idiosyncratic or innovative, was tied closely to an informant's lifeworld: perhaps a prosaic observation given that mobilage is a holistic unit of analysis. Nonetheless, knowledge work in enmeshed with one's knowledge.

Wes's thought-tumble time; Mo's car-share group; Ali's withstanding phone-engrossed bus culture; Lou's ambivalent *techspertise*, muted by a preference for 'other things'; Ian's nephew's scribbles; Rey's Google Drive smorgasbord; Chris absorbed in sewing sequins and The Moth; Aisha's life-indexical phone gallery; Pat's box of papers, rejection of 'the digital'; and, for Arlo, mobilage eclipsed at the deathbed. Not all of these would feature in a showcase of m-learning stars, but all are building Bildung.

With almost complete market penetration encountering mobilage is inevitable, even if you do not own a smartphone. In this study, its positive facilitation of, or deleterious impact on, learning varied not so much with the student's capability or the phone's features. It was informants' disposition and desire, privilege and unfolding circumstances, interaction and experience in iterative and dialectic combination.

In each case, informants' exercise of personal agency was fundamental to their pursuit of 'higher education' while accumulating or shunning artful digital practice. The latter is not as vital as some technology pundits and policy-makers claim. The promises of technology must be understood for what they are, as Aisha (page 86) remarked (Feenberg, 1999):

We sometimes take it for granted that because it is meant to be in this way, we adopt ourselves. We have options when it comes to technology but we should be thinking of the best options (I am more aware of this recently)

(Aisha February 27 at 4:20pm)

Postscript

A completed thesis is not necessarily 'finished', even if its author smooths over the fact. The conclusions above attempt to honour my commitment to a hermeneutic approach, informed by phenomenology, in which finality is permeable. This thesis connects with previous and future work, albeit in a way that is unavoidably partial. Thus, summary contributions, limitations and future directions are outlined below, as a postscript to signal the fluxic unfolding nature of the whole enquiry, not least following the *viva voce* examination.

Contributions to knowledge

1. Conceptual: I have combined insights from actor-network/assemblage thinking and educational/learning theory to create a unit of analysis called mobilage. I used this to sensitise the research in order to pursue an unveiling of pre-reflective experience without essentialising technological or human actors.
2. Methodological: A hermeneutic epistemology has carried the work from design to writing up. The three methods of information gathering were reflectively analysed in terms of their interpretive purchase on mobilage, as depicted in Table 2. The survey sought to disclose learning through the 'most sophisticated use' motif. The online

focus group is a new synthesis of several 'experience sampling' methods. Along with the encounters, this data corpus provided material that was analysed through re-presenting myself in writing vignettes to convey the essence of mobilage for healthcare students.

3. Policy: This work challenges the current policy climate and direction that is advancing marketisation in the higher education sector. The goal seems to be to maximise efficient throughput of graduates to satisfy workforce demands, rather than emancipate and equip human beings for a free society. Policy should defend pronesis and deliberation in higher education and take a less ambivalent attitude to the place of mobile phones in academic work. Students should be encouraged to resist the ransacking and desiccation of mind in mobilage, and instead seek to nourish their capacity to concentrate and attain scholarly prowess. Students with multiple lifeworld roles and limited means overcome amazing odds if they succeed in higher education, but more could be done to support the raising and realisation of aspirations towards learning that is truly transformational for them.

Limitations

In taking a multi-method approach, each of the three methods are philosophically ostensibly at odds with each other. The attempt to lend and blend disparate types of research will appal purists, drawing accusations of bald pragmatism. Nevertheless, I have explained my practical limitations and sought to fulfil my obligations to the research question as far as possible in a way that is consistent with a hermeneutic epistemology, given the moving target that is mobilage. Indeed, the reflexivity required to use multiple methods while retaining phenomenological values is a significant accomplishment. Perhaps the severest critique would arise from quantitative researchers – the survey's use of free-text items and basic statistical analysis are not conducive to rigour or generalisation. The online focus group was not as active as I had hoped, nor did informants always respond using their phones. More could have been done to train them, perhaps a short explanatory video would have been more engaging in order to convey emphasis. The self-reported nature of all the data, except for a few directly observed moments of 'authenticity' in the encounters, could have led informants to portray themselves in a more positive light.

It is hard to evaluate the vignettes in terms of whether they qualify as phenomenological prose, partly because of their subjective nature, which is why I co-opted the help of a critical friend. I think some of the writing meets many of van Manen's criteria (see Figure 51) but I invite the reader to decide for her or himself.

- Heuristic questioning: Does the text induce a sense of contemplative wonder and questioning attentiveness— *ti estin* (the wonder that this is) and *hoti estin* (the wonder that something exists at all)?
- Descriptive richness: Does the text contain rich and recognizable experiential material?
- Interpretive depth: Does the text offer reflective insights that go beyond the taken-for-granted understandings of everyday life?
- Distinctive rigor: Does the text remain constantly guided by a self-critical question of distinct meaning of the phenomenon or event?
- Strong and addressive meaning: Does the text "speak" to and address our sense of embodied being?
- Experiential awakening: Does the text awaken prereflective or primal experience through vocative and presentative language?
- Inceptual epiphany: Does the study offer us the possibility of deeper and original insight, and perhaps, an intuitive or inspired grasp of the ethics and ethos of life commitments and practices?

Figure 51: van Manen's criteria to evaluate the phenomenological quality of a study (van Manen, 2014, pp. 355–356)

Further research

The following are suggested as potential directions for further research arising from this thesis.

Mobilage could be further developed as a concept. The ideas of mobent, nano-waiting and locomotion have been proposed, but it may be possible to fulminate other features and existentials. These could emerge through refining the vignettes for serialising in a receptive publication.

Mobilage includes an aspect of learning theory, learning as bricolage. At best, this is a flawed metaphor and successful bricolage learning will depend on several factors, such as disposition and dexterity. Metaphors can be helpful, but in discussing and exploring learning, it is easy to enjoy mere wordplay under the illusion of disclosing the genuinely perspicacious. The question remains as to whether one's disposition can change, and under what circumstances. If disposition is at all fixed, then this must affect learning at a more *peripheral* level, including learning to use technology. Another important factor was the student's trajectory in the anticipated further use of gathered information in students' academic learning, including the development of technologically complex tactics. This tentative finding is worthy of further investigation.

Mobilage is connected, including linkages between students, as explored by Selwyn (2009), Madge et al. (2009), Henderson et al. (2017) and networked learning scholars. However, it would be interesting to update this work, perhaps in combination with Kerhwal's (2010) work on telepresence in computer mediated communication.

