

**The Predicament of the Learner in the New Media Age:
an investigation into the implications of media change
for learning**

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*This thesis is dedicated to the memory of David Francis, my father, who taught me
how to play, learn and create*

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Abstract

This thesis explores the predicament of the learner in an age during which an emergent participatory culture supported by networked computers is converging or colliding with a top-down culture industry model of education associated with centralised control and traditional learning media. Two case studies explore attempts to use advanced E-learning tools, the Learning Activity Management System (LAMS) and Revolution (a multiplayer role-playing game) to mediate learning activities in the digital classroom. Both reveal the shifting locus of agency for managing and regulating learning and identify a need to understand how learners are creatively appropriating a range of digital media to advance self-directed learning agendas. The main study, *The Agency of the Learner in the Networked University*, develops these insights through a cognitive anthropology, informed by post-Vygotskian theory, focussed on the digitally mediated practices of sixteen post-graduate students who enjoyed unrestricted access to the Internet from their study rooms. The findings chapters explore i) learners designing personalised learning environments to support advanced knowledge work; ii) learners creatively appropriating web-based digital tools and resources for course related study and self education; iii) learners cultivating, nurturing and mobilising globally distributed funds of living knowledge; iv) learners breaking away from lifeworld communities and learning with others in online affinity spaces; and v) learners seeking out opportunities to bootstrap themselves towards the actualisation of a projective identity through serious play in virtually figured worlds. In each case, an attempt is made to innovate conceptual tools that can help us to identify and conceptualise the new media literacies (conceived of as expert-like digitally mediated practices) required to exploit the full potential of new media as a resource for course related study, independent learning and self-education.

Table of Contents

Table of Figures.....	x
Introduction	1
Chapter 1 Understanding the Predicament of the Learner: a review of relevant traditions in the literature.....	11
1.1 Understanding media change: from the Culture Industry to Participatory Culture.....	12
1.2 The merits of ethnographic studies of informal learning in Participatory Cultures	20
1.3 The methodological shortcomings of the ‘Digital Generations’ literature.....	24
1.4 The limitations of survey research for understanding the predicament of the learner ...	28
1.5 Mixed method studies of computer use in the home	34
1.6 New Media, New Literacies.....	40
Chapter 2 Convergence Culture goes to School: personalisation, identity and the agency of the learner in the digital classroom.....	49
2.1 The cultural barriers to making school more like home.....	49
2.2 The agency of the learner in the Revolution classroom	55
2.3 The agency of the learner in the LAMS classroom.....	65
2.4 Identity and the agency in the digital classroom	73
2.5 Committed learning and new media literacy.....	77
Chapter 3 The Agency of the Learner in the Networked University: a socio-cultural approach.....	82
3.1 Why focus on the practices of college students?.....	82
3.2 Limitations of existing studies on the implications of media change of learning in the networked university	84
3.3 Introducing sociocultural and activity theory.....	90

3.4 Practice-based account of new media literacy within specific socio-cultural contexts	105
3.5 Summary: building on the work of socio-cultural theorists and studies of new media literacy.....	108
Chapter 4 Cognitive Anthropology on the Cyberian Frontier: research design and data collection methods.....	112
4.1 Research site and institutional context.....	112
4.2 Genesis of study.....	113
4.3 Demographics of informants recruited for the study.....	114
4.4 Research questions guiding data collection and analysis.....	121
4.5 Research design.....	122
4.6 Value and long term objectives of the study.....	124
4.7 Data collection strategy and methods.....	126
4.8 Strengths and weaknesses of the data collection strategies.....	135
4.9 Interpretation and analysis.....	137
4.10 Limitations of the methodology employed.....	141
4.11 Ethical Considerations.....	143
Chapter 5 The Learner as Designer.....	145
5.1 The scope of design work in the new media age.....	164
5.2 Tensions and contradictions confronting the learner as designer.....	165
5.3 Mindful design, emotive designs and designs for social futures.....	173
Chapter 6 Creative Appropriation of New Mediational Means.....	177
6.1 The concept of creative appropriation expanded.....	179
6.2 Creative appropriation for course related study.....	181
6.3 Creative appropriation, self education and career advancement.....	194

6.4 Tensions and contradictions associated with the creative appropriation of digital tools and web-based resources.....	204
6.5 Creative appropriation as an aspect of media literacy.....	206
6.6 Creative appropriations driving cultural change from the bottom up	208
6.7 Creative appropriation, identity and authentic need.....	210
Chapter 7 Learning with others through new media: cultivating, nurturing and activating globally distributed funds of living knowledge.....	212
7.1 Conceptual building blocks for understanding informal modes of collaborative learning in the networked university.....	214
7.2 The emergence of distributed funds of living knowledge from object orientated collaborative learning activity.....	219
7.3 Cultivating and nurturing globally distributed funds of living knowledge with social software tools and away messages.....	224
7.4 Mobilising the distributed expertise accessible through well nurtured globally distributed funds of living knowledge.....	230
7.5 Globally distributed funds of living knowledge and new media literacy.....	236
7.6 Learning with others: emergent tensions and contradictions	240
Chapter 8 Group Life: learning with others through participation in online affinity spaces.....	243
8.1 The concept of an online affinity space expanded and critiqued	246
8.2 Advanced learners' participation in online affinity groups: four localised insider perspectives.....	248
8.3 The growth of affinity group culture.....	263
8.4 The ends of participation.....	264
8.5 Deconstructing the ends of participation.....	265
8.6 Modes of engagement in online affinity groups.....	267

8.7 Learning with others through participation in online affinity groups: some emergent tensions and contradictions	272
8.8 Effective participation in online affinity groups	276
Chapter 9 Identity and Agency in Virtually Figured Worlds	282
9.1 Bruner on self-making and world-making	284
9.2 Virtual worlds as psycho-social moratoriums for identity play	287
9.3 Experiencing alternative projective identities through virtual role-play in immersive game worlds	289
9.4 Bootstrapping one's personal development towards the actualisation of a projective identity	293
9.5 Conceptual tools for understanding self-making in new mediascapes.....	306
9.6 Self-making as bootstrapping oneself towards the actualisation of a projective identity through serious play in virtually figured worlds	314
9.7 Committed learning in new mediascapes.....	317
Chapter 10 The Predicament of the Learner in the New Media Age	320
10.1 Summary of thesis.....	320
10.2 The problem of generalisation	326
10.3 Conceptualising the predicament of the learner with Engeström's extended mediational triangle.....	327
10.4 Are we witnessing the decentring of the traditional university?	335
10.5 New media literacy as mindful design and mindful practice	339
10.6 Directions for a developmental research agenda.....	341
10.7 The need for further category development and refinement	343
Bibliography	347

Appendix 1: Timeline of research and dissemination activities	374
Appendix 2: Methodology for LAMS study	379
Appendix 3: Methodology for Revolution study	393
Appendix 4: Pre-interview questionnaire	408
Appendix 5: Interview prompt sheet	423
Appendix 6: Sample interview transcript	427
Appendix 7: Sample stimulated responses	430
Appendix 8: Sample e-mails received from participants.....	435
Appendix 9: Sample memos.....	437
Appendix 10: Matrices used during data analysis	439
Appendix 11: Summary of data collection for The Agency of the Learner in the Networked University	447

Table of Figures

Figure 1.1 Wikipedia soars as <i>Encarta</i> dwindles	19
Figure 1.2 Percentage usage of Web 2.0 services across age bands. From Spire Project report (White, 2007).....	31
Figure 1.3 Proportionate use of services for fun / socialising, study and work. From Spire Project report (White, 2007).....	33
Figure 2.1 Screen shot from Revolution game: the townsfolk gather outside the court house to hear Robert Carter Nicholas speak out against open rebellion.....	56
Figure 2.2 Hannah in the living room of Steadmond Farm.....	57
Figure 2.3 Hannah overlooking the other slave characters working in the cotton fields	58
Figure 2.4 Diary entry produced by thirteen year old playing William the Carpenter.....	61
Figure 2.5 Screen shot of 14 year old home schooled student using Windows Movie Maker to construct a multi-media machinema diary.....	62
Figure 2.6 LAMS sequenced focussed on media effects debate used as a hook to encourage Y9 pupils to take Media Studies G.C.S.E.....	66
Figure 2.7 Sample responses from LAMS lesson on effects of the media.....	70
Figure 2.8 Sample of students' responses to a persuasive writing exercise	70
Figure 2.9 Mr. Francis appears in the local paper	77
Figure 2.10 Screen shot from machinema video diary.....	79
Figure 4.1 Bar chart visualizing time spent at computer each day	116
Figure 4.2 Ownership of technology	117
Figure 4.3 Computer use for different types of activity	118
Figure 4.4 Time spent using computers in different locations (estimated)	119
Figure 5.1 Advert for Wooton Patent desk.....	145
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Figure 5.2 Screen shot of Timothy's primary desktop environment	151
Figure 5.3 Screen shot of MRI CRO brain image analyzer	154
Figure 5.4 Screen shot of SPL Anatomy Analyzer	155
Figure 5.5 Screen shot of Jim's legal essay	159
Figure 5.6 Screen shot of Jim's notes folder	160
Figure 5.7 Screen shot of Jim's essay plan (from MS Word outline view).....	162
Figure 6.1 Screen shot of Google search for ANOVA test	183
Figure 6.2 Screen shot of ANOVA visually site	184
Figure 6.3 Screen shot of ZeroGBoy's G-mail account for backup	190
Figure 6.4 Screen shot from C-SPAN.org	195
Figure 6.5 Screen Shot of Wikipedia article on Lord Chief Justice	197
Figure 6.6 Screen shot of Creative Chemistry.....	201
Figure 6.7 Screen shot of ChemFinder.com	202
Figure 6.8 Screen shot of Web Elements interactive periodic table.....	203
Figure 6.9 Olympic athlete exploiting the elastic properties of fibre glass to vault	209
Figure 7.1 Screen shot of Miss Lullaby's 'buddy list'	226
Figure 8.1 Screen shot from Age of Mythology Heaven (fan site)	244
Figure 8.2 Screen shot from Yahoo Group's front page	245
Figure 9.1 Screen shot of Democrats Abroad front page	297
Figure 10.1 Activity theoretical conceptualisation of the predicament of the learner in the networked university	329

Introduction

I'm fairly certain that all teachers are familiar with the challenge. It presents itself like this. The student who moans at us because the computers in school are inferior to his uncle's, they are so slow and haven't got interesting software; the student who seems completely un-motivated and uninterested but who you discover programmes lingo (for *Director*) in her spare time; the student who always presents beautifully word processed and laid out work, but who can't organise a paragraph in class; the beautifully presented but shallow piece of work; the boys who are obsessed with computer games; the girls who live out an online chat room experience under their breaths during a *Midsummer Night's Dream*; the child who doesn't know how to use a web-site; the child who has never used a spell check before; the group of kids presenting an online radio station at the weekends who are going to fail their end of year exams; ... (Sefton-Green, 2004, p.162)

This somewhat lyrical passage, from an essay entitled, 'The 'End of School' or just 'Out of School?' by Sefton-Green, hints at some of the emergent tensions and contradictions manifest in the everyday life of school students. It suggests that school may no longer be the primary site of learning for many young people. It draws attention to the growing gap between the technology-rich home and the technology impoverished school and the disaffection of some young people with formal schooling. Further, it makes several references to deeply committed forms of playful creative production (the group who present an online radio station and the girl who produces interactive multimedia productions in *Director*) made possible by young peoples' expanding access to new media in the home. Finally, it suggests that a young person's capacity to make effective use of a range of new media tools and resources has become a crucial component of what it means to be literate in an increasingly technology-rich world.

The passage is cited because it captures, in a concise form, something essential about the predicament of the learner situated at the fault lines of media convergence. Indeed, this investigation attempts to understand the practices of learners who have grown up through a period of perpetual and rapid media change and who now have access to a new generation of digital tools and communication technologies that allow them to create, discover, explore, visualise and communicate with others with very similar interests from around the world.

The working hypothesis explored throughout this thesis concerns *the shifting locus of agency for managing and regulating learning* that emerges as learners (in schools, homes and universities) start to appropriate digital media and gain access to networked computers. Increasingly, I shall argue, individual learners are compelled to make choices and take more of the onus of responsibility for managing and regulating learning previously designed into the structuring structures of traditional learning environments and paper-based learning media. This corresponds to a more general shift in the locus of control associated with the transition from what Adorno (1972 [1947]) once described as the ‘Culture Industry’ to what Jenkins (2006a, 2006b) calls ‘Participatory Culture’¹. However, unlike those who celebrate the emergence of a democratic and egalitarian ‘le@rning society’ - as discussed by Selwyn *et al* (2006) – this thesis emphasises the challenges and choices confronting alienated individuals who find themselves situated at the fault lines of media convergence struggling to use new tools, innovate new practices and acquire the new media literacies they require in order to participate and contribute to an increasingly networked society (Castells, 2000). This is the central hypothesis and organising principle of this thesis.

¹ The term ‘participatory culture’ suggests a world in which learners become the active producers of the media they consume.

An investigation that attempts to shed further light on this complex cultural issue requires a question and focus. I start with the question: what are the implications of media change for learning and literacy? I focus on contexts that might allow us to glimpse the future of education. Indeed, rather than remaining focussed on what young people do with computers in contrived educational contexts, this investigation attempts to understand how young people and students, the young professionals of tomorrow, living through this period of transition are actively *appropriating* new media tools and resources both within and beyond formal educational contexts. In the new media age one must look to the margins to glimpse the future.

The inspiration and general approach adopted owes more to small scale ethnographic studies of digital subcultures (Tobin, 1998; Jenkins 2006c) than large scale government sponsored investigations concerned with the *impact* of ICT on student attainment (Harrison *et al.*, 2002). Rather than attempt to understand the *impact* of particular 'E-learning' tools on student attainment, drawing on socio-cultural and activity theory, this study aims to understand how and why learners are actively appropriating digital tools and resources to advance their purposes as learners. Further, an attempt is made to recognise the tensions and contradictions that characterise this process of media change - tensions that make new demands on learners and allow us to better understand the core competences or new media literacies (see section 1.6) required to live and learn in a rapidly changing mediascape².

My interest in that which I attempt to understand grows out of a very personal experience of growing up and living through this period of rapid media change. Indeed, for me, this has been a personal journey. My earliest recollections of school involved inkwells, blotting paper, wooden rulers and reciting times tables that the teacher had scrawled across a black

² The term mediascape derives from the work of Appadurai (1990).

board with a piece of chalk. Today I am attempting to write these words on a 1.8 GHz laptop computer loaded with hundreds of digital tools that help me write, plan, search for information, organise my daily routine, remember, reflect, visualise, analyse, proof, format bibliographies and present my ideas. I've become a post-human cyborg learner utterly dependent on this complex arrangement of cognitive tools (MS Word, Endnote, Atlas ti, PowerPoint to name but a few) and a carefully designed set of shortcuts and quick links to websites. All these tools are helping me produce a document that, as tradition would have it, must ultimately assume the form of a hard bound written thesis. If only I could submit it as an electronic hypermedia document incorporating digital video, audio recordings and dynamic diagrammatic models I feel could express my ideas far more succinctly. Moreover, this task might prove a little easier if this complex man-machine system would stabilise. But this complex system - that I've grown to regard as my extended mind - is evolving and changing by the year. I have not lived through a period of media in transition, I am living it still. I believe these changes have not only had implications for where, when, how, with whom and why I learn, I believe they have more subtle but profoundly important implications for my sense of self, community and identity.

Nevertheless, far too much writing in the public domain about the implications of media change for learning and literacy remains speculative or is based on an anecdotal or flimsy evidence base. Here, whilst personal experience clearly played a role in the hypothesis generation process, this investigation sets out to explore tentative hypotheses, hunches and conjectures through rigorous empirical investigation. Moreover, rather than remain at a descriptive level, the overall aim is to build a set of conceptual tools, schemas, and typologies that might transcend the particularities of each case and assist other researchers attempting to understand the implications of media change for learning.

Chapter Overviews

Chapter 1: Understanding the Predicament of the Learner: a review of relevant traditions in the literature

The literature review surveys six bodies of research that provide a perspective on the predicament of the learner. The first provides a model for thinking about media convergence in terms of a dialectical collision between an emergent web-based participatory culture (Jenkins, 2006a) and a top-down Culture Industry (Adorno, 1972 [1947]) drawing on media theory and cultural studies traditions. Small scale ethnographic studies of tech-savvy teens illustrate how some young people aggressively appropriate new media for creative production and serious play. The ‘digital generations’ literature is critiqued and exposed as highly speculative. Survey studies highlight interesting trends but provide limited insight into the diverse ways learners are making use of new technologies in everyday life. Mixed method studies of computer use in the home succeed in highlighting emergent tensions and contradictions that characterise the predicament of learners situated at the fault lines of media convergence. However, studies that attempt to understand the changing nature of literacy in the new media age reveal a need for further research focussed on the *digitally mediated practices* of learners. Each tradition helps to frame the current investigation and suggest how further localised insider perspectives might help to tease out the full implications of media change for the predicament of the learner.

Chapter 2: Convergence Culture Goes to School: personalisation, identity and the agency of the learner in the digital classroom

Chapter 2 provides a perspective on the predicament of the learner through a critique of policy rhetoric and a review of design experiments that attempt to make progressive use of new media in classroom contexts. This includes a presentation of the selected findings of two empirical investigations conducted in the initial phase of this DPhil project. Ethical

considerations, time limitations and technical issues inhibited the development of both studies. Nevertheless, each shaped the trajectory of thought developed in the main study. The first explores the agency of the learner in workshops set up in the Teacher Education Lab. at M.I.T. to explore the potential of *Revolution* (a multiplayer role-playing game) as a learning resource. The second investigates the agency of learners (and their teachers) participating in a pilot of the *Learning Activity Management System* (LAMS) in a British comprehensive school. The findings from both studies highlight the shifting locus of control for managing and regulating learning in the digital classroom. Further, they suggest that the cultural logic directed towards the utopian vision of ‘personalised learning’ is somewhat problematic. Indeed, the findings suggest that these digital classrooms became a *site of struggle* as teachers competed with a commercialised and eroticised popular culture that was seeping into schools through the Internet. This, in turn, indicates the need for a socio-cultural approach that can help us understand the internalised values, priorities and aspirations young people bring with them to the digital classroom. These findings suggest the need for further research focus on the practices of committed learners who enjoy unrestricted access to a variety of digital tools and resources and who are using these resources to advance self-directed learning agendas.

Chapter 3: The Agency of the Learner in the Networked University: a socio-cultural approach

Chapter 3 argues that studies focussed on university students’ use of digital tools and resources can provide a unique insight into the wider implications of media change for learning, literacy and the future of education. However, existing studies fail to provide sufficient insight into the actual *practices* of students as they make use of a variety of digital tools and web-based resources to advance personal learning agendas. Consequently, a case is made for a study that explores how advanced committed learners *creatively appropriate* digital tools and resources to address authentic learning needs. The central tenets of socio-

cultural theory and ideas that have influenced the New Literacy Studies movement are then introduced. These traditions provide a methodological and conceptual tool-kit that can help us move beyond the limitations of techno-centric research. Additional concepts developed by researchers who identify with the socio-cultural tradition are introduced throughout the thesis.

Chapter 4: Cognitive Anthropology on the Cyberian Frontier: research design and data collection methods

Chapter 4 outlines the research design for a cognitive anthropology focussed on the digitally mediated practices of sixteen post-graduate students. All had long histories of Internet use and enjoyed unrestricted access to a fast always-on Internet connection from their study rooms. Compared to national statistics, demographic data suggests that these students were all high end users of new technologies and the Internet. In this respect they can be considered an ‘extreme’ sample who might allow us to gain an insight into the full potential of the digital computers and the Internet as a learning resource. The chapter describes the multiple interpretative methods that produce the qualitative data used to examine how this group made use of new media. Further, it discusses the techniques employed during the transformation, visualisation and presentation of a rich but messy qualitative data set.

Chapter 5: The Learner as Designer

Chapter 5, the first of the findings chapters, explores how advanced students are designing personal learning environments to support advanced knowledge work. Conceptual tools developed by Kress (2003), Clark (2003), Vygotsky (1987) and Engeström (2005) guide the analysis of the data and the innovation of new categories for understanding design strategies. The argument stresses that a capacity to design a radically personalised mediascape for advanced knowledge work has become a fundamental aspect of new media literacy.

Chapter 6: Creative Appropriation of New Mediational Means

Chapter 6 draws attention to the various ways students *creatively appropriate* digital tools and resources to negotiate the fault lines of media convergence, address authentic learning needs and gain a competitive edge in the game of academia. Building on theoretical work by Wertsch (1998), Bakhtin (1981) and de Certeau (1988), the chapter illustrates how and why individuals are exploiting the affordances of new tools and resources, as they become available, to advance course-related study and prepare themselves for the jump into the job market. However, the analysis also draws attention to the considerable challenges confronting learners who are attempting to learn with freely available web-based resources.

Chapter 7: Learning with others through new media: cultivating, nurturing and activating globally distributed funds of living knowledge

Chapter 7 is the first of two chapters that direct our attention to some of the way students are learning with others through new media. This chapter explores the way student's appropriate social software to extend peer learning opportunities and leverage the distributed expertise of remote learning companions. With the aid of conceptual tools offered by Nardi *et al* (2002), Edwards (2005) and Moll *et al* (1997), it illustrates how e-mail, instant relay chat and social software technologies are used to cultivate and nurture *globally distributed funds of living knowledge* that can be mobilised as powerful learning resources. However, it also stresses the new demands made on students and the risks associated with breaking away from traditional lifeworld communities of learners.

Chapter 8: Group Life: learning with others through participation in online affinity groups

Chapter 8 introduces Gee's (2004, 2005) concept of the online affinity space as a powerful heuristic for directing our attention to emerging learning possibilities in online spaces. A series of vignettes illustrates how students are subscribing and participating in a range of online affinity groups that allow them to connect with anonymous others with very specific

interests. This chapter provides perhaps the most in-depth insight into how new media is enabling individuals to *break away* from traditional communities of learners and develop life-long learning agendas in distributed communities independent of the structures of the traditional university.

Chapter 9: Identity and Agency in Virtually Figured Worlds

Chapter 9 adopts a personal-historic perspective as the relationship between identity and personal agency emerges as the dominant theme. Building on the work of Bruner (1991), Turkle (1997), Gee (2004) and most importantly Holland *et al.* (1998), an attempt is made to develop a set of conceptual tools that can be used to better understand how advanced learners are engaging in self-making activities through serious play in virtually figured worlds. This chapter argues that as the distinctions between formal and informal self-education starts to break down, new media affords agentive individuals the opportunity to pursue radically personalised learning agendas and *bootstrap themselves towards the actualisation of a projective identity through serious play in virtually figured worlds*. This emergent mode of learning by doing provides a deep insight into the new possibilities now open for advanced committed learners to “get ahead” with new media and take an active role in designing their own social future.

Chapter 10: The Predicament of the Learner in the New Media Age

The final discussion summarises the central argument and core themes developed throughout this thesis. Further, it proposes a model for theorising the implications of media change for the future of higher education. The model emphasises the tensions and contradictions confronting learners who now have the capacity to break away from the traditional structures of top-down centralised educational systems and learn with the aid of a range of web-based tools, quasi-intelligent agents and remote learning companions in distributed online affinity groups. It questions whether we are witnessing the decentring of formal education in the

everyday lives of university students. Further it identifies *mindful design* and *mindful practice* as the fundamental *meta* media literacies manifest in the practices of advanced independent learners. This model also forces us to conceive of learners' *projective identities* as the object-motive of a life-long learning agenda. The chapter concludes by considering how the conceptual tools and heuristics developed throughout this thesis might be used to advance a developmental research agenda aimed at empowering learners to become resourceful users of new media for both course-related study and self-education.

