Technographic research in online education: context, culture and ICT consumption

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Technologically-mediated learning environments are an increasingly common component of university experience. In this paper, the authors consider how the interrelated domains of policy contexts, new learning cultures and the consumption of information and communication technologies might be explored using the concept of technography. Understood here as a term referring to “the apprehension, reception, use, deployment, depiction and representation of technologies” (Woolgar, 2005, pp. 27–28), we consider how technographic studies in education might engage in productive dialogues with interdisciplinary research from the fields of cultural and cyber studies. We argue that what takes place in online learning and teaching environments is shaped by the logics and practices of technologies and their role in the production of new consumer cultures.

\textbf{Keywords:} consumption; higher education; ICT; online learning; teacher education; technography

\section*{Introduction}

The expansion of new technologies in higher education internationally has provided both opportunities and challenges for tertiary learning and teaching. This expansion has been particularly noticeable within the field of education, which, according to a 2002 report commissioned by the Australian Federal Department of Education, Science and Training (DEST), represented 17\% of the 207 fully online courses offered by Australian universities (Bell, Bush, Nicholson, O’Brien, & Tran, 2002). These figures place education second only to the field of management and commerce in the delivery of fully online courses, pointing to the increasing significance of new technologies in the delivery of educational programs. However, despite the potential of online education to expand the market presence of Australian universities – and the programs of education faculties – in the global knowledge economy, educators and critics have cautioned that insufficient attention has been paid to the problems, tensions and long-term implications of learning and teaching in virtual environments (Brabazon, 2002, 2007). The field of education has made a considerable contribution to these debates, highlighting the need for more empirically informed and theoretically nuanced research that will enable better understandings about how online environments can best be utilised for educational purposes.

Currently, the literature indicates that numerous outstanding issues converge in technologically-mediated learning environments within Australian higher education. The first of these relates to the policy context, as competition within the sector drives...
the development of online courses, which are often seen by managers and administrators as a cost-effective means of content delivery that offers access and flexibility to larger numbers of students. The push toward online learning continues to encounter numerous obstacles, however, pedagogy and curriculum struggle to keep pace with the needs and demands of new generations of techno-savvy students of the “technological society” (Barry, 2001). The second set of issues relates to the first, with questions being raised about the kinds of learner identities and learning cultures that are emerging within what has been described as the “virtual university” (Robins & Webster, 2002). Educational potential for both learners and teachers is inexorably shaped by the constraints and possibilities that accompany technologically-mediated modes of delivery. Realising this is particularly important with respect to understanding the kind of learner and/or teacher it is possible to be as well as the kind of learning and teaching cultures of which one might be a part.

Alongside the promise of online education to produce more engaging, equitable and collaborative learning spaces, has grown the increasing awareness that their uses by student-consumers may bear little resemblance to the those intended by educational institutions (Kitto & Saltmarsh, 2007; Saltmarsh, 2004). These issues highlight the need for greater understandings of the complex intersections between what takes place in technologically-mediated learning environments and the other physical, social and virtual spaces within which both students and educators participate. To that end, we raise a third area of concern relating to the ways that “computational technologies model styles of thought” (Turkle, 2004, p. 99). Understanding how logics of practice emerge in online environments invites engagement with both the social semiotics of online environments (Cranny-Francis, 2005) and “the relationship between metaphor, artefact and experience” that Daniel Downes (2005, p. 140) describes in terms of the “poetics of cyberspace”.

In this paper, therefore, we take up a consideration of these convergences, with a view to proposing new orientations to researching the place and function of online learning within the field of teacher education. We deploy the concept of technography, a term with multiple meanings across a range of disciplines, including media ecology (Harris, 1997), medical anthropology (Mueller-Rockstroh, 2006), economics (Henderson, 1995), philosophy (Hamacher, 1998) and social theory (Latour, 1988, 1991) and described by Steve Woolgar (2005) as a term that “signals a need to maintain a sceptical ethnographic attitude towards the technical object at the very heart of the study, that is, towards claims about and representations of technical capability and effect” (p. 28). Indeed, Woolgar’s earlier work with Bruno Latour involved conducting a technography of a science lab, which provided a crucial and influential account of how the activities of scientists are profoundly implicated in the social construction of scientific “facts” (Vandenberghe, 2006, p. 74). Woolgar’s explication of the term can be read in light of that earlier work and, in particular, to its contribution to actor network theory. Specifically, he refers to technography as referring more broadly to studies concerned with “the apprehension, reception, use, deployment, depiction and representation of technologies” (Woolgar, 2005, pp. 27–28). We find this description useful and make use of it here to encapsulate our collective approach to inquiries into the relationship between key technological, relational and contextual domains of online education. The purpose of technographic research is to draw on multiple lenses, as described, to interrogate both process and practice in online learning environments. The function of technographic
analysis is to critically examine ways in which technology actively mediates in its representations in online learning contexts.