Although epistemologically at odds with the thesis, survey findings hinted at some interesting results when comparing age with level of sophisticated use. If developed, this could contribute an important insight to the fields of digital and new literacies.

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Appendices

Appendix 1 Literature Search from Autumn 2015

Search Strategy Inclusion and Exclusion Criteria

JB1 (Joanna Briggs Institute, 2014) recommend developing review protocols using the 'PICO' mnemonic, adapted for qualitative research:

Population: Students in higher education

Phenomena of *Interest:* experiences of using mobile devices where problems arose with use and how students overcome these problems.

Context: higher education, including where that extends into clinical settings

Although the research question arose within a healthcare context, given the phenomena of interest, limiting the literature search to healthcare fields would exclude relevant and important insights from other domains. As noted by Selwyn (2012), learning technology literature is diffuse across disciplinary fields, not just within what might be defined as core learning technology sources. Four databases were selected:

Academic Search Complete (ASC)

Education Resources Information Center (ERIC)

British Educational Index (BEI)

Cumulative Index to Nursing and Allied Health (CINAHL)

'First phase' searching with Google Scholar was quickly abandoned because of the difficulty in narrowing a search, although this did assist the development of key search terms. These were designed to be broadly inclusive:

Experience\$ – this word was chosen in opposition to 'effectiveness', in order to return qualitative results that may also contain verbatim quotes.

Student\$ - such a broad term was necessary to include studies reporting broadly from higher education contexts without excluding students placed in clinical areas.

Higher Education OR college – this term helped to narrow education database results but was not used with the CINAHL healthcare database to avoid excluding potentially useful results. It is likely that any participant identified as a 'student' within healthcare settings would be over 18 years of age and affiliated with a further or higher education institution.

Mobile AND (device OR phone) – to capture a very broad range of literature focussed on mobile.

Database searching took place between 30th October and 7th November 2015 as follows:

ASC

(student OR students) AND (mobile AND (device OR phone)) AND (Higher Education OR College) AND Experiences - Limited 1991-2015 - **98**

CINAHL

(student OR students) AND (mobile AND (device OR phone)) Experiences - no date
– **19**

BEI

(student OR students) AND (mobile AND (device OR phone)) AND (Higher Education OR College) AND Experiences - Limited to 1991-2015 - **14**

ERIC

(student OR students) AND (mobile AND (device OR phone)) AND (Higher Education OR College) AND Experiences - Limited to peer review - **155**

Date limiters are given for three databases. Although the first mobile computers were being launched as early as 1984 (Pountain, 1984), the search start date of 1991 captures research published after that the launch of 2G telephony. This development represents the earliest appearance of connectivity and related functionality in portable devices that bear any similarity with what is now available and hence potential relevance for the current research question.

Database subject headings are not reported since they did not return any additional potential results than the keywords already mentioned.

Results were imported into Zotero, the bibliographic management software for removal of 14 duplicates, and subsequent classification of the remainder.

272 articles' titles and abstracts were screened for suitability. The following exclusion criteria were applied generously at this stage:

Participants do not include students in higher education or similar.

Absence of qualitative data

Thus excluding 206 results, 66 full-text articles were retrieved. These were scrutinised for topic relevance and the presence of participant verbatim quotes. Although some survey research offered free-text responses, these were largely off-topic and too brief to hold any potential usefulness for this review. 12 articles were retained for the critical analysis stage. The JBI QUARI tool was used to assure consistency in analysis. The QUARI tool focuses on methodological quality and consistency. Although this was disappointing in general, only one article was actually excluded: apart from concerns about its quality, Wheeler and Lambert-Heggs (2009) was a short article with little space for reporting participants' voices, and the topic was predominantly around blogging rather than mobile *per se*.

Once the 11 papers had been identified, the full-text PDF's were imported into Atlas.Ti to facilitate the identification of themes (Wright, 2014b).

Articles returned by the above search strategy:

Beckmann, Elizabeth A. 'Learners on the Move: Mobile Modalities in Development Studies.' *Distance Education* 31, no. 2 (August 2010): 159–73.

Brett, Paul. 'Students' Experiences and Engagement with SMS for Learning in Higher Education'. *Innovations in Education and Teaching International* 48, no. 2 (1 January 2011): 137–47.

Davis, Katie. 'A Life in Bits and Bytes: A Portrait of a College Student and Her Life with Digital Media'. *Teachers College Record* 113, no. 9 (1 January 2011): 1960–82.

- Demouy, Valerie, and Agnes Kukulska-Hulme. 'On the Spot: Using Mobile Devices for Listening and Speaking Practice on a French Language Programme'. *Open Learning* 25, no. 3 (1 November 2010): 217–32.
- Green, Ben L., Iain Kennedy, Hadi Hassanzadeh, Suneal Sharma, Gareth Frith, and Jonathan C. Darling. 'A Semi-Quantitative and Thematic Analysis of Medical Student Attitudes towards M- Learning.' *Journal of Evaluation in Clinical Practice* 21, no. 5 (October 2015): 925–30.
- Jones, Chris, and Graham Healing. 'Networks and Locations for Student Learning'. *Learning, Media and Technology* 35, no. 4 (1 December 2010): 369–85.
- Odabasi, H. Ferhan, Abdullah Kuzu, Cem Girgin, Cem Cuhadar, Mubin Kiyici, and Tayfun Tanyeri. 'Reflections of Hearing Impaired Students on Daily and Instructional PDA Use'. *International Journal of Special Education* 24, no. 1 (1 January 2009): 8–19.
- Park, Sora. 'Always On and Always With Mobile Tablet Devices: A Qualitative Study on How Young Adults Negotiate With Continuous Connected Presence.' *Bulletin of Science, Technology & Society* 33, no. 5/6 (October 2013): 182–90.
- Pimmer, Christoph, Sebastian Linxen, Urs Gröhbiel, Anil Kumar Jha, Günter Burg, and Sebastian Linxen Urs Gröhbiel, Anil Kumar Jha and Günter Burg Christoph Pimmer. 'Mobile Learning in Resource-Constrained Environments: A Case Study of Medical Education'. *Medical Teacher* 35, no. 5 (May 2013). <http://search.ebscohost.com/login.aspx?direct=true&db=bri&AN=BEI.218898&site=ehost-live>.
- Taylor, J. D., C. A. Dearnley, J. C. Laxton, C. A. Coates, T. Treasure-Jones, R. Campbell, and I. Hall. 'Developing a Mobile Learning Solution for Health and Social Care Practice'. *Distance Education* 31, no. 2 (1 August 2010): 175–92.
- Wang, RuoLan, Rolf Wiesemes, and Cathy Gibbons. 'Developing Digital Fluency through Ubiquitous Mobile Devices: Findings from a Small-Scale Study'. *Computers & Education* 58, no. 1 (January 2012): 570–78. doi:10.1016/j.compedu.2011.04.013.