Chapter 1 Understanding the Predicament of the Learner: a review of relevant traditions in the literature

Deliberate learning involves engaging with the exposition, orchestrated discussion, research, systematic annotation, the focused reading of text, and a variety of other directed activities that many students may not always find easy to mobilize and manage independently. Sites of formal education have evolved structures that sustain and coordinate such activities with a scaffold of cultural resources: timetables, curricular, designed spaces, discourse rituals, and so on (Crook & Light, 2002, p. 158).

But what happens when learners gain access to new media, tools and resources that afford a myriad of new opportunities to learn that are not dependent on the traditional structures of formal education? This exploratory study investigates the various ways learners are appropriating digital tools and resources available through networked computers to break away from the traditional structures of formal education and pursue radically personalised learning agendas. It demonstrates how the emergence of a web-based participatory culture has resulted in a shift in the locus of agency for managing and regulating learning. An initial task is to understand media change in its historical context, understand how this relates to the shifting locus of agency for regulating and managing media consumption and review the literature that provides an insight into the predicament of the learner caught up in this process of cultural transition.

1.1 Understanding media change: from the Culture Industry to Participatory Culture

To illuminate the central shift in the locus of agency for managing and regulating learning it is helpful to understand why the once dominant trope of the 'Culture Industry' (Adorno, 1972 [1947]) - associated with mid-20th century conceptions of mass media culture - has given way to the trope of 'Participatory Culture' (Jenkins, 2006a) as a concept for understanding cultural production. Finally, it is useful to consider why some have started to employ the trope of 'Convergence Culture' (Jenkins, 2006b) to focus attention on the junctures where old and new media converge or collide. These three tropes provide powerful conceptual tools that can direct the attention of educationalists to some of the most significant implications for the predicament of the learner in a changing media environment. In activity theoretical terms, these tropes help to identify some of the fundamental tensions and contradictions that emerge in diverse contexts; contradictions that become visible when one adopts a broad socio-historical or 'culturalists' perspective (Bruner, 1996) and conceive of the mediascape as a cultural form³ that is part of the changing media environment in which we live and learn.

The Culture Industry is a term that acquired meaning in the early works of Adorno and Horkheimer (1972 [1947]) to suggest a monolithic, centralised, top-down industry that

³ See *Television: Technology and Cultural Form* (Williams, 2003). Williams argues against Marshall McLuhan's abstract theorising ('the medium is the message') that reduces the media to pure form devoid of content and arguably leads to into a technologically deterministic way of thinking. As a corrective, he proposed the notion of a Cultural Form to suggest the various ways media is embedded in social practices and power relationships and appropriated by different groups for different purposes. Williams illustrates the concept empirically with a comparative social-historical analysis of the distinctive ways the cultural form associated with the media of television evolved in the United States and United Kingdom.

manufactured and marketed cultural products through mass media at a mass audience⁴. For Adorno traditional expressions of popular culture, such as the folk ballad, percolated upwards from grassroots communities and therefore expressed the sentiments, anxieties and aspirations of ordinary people. In contrast, the products of the 'Culture Industry' are manufactured and broadcast from the top down through a centrally controlled mass media⁵. Indeed, the products of the 'Culture Industry' are 'commodities through and through', manufactured, marketed and sold to passive consumers, like hamburgers, 'more or less according to a plan' (Adorno 1999 [1975], p.31).

From this perspective, the production and consumption of cultural products cannot be considered independently from strategies of power and control. Adorno asserts that 'the culture industry intentionally integrates its consumers from above'. The implication is that post-industrial society is profoundly dehumanising. This sentiment is expressed in dozens of statements. For example, Adorno argues: 'the concoctions of the culture industry are neither guides for a blissful life, nor a new art of moral responsibility, but rather exhortations to toe the line, behind which stand the most powerful interests' (p.36).

⁴ In the *Culture Industry Reconsidered* Adorno (1991, [1975]) provides a lucid theoretical treatment of the genesis of the *Culture Industry* trope that was first used in the seminal treatise *Dialectics of Enlightenment* (Adorno and Horkheimer, 1972 [1947]). This essay was published in this translation by Anson G. Rabinbach, *New German Critique* no. 6 (1975).

⁵ For Adorno (1999 [1975]) the two forms of culture are fundamentally opposed and 'must be distinguished in the extreme'. As a consequence, he explains, it was decided to replace the term 'mass culture' (originally used in the draft manuscript) with the term 'the culture industry' in order to 'exclude from the outset the interpretation agreeable to its advocates: that it is a matter of something like a culture that arises spontaneously from the masses themselves' (p.2).

This sentiment finds parallels emerging from critical appraisals of the culture of formal schooling. For example, in *Learning to Labour: How working class kids get working class jobs*, Willis (1978) attempts to illustrate how a modern British secondary school subjugates, positions and prepares working class boys for a life of hard labour. The ethnographic study of a group known as 'the lads' illustrates how they reject the values of their middle class teachers in favour of the working class values of their lifeworld communities and thereby unwittingly condemn themselves to a life of manual labour. In this respect the school functions in the capacity of an ideological apparatus that perpetuates social inequality. Importantly, in the culture that Willis describes, access to knowledge is disseminated in a top-down manner by teachers who remain in the control of a centralised education system. In short, he describes a transmission or 'piggy bank' (Freire, 1985) model of education. In such a system access to knowledge, qualifications and professions are regulated and controlled by a centralised establishment. Similarly Adorno (1991, p.106) constructs the mass media as a 'means for fettering consciousness' that 'impedes the development of autonomous, independent individuals who judge and decide consciously for themselves'⁶.

The grand theorising of these Frankfurt school theorists, not unlike the 'critical ethnography' of Willis, engages in a political and ideological debate in which both formal schooling and the mass media are conceptualised as obstacles to achieving a more democratic, just and equitable society. Today, with the benefit of hindsight, these somewhat melodramatic discourses - characterised by the recurrent themes of victimisation, subjugation and manipulation - read like politically motivated post-Marxist 'critical pessimism', very much a product of its time, designed to highlight the enduring inequalities and exploitation of late capitalism.

⁶ Arguably, the political invective in this discourse is motivated by an attempt to understand the unexpected rise of fascism and the emergence of a brutal totalitarian regime in Stalin's Soviet Union. Both were associated with the top down control of the media.

Nevertheless, whether one agrees or not with the anti-enlightenment invective, the work of the Frankfurt school theorists captures something essential about the centralisation of power and state control over knowledge and culture that occurred in the mid 20th century. In both cases, the power of centralised mass media and formal schooling is seen to diminish ordinary people's ties with traditional folk culture and informal modes of learning (such as the craft apprenticeship) and to pull people into a centralised system controlled by a small cultural elite who regulate access to knowledge.

However, not all theorists, not even those working within a post-Marxist paradigm, have bought into the 'Culture Industry' metaphor. Enzenberger (1974), for example, argues that 'Marxists have not understood the *consciousness* industry and have been aware only of its bourgeois-capitalist dark-side and not of its socialist possibilities' (p.69). For Enzenberger, the 'open secret of the electronic media, the decisive political factor - which has been waiting, suppressed or crippled, for its moment to come - is their mobilizing power' (p.69)⁷. The central thrust of his argument is to debunk the 'possibility of total control of such a system' (p.70). New media, for Enzenberger, are making mass participation in a 'social and socialized productive process, the practical means of which are in the hands of the masses themselves' possible (p.69). He is referring to the first generation of electronic media: 'news satellites, colour television, cable relay television, cassettes, videotape, videotape recorders, video phones, stereophony, laser techniques, electrostatic reproduction processes, electronic high speed printing' etc. For Enzenberger these media are constantly forming new kinds of

⁷ Enzenberger's (1974) critique is aimed more directly at the likes of 'George Orwell's bogey of a monolithic consciousness industry' that Enzenberger claims 'derives from a view of the media which is undialectical and obsolete' (p.70). Nevertheless, he adds, 'nor are the works of Adorno and Horkheimer free from the nostalgia of bourgeoisie media' (p.70).

connections both with each other and with older media like printing, radio and film quite unlike the mass media that inform Adorno's 'Culture Industry'.

A central distinction between the old and new media concerns the degree to which they allow end users to communicate. For Enzenberger, equipment like television or film does not serve communication but prevents it. The content and meanings transmitted are controlled from the centre denying the possibility of an exchange between transmitter and receiver. In radio, however, he foresees the new possibilities:

Radio would be the most wonderful means of communication imaginable in public life, a huge linked system – that is to say, it would be such if it were capable not only of transmitting but of receiving, of allowing the listener not only to hear but to speak, and did not isolate him but brought him into contact (1983, p. 70).

His comments seem almost ludicrously utopian. However, Enzenberger perhaps correctly identifies a need for a communication system that might allow individuals to broadcast ideas, knowledge, and opinions to a wide audience. In *Technologies of Freedom* de Sola Pool (1983) makes a similar case. He argued that the traditional functions and separation of the media were preserved through habit rather than any essential characteristic of the various technologies. Further, he recognised the liberating potential of the new media.

Freedom is fostered when the means of communication are dispersed, decentralised, and easily available, as are printing presses or microcomputers. Central control is more likely when the means of communication are concentrated, monopolized, and scarce, as are great networks (1983, p.11).

For de Sola Pool, the media itself is neutral. However, when the means of communication are 'decentralised' and made 'easily available' they can be appropriated by marginal groups to serve diverse agendas. In this respect, he foresaw that new media would become a *site of struggle* as different groups attempted to appropriate the means of communication and dissemination of information for their own ends.

The notion of culture as a site of struggle between the dominant and dispossessed is central to the thinking of Williams (1961, 1983, 2003) and the Birmingham School of Cultural Studies⁸. These politically committed theorists highlighted the diverse ways that the disempowered groups, particularly post-war youth subcultures, resisted being subjugated by a hegemonic establishment and creatively appropriated and re-purposed available semiotic resources to create collective sub-cultural identities (Hall & Jefferson, 1976). These theorists attempt to understand how grassroots ‘folk’ cultures maintain a distinctive cultural identity, appropriating, subverting and resisting the values of the establishment. Interestingly, this mode of thinking has become important for understanding the role of new media, new technologies and community formation in the age of the Internet, particular in the work of Henry Jenkins⁹.

Jenkins charts the evolution of the mediascape through successive phases of technological innovation. The trajectory of his thought is suggested by the titles of his three influential collections. *Textual Poachers: television fans and participatory culture* (Jenkins, 1992) explores television fan cultures and the practice of sampling and remixing video footage from popular TV series like *Star Trek* to retell stories from marginal or deviant perspective -

⁸ Raymond Williams, the son of a railway worker and a committed socialist, is generally regarded as the forefather of *The Birmingham School of Cultural Studies* (Clarke, 1993; Cohen, 2005; Hall & Jefferson, 1976a; Hebdige, 2005; McRobbie, 1975; Willis, 2005; Young, 2005). These theorists tend to adopt an interdisciplinary approach, weaving together elements from post-Marxist, post-structuralist, feminist and post-colonial theory in an attempt to interpret the findings of ethnographic investigations focussed on marginalised groups. The term, ‘site of struggle’ is closely associated with Williams’s (1961, 1983) pioneering work.

⁹ Henry Jenkins is the founder and current director of the Comparative Media Studies Programme at M.I.T.

invariably for comic effect. *Fans, Gamers, and Bloggers: exploring participatory cultures* (2006a) discusses how fans start to appropriate digital technologies to 'poach', re-work, and share creative work over the World Wide Web. In this collection the 'geeks' and 'trekkies' of media fandom become a force to be reckoned with, a force that threatens the monolithic power and influence of multinational media conglomerates. Similarly, we see grass roots activists appropriating blogging technologies to challenge the authority of traditional print-based newspapers and the emergence of new practices, such as 'ad-busting', that threaten the hegemony of corporate rule¹⁰. In short, 'participatory culture' signifies a world in which audiences start to play an active role in shaping, subverting, and remaking the media they consume. The central movement is to chart the rise of 'participatory culture' from the margins to the mainstream, from the sub-cultural skirmishes with the culture industry typically described using metaphors of 'poaching' or 'pilfering' to a 'central resource' that might be used to mobilise the voters in a presidential campaign. Indeed, as 'participatory culture' moves from the periphery to the centre it becomes a cultural force to be reckoned with, a force that established institutions can no longer afford to ignore. Moreover, 'participatory culture' threatens to disrupt the revenue streams, political structures and laws regulating media consumption upon which the power of these institutions depend. The devastating effect that the *Napster* and *Kazaar* file-sharing communities had on the record industry supports this thesis (Battelle, 2006). Further evidence might be discerned through an analysis of the panicked reaction of the telecommunications industry to the sudden appearance of Skype.

¹⁰ Ad-busting refers to the practice of re-working or re-cycling the iconography and symbolism of global corporations to produce satirical 'mash-ups' or politically motivated anti-corporate adverts. In Jenkin's (2006b, p.137) words, Ad-busting is a practice that, 'borrows iconography from Madison Avenue to deliver an anti-corporate or anti-consumerist message'. The ads are typically broadcast over the Internet or used by anti-capitalist campaigners.

Recent survey data charting the emergence and massive take up of Web 2.0 technologies (such as *Wikipedia*, *My Space*, *Friendster*, *FlickR*, and *Facebook*) that support the sharing of user content and the formation of massively distributed online affinity groups tend to support Jenkins' claims. Madden and Fox (2006, p. 3) produce evidence that tends to confirm the hypothesis that a decentralised and distributed participatory culture is rapidly replacing a commercialised and centralised culture industry. For example, statistics relating to the use of Wikipedia (the free online encyclopaedia produced and edited by its own users) have rocketed whilst use of Encarta (Microsoft's leading commercial online encyclopaedia) has gradually declined (see figure 1.1).

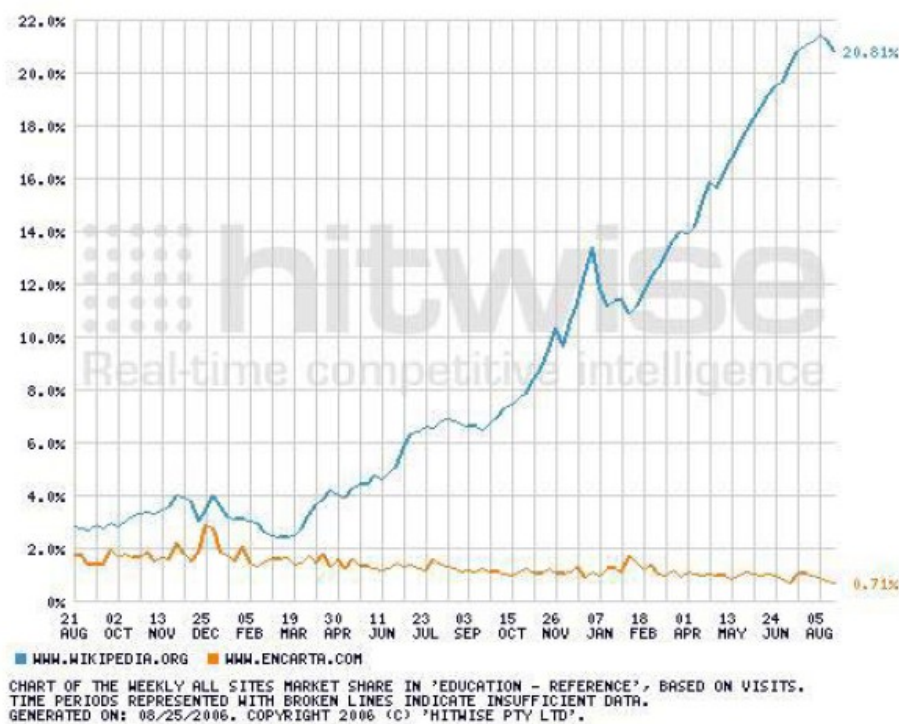


Figure 1.1 Wikipedia soars as Encarta dwindles

Madden and Fox (2006) also produce data to illustrate the massive popularity of social software sites that facilitate the rapid formation of distributed communities. They argue that ‘the beating heart of the Internet has always been its ability to leverage our social connections’, adding ‘social networking sites like *My Space*, *Facebook* and *Friendster* struck a powerful social chord at the right time with the right technology’ (p.5).

The broader impact of these cultural shifts is widespread yet uncertain. For Jenkins (2006a: p.2) no institution appears unaffected: he comments that as new technologies enable average consumers ‘to archive, annotate, appropriate and re-circulate media content: powerful institutions and practices (law, religion, education, advertising, and politics, among them) are being redefined by a growing recognition of what is to be gained through fostering – or at least tolerating – Participatory Cultures’. Indeed, in his latest work *Convergence Culture: where old and new media collide* (Jenkins, 2006b) he starts to conceptualise a media environment in which audience participation is recognised and embraced as valuable resource.

1.2 The merits of ethnographic studies of informal learning in participatory cultures

Jenkins’ approach, that charts the emergence of subcultural practices and then suggests how these practices start to disrupt and subvert the control of centralised media franchises suggests a strategy for understanding the predicament of the learner within a broader socio-historic and economic context. Moreover, it suggests a method for understanding the predicament of the learner from a series of localised insider perspectives. This solves a fundamental methodological problem concerning how to investigate the implications of such wide-ranging and pervasive cultural change. The opening lines to Castells’ three volume magnum opus, *The Information Age: Economy, Society, and Culture* are telling in this respect:

Towards the end of the second millennium of the Christian era several events of historical significance transformed the social landscape of human life. A technological revolution, centred around information technologies, began to reshape, at accelerated pace, the material basis of society (Castells, 2000, Vol. 1, p.1).

This somewhat dramatic opening employs a linguistic strategy untypical of Castells' work. However, the adoption of the voice of a historian of the future reflecting back upon the current period of transition makes an important point, implicit in the tone rather than the content of the words. All engaged in this project are insiders whose everyday reading, writing and communicative practices are implicated in the process of change. We have no stable, neutral or objective position upon which to stand. Consequently, the challenge for any writer attempting to theorise the implications of media change, from the macro-economic down to the micro-genetic levels of analysis, is to gain a vantage point. One strategy is to make imaginative leap into the future in order to identify the truly significant trends. By drawing a parallel between the Industrial Revolution of the 19th century and the Information Technology Revolution of the later 20th century Castells effectively makes this leap of the imagination¹¹. An alternative strategy is to triangulate multiple localised insider perspectives and then abstract what are deemed to be the most significant trends. Jenkins (2006a) makes a case for this approach. He writes:

My goal is to help ordinary people grasp how convergence is impacting the media they consume and, at the same time, to help industry leaders and policy makers understand consumer perspectives on these changes. Writing this book has been challenging because everything seems to be changing at once and there is no vantage point that takes me above the fray. Rather than trying to write from an objective

¹¹ A leap objectionable to many critics of the 'revolution' metaphor who prefer instead to talk about media convergence (Jenkins 2006b) and highlight how gradual displacement occurs as new media (such as PowerPoint presentations) become progressively layered and used in various combinations with old media forms (such as photocopied handouts).

vantage point, I describe in this book what this process looks like from various localised perspectives – advertising executives struggling to reach a changing market, creative artists discovering new ways to tell stories, educators tapping informal learning communities, activists deploying new resources to shape a political future, religious groups contesting the quality of their cultural environs, and of course, various fan communities who are early adopters and creative users of emerging media (p.12).

One who adopts such an approach cannot hope to arrive at any definitive conclusions. However, such an approach also reduces the risk of making grand generalisations that fail to grasp how media change is experienced in everyday life.

Educational concerns are not a priority for Jenkins. Nevertheless, one of the six ethnographic case studies included in *Convergence Culture* (Jenkins 2006b) provides an insight into the predicament of a learner. In a case study entitled, *Why Heather Can Write*, Jenkins explores the emergence of The Daily Prophet, a Harry Potter fan fiction site started by Heather Lawver, a 13 year old girl. Heather describes the purpose of her website thus:

The Daily Prophet is an organisation dedicated to bringing the world of literature to life ... By creating an online “newspaper” with articles that lead the readers to believe this fanciful world of Harry Potter to be real, this opens the mind to exploring books, diving into the characters, and analysing great literature. By developing the mental ability to analyze the written word at a young age, children will find a love for reading unlike any other. By creating this faux world we are learning, creating, and enjoying ourselves in a friendly utopian society (Jenkins, 2006b, p. 172).

The case study provides a powerful illustration of the ways new media affords young people the opportunity to take control of the means of creative production, take on adult managerial responsibilities and engage in authentic creative production tasks working with the aid of new media tools and resources. Significantly, the case study shows how Heather deploys a range of advanced literacy and communicative practices, not as ends in themselves, but in the process of developing and managing an online affinity group of *Harry Potter* fans. Heather

‘hires columnists who cover their own beats’, ‘edits stories in preparation for publication’, and ‘consults on issues of style and grammar.’ The emblematic significance of the case study depends not on Heather’s status as a resourceful and creative representative of a new digital generation so much as on the way in which this virtual space affords possibilities for deeply committed learning and creativity, wholly apart from the structures of formal education.

Further stories of tech-savvy teens actively appropriating new media, taking on adult responsibilities and engaging in creative production can be found in the ethnographic case studies collected by Sefton-Green (1998). For example, Tobin (1998) tells a very similar story about his son Isaac, who spends most of his time developing and managing a site for fans of the Warhammer video game. His personal development as a young artist is described thus:

At the age of 14, as happens with many young people, Isaac reached a point as an artist where he was frustrated with his ability to produce work good enough to meet his own increasingly sophisticated and demanding standards. But the computer gave him a second chance. With the scanner, his art-tablet, *Adobe Photoshop* and other drawing, drafting, and rendering software (*Morph*, *Kai’s power tools*, *Photoshop*, *Alien Skin*) Isaac was able to produce digital images of a very high quality. Isaac’s web pages quickly grew in size and sophistication. A year after getting his first Internet account (a student account at \$20 a month), Isaac had authored 20 pages and subpages on the e-mail messages to individuals and to the 40K list. He had become a Warhammer 40K celebrity, renowned for his e-mail prolificness, wit, and knowledge, and for the quality of his computer graphics. Over the course of the year he had become, before our eyes, a Warhammer-otaku (Tobin, 1998, p.133).

This small scale, richly descriptive ethnographic case study powerfully suggests the emerging opportunities for intrinsically motivated creative production afforded by digital technologies that, for the first time in history, allow individuals to produce work to professional standards for a globally distributed audience at minimal cost.

These studies work as independent ethnographic case studies. They are not informed by a deep knowledge of the literature in the learning sciences. However, both start to engage with a serious theme that has been current in educational discourse, at least since L.B. Resnick's (1987) influential presidential address to the American Educational Research Association (AERA) entitled, *Learning in and out of schools*. Moreover, both illuminate our understanding of the complex relationships between learning, motivation, identity, creativity and play in informal contexts beyond the confines of formal education.

From the perspective of those more directly concerned with the implications of media change for learning and literacy, Jenkins' conceptualisation of the tensions driving media change provides a powerful model for thinking through the challenges confronting educational providers and learners in the new media age. It leads one to understand media change as a site of struggle between an emergent web-based participatory culture that affords a variety of informal learning opportunities and monolithic structures of formal educational institutions (including schools, libraries and universities) that are now attempting to take stock and assimilate an emergent web-based counter culture. This cultural phenomenon is now developed with reference to studies that provide more direct insights into the predicament of the learner situated at the fault lines of media convergence.

1.3 The methodological shortcomings of the 'Digital Generations' literature

Literature focused on the theme of so called 'digital generations' promises to provide insight into the predicament of the learner (Buckingham 2006; Buckingham & Willett, 2006; Papert, 1996; Prensky, 2001b; Tapscott, 1998). However, this discourse tends to feed on parents' anxieties about the predicament of their children growing up in a changing media environment, betrays a lack of methodological rigor, and tends to celebrate rather than critically scrutinize the popular myth of a uniform and homogenous emergent generation of

tech-savvy teens. For example, in an early article provocatively entitled *Aliens in the Classroom*, Green and Bigum (1993) claimed that students with a fundamentally new 'post-modern' subjectivity forged in the 'nexus between youth culture and the increasingly global media complex' were beginning to appear in Australian classrooms¹². The argument summarises the anxieties of educators and parents, buttressed by conservative polemics, against the harmful and degenerative effects of mass media culture (Grossman, 1999; Postman, 1987) using alarmist rhetoric that hints at the possibility of a *Invasion of the Body Snatchers* style alien take over.