In the following sections, we provide an overview of some of the key ways in which online education continues to change the face of tertiary education. We begin with a brief mapping of the global and local contexts within which online education continues to be incorporated into Australian degree programs. We do so as a means of highlighting the significance of economic and political imperatives not merely as drivers of pedagogic and curricular change, but also as important factors to consider as part of all research inquiries concerned with online learning. We then move on to consider calls from European scholars for greater research focus on the new learning cultures that continue to emerge as online education becomes more widespread and more deeply entrenched within pedagogic spaces of the university. We synthesise key domains of online learning cultures as identified in the literature and consider how the consumption of information technologies beyond academic settings intersects with and informs online education. Drawing on interdisciplinary research from education, cultural and cyber studies, we aim to explore some of the conceptual, pedagogic and methodological dilemmas that continue to vex the tasks of researching and teaching in online learning environments. In so doing, we consider the possibilities offered by dialogues between teacher education and interdisciplinary scholarship concerned with technology and society. We argue that addressing the complexities of online education requires multidimensional approaches attuned to the permeability of boundaries between online learning and the practices and poetics through which identities and the social world are made and re-made via broader online activity.

**Contexts: online learning in Australian higher education**

The case for interdisciplinary research approaches to online learning in the Australian university sector begins, as outlined briefly above, with the extent of growth in online modes of course delivery across a range of disciplinary fields. Despite this growth, however, according to the 2005 Commonwealth report, *Our Universities: Backing Australia's Future* (Department of Education Science and Training [DEST], 2005) online education has “yet to live up to its promise to transform the teaching and learning process” (p. 215). This is particularly the case for undergraduate studies, with the overwhelming majority of online courses delivered at postgraduate level. While the report notes that a high proportion of undergraduate units are web-supplemented, undergraduate courses comprise less than 10% of those offered entirely online by Australian universities. Concurring with the earlier *Universities Online* report (Bell et al., 2002), a number of factors are identified as potential barriers to the mainstream implementation of online undergraduate education as a major mode of delivery. These factors include: lack of institutional and/or national strategies and infrastructure; unevenness of technological literacy amongst academic staff; and changing student profiles and participation rates. Both reports note that while many Australian tertiary institutions and academics have taken an internationally-recognised lead in the up-take of new technologies, there has yet to be widespread, systematic development in the organisation and delivery of online teaching. Further, “there has been little evaluation of the full impact of online learning on students, academics, institutional structures, policies and practices or teaching and learning” (DEST, 2005, p. 218).
In light of projected estimates of global growth in university education, Australia can ill-afford to lag behind its competitors in the burgeoning online learning industry. An indication of the potential for expansion is encapsulated here, in figures provided to the *Online Learning in a Borderless Market* conference hosted by the federal Department of Education, Training and Youth Affairs (DETYA) in 2001:

For example, the number of students at universities globally is expected to double – from 42 million in 1990 to 97 million in 2010. By 2025 there will be 159 million university students globally. In the US at the current time there are 90,000 courses delivered by distance – not necessarily online, but with an online component. Seventy percent of US universities now offer online courses, with one-in-three teaching entire degrees online. This equates to 5.8 million students logging on. There is little doubt that learning is the biggest business of the 21st century. “Webucation” is set to become part of a US$740 billion global market. (Stewart, 2001, p. 35)

