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LEARNING OR LIKING: EDUCATIONAL ARCHITECTURE AND THE EFFICACY OF ATTENTION

Leanne McRae

Abstract

The language surrounding the rise of online education, the use of learning management systems and social networking sites in university education is based on under-researched ideas about grasping and sustaining the 'attention' of digital natives. The assumptions supporting the promotion of digital learning interfaces as effective, efficient and essential to teaching and learning in the modern university confirm that education takes place around and between otherwise busy lives and must capture the ever-shifting attention of accelerated cohorts flitting through their socially networked and time-poor interactions. This paper examines the language used to promote digital learning interfaces and questions the consequences to teaching and learning when digitised artefacts are used to direct and govern curricula decisions. The argument in this paper suggests that allowing students to self-direct their education through functional and fashionable interfaces, means that a more detailed understanding of how 'ambient computing' environments shape and frame attention is deprioritised. Furthermore, this paper suggests that the fundamental experiences of learning – struggle with ideas, disciplining the mind, exploring concepts with individuals more expert than the student – is impoverished as we offload students onto social networks and out of classrooms.

Keywords: Learning Management System, Social Network Site, ambient computing, digitised interface, digital native, Blackboard, Facebook

Current structures of online learning at major universities are framed by the use of the LMS – Learning Management System. Common delivery platforms include, Blackboard, Moodle and WebCT. These systems are large behemoths that organise courses and are often maligned by students and researchers alike as being authoritative, difficult to use, impenetrable and more likely to disengage students from a fruitful learning experience. In contrast, social networking sites like Facebook, are hailed as interactive, connected, free, easily accessed and accessible, and enabled to create dynamic and nuanced communities of learners. These social networking sites and Facebook in particular, are described by students as highly desirable for their mobile, multitasked and multifarious lives where education is scheduled between personal and professional responsibilities. The place of Facebook in offering an interactive and accessible space for student learning is under researched, but often hailed as revolutionary, transformative, and potent. Blackboard, (and other LMSs) in contrast, is critiqued by users as hampered by layers of logins, convoluted streams of discussion and impenetrable structures of navigation. The binary situating these two styles of online educational interaction as contrasting and capricious, provides terrain upon which debates about learning can be

investigated, unpacked, and re-encoded to rethink the role of computers, consciousness and critique in contemporary education.

The purpose of this article is to move beyond the hyperbole of hyperreal learning environments whether they are located on Blackboard or Facebook and to ponder the shifts to educational outcomes and expectations that have led to the increase in the use of social networking sites as learning platforms. While supportive, student-centred learning is important to an effective educational context, the consequences to education are stark when social networks in online contexts are singled out as inherently connective, valuable and significant to students' motivation and learning outcomes. The purpose of this paper is to not reify the value of one style of learning management system or social network – Blackboard or Facebook – over another, but to suggest the ways in which teaching, learning, expertise and experience are corroded in the current consciousness of cached learning that services an accelerated, convenient, and consumer-based education. In four sections this paper will unpack the trajectories of online learning language to consider the role of different platforms in balancing motivation, attention, and academic outcomes.

In the first section, the methods and modes by which students interact with online learning interfaces and artefacts will be examined. The focus will specifically spotlight Facebook education groups and how these sites moderate and mediate acceleration and attention. In the second section, the language of celebration and revolutionary transformation of education deployed about the socially networked online environment, particularly for motivating students and improving their connectedness to learning outcomes will be questioned. In the third section, the argument unpacks the protocols embedded in economies of attention and ambient computing to rethink the role of educational architecture to teaching and learning. These new tropes for thinking about and through educational interaction reveal a series of unruly consequences for both teachers and students that need deeper consideration. The fourth section tracks the importance in understanding the architectures of digitisation to create a critical dialogue between learning platforms to better mobilise how education, scholarship and academic work have corroded in the desire to connect, entertain, accelerate and motivate students within these spaces. The long-term consequences to educational outcomes will be spotlighted. Each section will build to a cohesive vision of contemporary online learning ideals and consider how these fit with productive pedagogies. At each stage the language and literacies of the online, the mobile, and socially networked will be unpacked, investigated, and troubled.

University students at all levels of learning, are often highly networked and seek to deploy a number of digital devices and portals in their education. For example, “empirical studies such as that by Roblyer, McDaniel, Webb, Herman, and Witty (2010) point to a large uptake of *Facebook* by undergraduate students (up to 95%)” (Jenkins, Lyons, Bridgstock and Carr, 2012, p. 2). These same students also often use mobile apps and tablet based interactions within their courses in a contingent and flexible learning environment. They customise the delivery of their education by utilising a variety of functions such as “targeted stream posts, targeted updates, support for applications, engagement metrics, promotional widgets and vanity URLs” (Radel, 2011, p. 5) that provide a highly nuanced personal learning environment for student engagement. The popular perceptions of students and many teachers are that these digitised networks, devices and apps assist in their processing of and performance with ideas. As a result, the digital, synchronous and asynchronous portable portal is amplified as the key driver of special educative conditions that enable the right style of flexible pedagogy to harness multiple and malleable interactions for accelerated and accentuated learning. Mobile

devices such as smart phones and iPads, for example, are co-opted as part of this digitally transformative environment that can value-add to students' learning experience.

the mobility component means that students are free to move within, beyond and between multiple environments and between topics and disciplinary contents and contexts. Second, the use of the portable devices means that learning is not confined to formal educational contexts; learning is extended within informal opportunities such as home and work. Third, mobile learning is not a one-way exchange from lecturer to students, but constructing understanding within participating communities (Kinash, Brand and Matthew, 2012, p. 1).