Increasingly alienated, in the classical sense, young people are also increasingly *alien*, alienated others, differently motivated, designed and constructed. And the awful possibility presents itself, insistently: they are not simply visiting us, after which they will go away; rather they are here to stay, and they are taking over. (Green and Bigum, 1993, p.122)

Given that 'the youth will inherit the earth', the even more 'inconceivable anxiety' is that 'we' (the intended reader) would soon become the alienated other in a world controlled by the junkies of popular culture. Further, it is unclear that schools can do anything to reverse the situation. Indeed, whereas school once functioned as the 'central mechanism' for socialisation or subjectification from pre-school to post-school, the pervasiveness of media culture in the

¹² The research team based at Deakin University Faculty of Education started the investigation guided by the questions: i) are schools now dealing with a student who is quite different to students of previous years? and ii) have schools and educational authorities developed curriculum rationales on what are essentially inadequate and even obsolete assumptions about the nature of students? These questions assumed that mass electronic media were providing a 'critical socialising context' central to the (re)generation of student identities (Hinkson, 1991; McRobbie, 1986).

lifeworld of young people appears to have displaced the school's capacity to fulfil this social function.

In the decade following Green and Bigum's (1993) article a series of newspaper articles, academic conferences and popular books on the digital generation theme took this debate forward (Buckingham & Willett, 2006, pp. 1-2). Possibly the most well known is Tapscott's (1998) *Growing up Digital: the rise of the net generation*, a book targeted at a popular audience that offers nothing but reassurances to those readers who might harbour such anxieties:

Everybody relax, the kids are alright, they are learning, developing, and thriving in the digital world. They need better tools, better access, more services, and more freedom to explore, not the opposite (p.7).

It appears that Tapscott aims at re-educating the parents rather than the N-Geners who are busy educating themselves. Indeed, the 'Net' is constructed as something approaching a utopian medium that, in every respect, might be regarded as an educational 'good':

Time spent on the net is not passive time, it's active time. It's reading time. It's investigation time. It's skill development and problem solving time. It's time analysing and evaluating. It's composing your thoughts time. It's writing time (p.7).

In short, Tapscott's N-gen is constructed as a uniformly capable, responsible and resourceful generation. They are inquisitive and curious when venturing into the brave new online world that contains 'much of the world's knowledge', 'millions of peers' and 'thrilling, enchanting and bizarre new experiences'. They are adept at finding the information they need just-in-time. They resist attempts by adults to regulate their media use and, when confronted with problems, 'find support – not advice – from peers on the Net' (p.87).

Perhaps the most extreme expression of the hyperbole surrounding talk of a digital generation is provided by Prensky (2001b, p.1) in *Digital Native, Digital Immigrants*. Prensky asserts,

‘our students have changed radically’, arguing that today’s students are no longer the people our educational system was designed to teach. He goes so far as to claim that today’s students *think and process information fundamentally differently* from their predecessors. This is asserted as a fact, a fundamental discontinuity brought about by the arrival and rapid dissemination of digital technologies and the underlying cause of large scale disaffection among learners with formal education. The hyperbole betrays the absence of academic or scientific rigor. However, Prensky goes on to develop a distinction based on an analogy with first and second language speakers that has appealed to many writing on the theme of digital, or ‘techno’ literacies’ (Lankshear *et al.*, 2000; Snyder, 2004, 1998). His ‘digital natives’ are native speakers of the digital language of computers, video games and the Internet. In contrast, adult teachers are constructed as ‘digital immigrants’ who are now in the process of learning a new language. The problem with education is that ‘digital immigrant’ instructors who speak an outdated language (that of the pre-digital age) are struggling to teach a population that speaks the language of digital media. This is regarded as the single biggest problem facing education today. Prensky’s solution is to develop pedagogies that take account of young people’s enthusiasm for popular video games.

What then are we to make of the claims made for the emergence of a digital generations discourse? An obvious response is to dismiss talk of ‘aliens’, a homogenous ‘N-gen’ and ‘digital natives’ as sensationalist rhetoric designed to play with the anxieties of parents and to sell books. Prensky and Tapscott clearly target popular audiences. Alternatively, one could highlight the flaws in the methodologies employed in each case. Prensky’s argument depends on an untraceable reference to the work of a Dr. Berry of the Baylor College of Medicine for its evidential base and is possibly the most suspect in this respect. In Tapscott’s case qualitative data is collected through a series of online forums with ‘over 300 N-geners’ and complemented by additional interviews with a broad range of ‘parents, business leaders, cyber gurus, policy makers, educators, and marketing experts’ (p.5). We are told that ‘every effort

was made to recruit participants from different geographies, gender, age, socio-economic and cultural backgrounds (p.6)'. However, there is no evidence or procedure to ensure this was the case. In fact, it appears participants were recruited from members of the *FreeZone* network, the 'cyberhome to some 15,000 N-Geners'. Consequently the data informing the study reflects the views of those who were already actively engaging with online culture. This does not mean that the sample is not interesting in its own right. However, the lack of methodological transparency demands that the reader treat generalisations made from this self-selecting sample of high-end users with extreme caution. Furthermore, the extent of the positive spin evident in the interpretation of data suggests authorial bias. Nevertheless, such a dismissive approach perhaps underestimates the significance and appeal of the arguments proposed. As Buckingham argues when reviewing Tapscott:

From an academic point of view, it is perhaps rather easy to mock these kinds of arguments: they lack scholarly caution and qualification, and the evidence on which they are based is often unrepresentative and anecdotal. Yet in fact many of his arguments come quite close to the kinds of ideas that circulate in the discourse of policy makers – and, I would suggest, in the academy as well (Buckingham, 2006, p.7).

Indeed, the core ideas promoted by theorists like Green and Bigum, Tapscott and Prensky continue to provoke and inform debate. However, this debate has since become more informed by survey data and larger scale mixed method studies. Selected studies employing these methods are now reviewed.

1.4 The limitations of survey research for understanding the predicament of the learner

Surveys have provided useful contextual information concerning widespread trends that might bolster the credibility of emerging hypotheses proposed in small scale qualitative case studies and theoretical work (DfES, 2001; Dutton *et al.*, 2005; Facer, 2001; Livingstone & Bober,

2004; Livingstone & Bovill, 2001; White, 2007). Lenhart *et al.* (2001) suggest 94% of American youths ages 12-17 had Internet access. Similarly, Livingstone and Bober (2004) stipulate that in the United Kingdom Internet is 'nearly universal': 74% of children had accessed the Internet from a computer in the home; 19% enjoyed Internet access in their bedroom; and only 24% had access to the Internet at home but not at school. Interpreting these findings, the authors argue:

No longer are children and young people only or evenly mainly divided by those with and without access, though 'access' is a moving target in terms of its speed, location, quality and support, and inequalities in access persist. Children and young people are divided into those for whom the Internet is an increasingly rich, diverse, engaging and stimulating resource or growing importance in their lives, and those for whom it remains a narrow, unengaging if occasionally useful resource of rather less significance (p.5).

These findings shift the 'digital divide' debate away from issues of access towards issues of use. They point to a need for a better understanding of the factors that might enable young people to participate in online culture in beneficial and productive ways. However, survey data can only hint at the various ways users are actually appropriating online tools and resources.

Most attempts to gauge the 'educational' potential of the World Wide Web using survey methods leave many of the most important issues unaddressed. For example, Lenhart *et al.*'s (2001) survey reports, 71% of online teens say that they used the Internet as the major source for their most recent major school project and 34% of online teens have downloaded an online study aid. Their analysis might appear to shed light on Internet usage for educational ends. Nevertheless, these figures only indicate ways that young people are appropriating Internet access to advance study related agendas directed towards certification. Moreover, statistics of this kind are premised on blanket assumptions about what constitutes 'educational' use of the Internet. Further, they fail to shed light on the skills or new media literacies required to make

effective use of a range of web-based tools as learning resources. The problem is that most remain inhibited by an absence of heuristics that might allow questions to move beyond a mapping exercise of ownership and use.

One survey suggests a way forward. Figures 1.2 and 1.3 present selected findings from *The Spire Project* survey (White, 2007). It attempts to map the adoption and use of *Web.2.0* technologies including: social bookmarking tools; file and video sharing technologies; collaborative authoring tools; social networking tools; computer mediated communication tools (chat, blogs and wikis) and massively multiplayer online role-playing games (MMORPGs) like *Second life* and *World of Warcraft*.

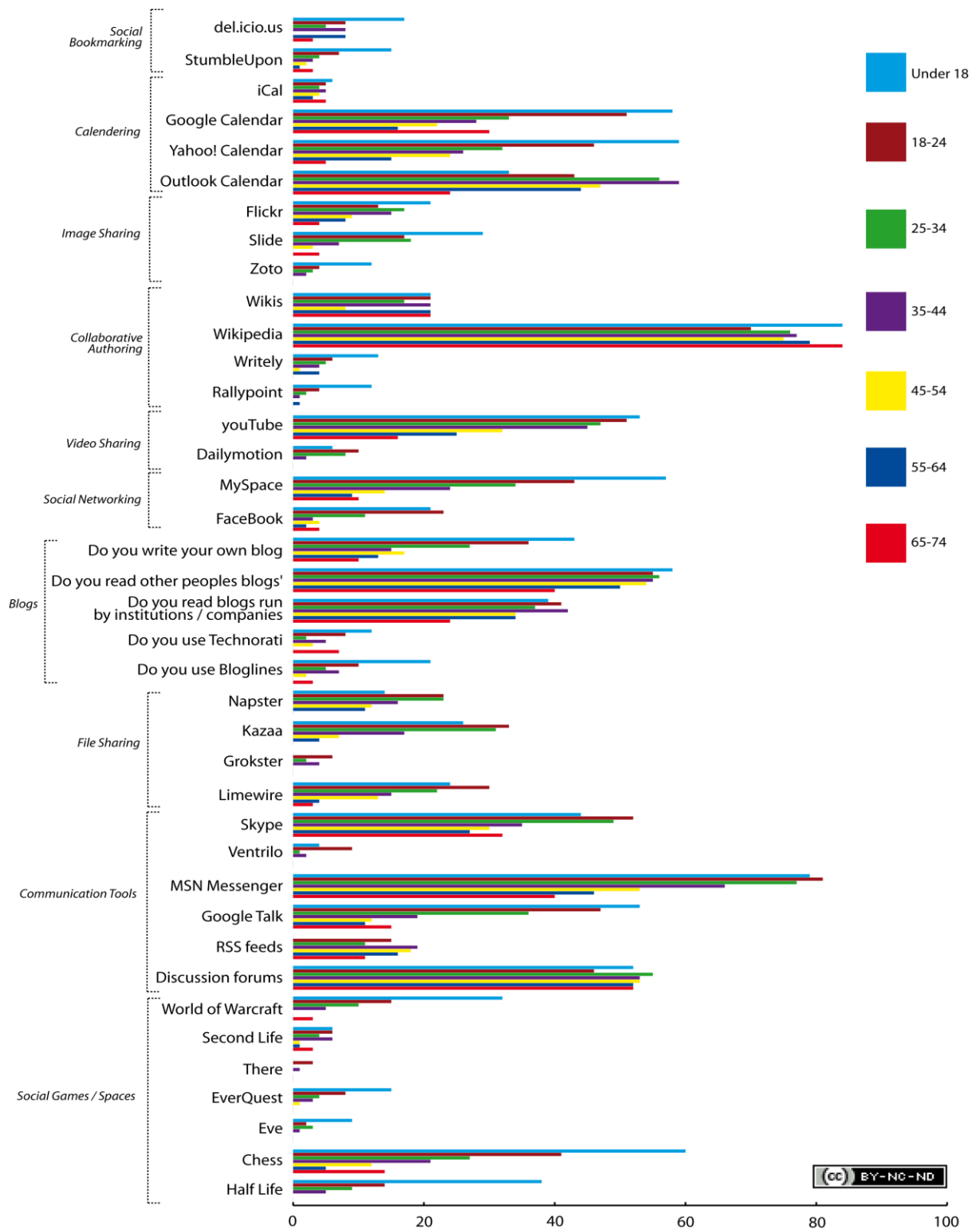
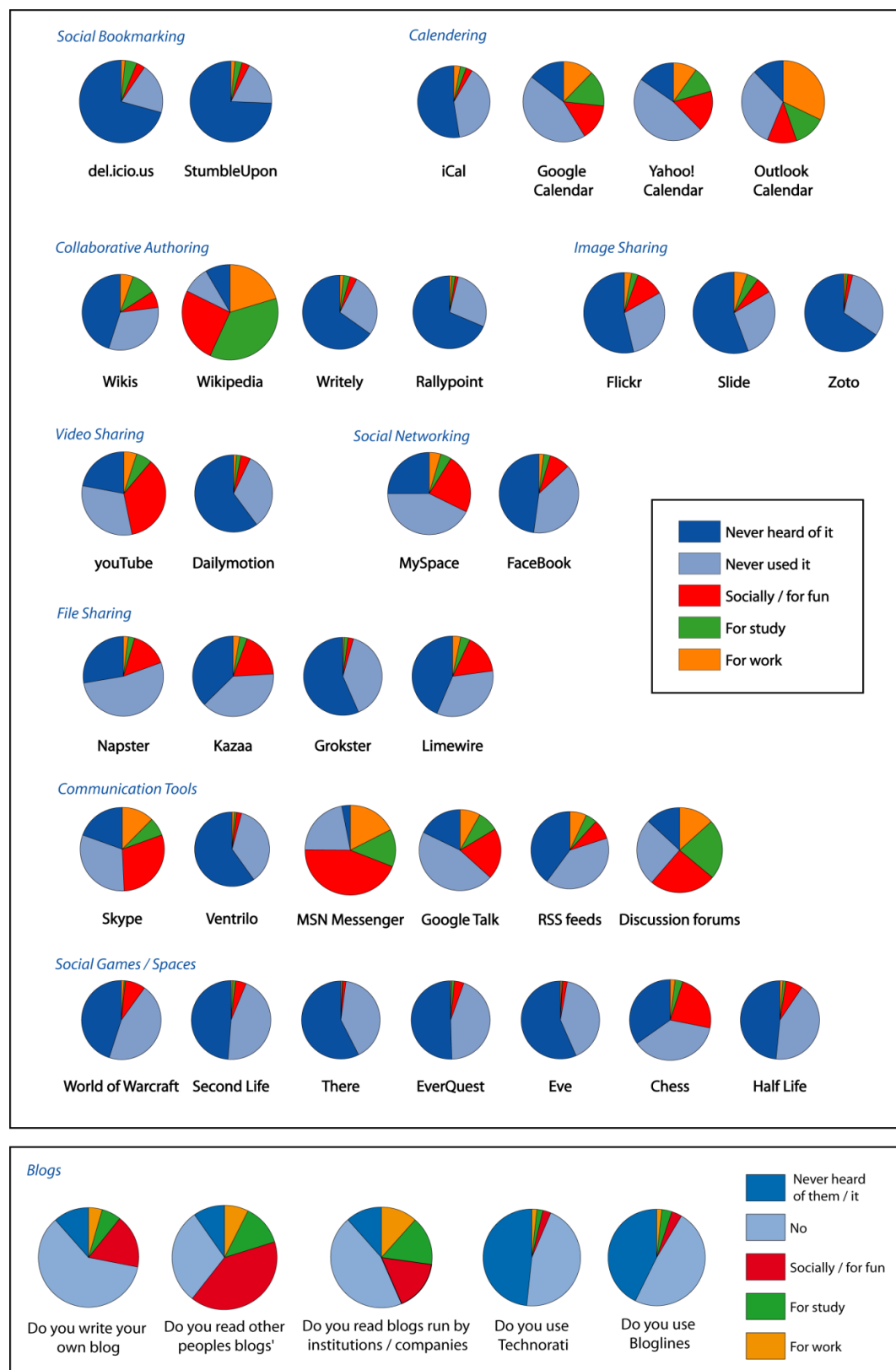


Figure 1.2 Percentage usage of Web 2.0 services across age bands. From Spire Project report (White, 2007).

Survey data of this kind can be used to distinguish between ‘exotic’ applications like massively multiple online role-playing games (MMORPGs) that cater for niche interests and the use of tools, like *MSN Messenger*, that are now widely used across all age groups. Furthermore, these findings suggest a need for research focused on technologies that are becoming integrated into many peoples’ everyday lives – technologies like *Wikipedia*, *MSN Messenger* and *YouTube* - rather than niche subcultural practices, like gaming, that have already attracted a great deal of attention from educational researchers (Beavis, 1999, 2002b; Gee, 2003; Steinkuehler, 2005). In addition, these data challenge some deeply entrenched assumptions. For example, the Spire survey indicates that *Wikipedia* is used by the over 65s as much the under 18’s, a finding that confounds the notion of an emerging digital generation (see section 1.4) and indicates a need for qualitative research to understand why these diverse user groups might appropriate this new kind of web-based resource to address authentic needs. Finally, these findings might encourage us to question what we regard as ‘educational’ technologies. For instance, a growing number of users (see Figure 1.3) estimate that technologies like *Wikipedia*, *YouTube*, *Skype*, *MSN Messenger* are used for a mixture of work, socialising / fun, and study. Interestingly, a small number of users even claim that the MMORPG *Second life* is used for study related tasks.



**Figure 1.3 Proportionate use of services for fun / socialising, study and work.
From Spire Project report (White, 2007).**

However, these data do not tell us why users start to use these tools, or how they might be deployed in multiple combinations for course related study or informal learning. Interpretative research that attempts to gain various localised insider perspectives on individuals' use of a range of new media tools might help us better understand more complex cultural issues.

1.5 Mixed method studies of computer use in the home

Perhaps the most robust research designs that attempt to build up a holistic understanding of the implications of media change for the predicament of the learner are large scale mixed method studies of computer use in the home (Buckingham & Scanlon, 2003; Facer *et al.*, 2003; Livingstone & Bovill, 2001; Selwyn *et al.*, 2006). These studies provide a corrective to the celebratory tone of much of the early digital generations' literature.

Both Livingstone (2002) and Facer *et al.* (2003) stress the need to contextualise computer use within the ecology of the domestic environment. For Livingstone (2002, p.10) media are not simply a conduit for the transmission of information, they are becoming part of the domestic environment in which young people live. For example, she argues, in the age of television, media time was family time. However, with the integration of a myriad of new media into the domestic environment families increasingly find themselves 'living together separately' (Livingstone, 2002, p.166-210). Facer *et al.* (2003) argue that 'technologies always enter into already existing socially constructed worlds' (p.225). They stress that learning how to use the computer in creative and productive ways depends on 'supportive contexts' that include access to more knowledgeable peers who might guide young people's use of the computer and unstructured time to play and experiment. In this respect, the notion of access is shown to be multi-dimensional and the digital divide is shown to be very real but more complicated and nuanced than one might have supposed. Selwyn *et al.* (2006) focus on adult uses of the computer at home and work and in third spaces like community centres. They stress that

boundaries between different contexts of use are often blurred. Buckingham (2003) adopts a broader socio-economic perspective. His method stresses the need to understand educational media (including software) as 'commodities' produced under certain socio-economic and political circumstances and marketed at a particular consumer. His analysis suggests that global publishing conglomerates (the Culture Industry) are aggressively marketing interactive 'educational' media at parents in a climate in which there is mounting pressure, backed by political will, to force parents to take a more active role in their children's education. This reading remains sceptical of the claims made by software manufacturers and exposes the strategies employed to exploit the anxieties of well meaning parents who are duped into believing that spending money on 'educational' software is the least they can do to give their children a chance of keeping up in an increasingly selective and competitive education system.

Thus, contextualisation exposes many of the bolder generalisations made by 'speculative' commentators and policy rhetoric as being in need of serious revision. In general, studies of the Internet in 'everyday life' tend to stress the way people shape their media environments and reject statements that imply a form of technological determinism.

The methodology adopted by Facer *et al.* (2003), loosely informed by socio-cultural theory, provides perhaps the most penetrating analysis into the informal *learning* opportunities afforded by interactive digital media. The use of an ethnographic case study method, framed within a large scale survey, that draws on multiple qualitative data sources including observation and treats each child as a unique case helps them to achieve a depth of insight that exceeds analysis which relies more heavily on interview data. This methodology allows the authors to start mapping out the diversity of ways young peoples' pre-existing interests and personal goals shape their use of digital media. Further, under the influence of Turkle (1984, 1997) the analysis reveals how playful uses of new technologies are heavily implicated in a

child's emerging sense of self and community. In this respect, the methodology developed by Facer *et al.* (2003) might be described as a socio-cultural (plus identity) approach. For example, the authors describe how David grew into the *role* of the family ICT expert and was frequently called upon at school by teachers to sort out computer problems. In contrast, Jamilia and her friends (who disliked violent games) surfed the Internet to find out about Asian fashion and culture. The authors stress that 'rather than building an identity through the computer, as David did, the computer was simply one cultural resource amongst many that she [Jamilia] employed in the construction of herself as a modern Anglo-Asian teenager' (p.120). Indeed, in the *ScreenPlay* study, identity becomes central for understanding young peoples' intrinsically motivated engagement with ICTs. For example, they highlight how Helen 'inscribed' herself in the little animals in the *Creatures* game, giving them 'names that they could say', and 'tricks which they remembered' so that when she came back to the game there was a 'little bit of herself left on the screen' (p. 176). Similarly, identity issues are important for considering why Faezel identified with the *Green Berret* in the German war game (p.177) or Karen's frustrated attempts to use the Internet to find out about 'Welsh love spoons' for her technology homework (p. 159). These choices appear motivated not just by pre-existing interests but by learners' emerging sense of self and community.

Selwyn *et al.* (2006) highlight the fact that a predisposition for learning is essential for productive participation. The authors argue that there was little evidence to suggest that that technology was somehow creating new learners (p.177). Those who took advantage of the new opportunities were those who developed 'learner identities' disposed towards further study. Moreover, they stress that non-use of ICTs among large sectors of the adult population is an active choice. Indeed, they argued that we need to acknowledge the '(ir)relevance of ICT in many adult lives' (p.182); a compelling argument that highlights the fact that a commitment to a lifelong learning agenda is a prerequisite for effective participation in a Le@rning Society.

Significantly, in these mixed method studies the distinctive trends and bold generalisations identified by survey studies are conspicuous by their absence. Most claims that are made are hedged by a range of compounding factors or constructed as possibilities rather than certainties. If anything, these studies succeed in uncovering various tensions and contradictions that are of interest in their own right. For example, Buckingham (Chapter 9) describes a world in which parents feel compelled to take on more responsibility for managing their children's education without sufficient time or training. Facer *et al.* (2003) describe a world in which young people start to take on adult roles, engage with professional software applications and teach their parents and teachers how to solve ICT related problems. Livingstone (Chapter 5) highlights the increasingly personalised nature of media consumption; however, this is also associated with an emergent individualism and the breakdown of shared frames of reference. Livingstone also stresses the 'uncertain pedagogy' of the home computer at a time when many young people choose to play video games rather than read or engage with educational packages (p. 215). Ironically, video games appear to offer more challenging and creative learning opportunities than many drill-and-test 'edutainment' titles (Livingstone, 2003; Buckingham, 2003; Facer *et al.*, 2003).