Figures from the Australian tertiary sector mirror this growth, with enrolment in Australian tertiary education having increased by 33% between 1995 and 2003 (Organisation for Economic Cooperation and Development [OECD], 2007, p. 3). Of particular interest here, Australian undergraduate taxpayer-supported places increased by 10% between 1996 and 2005, with overseas students representing approximately 25% of the 957,176 students enrolled in 2005 (OECD, 2007, p. x). These figures have particular salience for teacher education, given the prominence of education amongst those disciplinary fields with the highest representation of online courses. According to the *Universities Online* report (Bell et al., 2002), the disciplines most widely represented in online course delivery are: (1) education; (2) health; (3) management and commerce; and (4) society & culture. In addition to increased numbers of undergraduate students are increased numbers of offshore enrolments. For example, in 2005, DEST reported that nearly 64,000 overseas students enrolled in Australian universities were studying offshore, representing 27% of the total overseas students and more than double the number enrolled offshore in 2000 (OECD, 2007, pp. xiii–iv). Such figures give an indication of the significance of research into Australian online learning and of the importance of developing more sophisticated ways of analysing the barriers and facilitators to its widespread uptake as a mainstream mode of delivery. While we acknowledge that offshore study does not necessarily equate to online study, increasingly the delivery of distance education includes substantial online components.

Not only have Australian enrolments increased, but changing patterns of participation and student profiles amongst students have also been well-documented. For example, there has been a marked increase in student preferences for flexibility, such that in 2004–2005, 45% of domestic students had attendance patterns other than internal full-time (OECD, 2007). Additionally, increasing numbers of full-time students are also in paid employment, with a 9% increase recorded between 1994 and 1999 (Bell et al., 2002; McInnes et al., 2000). Some have suggested (Spender, 2001) that consumer demand places increasing pressure on universities to deliver the desired educational “products” to “global learning shoppers” with access to online learning opportunities that can be tailored to their own and their employers’ requirements. Indeed, critics of distance education offered via online learning have been quick to make the point that “the current mania for distance education is about the commodification of higher education” (Noble, 2002, p. 282).

Recent research has considered the problematic aspects of the reconfiguration of higher education in commodity terms (Bok, 2003; Kenway et al., 2006; Saltmarsh,
2004) with increasing reliance on technological delivery of content and assessment playing a role in a range of undesirable learning and teaching practices (Kitto & Saltmarsh, 2007). We are not, therefore, advocating what has been referred to as a “technological fix” (Ryan, 2001, p. 34) to problems of addressing market demand for online courses, nor are we suggesting an injudicious implementation of online delivery of courses at the expense of quality curriculum and pedagogy (Brabazon, 2002, 2007; Hase & Ellis, 2001). Rather, we would suggest that in order for Australian online learning to maintain a sustainable future in the global education marketplace, it will be important to address calls for research that attend to the full complement of factors that drive, shape, facilitate and constrain the quality and effectiveness of existing and emergent online programs. As noted in the OECD Thematic Review of Tertiary Education in 2007:

Sustainability of the higher education system is said to be achieved by institutions that are value adding, learner-centred, high quality, equitable, responsive, diverse, innovative, flexible, cost-effective, publicly accountable and socially responsible. (OECD, 2007, p. 8)

It is important to bear in mind that these general goals identified by government are neither politically nor ideologically neutral and to be reminded that existing dilemmas associated with online education have been broadly identified by research conducted since the 1990s. We are mindful that there is a complex interplay between what policy makers and administrators envisage, what curriculum developers, software designers and pedagogues deliver and what students make or do with the conceptual, technological, relational and subjective components of online learning environments. In particular, existing research highlights tensions and dilemmas across three primary domains: macro-level drivers of online delivery of university courses, meso-level contextual factors within which online university learning is situated and micro-level features of the online learning environments themselves. Here we have provided only a brief mapping of the macro-level drivers of Australian online education as a way of highlighting the extent to which learning and teaching is situated within – and never free of – broader concerns of political economies.