Mobile devices, apps and interfaces are argued to enable the movement of ideas into and through flexible modes of delivery. Information can pour through the portal and download into assignments, essays, tests and exams. Productive communities of learners can form around and through courses, transforming how students interact with information and instruction, making collective intelligence the currency of higher education.

There is potential within the digital oeuvre to provide exciting and transformative experiences to students. Properly harnessed, an effective virtual learning environment that includes not just the LMS but a range of reflexively integrated devices, platforms and portals, might segue seductively into a plethora of useful everyday learning opportunities. However, the increased blurring of learning and leisure mediated by mobile, wireless and tablet based interactions with teaching, learning, information and knowledge is reframing how education is contextualised. The evolution of "pervasive learning" (Thomas, 2006, p. 41) where electronic devices connect individuals to a variety of self-managed interfaces means that pedagogy is often an afterthought to sleek design and functional interfaces. Instead, learning is mediated by the device. Pervasive learning moves beyond student-centred learning. It is more than allowing the learner to determine and drive the shape and tone of education in collaboration with the instructor. Instead, Thomas (2006) argues students "can construct relevant and meaningful learning experiences, that they author themselves, in locations and at times that they find meaningful and relevant" (p. 45). Students manage their own inputs and outputs with little direction from instructors who now supply materials rather than the mechanisms to manage, interpret and engage with ideas. Within this emerging model of digital learning, students become expert managers of their own education, but little is written about how they might become experts of a discipline or episteme.

The resistance that many instructors might feel towards the deployment of multiple portals including social networking sites within their pedagogic parameters is often dismissed as old fashioned and outdated. This anxiety can be easily assuaged according to Alana Nakahara by "show[ing] them how to use it" (Nakahara, 2012, p. 2). These dismissals are paired with a prevailing attitude that "Facebook offers the opportunity to re-engage students with their university education and learning – promoting a 'critical thinking in learners' about their higher education" (Selwyn, 2007, p. 6). However, the specificities of the Facebook environment as having "many of the desired qualities of an effective education technology in its reflective element to use, mechanisms for peer feedback and goodness-of-fit with the social context of university learning" (Selwyn, 2007, p. 4) is rarely connected to the larger sense of place and context that students are deploying in their learning activities and interactions. It is another on a continuum of portal sites where students access information. As a result, many of the online, digital engagements taking place within these accelerated socially networked environments are inadequately connected to specific learning outcomes except via a desire for flexibility

and ‘personalised’ education. How education is contextualised, deployed and activated within a ‘network’ of information, knowledges, artefacts and portals is often ignored. The connections and confluences that can lead to reflexive mobilisation of a critical education is glossed over in the shiny interactions of nodes, user interfaces and speedy hardware.

The flexible delivery of unit content through multiple devices is motivated and supported by claims that universities are now populated by digital natives who “are accustomed to searching for and retrieving information on the Internet and thus have a need for a more interactive learning environment” (Barczyk and Duncan, 2013, p. 3). If not embedded in this digital oeuvre, the fear is that they will become disengaged and unmotivated if not posting, liking, chatting, poking and friending their way through their learning experiences. These students are framed as ‘social learners’ meaning that they learn more in an interactive environment where the education is student-centred and directed. Such experiences are mobilised by digital contexts that amplify a “social life ... organized around human motilities rather than fixed locations or bounded communities” (Wang and Stefanone, 2013, p. 437). The integration of social network sites as optimised learning environments coheres with pedagogical shifts away from ‘bounded’ Fordist models of teaching and learning revolving around the lecture format and linear delivery of information. These styles of education are encoded as out-of-date and counterproductive to the ethics of student engagement, motivation, and flexibility that have come to frame contemporary education and the digitally native enrolees. Face-to-face tutorials and lecture theatres are constructed as anti-social and linear while disembodied and disembodied online web2.0 exchanges are defined as nuanced, lively and exciting. Francine Toliver argues that the meanings attached to digital natives come with assumptions that must be challenged within modern education.

Digital Natives are said to prefer receiving information quickly; be adept at processing information rapidly; prefer multi-tasking and non-linear access to information; have a low tolerance for lectures; prefer active rather than passive learning; rely heavily on communications technologies to access information and to carry out social and professional interactions (Toliver, 2011, p. 62).

Within this modality, the digital native requires a dynamic learning space that harnesses their web2.0 literacies and provides inherent motivational modalities imparting an evocative and conversational space where critical and effective learning can take place. As a result, much of the language surrounding the integration of mobile, digital and socially networked interfaces in replacement to, or in support of face-to-face instruction hails the transformative potential of the portal and the mysterious ‘power’ of the interface to engage, inspire and motivate university students.