In Facer *et al.* (2003) these observations lead into deeper insights about the distinctions between formal and informal learning. Indeed, the central opposition that emerges concerns a mounting tension between computer use in the home and computer use in the schools conceived of as situated forms of social practice. This is summarised by Facer *et al.* (2003, p.231) in terms of an opposition between a top-down vs. bottom-up culture of learning in and out of schools. The findings are represented in Table 1.1

Table 1.1 Learning in and out of schools

Key features of learning with the computer at home:		Key features of learning with the computer in the school:
Children control what it is they want to do on the computer		Teacher chooses the activity
Learning is incidental, a by-product of their substantive activity		Learning is the explicit purpose of the computer-based activity
They control their own time		There is seldom sufficient time to engage effectively
The use a range of learning activities (playful discovery, asking people, looking things up, using online support)		The learning resources allowed are much more limited and primarily linguistically-based (verbal or written instruction)
Their expertise is often celebrated by family and peers		Children's experience is often not recognised or explicitly rejected
Their learning involves 'depth' rather than 'breadth'		Learning involves 'breadth' rather than 'depth'

The basic opposition identified strongly supports the central opposition introduced in section 1.1 that associates formal schooling with a top-down centralised culture industry that is beginning to converge or collide with an emergent culture of informal learning supported by new media in the home.

Taken together, these studies do more than describe the learning opportunities afforded by new media. They say something more generally about an emergent culture of informal learning supported by ICTs in general. In many respects new media becomes synonymous with informal learning constituting what Coffield (2000) argues is the 'structure below the surface' and accounts for two-thirds of learning despite the fact that it remains largely unseen. Similarly, Selwyn *et al.* (2006) stress that only a small minority of adults were using the Internet to engage in formal online courses. However, the new possibilities for informal 'self-education' given a pre-existing interest or authentic need seemed far more significant. They argue:

It seems that much of the ICT-supported informal learning documented in our study took the specific form of 'self education' – a more specific and personalised form of informal learning concerned primarily with the individual's ongoing and burgeoning relationship with knowledge (Gadamer, 2001). It has been argued quite convincingly that the majority of most people's 'real life' learning comes under the aegis of self-education even though the majority of research on teaching and learning tends to ignore it (Selwyn *et al.*, 2006, p.183).

For younger learners, the new possibilities for self-directed self-education in school appears heavily constrained by the rigid institutionalised structures that break the school day up into discrete subject disciplines (taught in clearly defined hour long lessons) in particular classrooms. For Facer *et al.* (2003), the imposition of restrictions and controls that prevent children from developing more personalised, self-directed learning agendas in schools appears increasingly out of step with the free, exploratory and playful ways young people are engaging with ICTs in the home. Indeed, a key distinction between the learning in and out of schools is framed in terms of choice. Importantly, when children were using the computer at home, it was they who actively chose what they wanted to use the computer for. This is regarded as highly significant; indeed, the term 'profound' is used. Further, learning to use various software tools was rarely perceived as an end in itself: 'rather, learning to use the computer, and learning from the computer, were usually side-effects of doing something else that they wanted to do' (p.187). For this reason the authors are sceptical of blanket statements like computers 'make your children more creative' or 'make your children smarter' and argue that learning with computers is a much more complex matter, involving an interaction between child, technology and the specific socio-cultural contexts.

This signals a radical departure from a techno-centric approach towards a far more learner centred approach to understanding the predicament of the learner in which the cultural context of use is all important. For example, compared to the rich and creative ways learners were playing with new technologies in the home, the authors note a considerable amount of

negativity around the use of ICT in schools. What young people, they argue, seemed to be asking for was freedom to work on ‘engaging and challenging projects’ which gave them the space to ‘do things in their own way’ and make ‘decisions for themselves without the imposition of time constraints.’ In the conclusion, the authors come close to recommending that the solution is to consider ways they might make school more like home.

1.6 New Media, New Literacies

An alternative perspective on the predicament of the learner is provided by writers and theorists more specifically interested in what it means to be literate in the new media age. These writers attempt to understand, describe and theorise the competences, what I call new media literacies, required to make effective use of a range of new media tools and resources necessary to succeed in a rapidly changing and increasingly technology-rich world.

From the late 1990’s onwards, an increasing number of scholars have started writing on the theme of ‘techno’, ‘silicon’ or ‘digital’ literacies (Alvermann, 2002; Barnsley *et al.*, 2004; Byiers, 2006; diSessa, 2000; Durrent & Beavis, 2004; Emihovich, 1990; Gilster, 1997; Kist, 2005; Kress, 2003; Lankshear & Knobel, 2003; Snyder, 1998, 2002b; Tyner, 1998). Tyner (1998) provides a theoretically informed, historical account that charts the evolution of literacy through successive stages of technological innovation. DiSessa (2000) develops a powerful model for understanding literacy that draws attention to the need to combine a technological, psychological and socio-cultural dimension in the analysis. However, much remains highly speculative (Glister, 1997), or is based on first-person experiences of interacting with digital-media triangulated with observations of young people’s changing meaning making and communicative practices. Nevertheless, all are informative and have value as texts that might sensitise one to the importance, breadth and complexities of understanding digital or techno-literacies.

The sentiment driving this movement is captured in a quotation from Kress who argues:

It is no longer possible to think about literacy in isolation from a vast array of social, technological and economic factors. Two distinct yet related factors deserve to be particularly highlighted. These are, on the one hand, the broad move from the now centuries old long dominance of writing to the new dominance of the image and, on the other hand, the move from the dominance of the medium of the book to the dominance of the medium of the screen (Kress, 2003, p. 20).

Similarly, Snyder (2004, p.1) argues that we have entered a 'New Communications Order' in which new technologies require people to develop new reading, writing and communicative practices. Two important volumes, *Page to Screen: taking literacy into the electronic era* (1998) and *Silicon Literacies: communication, innovation and education in the electronic age* (2002), both collected and edited by Snyder, convey the breadth of the field. Stylistically these essays betray the influence of cultural studies traditions. The authors write elegantly, working at a high level of abstraction, often traversing a range of issues within a single article whilst referencing a disparate array of theorists. Indeed, the focus of interests shifts rapidly within and between volumes from reviews of existing studies on written composition with word processors (Hawisher & Selfe, 1998) to articles on *The rhetorics and languages of electronic mail* (Moran & Hawisher, 1998), hypermedia navigation and *The wired world of second language acquisition* (Knobel *et al.*, 1998). Similarly, in the second collection, Abbot (2002) investigates the use of visual symbols like 'emoticons' in the emergent practices of instant relay chat; Beavis (1998a, 1998b, 2002a, 2002b, 2004) initiates a sub-discourse on the theme of 'games literacy'¹³ whilst Joyce (1998) explores the new possibilities for participatory stories that allow readers to negotiate their own reading paths through a hypertext narrative.

¹³ Games literacy refers to the practice of reading, writing and playing multimodal, dynamic interactive game 'texts'.

Most of the contributions come from humanists, predominantly literacy specialists currently teaching on English and communication studies courses. It is perhaps a flair for writing and sensitivity to detailed textual analysis that make these essays such a thrilling read. Nevertheless, no coherent method or theoretical framework is offered that might help work within this tradition to build cumulatively on prior work or connect with concepts and models in the learning sciences. Rather we witness a high degree of hybridisation as writers play with concepts pillaged from diverse humanistic traditions to theorise literacy in the electronic era. Indeed, Snyder (2002a, p. xxv) argues that ‘what emerges is a recognition that research in this area has begun the important process of careful and critical borrowing’. Indeed, it is this process of borrowing and playful experimenting with new ways of conceptualising the implications of media change for the future of literacy that tends to characterise this ‘chameleon’ field of inquiry.

Theorists whose work is more directly influenced by the older tradition of New Literacies studies (Barton, 1994; Gee, 1992, 2000a; Hodge & Kress, 1993; Street, 1984) and the work of the New London Group (Cope *et al.*, 2000; Group, 1996) is more powerful. Three theorists, James Paul Gee, Gunther Kress and Colin Lankshear (with Michele Knoble), whose influence is evident throughout this thesis, are very much a part of this tradition.

Kress (2000, 2003; Van Leeuwen & Kress, 2001) develops a sophisticated theory of *multimodal* literacy, conceived of as a capacity to read and make meaning out of multiple modal texts (like webpages) that convey meaning through a combination of text, image, icon, symbol, animation and audio-visual sound clips. However, this is linked to historical, technological and cultural change at a wider socio-cultural level of analysis. For example, he writes:

A vast change is under way, with as yet unknowable consequences. It involves the remaking of relations between what a culture makes available as means for making meaning (what I

shall call throughout the book, representational modes – speech, writing, image, gesture, music and others) and what the culture makes available as means for distributing these meanings as messages (the media of dissemination – book, computer screen, magazine, video, film, radio, chat and so on). ‘Literacy’, in whatever sense, is entirely involved in that (Kress, 2003, p.22).

Negotiating these changes is very much part of what it means to be literate in the new media age. Indeed, Kress argues that *Literacy* can no longer be considered the ability to read and write alphabetic texts for it is inextricably related to the emergent possibilities for meaning making and communication afforded by technological innovations.

Gee played a central role in the New Literacy Studies movement. His seminal contribution, *Social linguistics and literacies: ideology in discourses* (Gee, 1996) shifted attention towards the socio-cultural dimension of literacy conceived of as a capacity to participate in particular kinds of *Discourse*. More than other theorists in this tradition, Gee’s penetrating and illuminating analysis is also informed by deep readings in the learning sciences in general and socio-cultural theory in particular. Recent work focuses on the learning and literacy practices associated with playing video games (2003)¹⁴. Gee argues that commercial games that succeed in a fiercely competitive market are complex and hard to learn. Nevertheless, they incorporate mechanisms that engage young people and help them learn how to play. Indeed, he goes so far as to suggest that ‘good games’ are evolving into ideal learning environments that embed many principles of good learning.

¹⁴ Gee develops a sweeping and theoretically informed discussion based on his own experiences of playing of popular games such as *Tomb Raider II*, *Medal of Honour: Allied Assault*, *Half Life* and *Counter Strike* and *Pyjama Sam* with his son.

If you think about it, you see a Darwinian sort of thing going on here. If a game, for whatever reason, has good principles of learning built into its design – that is, if it facilitates learning in good ways – then it gets played and can sell copies, if it is otherwise good as well. Other games can build on these principles and, perhaps, do them one step better. If a game has poor learning principles built into its design, then it won't get learned or played and won't sell well. Its designers will seek to work elsewhere. In the end then video games represent a process, thanks to what Marx calls the “creativity of Capitalism,” that leads to better and better designs for good learning and indeed, good learning of hard and challenging things (Gee, 2003, p.6).

In short, game designers appear to have acquired deep insights into the complex relationship between learning, motivation, identity and play that educationalists can learn from. Furthermore, Gee argues that the practice of video game play provides a microcosm that might be studied in order to understand the learning and literacy practices required to become a competent user of a range of interactive digital tools and resources. To this end, Gee abstracts 36 principles that can be used to conceptualise learning and literacy in the new media age from a cross-case analysis of dozens of commercially available video games.

In *Situated Language and Learning: a critique of traditional schooling* (Gee, 2004) these insights are developed. The argument tends to celebrate the opportunities for deeply committed modes of learning-by-doing afforded by virtual role-play and participation in online affinity spaces. In these spaces learners are intrinsically motivated as they explore aspects of their emerging identities. This is contrasted to learning activities in traditional ‘chalk and talk’ classrooms in which the rote learning of bodies of knowledge is abstracted from situated practice. Inspired by his insights into video game play, Gee argues for

pedagogies that allow children to experience what it might be like to be a scientist, a doctor or a lawyer, rather than learn about science, medicine or law in the abstract¹⁵.

Lankshear and Knoble (1998; 2003), who have worked closely with Gee, also pay considerable attention to the New Literacies associated with digital sub-cultures. They are activists committed to revolutionising education through theoretical work (or memeing) and practical interventions. Lankshear's (1994) earlier interest in the works of Freire (1985) is barely suppressed. In *New Literacies: changing knowledge and classroom learning* (2003), they develop a useful distinction between insider and outsider mindsets in order to explain the success and failure of many ICT initiatives.

The National Grid for Learning (NGfL) is provided as an example of an initiative conceived with an outsider mindset. The authors produce a scathing critique of two 'edutainment' websites commissioned for the NGfL, highlighting the extensive range of security, surveillance and 'net nannying' tools that educators are advised to use to regulate students' use of the Internet in the classroom (p.81-109). For those who have 'rich experiences of the Net', they argue, these sites 'risk offending their insider sensitivities and turning them off' (p.104). Moreover, it runs the risk of providing young people with 'unfortunate experiences' of using the Internet. In contrast, *E-bay.com*, an online auction site, is presented as an example of an online space designed by insiders that enculturates its users into an insider mindset.

To participate effectively in E-bay auctions, participants must learn how to bid, how to post an item for sale, how to leave feedback, and how to make complaints. Ratings are worn like 'a

¹⁵ Shaffer (2005; 1999) also working at the University of Wisconsin-Madison, has developed 'epistemic games' that afford young people the opportunity to experience authentic 'designed experiences' through virtual role-play in immersive game worlds.

badge of honour' and an 'eBayer's' credibility as a trader, and thus their capacity to participate in the community, depends upon it. Literate traders soon learn not to rely solely on the reputation 'badge' (which can be manipulated) alone. They scrutinise testimonials, look at past transactions looking for 'tells' that might give them an advantage; advanced participants deploy a host of strategies including 'feedback hostage taking', 'feedback extortion' and 'feedback bombing' (pp.139-144). Furthermore, they consider the social position, geographic location and language use of their potential trading partner¹⁶. The authors claim that 'e-Bay teaches people how they *should* act within the new cyberspace'¹⁷. Moreover, 'it socializes people about what counts as an exemplary global space, encouraging the right kind of cyber practices that lead to a well-organised and civil World Wide Web (p.138)'. Insider mindsets are also manifest in the subcultural practices of young people including multimediating, e-zining, memeing, blogging and culture jamming (pp.33-49).

These claims might well be disputed. However, the central distinction between insider and outsider mindsets appears to have enormous explanatory power and connects with the Cultural Industry / Participatory Culture distinction and Facer *et al.*'s (2003) musings about learning with ICTs in and out of schools. Indeed, it suggests an approach to thinking about learning and literacy in relation to the changing media environment in non-reductionist ways.

¹⁶ For example, the authors note that one regular E-bayer 'loved' coming across item descriptions that included misspelt words. Misspellings indicated to the buyer that she was more likely to win a bargain.

¹⁷ To emphasise this point, the authors stress that the reputation system has spawned a host of spin-off complementary products. These include, 'How-to-bid successfully books', various auction tracking and auto-bidding software tools and even an E-bay University.

Summary

Chapter 1 reviews multiple traditions in the literature to gain a purchase on the predicament of the learner in the new media age. It presents a conceptual framework for understanding media change in terms of a transition from a top-down culture industry model of education to an emergent participatory culture that affords new opportunities for informal learning and self-education beyond formal educational contexts. Small scale ethnographic case studies of tech-savvy teens suggest how a few exceptional young people are exploiting the new opportunities afforded by an emerging web-based participatory culture, taking on adult roles and appropriating digital tools for creative production. Survey data confirms that people of all ages enjoy widening access to new media and the Internet. However, surveys can only hint at how these technologies are being appropriated by different groups in practice.

Empirical studies that contextualise computer use in the home identify emerging tensions and contradictions that demythologise the notion of a digital generation who are uniformly taking advantage of the informal learning opportunities afforded by young peoples' expanding access to the Internet. However, schools are still constructed as top-down centralised and controlling institutions increasingly out of step with an emergent culture of self-directed learning. This challenges educators to consider ways in which they can make school more like home and give young people more freedom. As a solution, this appears somewhat hasty. It appears to assume that all young people will monopolise on the relative freedoms afforded by ICTs in productive ways. This recommendation neglects the fundamental importance of a commitment to independent learning and self-education evident in small scale ethnographic case studies of tech-savvy teens and larger mixed method studies of adult learning in the home.

Studies concerned with the changing nature of literacy in the new media age highlight the agency of individual learners as they design multiple modal texts, navigate through non-linear

hypertext and playfully solve complex problems in immersive game worlds. Furthermore, they suggest that emergent literacies required to make effective use of the Internet are increasingly out of step with the restrictive literacy practices associated with paper-based learning environments and top-down E-learning systems, such as the *National Grid for Learning*; a contradiction crystallised in Lankshear and Knobel's (2003) distinction between insider and outsider mindsets.

As a whole, this body of literature highlights the growing discrepancies between traditional modes of education and formal schooling and an emergent culture of self-directed learning. In addition it suggests the need for the educational establishment to take stock and a growing consensus that formal modes of learning and instruction need to adapt and change with the times. This line of investigation is developed in Chapter 2 through a review of progressive ICT initiatives that attempt to cater for young people who are changing learning and literacy practices beyond the classroom.

Chapter 2 **Convergence Culture goes to School:**

personalisation, identity and the agency of the learner

in the digital classroom

This chapter starts to explore the predicament of the learner by exploring attempts to adapt and cater for the emergence of participatory culture through the integration of new media forms into classroom-based teaching and learning. In effect it suggests what happens when we attempt to make school more like home. It also serves to illustrate how two design experiments, conducted in the early phases of this DPhil project, shaped the trajectory of thought that led to a focus on the agency of the learner in the networked university.

2.1 The cultural barriers to making school more like home

Cuban (2001) has highlighted the degree to which computers are oversold and underused. Nevertheless, the uncritical utopianism that has characterised ICT policy rhetoric and propagates the notion that ICTs are transforming education continues largely unabated. The British Education Communications Technology Agency (BECTA) and the Joint Information Systems Committee (JISC) continue to construct ICT as the driving force, if not the *cause* of, rising standards in education. A recent report by BECTA (2007, p. 3) somewhat boldly claims that ICTs raise standards, improve learners' attainment, help young people develop the skills they need for today's workplace and makes learning more enjoyable and rewarding. Moreover, it adds that new technologies empower learners to take 'greater control of their learning'. Similarly, the *2020 Vision Report* (DfES, 2006) constructs an idealistic vision of the education system of tomorrow organised around the concept of 'personalised learning'. The notion is described in the following terms:

Learners are active and curious: they create their own hypotheses, ask their own questions, coach one another, set goals for themselves, monitor their progress and

experiment with ideas and take risks knowing that mistakes and ‘being stuck’ are part of learning. Work is sufficiently varied and challenging to maintain their engagement but not so difficult as to discourage them. This engagement allows learners of all abilities to succeed, and it avoids the disaffection and attention-seeking that gives rise to problems with behaviour (DfES, 2000, p.6).

Significantly, the stresses that personalised learning should be connected to what learners already know and allow the voice of learners to be heard. Indeed, personalisation demands that educators ‘establish the habit of talking about learning and teaching and how to improve it’ (p.20). In multiple respects this ‘personalisation’ discourse appears to be heavily influenced by observations concerning young people’s computer use in the home.

The widespread belief in the transformative potential of new technologies has resulted in large sums of public money being ploughed into the development of advanced ‘E-learning’ tools and technologies. In higher education, the Joint Information Systems Committee (JISC) has sponsored hundreds of projects devised to produce new online tools, services and depositories of interactive digital content¹⁸. In addition researchers at innovation and research centres like Nesta Futurelab, M.I.T.’s Media Lab, Ultralab and the London Knowledge Lab have been busily developing interactive learning environments that promise to support progressive, constructivist pedagogies which allow young people to learn through

¹⁸ Examples include: a digital archive of first world war poetry; ASSERT (an automatic summarisation tool for conducting systematic reviews); and *Constructing 2 Learn* (a construction tool kit that allows social scientists to model complex game-like systems).

experimentation, play and self discovery¹⁹. Similarly, companies like Muzzy Lane, DESQ and Immersive Education continue to develop a range of interactive learning environments in an attempt to build progressive interactive learning environments that engage learners and sell CD ROMs. In recent years, U.K. schools have been compelled to spend ‘E-learning credits’ on educational software in an attempt to bolster innovation and development in this area (DfES, 2004).

The excitement surrounding the emerging possibilities for deeply engaging ‘personalised’ learning supported by interactive digital media is nowhere more conspicuous than in the discourse that has emerged surrounding the serious or educational games movement; a vision invariably inspired by observations about young peoples’ commitment to playing complex and challenging commercial video games in the home. The optimistic sentiment is well captured in an early quote from the ‘guru of workable technologies’, Don Norman, who writes:

I have long been struck by the power of the computer game to mesmerise, to hold the attention of otherwise restless children for hours and even days. I have watched otherwise unruly children focus, study, collaborate, and problem solve. They read hint books, save checkpoints, the better to be able to try ‘what if’ scenarios. They consult, they create, they solve. They do all the activities we wish them to do in pursuit of an education. What a shame that what is being learned is so trivial, so worthless (2004, p. 1).

He then invites his reader to participate in a utopian vision of the future of education:

Now imagine a time when we transform education. When we can craft educational problems as cleverly as the game creators create theirs, allowing students to delve in

¹⁹ For an interactive learning environment designed to support situated role-play see *English Taxi* by DESQ; for active experimentation and hypothesis testing see *Racing Academy* by FutureLab and for collaborative problem solving see *Astroversity* by FutureLab¹⁹.

to the complexity of topics as deeply and as thoroughly as they delve into the games. Excite them to dive into the task, voluntarily working hard to learn the skills necessary to succeed. Only this time, the skills learned will be the ones necessary to be successful, well educated citizens of society: mathematics, history, writing, science, art and so on (2004, p.1).

Since Norman wrote this statement there has been a great deal of activity among developers and researchers motivated by similar sentiments. Recent overviews are beginning to map out the current state of this rapidly emerging field (de Freitas, 2006; Kirriemuir & McFarlane, 2004; McFarlane, 2005). And a variety of reports and papers discuss and theorise the new learning opportunities afforded (Barab *et al.*, 2005; de Freitas, 2006; de Freitas & Levene, 2004; Dempsey *et al.*, 2002; Dowe, 2001; Gross, 2003; Holsbrink-Engels, 1997; Jayakanthan, 2002; Jenkins & Squire, 2003; Rosas *et al.*, 2003; Sandford & Francis, 2006; Shaffer, 2005; Squire, 2002; Ulicsak, 2005; Woods, 1998; Young *et al.*, 2006). Nevertheless, objective research that reports on the use of game-based learning environments in real classroom contexts remains difficult to find. Indeed, existing research on the potential of games in the classroom tends to focus on the use of commercially available, off-the-shelf videogame (COTS). Furthermore, these studies highlight as many problems as new pedagogical possibilities.

Studies conducted by BECTA (2001) and TEEM (2002) provide initial insights. The BECTA study highlighted that the use of games like *Sim City* and *Roller Coaster Tycoon* increased motivation, encouraged collaborative patterns of working, and increased engagement with the content material leading to opportunities for discussion of complex issues such as citizenship and resource management. They also noted positive spin-off side effects such as the development of a range of ICT skills and increased library use inspired by interests developed through gaming activities. However, the games were invariably too complex for the teachers' purposes and did not fit easily into the space of a traditional one hour classroom lesson. Further, the knowledge and skills developed through these game-based learning activities

could not be easily assessed or categorised according to existing assessment criteria. The larger TEEM study concluded:

Many of the skills valuable for successful game play, and recognised by both teachers and parents, are only implicitly valued within a school context. Teachers and parents both valued the conversation, discussions, and varied thinking skills demanded by some of the games employed. However, these alone could not justify the use of the games within a crowded school curriculum (p.4).

All studies highlight the danger of students becoming so engaged in the game that they lose track of the learning objectives²⁰. Moreover, incidental learning that does occur as a result of game-play tends to be at odds with the educational agendas of teachers as they attempt to guide and scaffold learners towards particular learning objectives. This highlights a cultural problem that became more acute in secondary schools as the curriculum became tighter and more geared towards to the final exams²¹.