With respect to teacher education, it is important to bear in mind that the political and economic imperatives driving the expansion of online learning intersect at critical points with the politically situated (dare we say, charged) field of teacher education. For example, the use of information and communication technology has now been designated a “basic skill” for Australian primary and secondary school students, hence as a crucial component of teacher education programs as mandated by government and statutory accreditation bodies such as the New South Wales Institute of Teachers and the Victorian Institute of Teaching (Pearson, 2003). Thus, the intersection of technological literacies, professional learning and the potential for online learning environments to support and extend them collide with the policy context through which they are effectively mandated (Otteson, 2006). This intersection of policy with practice raises important questions about the kinds of tertiary experiences encountered by teacher education students. How, for example, are students’ engagements with ICTs shaped by their awareness of formal requirements of government and accrediting bodies? How is the provision of particular kinds of technologically-mediated learning experiences shaped by these same requirements and how are pedagogies and curricula shaped in response? Importantly, how might tactical practices of resistance to political imperatives and
pedagogic strategies reconfigure the problems and possibilities of online learning? While it is not our aim here to attempt answers to such questions, we raise them to show the permeability of boundaries between policy and practice and the incommensurability of understanding one without attending to the other.

Learning and teaching techno/cultures

The policy context described above has been accompanied by, and given rise to, numerous changes to teaching and learning practices (Land & Bayne, 2004). These changes have led to a proliferation of research concerned with the curricular and pedagogic implications of online learning, which particularly lend themselves to a technographic revisioning. In this section of the paper, we consider questions pertaining to what Timothy Luke (2002) refers to as “university technocultures”, in order to highlight the importance of research approaches that systematically draw together the political, cultural, pedagogical and technological elements of online learning. Recent European scholarship (Kuure, Saarenkunnas, & Taalas, 2000, 2002; Otteson, 2006; Saarenkunnas, 2004; Saarenkunnas, Kuure, & Taalas, 2003) for example, suggests an urgent need for empirical research into the new learning cultures that emerge in response to tertiary e-learning environments.

Here we understand the concept of new learning cultures as encompassing “how students and teachers use various tools in their everyday teaching and studying lives and how the meaning of computer-supported projects is constructed” (Saarenkunnas et al., 2003).

This definition represents a significant departure from notions of “community” in online learning contexts (Soderstrom, Hamilton, Dahlgren, & Hult, 2006), by placing emphasis on how the everyday uses and meanings associated with technologically-assisted learning become established as taken-for-granted assumptions, values and practices in learning institutions (Otteson, 2006). This is not to diminish or negate what has been described as “online communities of practice” within teacher education (Kirschner & Lai, 2007), but, rather, it is to suggest the notion of learning techno/cultures as referring to technologically-mediated practices and orientations that endure beyond the immediacy of groups, classes and peer networks that are formed for particular learning purposes. This has clear implications for developing curriculum, assessment and teaching approaches based upon the actual practices of students (McAlpine, 2004; Saunders & Klemming, 2003) and for cultivating institutional cultures that are best equipped to reflect upon, and respond to, the demands of continually changing tertiary learning environments (Davis, 2003).

In thinking through the implications of researching new learning techno/cultures in teacher education, we consider three themes that recur in the international literature and explore how they might be helpful when viewed through a technographic lens. These themes, each of which can be interpreted as fundamental to programs and practices within teacher education, include: learning and teaching practices; collaboration and the formation of social networks; and the entrepreneurial use of technologies. We see each of these three domains as interconnected, with online technologies playing an active part in shaping the practices and production of meanings that take place in each domain of inquiry. In this view, online educational technologies are not seen merely as tools to support learning, nor as merely
providing the social contexts that precede learning (Edwards, 2005). Rather, we see online learning technologies as operating, through the everyday practices of teachers and learners, as “a productive force that impacts on the concept and practice of the university as an institution” (Kitto & Saltmarsh, 2007, p.156). Thus, the technographic orientation to researching various aspects of online education that we are suggesting is fundamentally concerned with understanding the role of technology use in its broadest sense in the production of institutional cultures.

The literature concerning technologically-mediated learning and teaching practices makes a compelling case for considering subject areas as productive of distinctive cultures. Peter John and Linda Baggott la Velle (2004), for example, argue that through what they term “subject subcultures” – in other words, organisational practices, individual biographies and collective experience – are reinforced by generations of institutional practice “typified by a continuous distribution of knowledge over time”. The academic and professional values held by pre-service teaching students have been shown to be crucial to the effectiveness of ICT use in learning contexts. Factors such as attitudes to change, valued expertise, reflective practice and commitments to professional learning, play an important role in many facets of both ICT use and subject specific learning cultures (Mumtaz, 2000; Watson, 2001). Otteson (2006) has suggested that cultural continuities are associated with professional networks and workplace practices. We concur with these views, to which we would add that the cultural practices associated with substantive fields are subject to significant variation and transformation through the introduction of, and challenges presented by, new technologies. Here again, we suggest that understanding the policy-culture-technology nexus as it both precedes and exceeds the tertiary learning environment requires research approaches that can account (at least partially) for the co-implication of context, practice, tools and text in the production of social meanings and identities.