The ‘power’ of computer-mediated communications and the ‘personal learning experiences’ they facilitate, are encoded to transform learning and education via the digitised framework into effortless, engaged and highly adaptive student outcomes. The ‘powerful’ tools that create these conditions include Learning Management Systems (LMS) like Blackboard or Moodle, but predominantly emphasize the use of Facebook, social media, and mobile devices to cultivate conversations either as supplement to the LMS or in place of face-to-face interactions. The virtual learning environment that is generated via this interconnection of digitised tools and interfaces enables the centrality of bits and bytes to define the functional framework for flexible delivery of education. At the centre of the dialogue is the potential for the digitised environment – its tools, apps, connections, and asynchronicity – to create active, engaged and motivated learners. This “potentially powerful idea” (Nakahara, 2012, p. 2) is mobilised to produce

appropriately motivated and self-disciplined students who do not need to be taught, but rather facilitated in their own journey through information. Online, socially networked learning and its gadgets, widgets and apps are encoded with the ability to connect, engage and communicate concepts to students in ways that older, linear and authoritative models of education have struggled to achieve. Nakahara (2012) justifies her claim by affirming that this power in pedagogy exists “simply because students spend a lot of time on these online activities” (p. 2). According to this rationale, presence manifests an attention-based acuity making learning a liquid process that can be absorbed, promoted, poked and plugged-in.

The dynamic potential of online and digitally networked interfaces appears to be rationalised through the integration of popular aesthetics that harness both informal and formal audio, visual, and kinaesthetic learning tropes. It has been argued that students learn best when information is communicated down the streams of sense-based synergies and that “when learning environments are designed to cater to multiple sensory channels, information processing can become more effective” (Sankey, Birch and Gardiner, 2011, p. 20). This is a characteristic particularly attached to digital natives who are used to multisensory, hyperreal and hyperlinked web2.0 interactions within their everyday lives. However, claims about ‘digital natives’ and the online generation are often overstated. New research has demonstrated that the cliché of the digital native is damaging to the realities of how young people actually deploy digital media literacies. The Prince’s Trust Report (2013) surveying young people not in employment or education found that 10% of these young people “felt out of depth when using a computer” (p. 2) and among young people in general 12% “do not think their computer skills are good enough to use in the job they want” (p. 2). This data demonstrates that there is a considerable gap between the assumptions held about digital natives and realities of their digitised media literacy. Nevertheless, the hyper-connected contexts and languages of online and digital media interfaces for learning, are defined to offer multimedia and audio-visual engagements that accelerate learning by cultivating an attractive, popular, interactive and informal educational environment. The mobilisation of popular interfaces, it is argued, creates spaces which construct flexibility and functionality, moving students beyond structures and into conversations and communities.

Informal learning communities can evolve to respond to short-term needs and temporary interests, whereas the institutions supporting public education have remained little changed despite decades of school reform. Informal learning communities are ad hoc and localized; formal educational communities are bureaucratic and increasingly national in scope. We can move in and out of informal learning communities if they fail to meet our needs; we enjoy no such mobility in our relations to formal education (Jenkins, Clinton, Purushotma, Robison and Weigel, 2011, p. 9).

The intersections of these mobile, digitised and connected learning modes offers the potential to “improve attention rates” (Sankey, Birch and Gardiner, 2011, p. 19) which will lead to better overall performance. Mita Moody (2010) claims that in teaching via Twitter for example, “the goal is to pique and hold students’ interest while preparing them for a rapidly changing media climate” (p. 1). Within this argument, the multiliterate, scroll, swipe, hyperlinked, audio-visual network of nodes within an online and mobile learning framework is composed as a unique set of presences that can catch the students’ attention and connect them to learning. The assumption being promoted is that attention to unit content is enough to assess and process the significance,

consequences, and interconnections of ideas. The role of institutional pressure to streamline learning while cutting costs and reducing staffing commitments, thereby offloading students into displaced, off-campus and online oeuvres is often masked by this rhetoric.

There are corrosive consequences when a culture of attention is centralised in educational decision-making along with assumptions about student media and digital literacies. Rather than situating content or curricula as key to effective learning outcomes, ‘attention’ becomes the directive to the delivery of course material and deprioritises the structural inequalities that might block some students from effective learning outcomes. Ensuring that the platforms, interfaces and frameworks of learning are conducive to new attitudes of students-as-consumers redefines the purpose of education and assumes that downloading and digitisation is normalised. Making ‘access’ the key trope for effective learning, and cultivating these definitions through mobile, tablet-based VLEs (Virtual Learning Environments) and Facebook-framed interactions, means education is shaped by attracting students, assuming their levels of literacy and connection, rather than defined by reflexive assessment of power structures inside and outside the university, how that might impact on learning, and what the struggle for learning can create, build or re-write. Getting students updating, downloading, posting and poking are increasingly the emphases of a culture of attention mobilised by higher learning institutions. In this context, leisure and learning blur as a positive outcome of ‘student-centred learning’ where tablets and mobile interfaces offer a funky flexibility connected to everyday practices and literacies. But these techniques can also conflate Googling with research, liking with reading, downloading with interpreting as students lack the abilities to focus on information, comprehension, and the literacies requiring disciplined attention. Instead, ‘capturing’ attention rather than instilling focus-based literacies becomes the priority of many online learning contexts.