Appendix 2 Survey Design

This appendix recounts the detail of online survey design decisions.

Appendix 2.a Demographics

The purpose of gathering demographics is to enable the identification of trends and correlations, the pursuit of which somewhat contradicts this project's ostensible phenomenological framework. However, it was thought that such data could contribute usefully to a baseline for interpreting the rest of the survey. Relationships between age, gender and information technology use are contested in the literature, not least in the light of Prensky (2001) and others' assertions that young people are essentially more adept with technology than older people.

Learning from a survey designed for Stonewall, one of the options aims to assure participants of inclusivity. Programme information was requested to try and account for predicted biases within the population in terms of the academic level and professional group since there is variability in entry requirements. Students were expected to vary according to how long they had been on their programme.

Appendix 2.b IT attitude

For the purposes of background information, I asked students to give a general indication of how they see their own attitude *vis a vis* information technology on a scale I have designed and used occasionally for over a decade (M. R. Johnson, 2008). The item has never been subject to statistical testing for validity or reliability. Its purpose was to encourage reflection as much as giving an indication of 'IT attitude'. The options are intended to be at relatively stable intervals in this 'measure'. Most respondents use the scale which suggests that they can relate to it. Few have offered their own formulation prior to this project. I decided to use the scale again for an evaluation in early 2018 and was advised to add the following option placed 3rd in the scale: 'Fine – You generally enjoy using IT and do so well enough for your purposes without really thinking about it.' This option proved quite popular and will be retained in further use. For the categories as presented to the students, see Appendix 2

Appendix 2.c Phone calibre and ownership

Questions related to the phone's calibre are limited to rough bands of the age of the phone since this will affect how well the phone will download and run applications. Even after just 12 months, a new phone's performance can start to lag. This has a direct bearing on how easy it will be to undertake academic work on the phone. Operating system is important because some afford greater maturity, stability and variety of software than others. For example, at the time, the Blackberry and Microsoft mobile operating systems had minority market presence which undermines their appeal for developers to create and maintain apps for them, reducing choice and functionality for users of phones with those operating systems.

The next question asks about the physical ergonomic ease of performing basic tasks fundamental to use of the phone for academic work, such as reading and typing words and operating the phone with one hand.

Phone ownership is probed through two questions where students are asked to state and rank reasons for having their phone. This open question may shed light on the rationale for choice of handset, which again is assumed to influence device calibre

but also could reveal something of how participants comport themselves towards the device.

Appendix 2.d Use for academic work

Respondents are then asked to review six activities and indicate how effective they have found performing them on a mobile phone. These tasks reflect some of the breadth of activities represented by Macdonald and Creanor (2010), one of the few sources dealing directly with academic use of mobile technologies (see Figure 52).

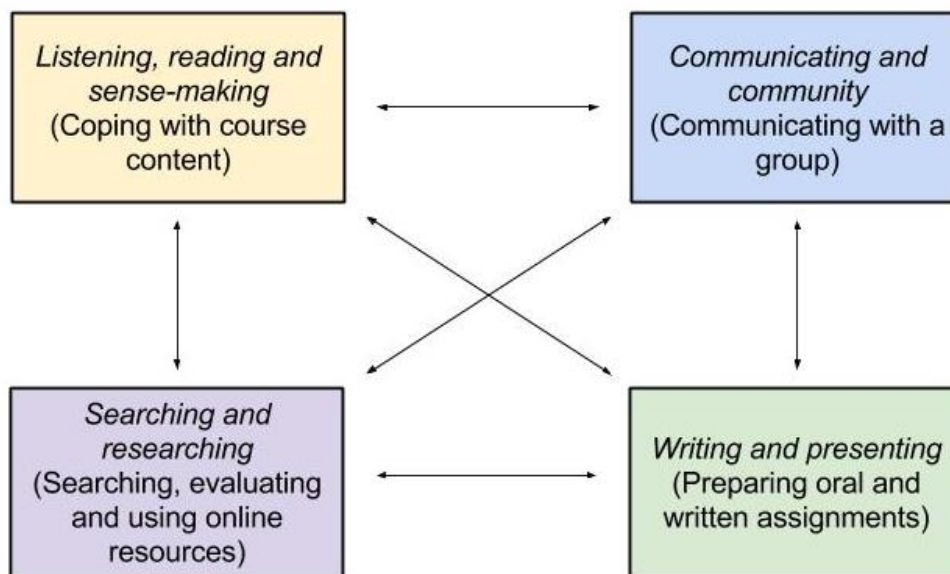


Figure 52: Studying with online and mobile technologies (Macdonald & Creanor, 2010, p. 5)

Question 17⁷ asks respondents to name their three favourite apps for academic work. This question allowed free-text replies so that students could express what *they* meant by ‘app’, rather than imposing a technical definition. Similarly, question 18 asked for ‘any things which make academic work more difficult for you on a mobile phone?’, with three free text response fields. This wording was designed to avoid framing a leading question that might encourage inauthentic responses.

Appendix 2.e Most sophisticated use

Question 24 asks respondents to ‘briefly describe the most sophisticated use you have made of your phone for academic work’.

Sophisticated: Of equipment, techniques, theories, etc.: employing advanced or refined methods or concepts; highly developed or complicated. (Oxford English Dictionary, n.d.)

The idea for this question emerged from a couple of lines of thought. Vygotsky’s experimental method sought to bring child development to light through observing actions at the periphery of a child’s ability (although there is more to Vygotsky’s ‘double stimulation’ method than this (Blunden, 2010)). The word ‘sophisticated’

⁷ Qualtrics numbering attaches in strict, permanent order of creation, including deleted or unused questions.

invites responses that implicate matters of relevance to the individual, but it also indicates something *about* that individual. 'Sophisticated use' was thought to represent an achievement or accomplishment, which the individual cares about. Thus, if Dasein is *that being for whom being is an issue*, this question taps into the student's sense of how they comport themselves within the mobilage in the context of academic work. It is their 'ordinary everyday' perspective of advanced use – expressed according to the limits of their own understanding and experience.

The word 'sophisticated' was chosen rather than 'technical', 'advanced' or 'complex' because it was thought to add an element of subjectivity, of taste, and this is emphasised and personalised by the qualifiers 'most' and 'you'. Asking students to respond with '*something* sophisticated' would change the emphasis to imply that responses were only welcomed if they met some external measure of sophistication. This predicted interpretive move was partly vindicated in one answer which admitted, 'I know not considered particularly sophisticated but email.' As will be shown below, analysis of the responses showed that the question successfully encouraged this broad and personalised interpretation of what was required.