Yet, as Paul Kirschner and Kwok-Wing Lai (2007) have observed, there remains a curious disjuncture between research on ICT, teacher education and teacher learning. They argue that “On one side of this abyss is mainstream teacher education research, which apparently does not really pay attention to ICT. On the other side are researchers studying ICT, who apparently pay little attention to research conducted on teacher education” (p. 127). While there are notable exceptions to such claims, they nonetheless raise important issues for teacher education, where, despite widespread acknowledgement that ICT use is increasing as well as increasingly important, concerns have been raised about its relative absence from major teacher education reviews (Kirschner & Lai, 2007). Writing with respect to Australian teacher education, John Pearson (2003) observes that much of the ICT-related learning that has taken place in Australian teacher education and professional development has involved learning about ICT – in other words, the “how to” of technology use associated with content delivery and curriculum planning. However, he argues that an increasing emphasis on learning with ICTs is necessary for bringing about the anticipated pedagogic changes promised by new technologies (Pearson, 2003). Importantly, Pearson makes the link between those learning and teaching strategies developed within the contexts of teacher education programs to what takes place in schools and classrooms once teachers enter the profession. This is supported by recent UK research that highlights the important connections between student teachers’ levels of competence and interest in ICTs and those of their teacher mentors (Cuckle & Clarke, 2003).
The links between teacher education programs and workplace practices and teachers’ ICT-related expertise and interests, raise the issue of collaboration and the formation of social networks as a second, albeit closely related, domain of techno/learning cultures that has attracted attention from education scholars internationally. Allen Thurston (2005), for instance, makes an explicit link between learning the skills of collaboration and communication with pedagogic practice and disciplinary knowledge, suggesting that “learners co-construct new understanding by building on existing knowledge through peer interaction. This allows students to form common interpretations of meaning through social interaction” (p. 357). While there have been numerous studies of student collaborations and peer networks in tertiary online educational environments, what we want to raise here is that such interactions exist within a much broader domain of technologically-mediated social relations. Douglas Kellner, for example, observes that:

As technologies like computers, telephones, televisions and new multimedia devices converge, computer-mediated culture will increasingly provide an encompassing environment in which people work, play, relate, learn and interact. Becoming computer-literate in this broad sense thus requires expanding notions of literacy and learning how to communicate, interact and create in novel cybercultures. (Kellner, 2004, p. 20)

Understanding the techno/learning cultures that emerge in online learning environments, then, increasingly requires research engagement that extends well beyond the immediate interactions between students, or between students and lecturers. Such an approach would encompass not just policy and educational contexts, but the techno/cultural contexts and logics of practice that shape everyday understandings, communications and identities. As Downes (2005) observes, “How we characterise the social groupings we seek through computer-mediated communication reflects our assumptions about technology and the degree to which we have incorporated them into our repertoire of basic metaphors” (p. 100).

With respect to the entrepreneurial use of technologies, there is another curious disjuncture in the literature. On the one hand, there is increasing evidence that students and educators are making greater use of ICTs in their teaching and learning practices. It perhaps goes without saying that many university students “have increasingly good IT skills, which they use extensively in academic work” (Szabo & Underwood, 2004). The extent and sophistication with which both students and educators make use of new technologies is an important means by which educational cultures are transformed. Writing from the Norwegian context, for example, Eli Otteson (2006) notes that practices such as internet use “[challenge] conventions of practice” (p. 283), altering the power dynamics between learners and educators, with implications for identities and social relations. Diamond and Adam (2004) take up a similar concern, noting that: “As technology continues to transform our conceptions of knowledge and information, notions about learning and ‘expertise’ shift as well.” However, despite the increasingly innovative and entrepreneurial ICT use that has been documented in the tertiary sector, Diamond and Adam (2004) also reiterate a view held by many that “higher education has not changed along with its students and environment.” They are supported by Neil Selwyn’s (1999, 2007) observation that the education sector has traditionally been wary of technological innovation, an observation echoed by others (Swain, 2006). This disjuncture in the literature marks
an apparent gap – with innovation and entrepreneurial ICT use on one hand, and resistance and reluctance on the other – that merits consideration in relation to teacher education. In particular, it raises important questions about the kinds of research questions that might be asked concerning the practices of those students and educators who employ technologies in innovative ways and those cultural and institutional factors that act as potential barriers to socio-technological change within the sector (Cuckle & Clarke, 2003; Davis, 2003; Diochon & Cameron, 2001; Gale & Kitto, 2003).