The ‘economy of attention’ describes the emergence of the ephemeral update, status reading, liking culture that has come to populate social media sites where mass audiences shift and alter their interaction with sites, pages and products based on the flows of their attention. The struggle to harness the potential consumer-base of friends and followers has been instrumental for marketers seeking to direct the untapped audience flowing over Facebook timelines, MySpace pages, and Twitter feeds towards products, services, and into advertising dollars. These “markets for novelty” (Potts, Cunningham, Hartley and Ormerod, 2008, p. 3) describe the fleeting and fluid movement of human and social capital through these networks. In these spaces, value is defined by “‘word of mouth’, taste, cultures, and ‘popularity’ ... dominated by information feedback over social networks” (Potts, Cunningham, Hartley and Ormerod, 2008, p. 4) whereby “people’s preferences have commodity status over a social network because novelty, by definition, carries uncertainty and other people’s choices therefore carry information” (Potts, Cunningham, Hartley and Ormerod, 2008, p. 5). The preference protocols that map the waxing and waning of attention across social networks segues neatly into attention-as-learning via the fetishisation of digitisation in education. The culture of attention is mobilised via the rhetoric defining the integration of mobile, student-centred, socially networked learning as crucial to motivation. In emphasizing the ‘power’ of social media via the language of attention, popularity, and presence, the wider concerns of criticism and knowledge literacy are masked behind the ‘swipe and like’ practices of students logging in rather than learning. The centrality of ‘attention’ in the new economy and the ability to control, harness, shape and direct the attention of ‘prosumers’ on web2.0 interactive platforms has leaked into the language of education. The student-as-consumer has come to define how we teach, the information we instruct, and education as product. The cultivation of the virtual learning

environment as a service delivering a downloadable education to a fee-paying cohort frames ‘access’, attention, and digitised interaction as prerequisite to learning rather than defining the processes of understanding as contingent, focussed, difficult, disciplined, and sometimes dangerous.

All of this flexibility and functionality is framed as significant for effective learning where “at the core of the properties of asynchronous online learning is the ability to provide collaborative learning experiences that are convenience for the individual” (Toliver, 2011, p. 63). Online, asynchronous, quasi-synchronous, virtual and mobile interfaces for learning are defined as cutting-edge and providing effective, convenient and transformative spaces for active learning regulated by multiple, piece-meal and convenient engagements with education according to external commitments and time management priorities. But these online networks are rarely connected to a wider understanding of information interfaces and how these facilitate the growth of knowledge. Instead, these directed spaces can ensure that students are exposed to ideas cultivated to their interests, needs and defined outcomes, but not to challenging, uncomfortable and disquieting notions that might reinscribe their experiences of self. The methods by which learning might be deployed beyond the link-up, group invite, or mobile app interface, is often left to the discovery of students themselves as ‘motivated’ learners. These attitudes place emphasis on the student to take responsibility for their educational outcomes, but it also deprioritises the role of the instructor, teacher, tutor and lecturer in embodying, mobilising and modelling expertise. They also mask the process of learning and teaching as nuanced, complex, refined, and subtle, requiring understanding of the intersections between ideas, creativity, discipline, and literacy applications. Instead, it is affirmed that with the right app anyone can Google their way through the curriculum, update the status of their learning, and download difficult debates with awkward ideas.

As a result, education is increasingly tailored towards self-centred learning that situates the individual at the core of information management strategies that suit their needs. While student-centred learning enables dialogue between pupil and teacher to craft reflexive curricula and classroom strategies, self-centred learning means education bends toward the ego and has the potential to corrode critical consciousness and the abilities to extend and stretch the self into unknown and uncomfortable psychological spaces crucial for well-rounded citizenry to emerge. James Paul Gee (2013) in “The problem of the school of one: Can technology make education too customized for the student?” argues for the imperative to challenge students rather than placate them with easy tasks and self-directed learning;

People who never confront challenge and frustration, who never acquire new styles of learning, and who never face failure squarely may in the end become impoverished humans. They may become forever stuck with who they are now, never growing and transforming, because they never face new experiences that have not been customized to their current needs and desires ... new technologies and the Internet allow us to enter our own customized echo chambers and identity niches where we can comfort ourselves with what we are and do not have to confront ourselves with what we can be and, indeed, must become as fellow citizens in a diverse and complex global world. This is particularly dangerous for students (para. 7).

Students require skills and strategies to move them through difficult relationships, infrastructures and problems. Toliver (2011) is careful to caution that “Learning for educational purposes is more than simply accessing information and participating in

chat rooms” (p. 63). Students require more than a cut-and-paste curriculum. Yet, the rhetoric surrounding the mythical powers of the portal to motivate, sustain and transform education cultivates a consciousness of consumer-driven education and learning where delivery of service trumps the potential awkwardness of struggling over a difficult idea in a context that requires discipline, doggedness and sometimes disengagement from social networks (online and offline) to provide the appropriate space for contemplation, percolation and persistence with an uncomfortable idea. Instead, the social and personal aspects of learning are highlighted, suggesting that learning can be consumed, communicated, and created via an online, virtual or digital portal that motivates and memorises experience and transforms it into expertise. These attitudes are in evidence with a close examination of Facebook education groups. Evidence shows that students use Facebook primarily to manage logistical information about the course, to confirm due dates, complain about assignments, critique staff and to reflect upon their experiences at university and its intersections with their everyday and professional lives. These interactions are rarely educational and are mostly informal in nature. They are directed at managing the student’s engagements with their courses, assignment expectations and deadlines. They ask each other when items are due and what is expected. Demand for materials, marks, deadlines, and confusion with critique, on these pages demonstrate the frustration of students, and also centralise the desire for effective delivery of service by teachers, tutors and the university hierarchy.