Allowing participants to define what they mean by 'sophisticated' was inherited from previous work with legitimation code theory (LCT) (M. R. Johnson, 2018b). One strand of LCT, specialisation, seeks to understand how a field of knowledge attains or maintains its legitimacy by asking students what they think is required for success in that field (Maton, 2014).

After pilot feedback, this question was adapted to provide an 'opt out' for those who could not think of anything at all and by selecting this they are moved to the end of the survey. It was impossible to tell how many were put off by the question because they felt they had nothing to offer, however, 202 did reply.

Students' responses to the question of their 'most sophisticated use' were piped forward by the Qualtrics survey system to form part of ensuing questions, in the same way that an interviewer might responsively pick up on a term or phrase of interest and seek further elaboration. The survey tool is not intelligent enough to recognise when the supplied 'sophisticated use' would render ensuing questions absurd, however this was considered a risk worth taking. In the event, 14 of 200 replies to this question defied coding.

The survey moves on to ask how the respondent realised their 'most sophisticated use' was possible. Here I was in pursuit of clues, albeit in retrospect, about inception, the 'inventive event where thought begins' (van Manen, 2014, p. 109). Phenomenology normally seeks out these beginnings 'in the primordially of lived experience' (van Manen, 2014, p. 109). Indeed, I have often found that this is where potential applications of technology arise most naturally, in the milieu of a committee meeting or serendipitous corridor conversation. An individual's inception of technology use may spring from a variety of origins. I was concerned that the temporally constrained encounters would limit the chances of being co-present during moments of inception. As the researcher, my presence and explicit purpose threatened genuinely 'everyday' moments of inception. In any case, inception *may* be stimulated externally but it occurs 'between the ears' and attempts at relating these are necessarily mediated. Although co-presence is privileged in phenomenological research, absencing the researcher from the presence of informants may dilute their contributing to a setting which encourages informants to inauthentically play the part of being a research subject, rather than a student.

The next question asked how the student learned this 'sophisticated use', offering a range of possible methods and a free text option to capture unforeseen responses.

Assuming learning implicates human agency (M. R. Johnson, 2016), I added a list of roles whereby students could attribute the general source of that human help (e.g. tutor, librarian, etc.), as well as allowing a free text option for unforeseen responses.

The survey does not assume this 'most sophisticated use' had been permanently adopted. Further questions ask about the frequency of this use and, if it had stopped, why this was.

Appendix 2.f Onward recruitment

The last page thanks the respondent and invites them to take part in two other aspects of the study. I did consider collecting volunteers through the same form, but this would have jeopardised anonymity. I could have linked to a separate online form but felt this was needlessly over-complex. At the time I also felt that a close temporal coupling of survey completion and volunteering may have engendered a more spontaneous kind of interest which may have resulted in volunteers who, at follow-up, would turn out to be less committed to participating. Instead I provided my University email address but chose not to hyperlink it for two reasons. I wanted to ensure that the survey was anonymous and *perceived* to be so. Also, I did not want to endanger the survey responses being submitted by the student's email programme opening automatically when they select the email hyperlink. Students had ready access to my email address if they used their University account and through the reminder email. This was clear enough from a flurry of replies from students either asking for help with some random aspect of IT or confirming their completion of the survey and apologising for missing the first invitation to participate. Some, thankfully enough, came forward to express interest in helping with the other modes of participation.

Appendix 2.g Response rate, duplicates, incomplete questionnaires and time taken

Late in November 2016, 3013 healthcare students were invited to participate through an announcement on the institutional virtual learning environment. This was followed up with an email, personalised with the students' first name. In the ensuing month, 372 surveys were commenced (12.3%) with 285 fully completed, giving a response rate of 9.2%.

Incomplete responses differ in the level of completion as shown in Table 14 below. 69% of the 87 incomplete responses contain useable data that was carried forward into analysis.

Qualtrics collects various data about the device used in the survey attempt, including operating system. Sixty-one (17.7%) of the 345 completed or partially completed responses were made using a mobile phone.

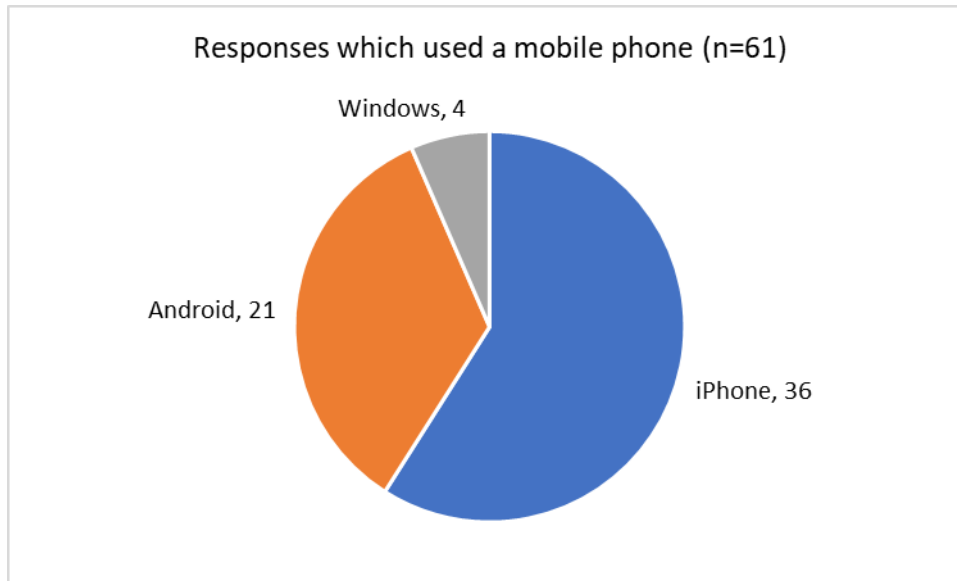


Figure 53: Responses which used a mobile phone by Operating System

Table 14: Number and percentage of questionnaires showing level of completion (n=372)

15	4.0%	Opened the survey only
12	3.2%	Added demographics, programme and 'Computer Attitude'
28	7.5%	Some (46-74% complete) useable data
32	8.6%	Almost (87%) complete
285	76.6%	Finished the survey

There was no obvious incentive to respond more than once to the survey apart from wishing to finish an incomplete response. Responses were checked for duplicates because Qualtrix can only restrict this though matching automatically captured elements, e.g., matching the device characteristics, or IP addresses. Since IP addresses are 'leased' for short periods the same person could acquire a different IP address even on the same device. Therefore, responses were grouped by 'Year of Birth' and those with >45% complete were compared with completed ones. In one case, responses shared demographics *and* similar answers but differed on length of phone ownership. In another similar pair, even these variables were the same but they showed quite different responses to the survey questions. I am therefore reasonably confident that incomplete questionnaires carry unique respondent data. One of the 46% complete surveys indicated date of birth as 1931, the oldest date possible the available range so this response was excluded as there are no 85-year-old healthcare undergraduates. I therefore carried 344 responses forward in the analysis.