We note with interest, in relation to our own experiences in teacher education classrooms, how such a disjuncture can play out in teaching and learning contexts. We regularly see our students bringing technological skills and practices from everyday life to learning activities such as locating information online and developing class presentations. For example, many of our students are adept at incorporating multi-media texts from popular sites such as MySpace and YouTube into “slick” Power Point presentations and at locating and sharing information online. Yet we also regularly observe a reluctance (and at times resistance) amongst students to take the kinds of intellectual, technological and social risks that ideally accompany learning with technology. For example, we find it perplexing that some of the very students who demonstrate high levels of skill in locating online information using general search engines, openly resist using databases to locate scholarly books or journal articles. A particular problem for teacher education, it would seem, is the need for teaching approaches that might best facilitate the incorporation of pre-service teachers’ informal technology use into those practices that are both useful and valued in academic contexts. For example, locating scholarly research from credible sources; synthesising and presenting scholarly information in ways that are accurate, engaging and meaningful; and collaborating in ways that support and enhance their scholarly learning. While there is little doubt that such intersections occur, our respective research in the areas of digital literacies (Sutherland-Smith, 2002a, 2002b), plagiarism (Saltmarsh, 2004; Sutherland-Smith, 2005, 2008) and assessment (Kitto & Saltmarsh, 2007) shows that consumerist orientations and neoliberal rationalities at play in the lives of our students can lead to mobilisation of technology and of the educational environments themselves in ways that undermine the learning process (Kitto & Saltmarsh, 2007).

Within each of these domains we see a range of complexities in circulation that pose vexing methodological questions. For example, alongside the policy contexts and global consumer demand driving online learning, how will learning techno/cultures within the field of teacher education evolve and how might they be effectively critiqued? Further, how might the role of technologically-mediated learning be interrogated in dialogue with analyses of the computational and representational technologies themselves, as well as the uses to which they are put by student consumers of ICTs? In the final section of the paper, we draw on examples from our own experience within online teaching environments as a starting point for thinking through how a technographic orientation might be employed in analysing the various layers of technologically-mediated learning environments. In so doing, we argue that what takes place in online learning and teaching environments is inexorably shaped by the logics and practices of computational technologies and their place in the production of contemporary consumer cultures.
ICT consumption and online learning

As discussed in the previous sections of this paper, the technographic approach to researching technologically-mediated learning environments brings together a range of policy, pedagogic and cultural concerns as intersecting domains of inquiry. Returning to Woolgar, we are reminded that:

Interpretation, reading and making sense of technology are a constant feature of social life. Technologies are not a given. Instead they are discursive moves in a never-ending cacophony of efforts at social ordering. (Woolgar, 2005, p. 29)

In this final section, we provide examples from our own online learning environments, discussed in relation to login pages from popular websites, in order to show how some of the rationalities and logics of the on-screen environment intersect with some of the broader contextual and cultural issues we have raised. While space does not permit a full exegesis, the following examples provide a starting point for considering how technographic approaches might contribute to fuller understandings of tertiary online learning environments currently available to students in teacher education programs.