Figure 1: Student comment on Facebook



Figure 2: Student thread on Facebook



Figure 3: Student comment on Facebook

Frustrations with university systems and protocols spill over into Facebook conversations, and the online dis-inhibition effect as outlined by Suler (2004), contributes to unflattering and critical assessment of courses, unit content and staff members. These interactions are part of a resistive trope whereby social media is used by students to manage their emotions and assert control, activate rebellion, and mobilise a resigned ironic assessment of their own abilities to manage information, negotiate

multiple digital platforms, and process academic language. Selwyn (2007) identifies “a wilful anti-intellectualism ... [in] many of these exchanges with students brazenly highlighting their inabilities and, by implication, the inadequacies of the university department” (p. 14). These posts are designed to cultivate community of shared disenfranchisement with the university and the protocols of academia. They also deploy a wider disengagement from the role and function of education within the social framework where expertise is dismissed as inappropriate, elitist and impractical. The use of Facebook in this context, creates a sense of ownership over university study and cultivates connections based on communal struggle with course content and expectations. It is also used to vent and direct anger towards staff, the university and intellectual culture.

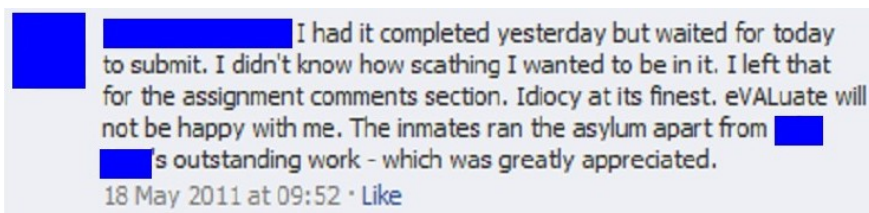


Figure 4: Student complaint on Facebook

The anger, resistance and rebellion towards the university is stimulated by a service-delivery consciousness whereby information must be packaged, easily accessed, downloaded and understood. When the delivery of material does not fit within these expectations, universities and their interfaces are demonised as elite and inaccessible. It is easier to critique the structures and staff of university education than to drill down into difficult ideas and be challenged by critique. As a result, the bulk of Facebook interactions are not educational. They are resistive, community building, supportive and helpful to students struggling to make sense of their role within the university. Facebook offers a short-term and fragmented engagement of personal, public and professional identities struggling to cohere through the codification of ‘student’ and rarely makes space for the development of ‘scholar’.

Students increasingly define their choices within a context of satisfaction, delivery of service and networked memory defined by others in their feedback loop of friends and followers. Students often overwhelmingly prefer Facebook to LMS environments. Cohorts “already using Facebook were more likely to see updates about the unit from within Facebook rather than by separately checking email or explicitly visiting the unit’s Blackboard site” (Jenkins, Lyons, Bridgstock and Carr, 2012, p. 3). The management of more complex interfaces and difficult information flows operates in contrast to the ease with which students seek to access online material and by default, the effortless way some seek to move through course content. Students consistently demonstrate a rejection of LMS structures and often complain about the impenetrable and layered manner in which information is locked behind secure servers and private entry points. This extends to complaints about the difficulty of using online databases, activating keywords and search parameters and a range of time-based skills required to not only access, but process information required for assignments. The formal interactions on the LMS site are also often called into question as being unproductive to instinctive, intuitive and complex engagements required in learning.

While Blackboard is highly secure and used by many universities, students do not feel that it is user-friendly. To check announcements and respond to email messages

requires that students go through many steps and logins to access the required pages (Barczyk and Duncan, 2012, p. 4).

Students often complain about the stream of discussion threads where interactions are opaque and time is wasted clicking on links that go nowhere or to single word answers like “OK” or “Thanks” in response to a direction or question. In an age where Google provides easy, free and streamlined access to instant information, the struggles and processes of understanding hierarchies of information, management of sources, and the careful deployment of knowledge is encapsulated in the binary between students’ perceptions of Facebook and Blackboard. The intuitive Facebook framework is contrasted with Learning Management Systems defined as “institutionally-owned and driven, and as serving the needs of the institutions rather than the learner” (Kompen, 2008, p. 2). Blackboard, Moodle and similar large LMSs are defined as inflexible spaces where “Learners have limited control over the extent to which the tools of a VLE [Virtual Learning Environment] can be customised” (Kompen, 2008, p. 2). The Facebook environment is encoded as better suited to the highly adaptive and customised approaches to online management adopted by online and digitised students. This trend is reflected by anecdotal evidence of a distinct resistance to LMSs.



Figure 5: Student thread on Facebook

However, LMSs provide an important architecture in the management of information in a digital format – both by containing the students within an official authoritative knowledge structures where they can be addressed as a whole by the course coordinator or tutor, and also as where the official discourses of the university are perpetuated in terms of the rigor of investigation, debate about ideas, and the critical examination of context.