Two deep sources of insight are provided by studies conducted by Ph.D students. In *Relaying History*, Squire (2004a) documents his attempt to use *Civilisation III* to re-engage a group of ‘underserved’ urban high school students. Similarly, in *Beyond Edutainment*, Egenfeldt-Nielsen (2005) documents his attempt to use *Europa Universalis* in a Danish high school.

The experience of game play promoted discussion that covered a range of issues. For example, Squire describes how ‘in one 15 minute period, students asked about: theology, steam power, free artistry, coastal fortresses, mutual protection pacts, wealth, the corporation,

²⁰ Futurelab has since conducted a large scale intervention study to explore the potential of commercial games in classroom contexts. In this study teachers were encouraged to develop schemes of work that incorporated COTS into curriculum-based learning activities (Sandford *et al.*, 2005).

²¹ Survey research has since attempted to map out the use of COTS in the classroom (Kirriemuir, 2005).

embargoes, astronomy, refining, espionage, and cavalry, as well as if threatening civilisations affected diplomatic relations' (Squire & Barab, 2004, p. 5). Squire (2004a) responded to the dizzying array of questions by providing a series of 'just in time' lectures based on his own experience of playing *Civilisation III*. However, this was only possible because he had personally spent hundreds of hours playing the game. The activity could be constructed as a 'personalised learning' experience in which learners are active and curious, ask their own questions and form conjectures and hypotheses. However, it appears that learners might also spiral off task and form misconceptions. At the same time, teachers might lose the ability to monitor the progress of individual students and intervene, when necessary, to provide direction and focus.

Interestingly, Egenfeldt-Nilsen who, unlike Squire, worked with students across the ability range, argued that many of the more academically motivated students dropped out of the *Europa Universalis* workshops (designed to teach European History) because it wasn't obvious to them how it might help them prepare for exams and thus succeed in the game of formal schooling. In short, learning undoubtedly occurred. However, the able students in the group did not perceive that this kind of learning had educational value. Further, it was not entirely clear what young people were learning from playing the games in a classroom context that they would not learn from playing these games with friends in the home.

My own interest in the shifting *locus of agency for managing and regulating learning*²² originated in my experience of conducting a design experiment that attempted to use a

²² In this context, the phrase is intended to suggest that progressive initiatives that make extensive use of new media and allow learners more freedom to be creative, discover and explore during the learning process invariably require an individual to take on more of the onus of responsibility for managing and regulating learning. In effect, new media affords children more choice and hence more control.

modified version of a multiplayer online role-playing game to support teaching and learning in the humanities classroom (Francis, 2006a, 2006c) and a multiple case study of students' experiences of learning supported by the *Learning Activity Management System* (LAMS). From a research design perspective both studies proved problematic. Access issues, technical problems, ethical issues and time limitations inhibited the development of these studies. Nevertheless, both focussed attention on the issue of learner agency that is central to this thesis. Further, both suggested the importance of the socio-cultural approach for understanding the implications of media change for learning and literacy. Consequently, in the next two sections key findings from both studies are presented in brief with samples of the data collected. Additional information about the background, data collection and methodology is provided in Appendix 2 and 3.

2.2 The agency of the learner in the Revolution classroom

Revolution is an educational game that was modified from the commercially available multiplayer role-playing game *Neverwinter Nights*²³ by developers, led by Philip Tan, at M.I.T working on the Education Arcade project. The game allows students to take on the role of ordinary townsfolk (a blacksmith, a field slave, a seamstress, the town lawyer etc.) and re-live a day in the life of an ordinary person in 18th century Colonial Williamsburg. In effect, the game attempts to model a complex social system in which the range of interactions between characters is constrained by variables relating to each character's race, class, gender and political affiliation.

However, this also demands they take on more of the burden of responsibility for managing and regulating their own learning.

²³ *Neverwinter Nights* is modelled on the *Dungeons and Dragons* card-based role-playing game.

The cyber-drama is set prior to the outbreak of the American War of Independence and is designed to help high school students learn about aspects of social history. It allows up to seven player characters to follow a ‘controlled emergent narrative’ as they pursue personal goals that require them to interact and speak with non-player characters. This culminates in a meeting held outside the courthouse (as shown in Figure 2.1.) where the townsfolk gather to discuss the Governor’s confiscation of the gun powder from the ‘Magazine’ and debate whether or not they should take up arms and rebel against British rule.



Figure 2.1 Screen shot from *Revolution* game: the townsfolk gather outside the court house to hear Robert Carter Nicholas speak out against open rebellion

Five workshops explored the potential of *Revolution* as a learning resource. Four were conducted with small groups of home schooled students (4-7 students) and a fifth with a group of fifteen students from a local high school. Multiple qualitative methods were used to record students’ in-game activities, contributions to discussion and practical production activities (see Appendix 3).

The game appeared to afford new opportunities for deeply committed learning. Particular students (invariably home schooled students) followed the instructions and engaged in whole class discussion in ways that suggested they had made powerful identifications with their virtual personas and gained a deep and holistic insight into many of the social-historical issues modelled in the game. For example Ariana, a thirteen year old African American girl, chose to play Hannah, a virtual house slave.



Figure 2.2 Hannah in the living room of Steadmond Farm



Figure 2.3 Hannah overlooking the other slave characters working in the cotton fields

The role is designed to place the character in a dilemma, with divided loyalties, torn between serving her master and assisting a runaway slave who the local militia are attempting to hunt down. Ariana appeared to empathise with the role and enter into a form of deeply committed imaginary play. This is evident in interview dialogue recorded after the game.

RF: So what do you feel that you learnt from playing Hannah?’

Ariana: Well, I learnt even more about how, how it is when you don’t really have a say in the matter. Or else – you’re under sentence of death or something. So you just have to do it and you’ll do it scared and you have to invent ways to get through it. And what you don’t really have is as much support as you would like because being a house slave they call you names, just because most of the time, you’re lighter skin because you’re the masters kid technically.

RF: Right, so it was like a struggle for survival and you felt the need to 'find ways to get by' is that what you said?

Ariana: Yes.

RF: What do you mean by that?

Ariana: I had to find the ways to get by because, you know, it was hard. On one side you don't want to get on the Masters' bad side because he can beat you. On the other side the slaves they ridicule you and are being mean so you try and pay them back by helping them out and trying to free them.

RF: That's interesting. Did the other slaves say anything to you that made you feel ridiculed?

Ariana: Not really.

RF: But you kind of imagined, you filled that in with your imagination?

Ariana: Yes.

RF: You kind of imagined that they would kind of ridicule you. You didn't feel like part of that community?

Ariana: Not really. Because you are totally different from them, they think you are trying to be better than them just because you are a house slave.

The data suggested that Ariana had become emotionally invested in the role and started to read things into the experience. For example, she imagined that the other slaves were ridiculing her because, compared to the slaves who worked in the fields, she enjoyed a relative easy life. Interestingly, Ariana had been 'home schooled' by her grandmother (also present at the workshops) who stressed that she organised a home-school curriculum that emphasised the accomplishments of the African American people. This appeared to manifest itself when she interpreted the songs the slaves were singing in the fields as 'spirituals', or coded messages, indicating that one of the slaves was going to run.

Given that seven students played different characters within the cyberdrama, each developed a very different perspective on the world and events modelled in the game. This led to some rich and varied post-game discussions as students discussed themes as diverse as the mounting tensions between the loyalists and the patriots, the irrelevance of the dispute about taxation to the slaves or the 18th century social protocols associated with class and gender roles.

Students also produced diary entries based on their experiences of virtual role-play and some produced machinema (multi-media productions that recycle graphical content captured from video games). These were combined with an audio voice-over retelling the day's events from the characters point of view using *Windows Movie Maker*²⁴. Samples of practical productions produced by two students are shown in Figures 2.4 and 2.5.

²⁴ Analysis suggested that the activity helped students develop a relativistic and critical stance towards dominant representations of the period as presented in school text books and consider why alternative histories of disenfranchised groups (such as the African American people) might be suppressed or silenced in dominant representations.

Dear diary,

I started the day in my workshop where I am skilled in engraving, gunsmithing, and silverwork. I am a moderate who believes in peaceful solutions to working out problems.

When I started my day, I was highly encouraged to make a key that would unlock a door to a building that might be concealing a runaway slave. Before I thought to refuse this demand I made the key, but afterward I felt as though I had done something morally wrong. However, I don't know what I would have done differently given the circumstances. I spent the next part of my day trying to collect signatures from local townspeople that would encourage non violent action in our current situation. After gathering many signatures I was told to go see Lewis Dollard who would publish my petition. Dollard eagerly agreed to do so.

Today was a day when rumours were running wild through the streets of Williamsburg. I heard such things as “Lord Dunmore had a secret tunnel” and “there was a runaway slave in the town”. When I was told to “remember my place, sir” by a woman of higher class, I was reminded of my social standing.

Later, when the townspeople surrounded the governor's gate, a redcoat pushed me down in an attempt to squelch a perceived threat. Little did he know, I was unarmed and was there merely observing the chaos.

William

Figure 2.4 Diary entry produced by 13 year old playing William the carpenter

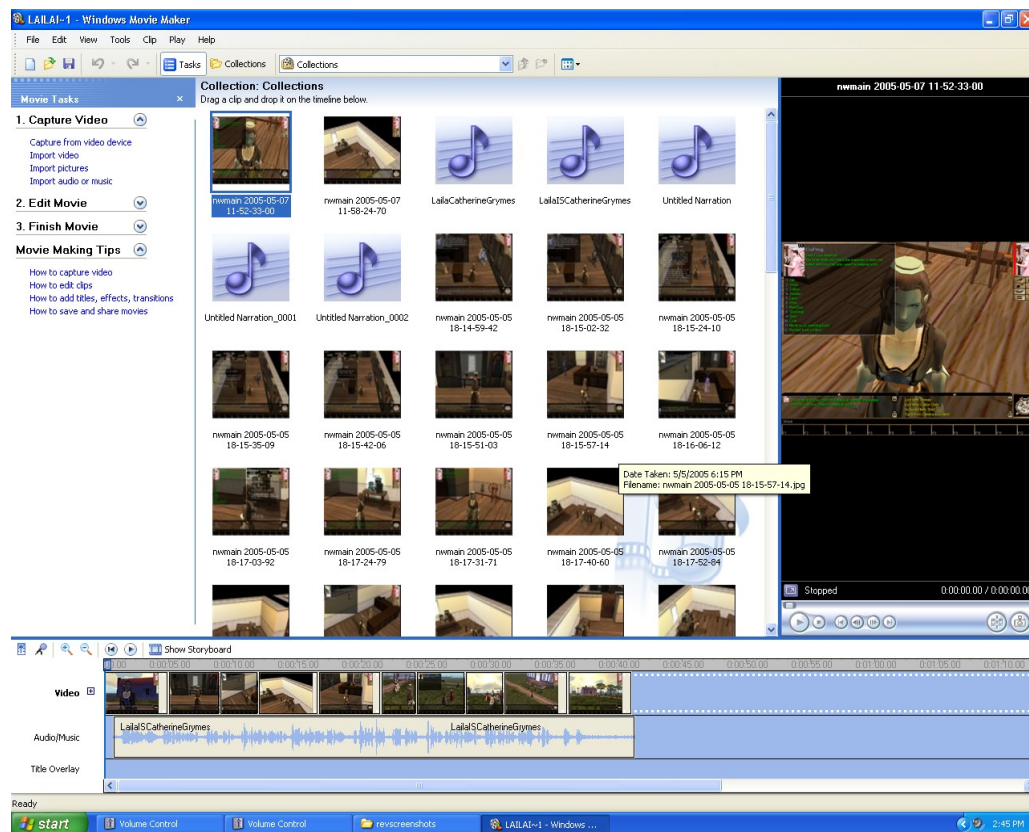


Figure 2.5 Screen shot of 14 year old 'home schooled' student using *Windows Movie Maker* to construct a multi-media machinema diary

The work produced suggested both students had empathised with their virtual personas, entered into a form of imaginary play and developed a deep commitment to the activity. The diary entry shown in Figure 2.4 suggests that the student followed instructions, empathised with his virtual persona and developed a holistic understanding of the dispute and the mounting tensions between different political fractions. The girl who produced the video diary repeatedly recorded voice-overs (indicated by the icons with musical notes in the screen shot) and went on to make some thoughtful and intelligent contributions to whole group discussion based on her experience of playing the seamstress Catherine Grimes.

Both examples suggest some of the rich, expressive and creative ways learners committed to the ‘official’ learning objectives of the lesson, appropriated new media to express their personal experience of virtual role-play and developed a holistic insight into the socio-historical themes modelled in the game. Indeed, the data collected from the workshops conducted with home schooled students could be used to make a powerful case for new possibilities for ‘personalised’ learning supported through interactive role-play in an immersive environment. However, a number of students did not play the game in the ways intended. Indeed, most of the students from the local high school failed to follow instructions before hastily setting off to explore the immersive game world. Several students exploited bugs in the system for comic effect and hacked into the combat menu that the game had inherited from the *Neverwinter Nights* game. Other students worked out how to take their characters’ clothes off and started streaking across the virtual market square and punching non-player characters indiscriminately. The game soon degenerated into an orgy of chaos.

Their teacher, who became rather angry, complained that they were under the influence of a commercialised and eroticised popular culture that had been seeping into the schools through the Internet. Indeed, whereas the home school students tended to engage with the game, following instructions and engaging in critical discussion, the high school students appeared to come to the workshop with the expectation of playing a violent action packed video game, such as *Grand Theft Auto: Vice City*, that many were accustomed to playing in the home. As a result, some high school students were somewhat disappointed by the ‘serious game’ offered. One boy, who had been asked to play the character of an ‘indentured servant’ in the local tavern complained, ‘I don’t want to bake bread in a computer game, I want to kill people!’ In effect, this group subverted the official game sanctioned by the teacher and invented a game of their own.

Thus, despite a multitude of insights into the potential of virtual role-play as a learning experience, I was forced to conclude that we can't understand the new learning opportunities afforded without understanding what students bring with them to the digital classroom. Students clearly appropriated the game in a diversity of ways depending on their own pre-conceived agendas. Modifying commercially available games to restrict access to undesirable features cannot solve the problem on its own. The gamers or hackers within the group relished the opportunity to subvert the constraints designed into the modified game. This is perhaps not surprising given that, as a flick through any gaming magazine illustrates, cheats and hacks are very much part of the appeal of video game subculture.

These observations suggested that video games can't be so easily taken out of the context of youth subculture and re-deployed for educational purposes without robbing them of many of the qualities that make them so appealing. In the context of the home, students are accustomed to being in control and are generally free to play the games, characters and roles they wish to play. Consequently, if they are instructed to play a particular role in a particular game, one can't necessarily expect them to identify with the characters they are asked to play or become imaginatively invested in the role. Arguably this is because part of the appeal of playing videogames relates to the opportunities they afford for identity play.

Given the complex cultural, contextual and identity issues that emerged, it was difficult to know what to recommend. The development team were expecting recommendations that might inform further design and development. Nevertheless, it seemed that the main pedagogical challenge concerned how to encourage all players to commit to the 'official' learning objectives and empathise with their virtual personas. This kind of imaginative identification was necessary to shift the experience from an essentially technical exercise to a form of imaginary role-play, mediated by the virtual world, in which learners might start to gain an insight into lives of ordinary people who lived through this historical period. It

seemed self-evident that this would involve giving students a high degree of freedom to choose which characters they played and preparatory exercises that might prepare students psychologically, not to expect a game, but to participate in a serious virtual cyber-drama through which they might learn about social history.

In this respect, virtual role-play should not be considered as fundamentally different from improvisational drama. Both can afford powerful learning experiences. The chief advantage of virtual role-play concerns the ease with which students can step into a pre-designed role in a fully immersive virtually figured world and start to learn about the people who inhabit it through a subtly constrained form of self-discovery.

2.3 The agency of the learner in the LAMS classroom

The importance of an internalised commitment to the teacher-defined or ‘official’ learning objectives in the digital classroom was replicated in another case study conducted in a very different context.

The *Learning Activity Management Systems* (LAMS) developed by James Dalziel and his team at Macquarie University’s E-Learning Centre Of Excellence (MELCOE) is a state-of-the-art learning design tool that promises to provide teachers and lecturers with a powerful tool for integrating a range of new media forms (chat rooms, discussion forums, question and answer sessions etc.) and a range of online web-based educational resources and interactive content into tightly structured learning sequences.

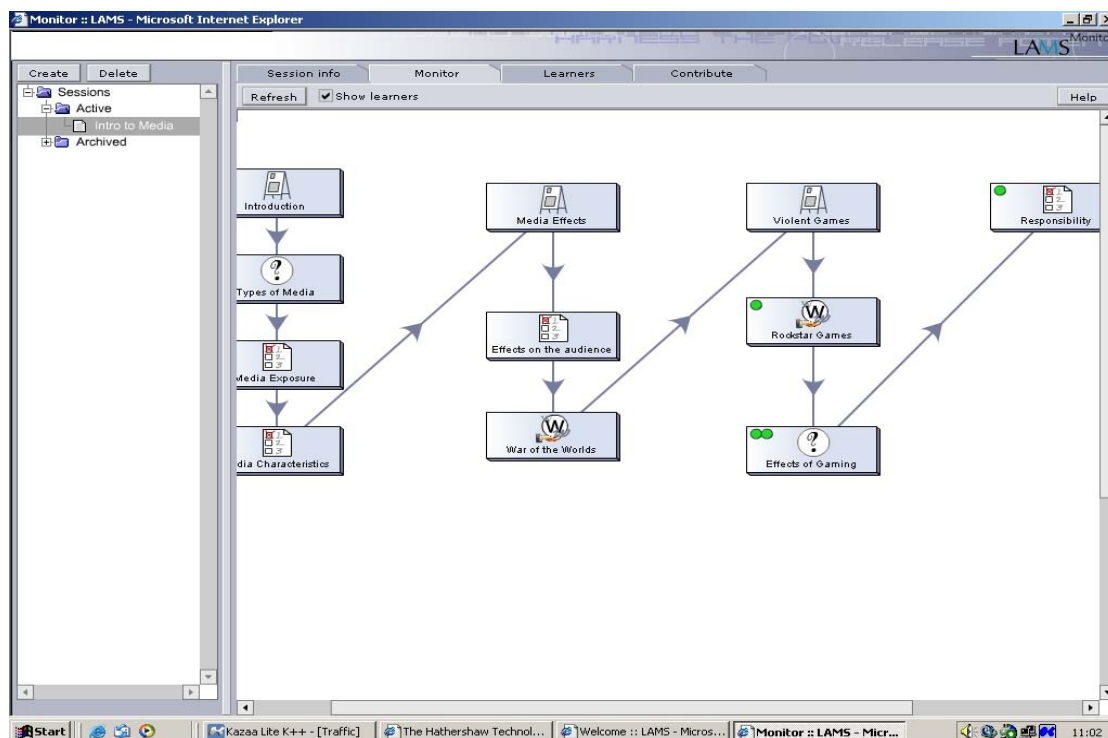


Figure 2.6 LAMS sequenced focussed on media effects debate used as a hook to encourage Y9 pupils to take Media Studies G.C.S.E

The Learning Design paradigm has attracted high levels of sponsorship and the support of leading figures in the field of E-learning. Kraan (2002) has argued that ‘learning design is the way ahead’. Laurillard, the former head of the U.K. government’s E-learning strategy unit, personally championed the LAMS system, arguing, ‘LAMS has the potential to transform teachers’ and lecturers’ capabilities to innovate in teaching and learning — I can imagine a future where every school in the UK may one day use LAMS’ (2004). The JISC sponsored a LAMS server and commissioned an evaluation of the LAMS system for further and higher education (Masterman & Lee, 2005a) and the Specialist Schools Trust (SST) financed a LAMS trial in U.K. secondary schools. In short, the system has received widespread support from the U.K.’s E-learning establishment as a progressive, ‘pedagogy free’ authoring environment that might be used by subject specialists in diverse contexts to design for E-learning across the curriculum.

To date much of the literature relating to Learning Design and LAMS remains preoccupied with technical issues (Beetham, 2004; Britain, 2004; Dalziel, 2003; Kraan., 2002; OUCS, 2004; Worlock, 2004). Only a handful of case studies document attempts to use LAMS in real classroom contexts with real learners (Gibbs & O'Sullivan, 2005; Parry, 2004). In 2004-2005, in an attempt to fill this gap in the literature, I attempted to gain access to observe LAMS lessons in action.

Initially, I tracked the roll out of the LAMS system into U.K. further and higher education and assisted in the JISC practitioners' trials. This involved interviewing lecturers who had used or who were intending to use LAMS to support learning on further and higher educational courses (Masterman & Lee, 2005a)²⁵. Further, I interviewed teachers who had spear-headed the trial in secondary schools in the south of England²⁶. Finally, I gained access to a British Comprehensive school participating in the SST trial. This provided a long awaited opportunity to observe LAMS lessons, designed by curriculum teachers, being used to teach real students in real classrooms.

The school was situated in a deprived area and had a history of low attainment. Many of the students were from disadvantaged backgrounds. Nevertheless, the school had made significant progress (OFSTED, 2004) and were making steady gains in the league tables. The creative use of ICTs played a central role in the school's development plan. The deputy head-teacher, who had invited me to the school, had assumed personal responsibility for driving

²⁵ See Appendix 3 for additional information regarding the process of obtaining access to observe LAMS lessons.

²⁶ In a spin-off project, based at Oxford University Computer Services, I designed LAMS sequences and participated in interviews and focus groups that explored LAMS capacity to support re-useable user content for English teaching (Masterman & Lee, 2005b).

forward the whole school ICT strategy. This included: the development of a school wide wireless LAN network; laptops for teachers; installation of interactive whiteboards throughout the school; the appointment of an ICT pedagogy officer with specific responsibility for supporting classroom teachers; and the development of a Virtual Learning Environment (VLE) to support teaching, learning and administration. Thus, the school's decision to participate in the LAMS trials was very much a part of a whole school strategy to transform learning through the progressive use of ICTs.

Among the staff participating in the trial there was great optimism and considerable excitement. Teachers discussed the possibility of using LAMS to support cover lessons and an 'independent learning centre' that would remain open after school hours. Further, the unit for the hearing impaired was interested in adapting LAMS sequences designed by subject specialists. Nevertheless, the trial was focussed on how LAMS sequences might be used to support classroom learning across the curriculum.

Teachers participating in the trial were given time off the standard timetable to take part in learning design workshops and designed LAMS sequences for teaching English, Media Studies, Maths, Modern Foreign Languages, Geography, Food Technology, Physical Education, and Business Studies (G.C.S.E. revision modules). The diversity of ways teachers appropriated the tool to address curriculum trouble-spots supported the claims that LAMS is a 'pedagogy free tool' that might be used across the curriculum.

Students' responses to a questionnaire added to the end of a LAMS sequence were generally positive. For example, one student wrote:

I think this a good lesson to take part in because we learn a lot about topics that face us today and we all get to have our own opinion, which doesn't always happen in the classroom. It compares very good to a normal lesson because we learn but

interactively and we have a lot more fun. We can all take part in the lesson, and we can express our thoughts without speaking in front of the whole class.

However, a number of responses appeared to parrot phrases used by teachers when introducing the activity. As a result, this data source was deemed suspect. Nevertheless, there seemed widespread support for the notion that the LAMS gave students more ownership over their own learning. One teacher described the experience of teaching a LAMS lesson in terms of letting go of the reins:

“You’re guiding them but they’ve still got that freedom and they are still in control of their lesson ... it’s a very strange experience, you don’t lose control but you interact on a different level and a different pace to anything else I’ve ever experienced. You have to let the reins go a little bit.”