When students enrolled in subjects taught by one of the authors (SS) logged into their subject websites at the beginning of semester this year, they found a page very similar to the one in Figure 1 on their screens:

Drawing on the work of Anne Cranny-Francis (2005) and Espen Aarseth (1997) we want to consider briefly how the visual elements of this particular cybertext (and the one to which it will be compared) construct meanings and subject positionings for its users. Aarseth (1997) uses the term “cybertext” to refer to the wide range “of possible textualities seen as a typology of machines, as various kinds of literary communication systems where the functional differences among the mechanical parts play a defining role in determining the aesthetic process” (p. 22). In this sense, the cybertext of the login page is understood as an active, rather than a neutral or
objective, part of the exchange between students, teachers, designers and subject content.

In particular, we are interested in the ways in which online environments such as this one visually situate learners in relation to the two broad domains discussed in the previous sections – i.e. the global knowledge economy and university techno/cultures.

Visual elements such as the vertical arrangement of words in interactive columns on the left and the horizontal arrangement of interactive tabs across the top (but below the banner) do more than merely organise words and icons on the screen. As Anne Cranny-Francis (2005) points out, the visuality of written texts on-screen plays an important part in constructing shared cultural values and meanings that accrue to the text’s substantive content. In the example of the online login page, the visual elements follow the logic of written representations in English – alphabetically ordered and read from left to right, in the case of the tabs, or from top to bottom in the case of the side menu. Beginning with the banner that occupies the top portion of the page, the university logo occupies a significant position in the top left hand corner. For Western readers, this is a position of visual primacy, signifying the “beginning” of written texts. Locating the logo in this position thus overlays the logic of literacy with that of corporate branding – the literate reader thus tacitly begins their negotiation of this particular text with a logo that is widely used to position the university within the global knowledge economy.

Additionally, from their respective computer screens, the students may scroll down an interactive list of pages available via the Interact site. Among these are links to an electronic assignment submission and tracking system and to student access to subject evaluation. Far from ideologically neutral, the electronic tracking of student work and anonymous student evaluation of tertiary courses have become installed within the Australian tertiary sector. Such systems are used as primary “technologies” (in the Foucaultian sense) for addressing, at least rhetorically, the demands for efficiency, transparency and accountability that have emerged as central organising principles in universities under neoliberal regimes of governance. Our analysis should not be read as implying any impropriety on the part of universities in their use of such systems – instead what we are endeavouring to show is that the emergence of technologies in the context of broader political economies and their convergence at the site of the online learning environment constructs technologically-mediated learning in direct dialogue with the logics of Western capitalism.

With regard to learning and teaching techno/cultures, we return the banner at the top of the site as a starting point for thinking about how relations between the learning institution, students and text are constructed. At the top centre of the screen is the word Interact, placed to the left of two faint red arrows, and under which is the tag-line “A scholarly community”, which functions to: identify the software platform; issue an implied directive to consumers of the text (to “interact”); and imply a dialogic engagement between users of the cybertext as part of a particular community. In this sense, the textuality of the cybertext enters into dialogue with its social and institutional context, as mediated by the functionality of, and access to, computational technology. Returning once more to the interactive menu down the left hand side of the page, we note that a number of the features available are designed to facilitate communication: chat rooms, discussion forums and Wikis, for
example, are designated communication tools. It is important to note that, as is the
case in other universities, all online subjects at the university are accessed via this
software platform. While individual lecturers may select or omit some of the tools,
there is general consistency in the appearance, layout and functionality of the
technologically-mediated learning environment. Thus, lecturers and students are
similarly constituted by the cybertext of the login page, calling to mind Downes’
observation that “Social construction is at a significant level about creating and
maintaining a sense of common reality – a social narrative of text, image, audio and
video collected in a vast interactive transcript.” (Downes, 2005, p. 123)

Constructions of social engagement via these educational texts have a number of
implications for technographic orientations to researching online education. In
particular, they highlight the importance of technologically mediated interactions to
the ways in which consumers of ICT engage with substantive, relational and
 technological components of online learning. This can produce a range of effects in
the lived experience of students, whose online social activities and networks are
unlikely to be limited to those encountered in formally established online learning
environments. For example, in a US study conducted by Charles Crooks (2002), the
online activities of students studying in networked environments were found to be
“highly interactive and mobile”, with online conversational exchanges providing
considerable distraction to their formal learning activities. While Crooks acknowl-
edges the potential for such exchanges to enhance study practices, he also comments:

However, our records indicate that such agility was only occasionally exercised in the
interests of formal study. Instead, the strong impression was one of an interactive
technology that somewhat undermined sustained periods of engagement with a single

Such observations accord with our own and we would suggest that technographic
research approaches to understanding the processes and practices of online learning
must necessarily attend to the semiotics and poetics of multiple online texts and
communicative spaces as a starting point for understanding technology as both
“material condition for experience” and as contributor “to the world we make”
(Downes, 2005, p. 16). Technological environments, in other words, and the
interplay between them have an important role in the co-construction of self and
the social world, through both their representational and functional logics and the
uses to which they are put.