When students migrate to Facebook or other social networking sites, they are able to engage in more flexible and fluid interactions, but the management of the cohort on such sites becomes increasingly difficult, placing enormous strain on staff. The encoding of knowledge parameters and performances becomes more difficult to model to the students. Shea, Li, Swan and Pickett (2005) have found – predictably - that “a strong and active presence on the part of the instructor – one in which she or he actively guides the discourse – is related to students’ sense of both connectedness and learning” (p. 71). The more present a tutor or lecturer in an online learning environment, the more likely students are to engage with course content and operate effectively in a functional learning context. But while some see advantages in teachers being able to “respond with considerable agility to issues” (Jenkins, Lyons, Bridgstock and Carr, 2012, p. 4) in the quick-fire update stream of Facebook, it is incredibly “time consuming for instructors” (Barczyk and Duncan, 2013, p. 3) to manage the multiple interactions, spaces and movements of students across these formats and is “somewhat dependent

on the instructor's skills, personal characteristics and willingness to commit the time needed" (Barczyk and Duncan, 2012, p. 3) to administer these spaces of interaction. Furthermore, the interactions between staff and students on Facebook are most often geared at managing course (mis)information rather than modelling and mobilising scholarship. It is on the moveable interfaces of Facebook and social networks that "potentially privileged information" (Selwyn, 2007, p. 12) offered to one student in precise circumstances is distributed as if it intended for everyone, leading to confusions and crisis management.

Neil Selwyn (2007) refers to this process as a "cascading" of information" (p. 11) where the networked, timed structure of Facebook enables the flow of information along parallel and dispersed lines. The result for educational groups is "a form of academic Chinese whispers, where assignment questions, rubrics and expectations were reconstituted in ways which were inaccurate and sometimes simply incorrect" (Selwyn, 2007, p. 12) This misinformation is time consuming for course managers who have to spend significant chunks of time in the minutiae of course details rather than actual teaching. For staff members, the distress of students when incorrect information is circulated means managing their emotional state, connecting to multiple social network sites where students are interacting with each other to coordinate course management, and responding to hierarchical requests for clarification.

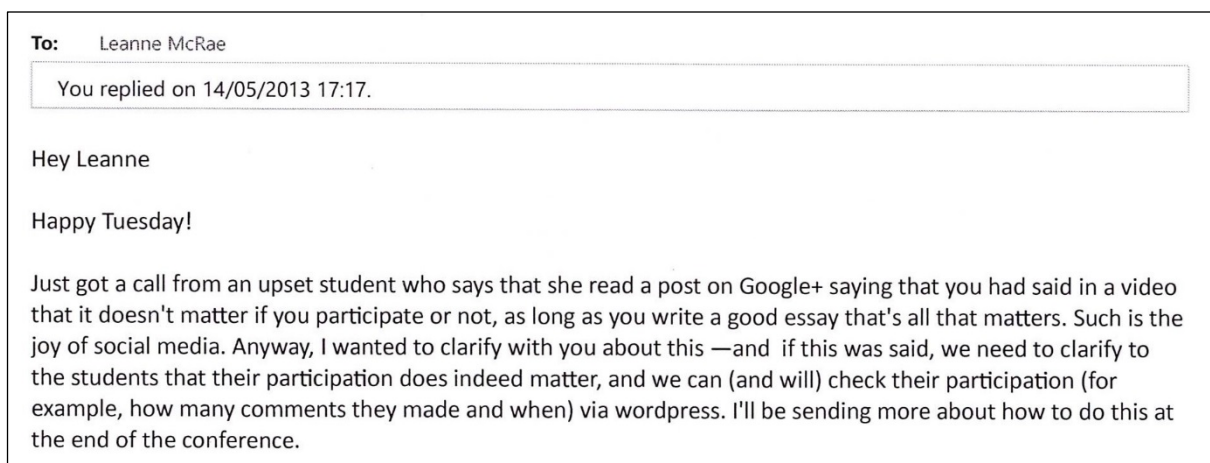


Figure 6: Email correspondence between tutor and course coordinator

The convoluted nature of social network interaction creates conditions where information mutates and contributes to a complex and contingent interface between the course content, administration, the students and the staff. Via the social network, information is restated, misconstrued, and incorrectly communicated leading to not only distress for students, but perpetuation of potentially damaging ideas related to assessment outcomes. Staff have to not only reassure students of the correct information, but also reassure the course managers that students had not been mistakenly misdirected. The huge amounts of time devoted to these inconsistencies and indiscretions distracts from the potential to craft an evocative learning space where the expertise of the tutor or course facilitator is actually deployed and not curtailed into an information manager role.

The binary between the rationalised LMS space and the emotional Facebook framework creates a dissection between education and identity. The LMS, as an official university space, is an architecture where the protocols of criticism outweigh the potentials of unruly and unregulated exploration of reactions and tumultuous tensions between identity, information, knowledge and the university. Students' use of Facebook

operates in these spaces of emotional insecurity and enables them a place in which to articulate these unstable moments. The in-between spaces of insecurity and struggle over information as it forms into knowledge is eroded in official university spaces and finds little complexity on Facebook beyond liking and emoting. The official formats for learning have instead been subsumed under the delivery of ready-made knowledge infrastructures to the student-as-consumer. Universities are no longer places where struggle, debate and complexity is explored, along with frustrations, insecurities and instabilities. Instead education has polarised with the university standardised structures of information, delivered via portals for pedagogy that remove the self from the struggle for knowledge. No longer are “students ... the subjects of learning ... responsible for their own ideas, while learning how to take risks, [and] negotiate differences” (Giroux, 2003, p. 92). Instead emphasis is on accessibility, portability, and readability of online texts. Experts are defined as those able to most effectively download rather than deploy information.