However, it was not clear from interview data how students actually exploited the relative freedom of the LAMS classroom. Analysis of screen-based content, captured by the LAMS tool, suggested a wide diversity in terms of levels of engagement. For example, the responses to a question posed by the LAMS system regarding effects of the media on young people varied greatly in terms of length and sophistication as shown in Figure 2.7.

lams202189 answered:

(lams202189) Some people, especially children, react according to the examples shown on television and computer games. I think that there is too much violence in them. The level of realism in the games and movies make the game a very uncomfortable game to play. I would be very angry and upset if my children were found playing these games. I would never play them myself. I think that it is a very sick and disgusting idea. It would be mostly boys and children that would play this game. The ideas from this game might make it hard for certain people to distinguish from reality and the computer game or film. In my opinion these games and films should definitely be banned.

lams202196 answered:

(lams202196) I don't know because some people try it on humans but others just do it on the computer.

lams202198 answered:

(lams202198) Yes, these guys once killed a woman because they had played on, "Manhunt" once. Getting points for killing most people in more gruesome ways does make people who play the games do the same actions.

lams202203 answered:

(lams202203) No because it depends how old you are if you are young then you will try to imitate the game and if you are older then you will know that this is only a game.

Figure 2.7 Sample responses from LAMS lesson on effects of the media

Likewise, one can see from the comparison of responses provided to a question posed as part of a LAMS-based 'Great Inventors Balloon Debate' that whilst some students attempted to compose thoughtful and reasoned arguments as instructed (Figure 2.8, left), others simply cut and pasted digitised text directly from a web site into a response box (Figure 2.8, right).

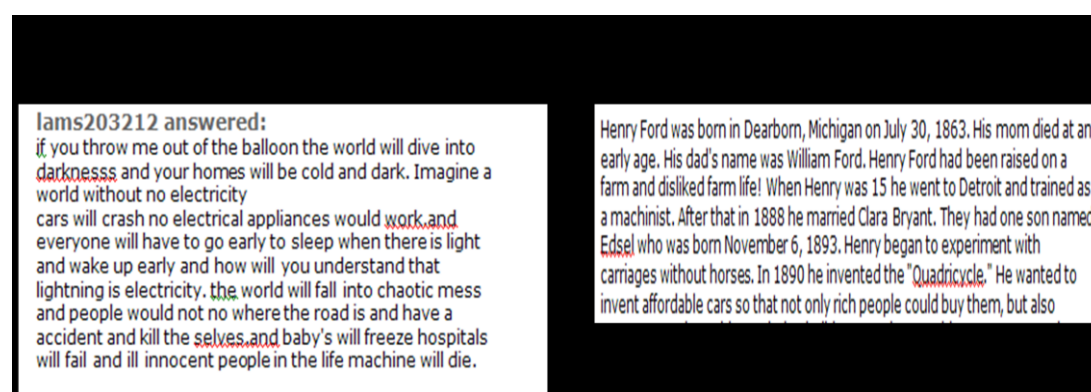


Figure 2.8 Sample of students' responses to a persuasive writing exercise

Indeed, in each of the five lessons observed, whilst a number of students who seemed committed to the ‘official’ learning objective (i.e. those promoted by the teacher) progressed through the activity following instructions carefully others exploited the relative freedom of the LAMS lesson to advance their own agendas. Observation and stimulated responses (recorded whilst students were actually working through a LAMS sequence) were more revealing. Indeed, these data sources proved invaluable for understanding the predicament of the learner in the LAMS classroom²⁷.

A schema was developed that categorised the practices of learners in terms of the level of commitment to the ‘official’ teacher defined learning objective that brings the agency of the learner to the foreground²⁸. The schema included four categories: committed learners (aligned to the ‘official’ learning objectives); committed learners (not-aligned to the ‘official learning objectives); ‘easy-riders’; and the ‘gamers / hackers’. In summary:

Committed learners aligned to the official learning objectives internalised the learning objectives suggested by the teacher designed into the LAMS sequence and appeared to enjoyed the relative freedom of the LAMS environment to progress at their own pace. They followed on-screen instructions carefully, leveraged the expertise of the teacher if and when required and exploited opportunities to compare their work with others. Finally, these

²⁷ It was impossible to interview or observe all students participating in any one LAMS lesson. Thus, I tended to wander around the room observing students’ activities (making notes on a Dictaphone) and sought opportunities to conduct minimally intrusive mini-interviews (or stimulated responses) with students who were progressing through the activities. Thus, the notes and interviews conducted in these sessions can not be regarded as representative of the whole group.

²⁸ This schema was first presented at the European LAMS Conference in Greenwich (Francis, 2007)

committed learners appeared motivated by the opportunities to display work to a real audience and resisted potential distractions and remained on task.

Committed learners not aligned to the ‘official’ learning objectives were highly engaged. However, they did not fully internalise the official learning objectives. This group did not follow on-screen instructions carefully and often veered off-task to explore more personal interests. For example, one child participating in a geography lesson realised he could find out what the weather was like in Wales (where his mother lived) using the BBC weather website and then became preoccupied with exploring what else he could find out about the region. In short, this group appeared intrinsically motivated by materials relating to their own sense of self and community.

The group categorised as *easy riders* liked the fact that they could chat whilst working through a LAMS sequence without being “told off” for interrupting. They progressed through the task but did not seem particularly engaged. Further, they sometimes rushed through the LAMS sequence quickly avoiding activities that demanded work. Notably, this group tended to cut and paste rather than compose original contributions (as shown in Figure 2.8). This group also appeared to enjoy the relatively low level of teacher surveillance and paid little attention to the opportunities to compare their work with others.

The *gamers* or *hackers*’ actively resisted (rather than internalised) the official learning objective and sought out ways to get around the enabling constraints imposed by LAMS sequence to advance their own agendas. For example, a small group of boys spent much of

the time browsing the web looking for pictures of Ferrari sports cars²⁹. They were supposed to be working through a LAMS sequence that guided them through a web-based investigation into the life and times of Charles Dickens. Their teacher became somewhat frustrated and despaired: 'I don't know what to do Mr. Francis, you ask for Charles Dickens and you get a Ferrari!' Others students in this category attempted to use instant relay chat to send messages to their friends. One boy came out of the LAMS system and attempted to access game sites that had not been blocked.

Interestingly, the group identified as gamers / hackers appeared to have extensive experience of playing games, surfing the web and engaging in digital subculture beyond the classroom. The experience of progressing through a linear LAMS sequence and responding to text-based question and answer sessions appeared rather dull by comparison. In short, not unlike the hackers in the Revolution classroom they also appeared heavily influenced by a commercialised culture that was seeping into the school through the Internet.

2.4 Identity and the agency in the digital classroom

The observations made in both the LAMS and Revolution case studies forced one to start questioning the cultural logic of attempts to make school more like home and consider non-technological factors that might account for the diversity of ways students appropriate new media in the digital classroom. Indeed, these case studies highlight above all the folly of thinking in technologically deterministic ways and seeking evidence that ICTs might improve attainment – assumptions that are implicit in research designs conceived of as 'evaluations.'³⁰.

²⁹ When the teacher approached, these boys typically switched windows so the LAMS activity was visible before resuming their Ferrari web-quest.

³⁰ The technologically deterministic assumptions underlying attempts to evaluate new technologies in classroom contexts has also been questioned by Somekh (2004). Somekh was formerly a principal

Rather, these findings suggest we ought to conceive of the digital classroom as a *site of struggle* in which multiple forces are shaping the agencies of individual learners and different groups who are in turn *appropriating* new media to advance their own agendas (learning and otherwise) in diverse ways. In fact, teachers seemed relatively powerless to dictate or control how these technologies might be appropriated. In socio-cultural terms, both the LAMS and *Revolution*, conceived as pedagogical tools, attempt to promote particular actions within a widening *zone of free movement* (Valsiner, 1997) in order to position learners within a *zone of proximal development* and guide them invisibly towards a desirable learning outcome. However, students who had not internalised and committed to the ‘official’ learning objectives in each lesson could easily ignore the subtle constraints designed into the LAMS sequences and the Revolution game and stray off task to pursue their own agendas. This is not fundamentally different from a traditional classroom. The enabling constraints designed into the Revolution game and LAMS sequences were used to promote educationally desirable interactions within an otherwise open ended environment. Nevertheless, compared to a traditional lesson taught with familiar learning media (texts books, a white board and photocopied handouts) learners enjoyed considerable freedom to veer off task and follow their own agendas. Further, a teacher’s capacity to monitor students working within windowed environments (that can be opened or closed at the click of a mouse) on networked computers is significantly diminished.

Learners working on networked computers are also exposed to a variety of potential distractions that compete for their attention. Simplistically, this might be abstracted as a struggle between the educational objectives promoted by the teacher (and supported by the

investigator of the Impact studies (Harrison *et al.*, 2002; Somekh *et al.*, 2002) but has since argued that that we need to ‘take the sociological imagination to school’ in order to understand the (lack) of impact of ICT’s on pupils’ learning and attainment.

constraints designed into the E-learning tools) and the influence of popular culture that was seeping into the schools through the Internet. In this respect, many of the barriers to personalised ‘child-centred’ learning associated with the structures implicit in traditional classrooms and paper-based learning media (that arguably restrict the range of possible interactions and protect learners from the distractions of popular culture) might be re-conceived as an enabling form of constraint³¹.

Given this widening zone of free movement, understanding how and why learners might appropriate new media appears to depend on a range of non-technological factors. Learners’ pre-history of Internet use and their experience of participating in digital subcultures appeared significant. However, understanding learners’ differential level of commitment to the ‘official’ or teacher defined learning objectives also forces one to consider their personal identities, priorities and values. In a sense, the shift in the locus of agency forces students to fall back on their own personal commitment to learning that, in turn, seems connected to their emerging sense of self. This finding resonates with the argument proposed by Selwyn *et al.* (2006) who argued that adult learners who appropriated new media for self-education had a pre-existing commitment to learning.

Ultimately these studies suggest that a learner’s values and personal commitments to learning play a significant role in determining how they might appropriate access to new technologies in the digital classroom. In this respect, it seems reasonable to propose that what has been celebrated as ‘personalised learning’ needs to be treated with caution.

The loss of enabling constraints implicit in the traditional classroom and paper based learning media poses new challenges for learners. Further, the data suggests that we need to start conceptualising learners’ identities as powerful mediators of learning activity that regulate

³¹ Indeed, this is the view proposed by Crook (2001). See section 2.7.

action from the inside. The central challenge confronting teachers is how to encourage students to internalise or align themselves with the ‘official’ learning objectives promoted by educators and this requires teachers to first recruit learners identities into a culture of achievement. Interestingly, experienced teachers using the LAMS system started the lesson with a ‘sales like’ introduction with the group gathered at the front of the class. This seemed designed to engaged and enthuse their students before letting the class loose on a LAMS sequence. These introductory talks could be interpreted as an attempt to encourage more students to commit to the official learning objectives. It was as though these teachers intuitively knew that the constraints designed into the LAMS sequences would not be enough to keep students on task without an internalised commitment to the ‘official’ learning objectives.

A similar strategy appeared to underpin the whole school ICT strategy in the LAMS trial school. Surprisingly, when discussing the whole school ICT strategy, the deputy head-teacher said that evidence of improved attainment was not a primary concern. For him, the priority was to make pupils feel like they were part of a school in the process of transition, a school that was ‘going somewhere’. The widespread use of ICTs throughout the school facilitated this process. ICTs helped to create a certain ‘buzz’ around the school and ultimately made students feel like they were part of a culture of achievement. This was immediately apparent to visitors as they entered the school. In fact, inviting visitors, researchers and E-learning specialists to the school appeared very much a part of this strategy. It made both teachers and learners feel as though they were part of a special school that was attracting attention from far and wide³². Indeed, my presence in the school was used as part of this strategy. In the final

³² The deputy head discussed a visit from David Milliband, the former Minister of Schools, whom he joked he had mistaken for a sixth former.

day of the project, the deputy head telephoned the local newspaper who took photographs of me researching students' use of the LAMS system as shown in Figure 2.9.



Figure 2.9 Mr. Francis appears in the local paper

In effect, my presence in the school was used to promote the fact that the school was participating in a progressive E-learning initiative to the local community. In this respect, it seems reasonable to surmise that the deputy head-teacher was primarily concerned to use the school's participation in the LAMS trial as a strategy to recruit learner identities into a culture of achievement. In the long term this strategy appeared designed to encourage students to envisage a social future beyond the production line in the local cake factory where many of their grandparents had worked.

2.5 Committed learning and new media literacy

Another central contraction that become evident in both the LAMS and Revolution case studies concerned the vast discrepancies among the students' competence with new media. There appeared no correlation between a student's commitment to the official learning objectives and their respective new media literacies. In the Revolution workshops, some of

the home schooled students who remained on task, struggled with the ‘learning the controls’ sheet and constantly asked for assistance with interface navigation. In contrast, group members identified as the gamers or hackers had no difficulty mastering interface navigation techniques. In fact, one student from the local high school who larked around in the game went on to create some sophisticated albeit ‘comic’ machinema (using *Windows Movie Maker*) that juxtaposed digital content captured from the game with audio-visual material they found and downloaded from the web (without permission). In one case this included video footage of wild animals in a zoo and a sound file of a Mozart piano concerto to create a somewhat bizarre comic ending to a less than serious re-telling of the virtual drama. This boy concerned clearly did not take the activity very seriously.

Another fifteen year old boy (in the fourth home-schooled group) produced a machinema diary that exploited some image processing tools available on his computer to create an audio-visual news report of the day’s events that simulated an old fashion silent movie as shown in Figure 2.10.

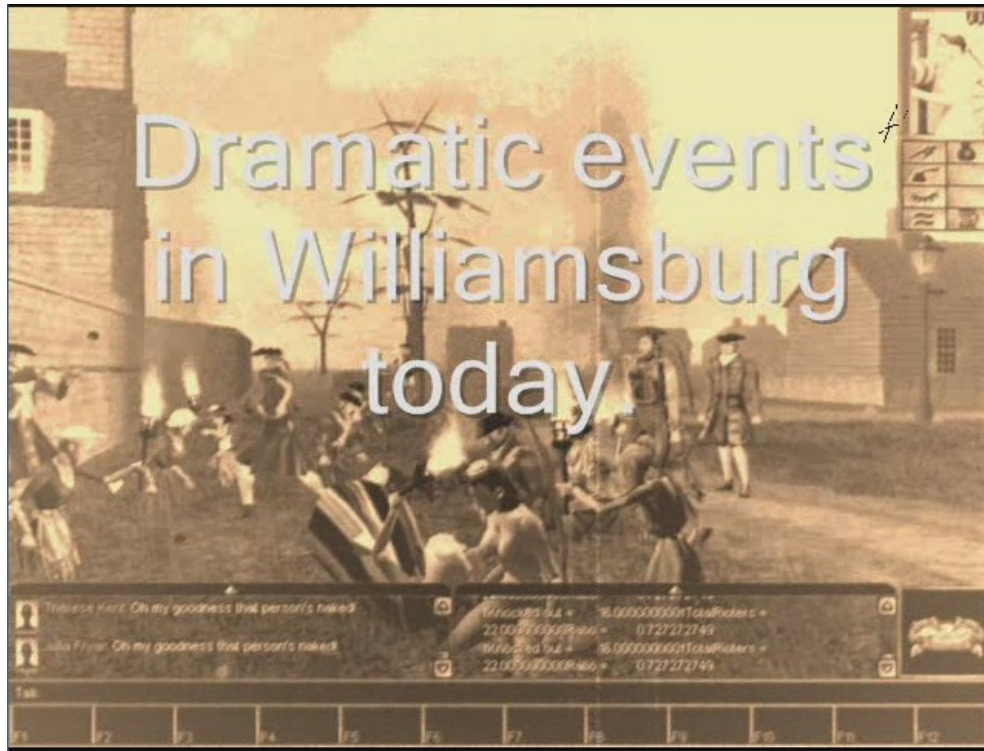


Figure 2.10 Screen shot from machinema video diary

The image also shook as though filmed on a handheld camera. Interestingly, this machinema diary also re-told the story from a point of view of the British Army who successfully suppressed the crowd of ‘liberty facists’ and restored law and order to colonial Williamsburg. In one caption, referring to the British governor, he praised the ‘iron will’ of our ‘glorious leader’. He was not instructed to do this, nor was it possible to play the roles of the British soldiers in the game. In effect, he stayed off task and employed advanced new media literacies to produce a multimedia production that subverted the dominant representation of historical events modelled in the game. In this case, the boy creatively appropriated the digital tools at his disposal to expose the representational bias implicit in a dynamic game-text. It was difficult not to admire his creativity and resourcefulness, despite the fact that he had not followed instructions.

It is important to emphasise that the gamers were not just ‘naughty boys’ who had no interest in wider social, political or representational issues. In fact, whilst lamenting the absence of guns in *Revolution*, two of the gamers started to make comparisons with other modifications of *Neverwinter Nights* and critiqued the animation. Moreover, they started commenting on the density of the population in colonial Williamsburg compared to a contemporary urban environment. One argued that there weren’t so many people in Harvard Square and made some thoughtful comments regarding the potential offence that the representation of slave characters might cause.

Summary

The studies reviewed in this chapter raise questions that problematise the notion of ‘personalised learning’ and suggest that the idea that we can re-engage all young people by simply integrating new media forms into classroom-based learning activities as overly optimistic and utopian if not woefully naive. Such manoeuvres might be regarded as an attempt by the Culture Industry model of education to assimilate the rise of Participatory Culture. Initiatives that attempt to accommodate this emergent culture for educational ends cannot do so without denying learners choices, control and personal agency in the learning process.

How then should educators respond to these challenges? Should we abandon the challenge of making school more like home through the integration of new media into classroom teaching and learning? Should we design E-learning tools that give teachers greater control and students less freedom to break away from a teacher prescribed learning path? Alternatively, should we accept the irrelevance of formal schooling for the mischievous gamers who might be regarded as the ‘masters of modernity’ (Nissen, 1998), the true representatives of Tapscott’s ‘N-Gen’ or Green and Bigum’s ‘aliens’ who are destined to ‘inherit the earth’? Moreover, should we accept that learners would be better left to get on with educating

themselves given open access to the Internet? None of these possibilities seem satisfactory. What does become clear is the need to understand how learners draw on pre-existing new media literacies and a range of digital tools to advance personal learning agendas. Given an internalised commitment many young people appear capable of appropriating new media in creative and productive ways for worthwhile ends. Without it, they might well fall prey to a commercialised and eroticised popular culture is seeping into schools through the Internet.

In summary, these findings indicate a pressing need to develop a better understanding of emergent learning practices and new media literacies, not in the abstract, but as a capacity to use a range of digital tools and resources to advance worthwhile learning agendas in real world situated contexts.

Chapter 3 The Agency of the Learner in the Networked University: a socio-cultural approach

A study that could build on the key findings of the LAMS and Revolution case studies would require a) a research design and research site that would permit an in-depth study of the practices of committed learners with authentic learning needs who enjoy unrestricted access to a range of digital tools and resources and b) a theoretical framework that can help us understand how new media tools and resources might mediate or re-mediate learning activities (as opposed to cause change). This chapter identifies college students living and learning in the context of a networked university as a population that can help us advance this line of inquiry. Further, it draws attention to the limitations of existing research focussed on this population. Finally, it introduces a theoretical framework that can be used to focus research on the digitally mediated practices of this group with a view to identifying emergent new media literacies, identified as expert-like practices mediated by digital tools and resources. This serves as a foundation for the theory building developed in each of the findings chapters. In Chapter 4, a full account of the research design and methodology used to research the practices of a group of students is presented.

3.1 Why focus on the practices of college students?

The main study attempts to develop an investigation into the predicament of the learner through an investigation of the various ways college students are appropriating a range of digital tools and resources to address authentic learning needs. Existing literature suggests that this population can provide some unique insight into the implications of media change for learning. Jones *et al.* (2002, p. 2) stress that the Internet is a part of college students' daily routine. Unlike homes or in some schools, at university the Internet is rarely conceived of as a novelty or optional luxury item, 'it is integrated into their daily communication habits and has become a technology as ordinary as the telephone or television' (p.2). Similarly, McMillan

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and Morrison (2006) stress that for many of today's students, participation is no longer optional, it is expected. Indeed, having access to the Internet has become a pre-condition for full participation in college life.

A study focussed on the practices of college students also allows us to observe advanced new media literacies in action. Bereiter and Scardarnalia (1993) argue that it takes approximately ten years of habitual practice to achieve expertise in any given domain. If we conceive of new media literacy as expert-like practices mediated by digital tools and resources, it seems self-evident the practices of older students who have a long history of Internet use and who have a range of authentic learning needs promise to provide a richer source of data than the practices of teens. Indeed, college environments give us direct access to a population of committed learners who, following Tapscott (1998), one could argue have 'grown up digital', and who might well be expected to appropriate new media in sophisticated ways to advance their own learning agendas.

A study focussed on the practices of college students may also help us to peer into the future. Jones *et al.* (2002, p.5) construct college students as a unique population who occupy a 'middle ground between childhood and adulthood, between work and leisure and who have been at the forefront of social change since the end of World War II' stressing that many Internet tools (such as *Yahoo* and *Napster*) and practices (such as file-sharing, blogging, social-networking and Internet telephony) were developed by and for college students. They also stress that early adopters are invariably found among college populations in a culture that facilitates rapid diffusion of innovative practice. Mcmillan and Morrison (2006, p.74) construct college students as 'shapers of tomorrow's society' and argue, 'an understanding of how new technology is influencing the various domains of these young people's lives provides a window on what Internet use may be like for future generations'.

Finally, a study focussed on the practices of college students might well afford opportunities to study how a range of digital tools are used for both course related study and self-education. All college students are likely to use the Internet and a range of online resources to advance learning agendas directed towards accreditation. However, access might also be exploited to explore more individualised personal learning agendas. Consequently, this population also promises to afford opportunities to study the (dis)juncture between formal education and self-education.

3.2 Limitations of existing studies on the implications of media change of learning in the networked university

Only a handful of studies have adopted a broad cultural perspective that attempts to understand the wider implications of media change for life in a networked university. Three studies that identify some interesting emerging trends and alert the reader to some emergent tensions and contradictions include: *Internet Goes to College: How students are living in the future with today's technology* (Jones, 2002); *The Cultural Practice of Study* (Crook & Light, 2002) and *Coming of Age with the Internet: A qualitative exploration of how the Internet has become an integral part of young people's lives* (Mcmillan & Morrison, 2006). All three studies are progressive and begin to advance our understanding beyond the confines of ICT use in formal educational contexts for prescribed purposes. All have helped to frame and guide the current investigation principally because they adopt a holistic perspective and attempt to understand the changing culture of learning in increasingly networked universities.

Data collection strategies employed varied markedly. Jones *et al.* (2002) collated data from 2,054 surveys, interviews and unstructured observation on two college campuses. Crook and Light (2002) ask a stratified sample of 48 second and third year undergraduates (from one campus university) to keep a log of their Internet related activities at fifteen minute intervals. They also catalogued students' e-mail traffic and used a 'continuous system logging program'

to monitor Internet use. Mcmillan and Morrison (2006) asked 72 college students to write an account of their personal history and current relationship with the Internet.

Whilst Jones *et al.* (2002) tend to highlight the new opportunities afforded for learning made possible by near ubiquitous Internet access in U.S. college campuses, Crook and Light's (2002) study adopts a somewhat cynical stance towards new media. They are vehemently critical of 'liberationist' language that uncritically celebrates the virtualisation of learning in the networked university. They position themselves in opposition to the likes of Blustein *et al.* (1999) who have argued 'when students can get cash at 2 am, download library materials at 3 am, and order shoes from LL. Bean at 4 am, it is only educational inertia that keeps them convinced that they must learn calculus by sitting in the same classroom for fifty minutes, three times a week' (p.21). Such 'manifestoes', it is argued, imply that opportunities to study should be as accessible and consumer-friendly as opportunities to shop. In contrast, they argue that 'learning is an activity that cannot be so readily abstracted from its context' and 'calmly executed at other arbitrary times and places' (Crook and Light, 2002, p.156). Learning, they suggest, depends more upon an environment being in place that structures learning activity and is purposefully designed to support various modes of participation in study-related practice. The analysis repeatedly shows how new media disrupts the structures that support concentrated study and focussed discussion. However, for the most part analysis remains focussed on tutor directed online discussion forums or 'electronic seminar spaces' supervised by a tutor rather than emergent modes of collaborative informal learning activity mediated by CMC tools.