To use but one example, we offer a brief consideration of the current homepage
of myspace.com, where many of our students maintain personal pages documenting
their personal lives and interests and communicate with friends and fellow students
about planned social activities (see Figure 2).

Even a brief glance at the text invokes comparisons between the colourful and
highly interactive online text of the myspace.com homepage and the predominantly
white and grey tones and visually static menus and tabs of the online learning
environment. Whereas students in the formal learning site are presented with vertical
and horizontal menus for navigating the site and its contents, myspace.com invites
interaction through roll-over hyperlinks, videos, advertisements for cultural events,
celebrity news, job opportunities and numerous references to “friends”. On the other
hand, the location of the myspace logo in the top left hand corner of the banner once
again highlights the primacy of corporate identity within the logics of written English
language literacy. On this site, however, consumers of the myspace site are addressed
as both global consumers and producers of media texts – links to globally recognisable music, comedy and celebrity features sit seamlessly alongside links to email and amateur videos. Of particular interest, just as the login page of the online learning site situates students within a metaphorical “community” mobilised around the consumption and production of scholarship, the tag-line “a place for friends” situates visitors to the site within an implied, spatialised network of interpersonal relations predicated on “friendship” that is mobilised around the consumption of popular culture.

While it might be reasonably argued that these online spaces have very different social functions – one being an engagement with formal learning processes and the other being an engagement with popular culture – we contend that the logics of
visual representation and technologically-mediated communication across such sites
enables a better understanding of what takes place in each. Crooks and Light (2003)
take up similar issues in their discussion of the relationship between students’
informal cultural practices associated with online activities and the formalised
activities that comprise “study”, which they situate as a cultural practice. In
particular, they argue that successful educational experiences require that the
practices of each must become visible in the repertoire of the other:

The enculturation of knowledge is then a subtle management of the interface between
the demands of the formal and the fluency of the informal. Successful education
involves making students comfortable with the activities demanded by formal study:
encouraging them to allow their repertoire of informal practices – listening, talking,
investigating and so on – to be formalised in ways that then support their learning.
(Crooks & Light, 2003, p. 174)

To disengage investigations of formal learning from the contexts of informal
practices online is to risk overlooking the very skills, tools and systems of
signification that might otherwise be drawn upon as crucial resources in, and
explanatory frameworks for, the production of new learning cultures within the
broader context of the global expansion of online education.

Conclusion

For teacher education, the intersections between the broad domains of global and
institutional policy contexts, the ethnographic and relational domains of new learning
 techno/cultures and the representational domains of both educational and other online
environments have yet to be fully examined. Yet, importantly, examining such
intersections may provide valuable insights into the kinds of generational and
institutional knowledges and practices that shape the ICT-related attitudes and
experiences of pre-service teachers, teacher educators and teacher mentors. While
technographic research orientations to such undertakings, in methodological terms,
might take a variety of forms, our aim in this paper has been to take some initial steps in
showing its usefulness for analysing the complex intersection of technologically-
mediated learning environments as they intersect with policy directions and cultural
practices. Using technography as an interdisciplinary means of exploring these
interrelated domains, we have provided some discussion of how technologies of online
education might be understood in terms of their contribution to institutional “social
orderings” (Woolgar, 2005, p. 27) that operate in dynamic dialogue with policy and
social contexts and, indeed, their uses by students/consumers. Gaining insights from
cyber and cultural studies, we argue that what takes place in the online learning and
teaching environments within teacher education is inexorably shaped by the logics and
practices of computational technologies and their place in the production of
contemporary consumer cultures. It is crucial that academics interrogate the
political-cultural-technological nexus in teacher education courses as universities move
quickly to expand online education courses.

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**References**


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