Generating methods to interconnect the many different ways we intersect with information – not just via portals, but also through emotions, identity, criticism and the self – requires a rethink of the relationships between technology and learning. Advocates of the asynchronous enthusiastically affirm the “positive ... impacts on student engagement, motivation, personal interaction, and affective aspects of the learning environment” (Toliver, 2011, p. 66). These cheerleaders shift teaching and learning into a form of “infotainment” (Toliver, 2011, p. 63) where grasping and maintaining the students’ attention reifies self-centred learning amongst the “fingers ... flying across the keyboards ... clicking noises ... [and] eyes fixed to the screen in front of them” (Maxwell, 2007, p. 1) and is the primary objective to imparting crucial curriculum information. Instead a far more rigorous and engaged connection to digitisation and education must be crafted. One that might moderate the connections between the self and the scholar. These connections should acknowledge the desires of students, but not be driven by them. Learning must be conducted with tools and methods that extend rather than meet student expectations. This is fundamental to creating a critically conscious generation of innovative thinkers and decision-makers.

The objectives of understanding, critical thinking and scholarship must frame the integration of online and digital learning contexts in more effective and functional ways. Malcolm McCullough has evocatively woven together the impacts of educational architectures and infrastructure on attention and interest, learning, and scholarship to offer critique of the use of computing within everyday life, and the impacts of inadequate design on learning and attention. He argues that it becomes important to understand online and digitised technologies within a “general paradigm shift from cyberspace to pervasive computing” (McCullough, 2007, p. 383). Online environments are no longer accessed by a separate entry point. Instead, ubiquitous computing creates conditions where “wireless and seamless identification and connectivity” (Hua, 2012, p. 40) surround a constant and ongoing interaction with screens within everyday life. McCullough argues that the architectures by which we interact with mobile, integrated and heavily invested digital items must be understood within and through modes of ‘ambient information technology’. The plethora of digital interfaces or ‘interactions’, as McCullough understands them, are mobilised with a principle of ‘periphery’ described as “a strategy for managing information overload” (McCullough, 2007, p. 383) whereby the volume of information in-take can be mediated and moderated by redirecting our attention at times of stress. Rheingold refers to critical information literacy (or crap detection) and infotention as strategies for learning to “handle new flows of knowledge, media and attention in a healthy, flexible, grounded manner” (Rheingold, 2012, p. 5). These skills are designed to assist the management of information overload without

resorting to compulsive, distracting and obsessive movement between screens, sites, and social media. But without such skills, more immediate tactics are put to use – mainly distraction and disengagement – facilitated by our tendency to cycle through economies of attention within online social networks, shifting and reshifting our focus in a “circular dimension ... [with] repetition of the same web browsing habit” (Petersen, 2007, p. 84). Technological devices, digital literacies and portal paradigms encircle the periphery of who we are and create spaces of multiple and multiplying information interfaces. In order to manage this information overload, we shift attention between nodes.

Trying to keep too much in the locus of attention tends to be stressful. We find it more natural to use our considerable powers of sensing the surroundings, and then to experience more capacity and resolution where our attention is focused. Thus, as Brown and Weiser observed, bringing something back from the periphery to the center of attention is a fundamentally engaging and calming process (McCullough, 2007, p. 386).

We now shift between interactions rather than interfaces, and regulating these interactions is crucial to understanding how we process information via technology in education. This strategy is akin to having the Facebook window open but reduced onto the taskbar while other reading or research is being done. The drive to open the window periodically to check in with the timeline satisfies a desire for moderating and mediating the stressful activities of learning which require focus and discipline. These activities suspend any sustained sense of processing and cohesive capacity to generate complex connections between ideas and concepts. This has consequences for how we teach both face-to-face and online and via digital artefacts. It is easier to read updates than it is to read high theory, which is why students often prefer the pithy interactions on Facebook than they do the rigorous responding that is sanctioned (but not more likely) to occur on Blackboard or Moodle. How teachers account for these distractions, think through digital interactions, mobilise interfaces and impart the radical textualities of knowledge is crucial to an effective integration of digital sites and literacies in evocative pedagogies. McCullough (2007) argues that these digital distractions codify place-based and space-based identities, moving users between space and place to redefine the self. He maps the distinction as contrast between the unfamiliar and the familiar where “space is the anxiety of global indifference; place is the comfort of local malleability ... space is an ordering of understanding; place is an ordering of experience.” (p. 5) The architecture of ‘pervasive computing’ is part of a “situated information practice” (McCullough, 2007, p. 394) where household and other activity is managed around and via screen interactions which produce a plethora of micro-places where we find the familiar, the comfortable and the secure. The internet is now used “in relation to all the different everyday duties” (Petersen, 2007, p. 84) where “the spontaneity and the use in between the different duties makes the internet a constant component of almost everything” (p. 84). Its intersection with education situates complex concepts next to the context of the mundane and the familiar – so when students experience the unfamiliar and the challenging in education, it creates tension between space and place. The desire to move into and out of the periphery becomes overwhelming. McCullough argues that the architecture of this ubiquity is currently inadequately designed to cope with the place-based connections and confluences between interfaces, and they must be redefined/redesigned to create truly playful and effective ambient computing environments. He argues that ‘interaction design’ should be emphasized over ‘interface design’ because it offers potential for a dynamic flow between structures and applications and reflexive understanding for how information is processed.