However, the importance of informal modes of participation and co-operation facilitated by networked computers emerges as a theme in all three studies. For example, Jones *et al.* (2002) identify five study-related activities supported by networked computers:

- New academic possibilities between students;

- Online study groups allowing inclusion of groups that do not usually attend class;
- Electronic submission;
- Communication with professors, peers, and parents at any time, day and night;
- Easy to maintain contact with friends from home and high school attending other universities.

These findings suggest how the divide between formal (the use of new technologies to access university services) and the informal (students self-directed use of the Internet) starts to break down. However, they do little more than highlight new possibilities. They do not illustrate how these opportunities are exploited by individuals with specific priorities and learning needs.

All three studies draw attention to the need to investigate students' use of computers in their study rooms. Jones *et al.* (2002) argue that the greatest impact seems to be in supporting informal learning beyond the seminar or lecture room. Indeed, analysis of student logs showed that students spent far more time in private study than formal or supervised study in lectures, seminars and labs (Crook and Light, 2002). Unfortunately, the research designs and data collection strategy employed prevents either study from probing this sphere of activity in -depth. Data generated from self-completed student logs presented in *The Cultural Practice of Study* provides some insight into the practice of Internet use in the study room. However, these insights lack the holistic depth and richness of those gained by ethnographic researchers investigating the practices of children's computer use in the home. The use of ethnographic methods in the *Internet Goes to College* study remains focussed on students' computer use in

university libraries rather than their study rooms³³. No existing study has set out to investigate students' use of the Internet in their study rooms. This is undoubtedly a gap in the literature.

The credibility of the generalisations made in each study depends, in large part, on the size of the samples. Indeed, each aims to recruit a sample of students that might be regarded as representative of college populations. This strategy lends credibility to the emergent trends identified in each study. However, this strategy limits the researchers' capacity to investigate how new media usage relates to an individual's personal circumstances, motivations, priorities and emerging identities. Neither Jones *et al* (2002) nor Crook and Light (2002) allow the practices of individual students to be understood from a personal-historic perspective, that is, as a set of practices that has evolved over a life-time through participation in both formal study-related and informal leisure activities in and out of schools. Indeed, Crook and Light (2002) appear to judge CMC tools in terms of their capacity to promote traditional practices (that lecturers working in higher education institution wish to foster) rather than attempt to understand the new informal learning opportunities made possible by a web-based participatory culture. Similarly, for the most part, Jones *et al* (2002) remain focussed on ways Internet access facilitates course-related study. In short, digitally mediated study and digitally mediated play are constructed as opposites rather than understood as interrelated and transferable sets of practices. In fact, both investigations remain somewhat preoccupied with how new technologies augment traditional modes of study rather than exploring the way CMC tools are affording fundamentally new modes of collaborative learning.

³³ Jones *et al* (2003) do employ ethnographic methods. However, these are restricted to the observation of students computer use in two university libraries.

Coming of Age on the Internet (McMillan, 2006) abstracts emergent themes from self-reflective written accounts of students' personal histories of Internet use. This approach allows the voices of students to be heard and suggests how this process of transition is experienced by individuals. This approach also foregrounds some of the ways the Internet is supporting the cultivation of extended personal networks. For example, the students studied were able to maintain relationships with friends and family as they moved away from home and link up with others with similar hobbies and interests. Further, the grounded theory analysis procedure employed enabled the researchers to break out of restrictive pre-conceptions, identify some interesting new trends and start asking different kinds of questions. Consequently, as the authors themselves claim, the study succeeds in 'opening a window into their past and present use of interactive media' (p.74). Nevertheless, there is no attempt to triangulate the personal stories of participants with observation data, or concrete analysis of goal-directed practices. Consequently, this research design can only succeed in identifying emerging patterns in students' *experience* of using the Internet. Furthermore, its capacity to draw out the significance of these trends is limited by the absence of a theoretical framework. Indeed, research in this field betrays a need for conceptual heuristics that advance our understanding of the implications of media change beyond the descriptive level.

Of the three studies, *The Cultural Practice of Study* is the most theoretically sophisticated. It moves beyond the reporting of statistics, the identification of emergent trends (illustrated by short quotations extracted from interview transcripts) and engages in a wider debate about the 'virtualisation' of learning. It repeatedly stresses the need to consider the process of transformation as it gradually takes place as always in tension with the established practices associated with 'bricks and mortar institutions' that have evolved over the centuries to support study conceived as a distinctive form of social practice (p.154). Such an approach demands a socio-cultural perspective that the authors elaborate thus:

The cultural perspective invites us to view human activity as everywhere embedded in a medium of cultural resources. When we set out to understand it, human activity should not be decoupled from the artefacts, technologies, symbol systems, institutional structures, and other cultural paraphernalia within which it is constituted. Moreover, some forms of activity have evolved to be particularly well binded into particular cultural conditions. This may be so for learning (p.158).

Crook and Light's (2002) use of socio-cultural theory leads them to emphasise the enabling constraints inherent in formal, structured educational settings and understand the interface between the formal and informal:

Successful education involves making students comfortable with the activities demanded by formal study: encouraging them to allow their repertoire of informal cultural practices - listening, talking, investigating and so on – to be formalised in ways that then support learning (p. 174).

The problem is that this assumes that informal learning activity must always be shaped into more formalised study-related activities for it to constitute educative learning. This appears a somewhat 'lecturer-centred' approach to understanding university learning. It fails to account for the reverse movement, when students intentionally break away from traditional structures and seek out new opportunities to learn outside the structuring structures of the traditional university. The present study elaborates the reverse trend and illustrates how and why students are appropriating new media to break away from this top down culture industry model of education.

In short, there remains a need for research focussed more directly on the practices of individual learners who are creatively appropriating new media, taking ownership over their own learning agendas and breaking away from traditional modes of learning and instruction. Existing studies suggest this research ought to be focussed on students' computer use in their

study rooms and needs to be informed more explicitly, from the outset, by a theoretical framework that might guide the research design, data collection strategy and analysis of data.

The interpretation of data presented in Chapter 2 relating to the LAMS and Revolution case study is influenced by readings in the socio-cultural tradition. However, neither research design was originally conceived as a socio-cultural study. This present study makes explicit use of sociocultural and activity theory and aspects of the New Literacy Studies tradition to advance this line of investigation from the outset. At the beginning of each of the chapters conceptual tools are introduced that serve to focus analysis and provide the building blocks for further conceptual innovation. However, to orientate the reader, in the following section a broad introduction and some central methodological tenets of socio-cultural and activity theory are introduced. This is followed by a more explicit introduction to the practiced-based account of literacy that informs the concept of new media literacy. In short, the remainder of this chapter introduces the central tenets of the conceptual framework that is developed throughout the remainder of the thesis. An account of the research design and data collection strategy is presented separately in Chapter 4.

3.3 Introducing Socio-cultural and Activity Theory

Socio-cultural and activity theory (SAT) is a general term used to characterise a cross-disciplinary research agenda. The multidisciplinary nature of the tradition makes it difficult to define. Rather it works as an umbrella term for those committed to developing a holistic understanding of the complex relationships between mind, culture and activity. All theorists working within this tradition acknowledge the influence of Lev Vygotsky and the Soviet school of cultural-historical psychology (Leont'ev, 1979; Luria & Vygotsky, 1992; Vygotsky, 1987). Their ideas have been seeping into the Western academy since the translation and publication of Vygotsky's *Thought and Language* in 1962 and have had a profound impact on the intellectual trajectory of leading educationalists (Brown *et al.*, 1989; Bruner, 1984, 1996;

Bruner *et al.*, 1976; Resnick *et al.*, 1991). Indeed, Vygotskian concepts such as *internalisation*, *externalisation* and the *zone of proximal development* have become part of the vocabulary of learning sciences. However, it is perhaps misleading to construct socio-cultural and activity theory as a post-Vygotskian tradition.

Theorists who have adopted a socio-cultural perspective often import ideas, perspectives and influences from their own disciplinary backgrounds to serve their own research agendas. Indeed, ideas emerging from cultural anthropology, linguistics, sociology and philosophy are often synthesised into an evolving body of theory. For example, Engeström, the leading proponent of activity-theoretical research, is heavily indebted to the work of Bateson (1978, 1985, 2000). Wertsch (1991, 1998) a leading socio-cultural researcher is heavily influenced by Bakhtin (1981) and symbolic interactionism (Burke, 1969); while Cole (1996), one of the translators and compilers of *Mind in Society* (an abridged collection of Vygotsky's seminal essays), highlights the strong parallels with American pragmatism (Austin *et al.*, 1978; Dewey, 1931, 1998). Similarly, in the current thesis ideas emerging from the philosophy of cognitive science (Clark, 2003; Dennett, 1996), social semiotics (Gee, 2004; Kress, 2003), cognitive anthropology (Holland *et al.*, 1998; Lave & Rogoff, 1984) and the multiliteracies movement (Cope & Kalantzis, 2000; Cope *et al.*, 2000; Gee, 2000b; Group, 1996; Luke, 2000) are used as building blocks for the development of new conceptual tools that can be used to conceptualise emerging learning and literacy practices.

The central tenets of socio-cultural research

Wertsch (1995a) argues that the goal of socio-cultural research is to 'explicate the relationship between human actions, on the one hand, and the cultural, institutional, and historical

situations in which it occurs, on the other' (p.11). In his seminal work³⁴, Cole (1996, p.104) summarises the central tenets of the tradition thus:

1. It emphasizes mediated action in a context.
2. It insists on the importance of the "genetic method", understood broadly to include historical, ontogenetic and micro-genetic levels of analysis.
3. It seeks to ground analysis in everyday life events.
4. It assumes that mind emerges in the joint mediated activity of people. Mind, then, is in an important sense, "co-constructed" and distributed.
5. It assumes that individuals are active agents in their own development but do not act in settings of their own choosing.
6. It rejects cause-effect stimulus response explanatory science in favor of a science that emphasizes the emergent nature of mind in activity and that acknowledges a central role for interpretation in its explanatory framework.
7. It draws upon methodologies from the humanities as well as from the social and biological sciences.

These tenets provide a general orientation to the social-cultural mode of thinking that informs the current study³⁵. Each of the findings chapters develops new concepts and categories to

³⁴ Rather than 'socio-cultural' or 'activity theoretical' research Cole (1996) constructs the tradition in broader terms under the umbrella term 'Cultural Psychology'. Cultural Psychology is distinguished from psychological traditions that ignore the fundamental importance of culture and context.

³⁵ A full account of the origins and history of this evolving body of theory is beyond the scope of this chapter. For a fuller account of Vygotsky's ideas and influence see (Daniels, 2005; Wertsch, 1985).

extend SAT as a conceptual tool kit for theorizing emerging learning and literacy practices. However, first it is important to identify and elaborate aspects of the central tenets as a foundation for additional theoretical development.

Mediation and the use of tools

Before his untimely death, Vygotsky stated, 'the central fact about psychology is the fact of mediation' (cited in Wertsch, 1985, p.15). For Vygotsky and his followers, it is our capacity to make and use tools that enabled Man to pull away from animals in phylogenesis (or evolutionary time) and develop higher mental functions (Vygotsky, 1978, p.19-30, Cole, 1996, p.146-150). In line with a concern to develop a psychology that was compatible with Marxism, Vygotsky analysed how tools were used to act on the world in order to shape and improve it. These tools included both material artefacts and conceptual tools frequently revealed in language use. These tools are, according to Vygotsky, imbued with our cultural legacies. That is to say, the tools and how we use them represent what is valued in our worlds: they mediate our culture in our action on our culture. Consequently, learning, for him, was evident in the increasingly developed use of tools.

The concept of mediated action is central to understanding these relationships. Mediation is an active process. Indeed, Wertsch (1985, p. 22) argues:

Whilst cultural tools or artefacts involved in mediation certainly play an essential role in *shaping* action, they do not *determine* or *cause* action in some kind of static, mechanistic way. Indeed, in and of themselves, such cultural tools are powerless to do anything. They can have their impact only when individuals *use* them. The point of all this is to remind us that the study of mediation and mediated action cannot focus solely on the cultural tools involved. Even the most sophisticated analysis of these tools cannot itself tell us how they are taken up and used by individuals to carry out action.

Wertsch's (1998, p.38-41) position also proceeds on the assumption that all mediational means are both empowering and constraining. The 'cup half full' perspective tends to emphasize how new mediational means empower individuals and *afford* new opportunities. The 'cup half empty' perspective tends to focus on the way tools *constrain* action.

Agency and mediation

To understand human agency it becomes essential to understand how a variety of tools mediate thought and action. Indeed, from a Vygotskian perspective, it is the use of tools (including language and other people) that allow human beings to achieve more than they could achieve unassisted within the *zone of proximal development*. Further, cultural tools (i.e. diagrams, language and online discussion forums) allow individuals to co-ordinate their activities to work collaboratively on shared objects.

This study is primarily interested in understanding how the use of digital tools mediates learning activity. However, learning activity is defined with reference to its goal or object-motive, rather than specific tools. Thus, as the Revolution and LAMS case studies suggested, understanding a particular tool mediated action or more complex learning activity involving multiple digital tools often requires one to consider other kinds of mediation.

Vygotsky was principally interested in the mediational properties of spoken language (Vygotsky, 1986). Indeed, he regarded speech (spoken and internalised) as the 'tool of tools' that structured and shaped human thought and action. However, others have explored the mediational properties of a variety of tools, cultural products and cognitive artefacts. These include studies of: mediation via the structural properties of the environment (González *et al.*, 2004; Moll *et al.*, 1992, 1997; Valsiner, 1997); mediation via material tools and instruments (Keller & Keller, 1996); mediation via models and external cognitive artefacts such as to do lists, diagrams, and flow charts (Norman, 1993; Wartofsky, 1979); mediation via internalised psychological conceptual tools (Kozulin, 2003); mediation via care givers, tutors and peers

(Forman & Cazden, 1985; Resnick, 1996; Resnick *et al.*, 1991; Rogoff, 1990, 2003); mediation via electronic instruments and digital tools (Hutchins, 1995b, 1997; Ludvigsen *et al.*, 2007; Norman, 1988, 1993; Pea, 1985; Säljö, 1999); and mediation via internalised narrative, scripts and self-schemas (Bruner, 1986, 1991; Schank & Abelson, 1977; Wertsch, 1998, 2002).

In this thesis no form of mediation is excluded if it helps to understand the implications of media change for learning. Indeed, in this study, identity, conceived of as an invisible yet powerful form of semiotic mediation, becomes essential for understanding self-directed learning in radically personalised mediascapes³⁶.

The unit of analysis

A prime methodological directive from a socio-cultural perspective is to find a unit of analysis in which the whole is captured in a single, empirically observable unit (Davydov & Radzikhovskii, 1985; Zinchenko, 1985). This imperative grew out of reaction to the reductive disciplines of Pavlov's behaviourism on the one hand and 'idealistic' Gestalt psychology and Freudian psychoanalysis on the other. From a Vygotskian perspective, both remained trapped within a dualistic concept of mind and failed to take account of the various ways culture and cognition create each other (Cole, 1985). The separation of elements (i.e. psychological processes from the specific cultural tool kit that mediate these processes) is regarded as a fundamental error that has led previous theorists of cognition and learning to invalid conclusions. To emphasise this point, Vygotsky (1934a, p.7, cited in Wertsch, 1985, p.194) argued that if someone who was interested in why water extinguishes fire divided the water

³⁶ Studies that explore mediation via self schemas, identities and figured worlds (Holland *et al.*, 1998; Holland & Lave, 2001) are particular influential in this respect (see Chapter Ten).

molecule into its constituent elements for analysis, they would be surprised to find out that hydrogen burns and oxygen sustains fire and would never be able to explain the properties of the whole. Since mind or consciousness, not unlike a molecule, can't be broken down into constituent elements, Vygotsky attempted to deal with the problem by proposing a unit of analysis that provides a 'microcosm of consciousness that reflects all its aspects' (Wertsch, 1995, p.192). Consciousness can't be conceived of apart from intentional action involving the use of cultural tools (including language). Therefore, in a sense, consciousness is revealed in action and an analysis of mediated actions provides a 'cross section of the interfunctional complexity of consciousness' (p.192).

In many ways this parallels the method employed by Marx to investigate socio-economic phenomena. Indeed, a note in one of Vygotsky's unpublished notebooks, cited by Cole and Scribner in the introduction to *Mind in Society* states:

The whole of Capital is written according to the following method: Marx analyses a single living "cell" of capitalist society – for example, the nature of value. Within this cell he discovers the structure of the entire system and all of its economic institutions. (Vygotsky, 1978, p. 8),

He adds, 'to the layman this analysis may seem a murky tangle of tiny details', but stress that these tiny details are 'exactly those' which are essential to the 'microanatomy' of the whole (Vygotsky, 1978, p.8). Thus, for socio-cultural theorists *tool-mediated-action* (Wertsch, 1985, 1998) has tended to provide the microcosm that illuminates the structure of the whole and has been widely accepted as the primary unit of analysis. Nevertheless, many real world researchers study *practices* involving multiple tools and mediating artefacts (Chaiklin et al., 1999; Scribner, 1988). Indeed, since it is not always possible to ascertain the goal of a tool-mediated action prior to observation, it often proves more practical to study practices that might involve multiple tools and subsequently attempt to ascertain the goals of various tool-mediated actions.

As things become more complicated, it is necessary to study complex activities that comprise multiple individual tool-mediated actions. To this end, Activity Theorists study more complex object-orientated activities. The activity system is defined in relation to the object-motive of the activity (Engeström, 1987; Miettinen, 2005). For example, hundreds of operations and actions (mediated by a variety of different digital tools and resources) might be employed to produce a written assignment (the object-motive of the activity). This object-orientated activity also involves a *division of labour* (e.g. planning, drafting, editing, proofing etc), is constrained by various *rules* (e.g. a word limit) and may involve input and feedback from others (i.e. tutors and course mates) that might be regarded as the *community*.

In the current study, digitally mediated practice is taken as the primary unit of analysis that provides the microcosm that illuminates the whole. This is investigated directly through observation (or stimulated response) and indirectly through interview and retrospective virtual ethnography (see Chapter 4.7). Indeed, through the study of practices mediated by digital tools and resources one is obliged to consider how and why individuals appropriated particular tools in particular ways to achieve particular purposes. In this way, theory is abstracted from micro-genetic analysis of concrete practices. The theory may be disputed and hypotheses that arise may be questioned, modified or rejected. Nevertheless, the concrete observations (presented throughout this thesis as a series of richly descriptive vignettes) anchor the work of conceptual development.

This provides a fundamentally different approach to studies that rely wholly on pre-structured survey data or interviews in which multiple pre-suppositions frame the data collection project and arguably blind the researchers to the fundamentally new and emergent forms of practice mediated by digital tools and resources.

Dialectics, personal development and the method of double stimulation

The importance of the dialectic, as a way of conceptualising cultural change and personal development is evident throughout this thesis. Consequently, it is important to consider the centrality of the dialectic in Vygotskian thinking.

Vygotsky rejected the notion of gradual growth, change and development. Indeed, metaphors that imply organic growth, later employed by those like Papert (1993) who was influenced by Piaget (Boden & Piaget, 1994; Piaget, 2001 [1923]), are rejected in favour of metaphors that imply a dialectical pattern of development characterised by tensions, ruptures, contradictions and sudden transformations. For example, Vygotsky argued:

Our concept of development implies a rejection of the frequently held view that cognitive development results from the gradual accumulation of separate changes. We believe that child development is a complex dialectical process characterised by periodicity, unevenness in the development of different functions, metamorphosis or qualitative transformations of one form into another, intertwining of external and internal factors, and adaptive processes which overcome impediments that the child encounters (1978, p.73).

This dialectical mode of thinking about change and personal development, inherited from Hegel (1977) via Marx (1970), can be applied at multiple levels of analysis. Further, developmental breaks and transformations are associated with the creative appropriation and use of new mediational means. Indeed, Vygotsky stresses that individuals master their own behaviour through the use of external stimuli:

As I have repeatedly emphasized, an essential mechanism of the reconstructive process that takes place during a child's development is the creation and use of a number of artificial stimuli. These play an auxiliary role that permits human beings to master their own behaviour, at first by external means and later by more complex inner operations (1978, p.73).

As the quote suggests, with time the use of the new tool or ‘artificial stimuli’ starts to function as an internalised psychological tool, mediating thought and action, even when the original stimuli is no longer present. Indeed, internalised psychological tools become powerful yet invisible mediators that assist individuals in achieving mastery and self-control.

Vygotsky and his followers originally developed the method of double stimulation in an attempt to study instances of developmental growth in children’s problem solving activity. In contrast to the stimulus response framework used in behavioural psychology, the genetic method attempts to understand how young children actively appropriate new mediational means within their reach to achieve their purposes and escape contradictions. Vygotsky’s description of the method is worth quoting at length:

Our approach to the study of these processes is to use what we call the functional *method of double stimulation*. The task facing the child in the experimental context is, as a rule, beyond his present capabilities and cannot be solved by existing skills. In such cases a neutral object is placed near the child, and frequently we are able to observe how the neutral stimulus is drawn into the situation and takes on the function of a sign. Thus, the child actively incorporates these neutral objects into the task of problem solving [...] In this way, we are able to study the *process of accomplishing a task by the aid of specific auxiliary means*; thus we are also able to discover the inner structure and development of the higher psychological processes (1978, p.4).

Critically, this method attempts to gain an insight into higher psychological functions through the concrete analysis of tool-mediated actions. Stimulation is not directly applied. Rather, the researchers simply place auxiliary stimuli within the child’s reach and observe how they actively appropriate the tool or symbol to mediate a goal directed task. Using this method, one can begin to understand how and why learners appropriate new tools to mediate their own actions and achieve their purposes.

Vygotsky (1978, p.74) argued that the ‘method of double stimulation elicits manifestations of the crucial processes in the behaviour of people of all ages’. For example, he argues ‘tying a

knot as a reminder, in both children and adults, is but one example of a pervasive regulatory principle of human behaviour, that of *signification*, wherein people create temporary links and give significance to previously neutral stimuli in the context of their problem-solving efforts' (p.74). As the example illustrates, detailed analysis of a mediated action enables one to make inferences about inner psychological processes and then abstract a general principle.

In the new media age, it becomes interesting to consider how students are creatively appropriating a variety of new digital tools and resources (blogs, wikis, search engines, social bookmarking tools, quasi-intelligent spell checkers, etc.) to mediate their own learning and study-regulated activities using the genetic method. From this we can attempt to abstract some general principles that enable us to conceptualise emergent learning practices.

Cognitive anthropology and studies of cognition in the wild

Since the 1980's, a tradition of research typically described as socio-cultural studies of the mind (Wertsch *et al.*, 1995b) or cognitive anthropology (D'Andrade, 1995; Hutchins, 1995a; Rogoff, 1990) has made extensive use of methods that resemble Vygotsky's genetic method to study the process of problem solving and learning activity. However, rather than set up quasi-experiments in laboratory environments, they tend to investigate 'everyday cognition' (Lave & Rogoff, 1984) or 'cognition in the wild' (Hutchins, 1995a, 1995b). In short, they study the practices of real people in diverse real world contexts³⁷.