The Qualtrics software captures how long participants spent completing the survey which indicates something about *how* they responded to the survey. Of those who finished, the quickest took just 147 seconds to submit. At the other extreme, one student left their Web browser open on the survey for nearly 20 hours before submitting it. Excluding this outlier, the average time spent was 593 seconds (or 9.9 minutes), which tallies with the time predicted by Qualtrics. The standard deviation of

558 seconds (or 9.3 minutes) indicates quite a wide spread - see Table 15 below. This lends weight to the assumption that many respondents answered survey questions in a 'reactive' rather than 'reflective' manner but there is no way to verify this.

Table 15: Time recorded by Qualtrics for submission of the survey in 5-minute bands (n=285)

Minutes	2.5-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	>60
Surveys	54	152	42	13	10	3	1	3	1	2	4

Appendix 2.h Data handling and analytic approach

As described above, the survey was made up of limited choice and free-text questions. Wherever possible free text responses were coding for aggregation – a laborious process. Evernote was the tool of choice for developing codes. Evernote features internal linking between notes which is helpful for organisation (see Figure 54 below, a screenshot of an 'index note' – the survey 'codebook'), and cross-platform synchronisation allowed this work to be taken anywhere.

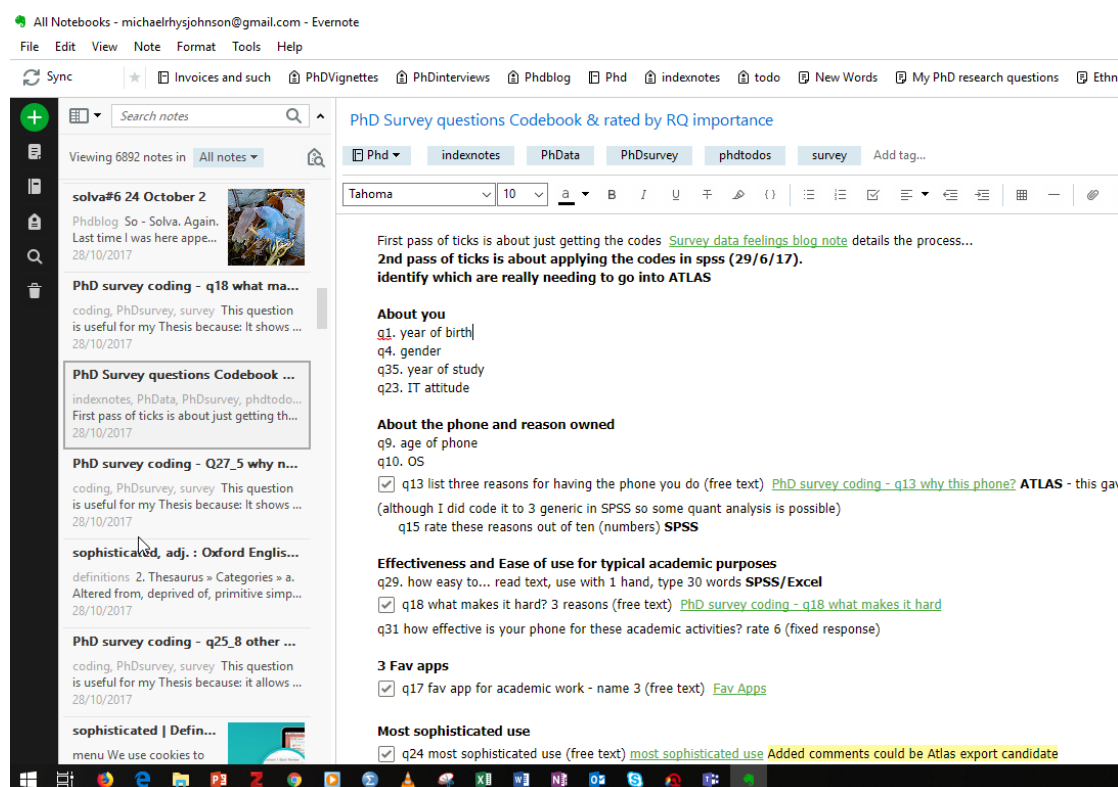



Figure 54: Survey 'Codebook' in Evernote™

For each question I created a new note and added the list of responses to look for duplication and patterns. I considered coding according to extant frameworks to provide a level of standardisation across the data corpus: the Digidol project (Nicholls, 2011) and Macdonald and Creanor (2010) (Figure 52 on page 142). These informed the coding but could not be strictly applied to each question: the former is task-focussed and the latter too generic.

Resultant codes were appended to data tables in SPSS and/or Microsoft Excel for further analysis and the generation of findings. I did consider exporting free-text responses to ATLAS.ti alongside the other qualitative data but this proved unnecessary since responses were generally quite short.

I will discuss findings from the survey in Chapter 4.

Lancaster
University



Browser Meta Info

This question will not be displayed to the recipient.

Browser: **Firefox**

Version: **56.0**


Operating System: **Windows NT 10.0**

Screen Resolution: **1366x768**

Flash Version: **27.0.0**

Java Support: **0**

User Agent: **Mozilla/5.0 (Windows NT 10.0; Win64; x64; rv:56.0) Gecko/20100101 Firefox/56.0**



Thank you for your interest in this research into mobile phone use for academic work by students in higher education. The information you provide is vital for my PhD thesis. I am also holding interviews and an online focus group to investigate this topic. You can find out more about that at the end of the questionnaire.

The survey should take no more than 10 minutes to complete. All the questions are optional but some require input of a particular kind before the survey will allow you to move on (e.g. year of birth must be entered as a 4-figure number between 1930 and 2000).

The study has been approved by Lancaster University's Faculty of Arts and Social Sciences Ethics Committee and permission to conduct the research has been granted by
of Health ethics committee.

>>>

Please type the year of your birth (e.g. 1985):

Please select from the following to indicate your gender?

Male

Female

Prefer not to say

If you prefer to use your own term, please provide it here:

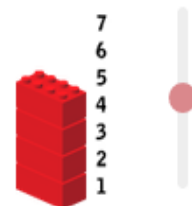


Please indicate the level and programme, if any, that you are following?