Interaction designers study how people learn, operate, and assimilate technology, especially information technology. They also study how technological mediation influences what people are doing. Increasingly, they do so in terms of work practices, social organizations, and physical configurations – in a word, context (McCullough, 2007, p. 385).

Understanding *how* students interact with digital technologies and activate a sense of place through which to process information into knowledge is crucial to motivating a transformative mobile and digital education that can interact with and support face-to-face learning rather than replace it. To affirm the significance or ‘power’ of the online and digitised environment for learning without reflexive examination of how this is situated in the context of everyday activities and architectures ignores the nuances between contexts, technologies, ubiquity and presence that is required for effective digitally mediated learning to take place. Belonging to the educational community formed via Facebook is not enough. McCullough (2007) argues that “with the rise of pervasive computing, more applications must enhance, and not undermine our perceptions of grounding place” (p. 388). Currently, many online and digital educational interfaces as they shift and morph between multiple objects and networks, disconnect students from scholarship and connect them to mediation. They do not allow learning to occur within the context of place and instead make the management of multiple selves, micro-places and spaces of digitisation more important.

Methods for moving between and within different learning environments needs to be mastered and mobilised via reflexive pedagogic potentials. Students need to know which digitised interaction to engage in to achieve specific results in their research and knowledge development. These knowledges are not always present within the cohort. Some studies have demonstrated that students may be immersed in these digitally dense environments but may not have the required skills set to translate these literacies into other contexts. Toliver (2011) warns;

While today’s college students are immersed and fluent in social media, consumer electronics and video games, they are not nearly as proficient when it comes to using digital tools in the classroom setting (p. 60).

These skills need to be taught. Critical understanding of the ways in which technology can be activated and integrated into a learning environment needs to be mobilised by both teachers and students. Searching online and using library databases, operating keywords and using Boolean logic are just some of the skills the cultivation of a personal learning experience, or joining a Facebook group, watching a YouTube video, or liking an update will not impart. Being able to integrate technological literacies into learning literacies remains consistently under-theorised and activated within contemporary, hyped language describing online learning environments.

The balance between linear and asynchronous forms of teaching and learning need better integration and understanding. The importance of student-centred learning is significant in recognising diverse learners and making course content accessible. But confusing information for knowledge is becoming increasingly commonplace as the role of knowledge – as confrontational, uncomfortable and critical – has been flattened within social sense-making. The prevalence of easy access to information via the blinking cursor in a Google search box has cultivated a culture of instant information. The place of struggle and discomfort in the processing, understanding and translating of that information into knowledge is masked by the attention to online interfaces,

asynchronous learning, student-directed instruction and digital rather than media literacies. Rather than lifting the expectations of students and asking them to be uncomfortable in the struggle over meaning, teachers, parents, and universities settle for seductive encouragement and incremental instruction in the name of building confidence and comfort in learners. Mobilising elite educational attitudes that are designed to block access to higher learning through obscuring knowledge and impenetrable language is not productive. But there does need to be a critique of the place and role of tailoring education to the niche of personality, comfort, and the ordinary. To lower expectations is just as damaging as making them unachievable. The focus on student-centred learning and paradigms such as personal learning environments, and the mythical powers of digital portals, emphasize mediocrity. These ideas are not located within a rationalised and reflexively theorised understanding of how to build knowledge, communicate expertise and encourage struggle over meaning.

The movement between ideas, contexts and consciousness is an important and special experience for a transformative education, but a technology – an iPad, tablet, laptop, or the internet – cannot achieve this transformation without considered and careful understanding of the deployment, activation, and translation of knowledge and the architectures of information communicated through ambient computing protocols. Swiping the screen will not replace the sensations of struggle, synthesis and seductions of big ideas and difficult knowledges. The ability to connect and understand the importance of these iPad and smart phone styles of mobility and the interactions between interfaces (small screen to big screen, digital to analogue) is key to mobilising a reflexive and engaged learning experience. Otherwise, students are fragmented and distracted – lost in a sea of ambient computing with little to guide their management of the technological terminus. These models of learning that are luxuriously labelled and digitally designed, mask the wider consequences to learning when education is delivered in virtual networks of technologically tethered experiences. Not only do assumptions about digital literacy pervade these spaces, but the careful and reflexive movement of learners from information through to knowledge and onto expertise by teachers is neglected. For self-directed, motivated learners, these approaches can be effective. Online interactions can provide an effective environment for exploring information. For other types of students, who may lack the discipline to coordinate their learning approaches and are flitting through the peripheries of their computing context, such flexibility can be crippling and overwhelming. As a result, they lack the ability to take an information-rich environment and translate it into functional and effective models of knowledge and expertise that can be applied to context-specific and placed-based circumstances. Without an anchored and contextualised way in which to understand how movement connects, disconnects, translates and transforms knowledges, experiences and ideologies, having an iPad, or moving through a portal, or commenting on Facebook offer limited educational experiences that frame learning through click-and-link cultures and update literacies. Online learning should be experiential, exciting and expert. It should bring with it the best of offline modes and supplement these with audio-visual and interactive engagements. With reflexive understanding of how digitised devices and portals are integrated into the everyday and the mundane, space can be created for the special and unique moments of education to transform students into critical thinkers, responsible citizens and innovative individuals.

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