Level

Programme

Select a level on the slider to indicate your current year of study for this programme.



Please select one from the following choices that best describes your usual attitude towards information technology?

Avid - you live a 'digital life'. Highly IT fluent. Mostly self-taught although you know where to go to get help.

Keen - Perhaps lacking experience but you've 'got the bug'- motivated to learn more although certain barriers prevent you attaining Avid status.

Ambivalent - You have no strong feelings about IT. IT is just a tool and not one you feel you need to use frequently or especially well.

Satisficing - You do not really like IT but you will use them if it's convenient and unavoidable. Experience of using IT usually reinforces this dislike.

Strategic non-user - You have successfully avoided (and will continue to avoid) using IT, even if it means going out of your way to do so (e.g. by relying on others to help you out with the technical side of things).

Non-user - for a variety of reasons, you never 'got' IT and you're mostly content to keep it that way.

Panic! - Help! I do not like IT and IT does not like me!

Or, please write your own here!

< >



How new is the phone you use for academic work



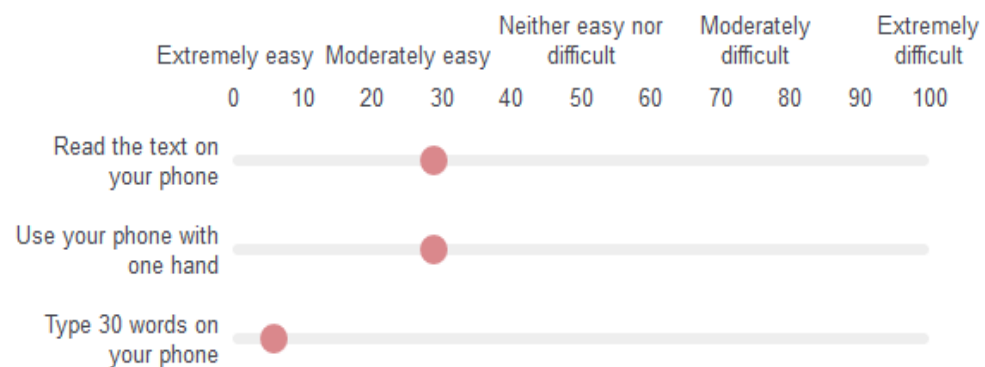
What Operating System does this phone have?



<<

>>

Select the place on each scale to indicate how easy you find it to:



Why do you have this phone? (Short or even one-word answers are OK)

Main reason	<input type="text"/>
2nd reason	<input type="text"/>
3rd reason	<input type="text"/>

<<

>>



From the reasons you just gave, please rank them here. Give each reason a number so that the total adds up to ten. The stronger the reason, the higher the number.

Main reason	<input type="text" value="0"/>
2nd reason	<input type="text" value="0"/>
3rd reason	<input type="text" value="0"/>
Total	<input type="text" value="0"/>

<<

>>

Have you tried these activities on your phone for academic work? How effective or ineffective have you found them?

Making short notes at any time	Extremely effective
Learning from audio/video	Very effective
Reading journal articles	Moderately effective
Searching the library catalogue	Slightly effective
Writing for an assignment	Not effective at all
Sharing knowledge with other students	Not tried

What are your three favourite apps for academic work?

Favourite app:	<input type="text"/>
2nd choice:	<input type="text"/>
3rd choice:	<input type="text"/>

Are there any things which make academic work more difficult for you on a mobile phone?

Main factor	<input type="text"/>
Factor 2	<input type="text"/>
Factor 3	<input type="text"/>

<<

>>



Please briefly describe the most sophisticated use you have made of your phone for academic work:

Type your answer here:

playing table tennis

Sorry but I cannot think of anything (skips to the end of the survey)





How regularly do you use your phone to Explore the galaxy

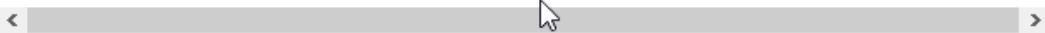
Daily

4-6 times a week

2-3 times a week

Once a week

Not any more - please briefly explain your selection of this choice



How did you come to realise Explore the galaxy was possible?

How did *you* learn to use your phone for Explore the galaxy ?

Please select **all** that apply:

Trial and error

Staff showed me

I read about it

Family showed me

Friends showed me

I attended a workshop/class to learn it

I found a video about it

Other - please specify:

<<

>>

You mentioned that a member of staff showed you how to use your phone for . Please specify that person's role (**you can select more than one**):

Lecturer

Personal tutor

Academic supervisor

Librarian

Professional Support staff

Clinically-based staff

Other - please specify:

<<

>>

We thank you for your time spent taking this survey.
Your response has been recorded.

Appendix 3 Survey: Favourite Apps Categories

Students were invited to name three favourite apps for academic work. The top twenty are listed in the body of the thesis (page 73). The table below lists the categories in alphabetical order and frequency of occurrence.

Table 16: Favourite Apps – 48 categories in alphabetical order

Academic – Databases	21
Academic – Journals	10
Browser	45
Calculator	2
Citation Management	43
Cloud Storage	10
Collaboration & Communication	28
Email	24
Health Ed App/Site	39
Knowledge platform	1
Knowledge work support - paraphraser	1
Knowledge work support for stats	1
Library	5
Lifeworld – games	1
Lifeworld – tide times	1
Navigation	1
Not usable data	5
Notes	30
Null - No use made	41
Photograph Management	1
Photographs	1
Presentation	17
Productivity (Office Suite)	6
Reading	27
Reference	10
Reminders	1
Revision app	4
Scan to PDF	4

Search	36
Social Networking	20
Sound Recording	1
Speech to Text	1
Spreadsheet	16
Text to Speech	1
Time Management – Alarm	1
Time Management – Calendar	4
Time management – Scheduling	1
Time management – Timer	1
Timetables	3
Translation	1
Uni - App or Website	10
Uni - Audience Response system	5
Uni - Clinical Assessment Recording	3
Uni – Records	2
Uni – VLE	110
Video	17
Word Processor	33

Appendix 4 Survey: ‘Most Sophisticated Use’ Categories and Levels

Table 17: ‘Sophisticated use’ clusters, counts, descriptions and levels

Cluster	Cluster Count	Sub-code	Sub-code description	Sub-code Count	Level of sophistication
1. Search	65	10	Search	21	2
		11	Concept/facts definition search	7	2
		12	Library search	3	2
		13	Journal search (incl. 'Literature research' and databases)	31	3
		14	Library search to then obtain physical books	3	2
2. Managing Information (receiving, parking,	41	20	Managing Information (Receiving, Parking, Sending Information)	0	
		21	Digitising paper-based words	1	4
		22	Making notes	10	2

sending information)		23	storing journal articles	5	3
		24	Managing/accessing files with Cloud storage	3	3
		25	Referencing	8	2
		26	Taking photos of lecture/information/screencapture	11	2
		27	Audio recording tutorials/lectures	3	2
		28	Audio notes	2	2
		29	Submitting assignment	1	4
3. Manipulating, Developing Information or knowledge	12	30	Manipulating, Developing Information or Knowledge	0	
		31	Video editing	2	4
		32	Drafting/proofreading essay	8	4
		33	Designing PowerPoint	2	4
4. Managing Self and Others	9	40	Managing Self & Others	0	
		41	Accessing student information system	3	2
		42	Timetable	1	2
		43	Timetable sync to phone calendar	2	3
		44	Coordinating meetings	2	2
		45	Calendar	1	2
5. Sharing and Interaction (epistemic exchange)	38	50	Sharing & Interaction (Epistemic Exchange)	0	
		51	Email	16	2
		52	Sharing info/files with peers	7	3
		53	Work cooperatively with peers on googledocs	1	3
		54	Phoning University staff	1	1
		55	Audience response software (Kahoot)	3	2
		56	Group/collaborative communication	7	2
		57	Discussion forums	1	2
		58	Showing a presentation	1	3
		59	socialising	1	1
6. Content	57	60	Content	1	
		61	watching academic video	3	2
		62	Journal browsing	2	2
		63	Reading journal articles/documents	17	2
		64	Accessing domain knowledge (NICE, geeky medics)	3	2
		65	Accessing learning materials from VLE	22	2
		66	e-learning	1	2
		67	Reviewing something to give feedback	2	2

7. Facilitative	7	68	Checking social media	1	2
		69	Viewing lecture presentation slides	5	2
		70	Facilitative	0	
		71	Using instead of a laptop	2	3
		72	WiFi Tethering	2	3
		73	Working between/alongside another device	1	2
		74	Using alongside handwritten note-taking	2	2

Appendix 5 Letter requesting permission to access a population

17th October 2016

To Dr [name redacted]

School of Healthcare Sciences Ethics Committee

[name redacted]

Permission Request for Research

Dear Dr [redacted],

I am writing in relation to my role in the School of Healthcare Sciences and my doctoral studies supervised by Dr Kirsty Finn within the Department of Educational Research at Lancaster University. I would like permission to recruit current students in this school to investigate their perspectives on the use of mobile devices for learning in higher education.

This study will help to gain an understanding of the ways that students in higher education accomplish scholarly work on a mobile device and how they learn to do that. I expect that valuable insights will be obtained to help guide staff and students and the wider education community as we try and make the best use of the technologies at our disposal.

Recruitment activities will be limited to one announcement on Learning Central and one follow-up email. This method is intended to avert coercion. Participation in the study involves the use of data collected by an online survey, a private online focus group (using Yammer) and individual interviews (to be recorded and transcribed) which will be held with a selection of students at a time and location convenient for participants. Lancaster University Faculty of Arts and Social Sciences and Management School (FASS-LUMS) Ethics Committee has reviewed and approved the study.

I have included the protocol, a document about data collection, the participant information sheet and consent form (for interviews). If you would like further information about this project please contact me by email at [johnsonmr1@\[redacted\].ac.uk](mailto:johnsonmr1@[redacted].ac.uk) You can also contact my supervisor, Dr Kirsty Finn, or the Head of Educational Research Department, Professor Paul Ashwin.

Best wishes,

Mike

Researcher: Mike Johnson, [johnsonmr1@\[redacted\].ac.uk](mailto:johnsonmr1@[redacted].ac.uk)

Supervisor: Dr Kirsty Finn, k.finn1@lancaster.ac.uk

Head of Department: Professor Paul Ashwin, paul.ashwin@lancaster.ac.uk

Appendix 6 Consent form (v2)

Title of Project: An ethnographic study of healthcare students' use of mobile phones for learning in higher education

Name of Researcher: Mike Johnson

		Please Tick
1.	I confirm that I have read and understand the information sheet dated 6 th December 2016 for the above study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily.	
2.	I understand that my participation in this research study is voluntary. If for any reason I wish to withdraw during the period of this study, I am free to do so without providing any reason.	
3.	I consent to the interview being audio recorded.	
4	I understand that the study seeks to collect anonymised digital images from, <i>but not of</i> , participants, as follows: My mobile phone's screen. A sketched map of the places and transits where I learn using my mobile phone. The location of the interview as part of 'field notes'	
		4.1
		4.2
		4.3
5	I do not want any images relating to my interview to be taken or kept.	
6.	I understand that the information I provide will be used for a PhD research project, stored securely for ten years, and that data extracts and findings from the project may be published. In all this my anonymity will be ensured.	
7	I understand that I can request to view the field notes or listen to the audio at the end of the interview and any parts I am unhappy with can be deleted, or disregarded from the data. I understand that I have the right to request that my data is destroyed at any time during the study.	
8.	I agree to take part in the above study.	
9.	I agree to further contact from the researcher: to check the interpretation of my contribution to be invited to one more interview to receive news about this research study's findings	
		9.1
		9.2
		9.3
Name of Participant: University email address: Signature: Date:		

Consent form version date 6th December 2016

Appendix 7 Information for Participants

Title of Project: An ethnographic study of mobile device use for academic work by students in higher education

Research Student: Mike Johnson

School of Healthcare Sciences, [address redacted]

Tel: [number redacted]

Email: m.johnson6@lancaster.ac.uk

Supervisor: Dr Kirsty Finn

Educational Research Department, County South, Lancaster University, LA1 4YD, UK

Tel: +44 (0)1524 595123

Email: k.finn1@lancaster.ac.uk

Date: _____,

Dear _____,

I would like to invite you to take part in my PhD thesis research with the Centre for Technology Enhanced Learning in the Department of Educational Research at Lancaster University.

Before you decide if you wish to take part you need to understand why the research is being done and what it would involve for you. Please take time to read the following information carefully. Talk to others about the study if you wish. Ask me if there is anything that is not clear or if you would like more information. Take time to decide whether or not you wish to take part.

This document includes:

Information about the purpose of the study (what I hope to find out).

Information about what you will be doing and how to withdraw, if and when you wish to.

Details of what notes, recordings and other sources of information may be used as 'data' in the study - for the group and with you as an individual.

Information about how this data will be secured and stored.

Information about how any quotes will be used and how you will be involved in checking, agreeing and consenting to their use.

How the information will be used in the thesis and for other purposes such as conference presentations or publication.

The purpose of the study

This research is for my thesis on the PhD in Technology Enhanced Learning programme with the Centre for Technology Enhanced Learning in the Department of Educational Research at Lancaster University.

My research aims to find out how students in higher education use their mobile devices for academic work and how they learn to do that.

What participation involves and how to withdraw if you no longer wish to participate

Why have I been invited?

You have been invited because you are a student in higher education with a mobile phone.

Do I have to take part?

No, your participation is entirely voluntary.

You can withdraw at *any* time during the data collection phase of the study and there is no obligation on you to continue nor penalty for withdrawing. You can request that the data you provided (recordings, notes, etc.) be destroyed and all reference to your contribution removed. However, as the work progresses it becomes more difficult to remove your data from the study. Therefore, if you decide to withdraw, your data will be included unless you request its removal before March 31st 2017.

What would taking part involve for me?

The study intends to analyse data provided by you as follows:

1. At interview I would like to talk with you individually about your experiences of using a mobile device, especially a mobile phone, for academic work. The interview will take place in a suitable time and location of your choice and last for about an hour. Our voices will be recorded for transcription and analysis later. I will ask you to sketch a simple paper and pencil map of where you typically attempt academic work with your mobile device. With your consent, I will take a digital photograph of this and you can keep the paper version. In keeping with the 'mobile' theme, it may help the study to capture and use a photo of the setting for our interview and/or the screen of the mobile device, but images will only be taken and used with your full agreement. You will not be in any photos. I will ensure all aspects of the interview will uphold your privacy and anonymity and you can ask for the images to be permanently deleted and excluded from the study at any time up until end March 2017. I would like to interview you again at a later date to see how you are getting on after some time has passed but you are free to decline this without giving a reason. With your permission, I would like to contact you after the interviews have been transcribed and analysed to check my interpretation of this with you and in case you have anything else you wish to discuss, change or add. Again, you are free to decline this further contact without giving a reason.

2. Online focus group I will invite you to a private online group set up just for this research project. This is entirely optional. The group will use Yammer, a [redacted] University communications system, which works through a mobile app or a Web browser and email alerts to your university inbox. This will enable us to share and compare experiences of mobile academic work with other study participants. As with face-to-face focus groups, you will be identifiable to other members of the group and

members of the online focus group will all agree to uphold the strictest confidentiality. Participation in the Yammer group is also governed by the University's 'acceptable use' policy: [www.\[redacted\].ac.uk/govrn/cocom/uniitregs/index.html](http://www.[redacted].ac.uk/govrn/cocom/uniitregs/index.html)

This group will close down at the end March 2017 but you can leave at any time without giving a reason. You are welcome to contribute whenever you want to but I will occasionally prompt the group (once a week at most) with a general question about mobile-based academic work. You are free to respond or ignore these prompts. Your ongoing participation in the online focus group will be held to imply your consent to the use of your anonymised contributions as data for analysis in the study.

Protecting your data and identity

What will happen to the data?

'Data' here means the researcher's notes, audio recordings, photographs and any Yammer exchanges we may have had. The data may be securely stored for ten years after the successful completion of the PhD Viva as per Lancaster University requirements, and after that any personal data will be destroyed. Digital files such as audio recordings and images will be stored on my encrypted personal laptop and deleted from unencrypted media (memory cards) used in audio or image capture devices as soon as possible. In the mean time I will ensure devices carrying unencrypted data will be kept safely until the data is deleted. Secure back-up will be provided by Lancaster University's approved 'Box' service.

You can request to view the field notes or listen to the audio at the end of the interview and any parts you are unhappy with will be deleted, or disregarded from the data. Data may be used in the reporting of the research (in the thesis and any further publications). If your data is used, it will not identify you in any way or means, unless you otherwise indicate your express permission to do so.

You have the right to request this data is destroyed at any time during the study as well as having full protection via the UK Data Protection Act. The completion of this study is estimated to be by 31st December 2017, although data collection will be complete by 31 March 2017.

Data will only be accessed by members of the research team and support services, this includes my supervisor and professional transcription services (i.e. [name redacted] who operates from her own home). Recording and transcript files will be securely shared using Lancaster University's approved 'Box' service).

The research may be used for scholarly publication, such as journal articles and conference presentations.

How will my identity be protected?

A pseudonym will be given to protect your identity in the research report and any identifying information about you will be removed from the report and any subsequent publications. All pseudonyms will be securely stored on a strong password-protected encrypted file in Lancaster University's approved 'Box' service.

Who to contact for further information or with any concerns

If you would like further information on this project, the programme within which the research is being conducted or have any concerns about the project, participation or my conduct as a researcher please contact:

Professor Paul Ashwin – Head of Department

Tel: +44 (0)1524 594443

Email: P.Ashwin@Lancaster.ac.uk

Room: County South, D32, Lancaster University, Lancaster, LA1 4YD, UK.

Thank you for reading this information sheet.

Mike Johnson – 6th December 2016

Appendix 8 Online focus group email outlining terms of engagement

Dear _____

Thank you for volunteering to participate in the online focus group for my study. I hope that you will find the experience interesting and stimulating.

As with any research, it is vital that you are fully aware of what participation amounts to and that you are happy to go ahead in that knowledge. This message seeks to address some key issues but you are most welcome to seek clarification before finally agreeing to become a member of the online focus group.

If you reply to this email saying you wish to be added to the online focus group, I will take that as meaning you:

have read and understood the information sheet (attached to this email) and confirm you have had the opportunity to consider the information, ask questions and that these questions have been answered to your satisfaction

understand that participation in this research study is voluntary. You can withdraw from the Yammer group and exit the study at any time and you do not have to give a reason.

understand that you will be identifiable to other participants and you therefore agree to keep strict confidentiality about the group.

understand that because the online focus group used the [redacted] University Yammer service it implies your membership will accord with the University 'Acceptable Use of IT Regulations'
[www.\[redacted\].ac.uk/govrn/cocom/uniitregs/index.html](http://www.[redacted].ac.uk/govrn/cocom/uniitregs/index.html)

understand that activity in Yammer will generate emails to your University inbox.

understand that Yammer messages cannot be edited or deleted once posted (except by a system administrator). You do have the right to request that your contributions are excluded from the data for the research at any time.

understand that a breach of group confidentiality or the University 'Acceptable Use' regulations will lead to your removal from the group and your actions reported to your personal tutor.

understand that the information you provide will be used for PhD research and the combined results may be published. Please indicate if you would like to receive news about this research study's findings.

consent to take part in the study, and that your ongoing membership of the online focus group implies ongoing consent to take part.

Best wishes,

Mike