³⁷ Such an approach has been used to study dairy pre-loaders (Scribner, 1988), children's meal times (Valsiner, 1997), ski instruction (Burton & Brown, 1988), grocery shopping (Lave *et al.*, 1984), children's reasoning (Lubin & Forbes, 1988) and interactions between toddlers and care-givers (Rogoff *et al.*, 1993). Unlike those involved in Developmental Work Research (DWR), cognitive anthropologists rarely make interventions designed to bring about transformation. However, interventions are not prohibited. In certain cases, changes to the circumstances or access to new tools

Studies of everyday cognition rarely aim to bring about transformation. Rather the aim is to develop conceptual tools that can be used to conceptualize how cognitive processes and learning occur in real world situated contexts. Powerful conceptual tools such as *legitimate peripheral participation* (Lave & Wenger, 1991), *funds of living knowledge* (Moll *et al.*, 1992, 1997), *guided participation* (Rogoff, 1990), and the *zone of free movement* (Valsiner, 1997) innovated by these theorists are often applied to understand learning activity in different contexts.

Many studies within the socio-cultural tradition tend to describe and theorise how individuals become progressively enculturated and start to *participate* in specialised forms of mediated social *practice*. This is particularly conspicuous in the *Communities of Practice* model (Lave & Wenger, 1991; Wenger, 1998) in which apprentices progressively imitate and master the practices of experts. Practice reified in the cultural toolkit associated with a particular activity setting becomes internalised by participants who later perpetuate the cultural practice through their own practice, externalising what they have learnt. In this respect, there are strong parallels with French micro-sociology (Bourdieu, 1977; Bourdieu & Nice, 1990; 1998) and Giddens's (1984) structuration theory. What is lost is the emphasis placed by Vygotsky's on the agency of the learner and the upheavals, historical ruptures, contradictions and discontinuity in the developmental process. Indeed, from a more purely Vygotskian perspective, it is the critical moments, when learners can't proceed without assistance and creatively appropriate tools (including artefacts, symbols and cognitive resources of other minds) to escape difficulties and solve problems that remains of interest.

leads to the adaptation of practice and yields interesting insights (Lave *et al.*, 1984; Scribner, 1988). Nevertheless, in all cases, the challenge is to understand why people act or behave as they do within a particular socio-cultural niche.

Breaking away, horizontal development and double binds

In activity theoretical research, the emphasis on tensions and contradictions and sudden transformations is more conspicuous than in studies of everyday cognition. Indeed, developmental work research explicitly aims to help the subjects studied work through contradictions within the activity system and thereby bring about progressive change. In Engeström's terms, this allows participants in an activity system to overcome existing contradictions, find solutions to the problems they confront and *break away* from routinised practices. Engeström (1996, p.1) argues that this model of *expansive learning* moves beyond models of personal development proposed by either Vygotsky or Piaget:

Recent work based on dialectics and the cultural-historical theory of activity points towards three major challenges to the development of both Vygotsky and Piaget: (1) instead of just benign achievement of mastery, development may be viewed as partially destructive rejection of the old; (2) instead of just individual transformation, development may be viewed as collective transformation; (3) instead of just vertical movement across levels, development may be viewed as horizontal movement across borders (Engeström, 1996, p.1).

From an activity theoretical perspective, this cannot be done alone. It must be done through the appropriation of new tools, new mediational devices and identifications and collaboration with others in relation to the collective activity. Indeed, progressive transformations require learners to first become conscious of their own predicament, as though looking at themselves through the eyes of another. This movement towards self-conscious awareness is captured powerfully by Ilyenkov, the philosophical mentor of the Soviet school:

Consciousness only arises where the individual is compelled to look at himself as if from the side – as if with the eyes of another person, the eyes of all other people – only where he is compelled to correlate his individual actions with the actions of another man, that is to say, only within the framework of collectively performed life activity (Ilyenkov, 1977, p.24).

This provides a very different model to that implied in Wenger's (1998) idea of a community of practice where the apprentice becomes progressively enculturated (possibly unconsciously) into a community of practice taking on more and more of the characteristics of the master. It stresses the need for practitioners to become more conscious of their own practice, the contextual structures that support particular kinds of practice and the inherent tensions and contradictions in the existing activity system of which they are a part. In this respect, self-consciousness must precede a horizontal development. Further, it directs our attention to the ways conscious awareness may be raised and boundaries crossed through associations and dialogues with others³⁸.

Thus the emphasis in *expansive learning* is on human subjects taking control, achieving self-consciousness and asserting their personal agency to transform the conditions of their own learning and development. Engeström (1987) attributes the inspiration for the concept to the highly original work of cognitive anthropologist Gregory Bateson - in particular, Bateson's work with the carers of schizophrenic patients that leads to the theory of the double bind (Bateson, 1978). Bateson proposed three types of learning. Learning 1 is associated with stimulus-response behavioural psychology and refers to the conditioning and acquisition of the responses deemed correct in a given context – for instance, the learning of correct answers in a classroom. In Learning II (or deep learning), people acquire the deep-seated rules and patterns of behaviour characteristic to the context itself. This model appears implicit in work that discusses progressive enculturation into communities of practice (Wenger, 1998) and guided participation (Rogoff, 1990) in which individuals gradually master the practices of

³⁸ In this respect, it becomes interesting to explore the degree to which CMC tools enable learners to connect to others, gain new perspectives on their own practice and break away from routinized ways of studying.

experts and tutors. However, as a result of a slave-like adherence to traditional practices, learners sometimes find themselves caught in a double bind. In these situations, no matter what a subject does, they cannot achieve their goals. Learning III describes a situation where a person or a group begins to radically question the sense and meaning of the context and re-constructs a wider alternative context. In effect, it occurs when learners *break away* from traditional practices and transform themselves through the active transformation of the context of action.

Engestrom's notion has been widely applied in the context of Developmental Work Research in which adults learners (in co-operation with researchers) are attempting to bring about organisational change (Engeström, 2001; Engeström *et al.*, 1997; Engeström & Middleton, 1996). Expansion occurs when experts arrive at an awareness of the contradictions in existing practice and set about changing the very nature of the enterprise. This invariably involves a re-conceptualisation of the problem, the recruitment of new tools and resources required to solve the problem and a re-organisation of the division of labour required to work on the object.

However, this model might also be used to understand the expansive learning cycles through which individuals progress as they resolve problems in everyday life or illustrate the periodic expansive cycles that characterise personal development in ontogenesis³⁹. In the current thesis, these ideas are used to focus attention on the way learners are taking advantage of the opportunities to re-design and re-configure radically personal media environments and make connections to others that, in turn, afford new opportunities for self-directed independent learning.

³⁹ To illustrate the latter, Engeström (1987) analyses the fictional biography of Huckleberry Finn as a process of expansive learning through the zone of proximal development.

Given the rapidity of media change, in a sense, learners are compelled to break away and innovate strategies that exploit the affordances of the new mediation means which are becoming available. This process has already begun. A recent Higher Education Academy report observed that ‘there is an increasing recognition that students are making use of their own technology as well as those provided for them and that they are doing this in ways that are not planned for, difficult to predict and may not be immediately visible to their teachers or researchers’ (Sharpe *et al.*, 2006). This suggests a need for a more focussed study that follows learners in an attempt to understand how they are appropriating new tools and developing new practices to advance personal learning agendas. Moreover, this thesis explores the notion that students are increasingly forced to question the context and structures that support learning and actively transform these contexts to remain competitive in an increasingly technology-rich world.

3.4 Practice-based account of new media literacy within specific socio-cultural contexts

The concept of digitally mediated practice is sufficient to focus attention on the tool-mediated actions of post-graduate students. However, this study also attempts to identify and conceptualise how expert-like learners make use of a variety of tools and resources to achieve their purposes as learners. Consequently, following writers interested in the changing nature of literacy (see Chapter 1.6), in this thesis new media literacy is conceived of as a capacity to successfully negotiate the fault lines of media convergence and make effective use of digital tools and resources to address authentic needs. Examples of new media literacies in action are identified in the digitally mediated practices of post-graduate students who have developed sophisticated strategies. This approach accords with a practice-based account of literacy that has been influential since Scribner and Cole (1981) first conceptualised literacy as a

specialised form of social practice in the seminal study *The Psychology of Literacy*.

Commenting on this work, Olson (1994) argues:

Literacy is not just a basic set of skills isolated from everything else. It is the competence to exploit a particular set of cultural resources. It is the evolution of those resources in conjunction with the knowledge and skill to exploit those resources for particular purposes that makes up literacy (p.43).

In effect, this expands the unit of analysis beyond simple tool-mediated actions. It shifts one into thinking about how individuals become adept at exploiting the affordances of new media to succeed in an increasingly technology-rich world. This is a line of thinking that has been developed by Gee (1996) who argues:

From a sociological perspective literacy is a matter of social practices. Literacies are bound up with social, institutional and cultural relationships, and can only be understood when they are situated within their social, cultural and historical contexts (p. xii).

The New Literacy Studies tradition also encourages us to consider the changing socio-cultural contexts of literacy and thereby connect micro-genetic observations focussed on specific digitally mediated practices with the wider socio-cultural context. Indeed, in *A Pedagogy of Multiliteracies: Designs for Social Future* (1996), the New London Group⁴⁰ argue that the

⁴⁰ The New London Group consisted of a group of scholars from various disciplinary backgrounds who shared an interest in literacy: Courtney Cazden (classroom discourse and language learning in multilingual contexts); Bill Cope (changing discourses of the work place); Norman Fairclough and James Gee (language and mind); Mary Kalantzis (citizenship education); Gunter Kress (language, learning, semiotics and visual literacy); Allan Luke (sociological approaches to the teaching of reading and writing); Carmen Luke (feminist pedagogy); Sarah Michels (classroom learning in urban settings); and Martin Nakata (literacy in indigenous communities).

multiplicity of communications channels and increasingly cultural and linguistic diversity in the world today call for a broader view of literacy than that portrayed by traditional language-based approaches. The authors argue that a focus on multi-literacies helps to ‘overcome the limitations of traditional approaches by emphasising how negotiating the multiple linguistic and cultural differences in our society is central to the pragmatics of the working, civic, and private lives of students’ (p.61). Furthermore, The New London Group (1996) manifesto emphasises the fact that young people in the West are growing up in a society in which individuals inhabit a plurality of lifeworlds that require them to continually adapt, negotiate and reconstruct their identity or find their opportunities restricted. These insights become important for exploring the diverse ways advanced students are exploiting new media, not only to study and learn, but also to maintain connections with others from diverse social and cultural backgrounds and to negotiate and manage their identities as they move across contexts connecting to others on and offline.

Mastery of a range of meaning making and communicative practices mediated by new technologies is regarded by the New London Group theorists as an important aspect of multi-literacy. However, as Lankshear and Knoble (2003, p.18) have argued, ‘to a surprising extent, those scholars who identify with the New Literacy Studies, have to date not been very interested in what we regard as important and influential new literacies’ - those associated with information and communications technologies. Further, the methods employed by Gee, Kress, Lankshear and Knoble, the four theorists (identified in Chapter1.6) working within this tradition who *are* interested in new media, are insufficiently grounded with empirical data generated by the study of the tool-mediated practices of real learners to serve as a model for the current study. Kress (2003) conducts comparative analyses of static multimodal texts. He rarely studies digitally mediated practices that might provide an insight into how and why individual learners might appropriate new technologies to advance personal learning agendas. Consequently, his work has limited value for a study that attempts to understand the changing

practices of advanced learners in the context of a networked university. The evidence base used in *What video games have to teach us about learning and literacy* (Gee, 2003) consists of qualitative data produced by textual analysis (of game texts), participant observation (playing video games) and observations and conversations of a single player (Gee's son). In short, little of Gee's theory building appears directly informed by the study of other learners' practices. Lankshear and Knoble (2003) appear to make the most sustained attempt to study digitally mediated *practices*. The study of the cultural practices associated with *E-bay* trading (see Chapter 1.6) illustrates the potential of detailed ethnographic work (based on participant observation and E-mail interview with selected traders with an online space). However, this approach starts with an online space and then attempts to understand how and why individuals might participate. Thus, it confines the analysis to a specific online arena.

In order to overcome the methodological limitations of existing research, the method described in Chapter 4 aims to anchor the study of emerging new media literacies through the detailed study of the digitally mediated practices of university students. In this respect, it attempts to bring the study of new media literacies into a broader socio-cultural framework.

3.5 Summary: building on the work of socio-cultural theorists and studies of new media literacy

This chapter has identified college students as a group likely to provide an insight into the diversity of ways advanced learners are actively appropriating new mediational means to advance personal learning agendas. Further, it argues that a study focussed on the *digitally mediated practices* of this group might allow us to better understand emergent learning practices and identify the new media literacies required to successfully negotiate the faultlines of media convergence. Further, it introduces the reader to the central tenets of socio-cultural and activity theory and aspects of the New Literacy Studies tradition as a conceptual toolkit that can be used to guide and focus analysis on the digitally mediated practices of real

students as they appropriate digital tools to overcome tensions and contradictions and break away from routinized or traditional practices. These conceptual tools also serve as conceptual building blocks throughout the remainder of the thesis. However, the aim is not simply to apply existing tools to conceptualise emergent practices. Rather, the aim is to develop new conceptual tools, building on existing theory, which can be redeployed across a variety of contexts and serve as the basis of further theoretical, empirical and developmental research. To this end, each of the findings chapters (Chapters 5-9) attempts to develop concepts and categories that extend the framework presented in this chapter. This process involves a degree of hybridisation and the integration of concepts from beyond the traditional boundaries of socio-cultural research.

The first two findings chapters explore ways learners are learning with the aid of digital media. In Chapter 5, The Learner as Designer, distributed cognition theory (Clark, 2003; Dennett, 1996; Norman, 1993; Pea, 1997; Perkins, 1997), multimodality theory (Kress, 2003) and the Vygotskian notion of self-regulation 'from the outside' are used to develop further concepts and categories that can be used to conceptualise how learners design cognitive ecologies to facilitate advanced knowledge work. Chapter 6 builds on theoretical work by Wertsch (1998), Bahktin (1981) and de Certeau (1998) and develops the notion of *creative appropriation* as a tool for conceptualising how learners are now using a variety of digital tools, sometimes against intentions of the designers, to exploit the affordances of digital tools and resources for course-related study and self-education.

The next two chapters develop conceptual tools for understanding how advanced learners are appropriating CMC tools and social software technologies to learn with others through new media. In Chapter 7, conceptual tools offered by Nardi *et al* (2002), Moll *et al.* (1992, 1997) and (Edwards and D'Arcy, 2004, Edwards 2005, in press) are used to conceptualise how and why students create, nurture and activate *distributed expertise* and exercise *relational agency*

through *globally distributed funds of living knowledge*. Similarly, in Chapter 8, theoretical constructs developed by Gee (2004, 2005) and Lave and Wenger (1991) are used to draw attention to the various ways advanced students strategically shift between various modes of participation in *online affinity groups* to exploit the distributed expertise of thousands of anonymous others. Finally, Chapter 9 adopts a personal-historic perspective and explores how a learner's emerging sense of self and community is mediated by quasi-virtual contexts that learners design and cultivate over the years. To this end, conceptual tools offered by Bruner (1991), Gee (2004), Turkle (1997) and Holland *et al.* (1998) are used as building blocks. The vignettes illustrate some of the way three advanced learners exploit new media to *bootstrap themselves towards the actualisation of a projective identity through serious play in a virtually figured world*. The chapter concludes by proposing that a *virtually figured world* can be conceived of as an expanded *space of self-authoring*.

Thus, in each chapter an attempt is made to pull together conceptual resources that might be integrated into a socio-cultural mode of thinking about the implications of media change for learning and literacy. Existing concepts are used as heuristics to read the data and serve as building blocks for the development of new derivative concepts. Nevertheless, it is important to stress that in all cases, theory development is firmly grounded in analysis of the digitally mediated practices of real students as they attempt to exploit the affordances of new media to address authentic learning needs. In short, conceptual development and analysis of concrete practice investigated with multiple qualitative (or ethnographic) methods evolve in tandem.

Given that theory development is grounded in detailed observations of practice investigated with ethnographic methods, as opposed to a theoretical exercise that engages with existing literature and theoretical work, I conceive this study as a cognitive anthropology informed by socio-cultural and activity theory focussed on the digitally mediated practices of advanced

agentive learners. Chapter 4 introduces the informants, research design and data collection methodology used to advance this empirical investigation.

Chapter 4 Cognitive Anthropology on the Cyberian Frontier: research design and data collection methods

The main study, introduced in this chapter, focuses on the practices of sixteen post-graduate students who were living and studying at Oxford University. Unlike prior studies focussed on students' use of the Internet, the design was wholly flexible and emergent in line with the qualitative-ethnographic tradition. It aspired to obtain a similar depth and freshness of insight that small scale ethnographic studies (Jenkins, 2006c; Tobin, 1998) had gained into the sub-cultural practices of fans and gamers by using ethnographic methods to investigate the digitally mediated practices of post-graduate students living in a college environment. Unlike the investigations that explored the agency of learners in the LAMS and Revolution classrooms, it allowed insights that emerged in the field to be probed and explored in considerable depth. Ethical issues, time limitations, travel and access problems - all of which had impeded the earlier studies (see Appendix 2 and 3) - posed few problems. This allowed for a more in-depth and naturalistic investigation of digitally mediated practice to proceed.

4.1 Research site and institutional context

Guided by the importance of students' use of technology beyond formal educational contexts identified in the literature, the connected study/bed room was selected as the primary research site. All participants recruited lived within college accommodation and had access to a fast 'always on' Internet connection that gave them direct access to the university network and an extensive range of online resources used in the day-to-day course of university life. For example, e-mail had long since replaced the traditional pigeon-post system as the dominant mode of communication between students, tutors and university staff. All colleges, departments and the overwhelming majority of clubs and societies had their own websites and disseminated information and notices to subscribed members via e-mail listservs. Further, some courses, clubs and societies had started to adopt Virtual Learning Environment (VLE)

technologies to facilitate the dissemination of information and allow members to share information and resources. At the time, the university library service was in the process of making many of its services available online. *Oxford Libraries Information System* (OLIS) provided online access to the university's catalogue, either via the web or a *telnet* interface. Students could access the library catalogue directly from their study rooms. In addition, the library services provided portals to searchable online databases, indices, encyclopaedias and digitised newspapers. Significantly, full texts of academic journals could be accessed and downloaded directly via a *TDNet portal*⁴¹. Moreover, fast web connection gave students direct access to volumes of information, tools, resources and communities supported by the World Wide Web. This afforded students opportunities to use a range of online tools and resources (such as an interactive version of the periodic table of the elements) and participate in online communities (supported via chat rooms, listservs, blogs, RSS feeds and wikis) hosted by individuals, charitable and commercial organisations and other universities directly from their study rooms. In this respect, the context for this study constituted the intersection between the physical university, the services it provided online and a distributed network of contacts, services and communities in which students were able to simultaneously participate due to the unrestricted access they had to the Internet in their study rooms.

4.2 Genesis of study

The study began following approximately two years of immersion in this culture. This proved vital, as Marshall and Rossman (1999, p. 106) have stressed 'immersion in the setting allows the researcher to hear, see, and begin to experience reality as the participants do'. The initial period of auto-ethnography is not considered a data source as it was considered important to

⁴¹ As a result one can make extensive use of a range of resources without actually visiting a physical library. Indeed, some research students conduct the majority of their work whilst living in remote locations at a far remove from Oxford in the U.K. and abroad.

move beyond self-reflective studies that characterise much of the early techno-literacies literature (Snyder, 1998, 2002b). Nevertheless, it proved essential in the initial phases of hypothesis generation and provided much of the inspiration for the current study. At the time, I had become fascinated with the various ways access to an ‘always on’ Internet connection was transforming my own study-related and communicative practices. The auto-ethnographic phase involved the writing of descriptive and theoretical memos whilst reflecting on personal practice⁴².

4.3 Demographics of informants recruited for the study

In total, sixteen students participated in the study. These are regarded as informants in a cognitive anthropology, informed by post-Vygotskian theory, focussed on the digitally mediated practices of learners. They are not conceived of as a sample representative of the wider student population. Selected findings from the pre-interview questionnaire are presented in this section for the purposes of describing and comparing the sample relative to trends identified in the populations investigated in survey studies. A breakdown of the final group of sixteen students recruited for the study is displayed in Table 4.3⁴³.

⁴² The memos ranged across the topics of literature searching, note taking and the use of a digital mind mapping tool. At the time, I was interested in digital tools that appeared to be changing the way I thought and what I was capable of achieving.

⁴³ The information tabulated here was collected from the ‘demographics’ sections of pre-interview questionnaire. Selected data is presented here, in advance of the methodology, to convey some essential features of the group and explain why they constituted an interesting object of study.

Table 4.1 Demographics of students recruited for the study

Pseudonym	Age	Gender	Subject	Nationality	Course
Edina	30	F	Forced Migration Studies	British	MSc.
Clinton	23	M	Social Policy	U.S.	MSc.
Sue Ellen	23	F	Evidence-based Social Work	U.S.	MSc.
Timothy	26	M	Psychiatry	British	DPhil.
Ishani	23	F	Medicine	British	MD.
Anastasia	28	F	Evidence-based Social Work	Romanian	MSc.
Miss Lullaby	23	F	Social Policy	U.S.	MSc
Karen	23	F	P.G.C.E	British	MSc.
Ardash	26	M	Education / Medical anthropology	Canadian	DPhil.
Jacob	31	M	Environmental Policy	U.S.	MSc.
Jim	31	M	Law	Canadian	MSt.
Katrina	26	F	Anthropology	German	MSc.
Daisy D.	25	F	Medical Anthropology	U.S.	MSc.
Peter	25	M	Medical History	British	MSc.
Jacqueline	23	F	International Relations	British	DPhil.
ZeroGBoy	25	M	Geography Education	British	DPhil.

The findings chapters illustrate how the diverse styles of computer use observed relate to the personal values and priorities of each user. However, here it is important to emphasise what these students had in common.

The median indicates that these students typical spent between six and eight hours day working at their computers.

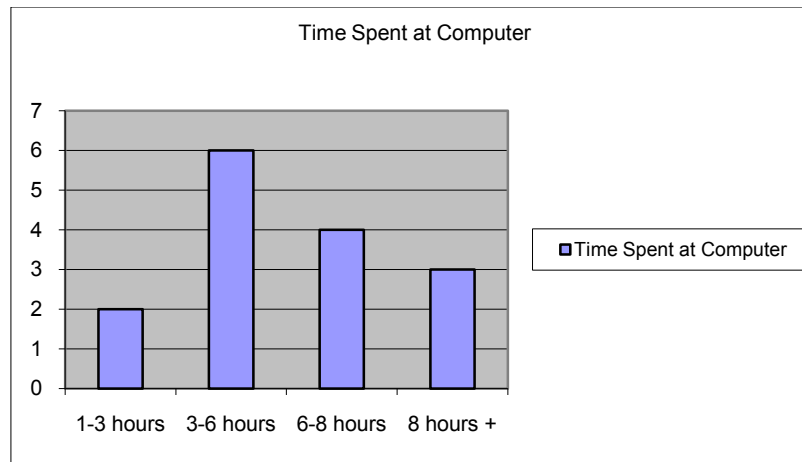


Figure 4.1 Bar chart visualizing time spent at computer each day

The three students who estimated spending over eight hours of computer use per day were all in the midst of writing a dissertation and the two relatively low responses of one to three hours were given by Ishani (who spent most of her time on a placement at the hospital) and Jacob (who had just finished his exams and was enjoying a break). A national survey of internet use, using a representative sample of the adult population, revealed that the average users spend ten hours a week online ranging between one hour for low end users and over twenty hours for high end users (Dutton *et al.*, 2005). By comparison even low end users among this group were online more than the average citizen and high end use would amount to forty plus hours a week, more than twice the national average. Thus as a group these were extremely high end users of computers and the Internet.

Significantly, apart from Anastasia (a Romanian student living on a tight budget) all owned their own laptops and mobile phones as suggested by the bar chart represented in Figure 4.2

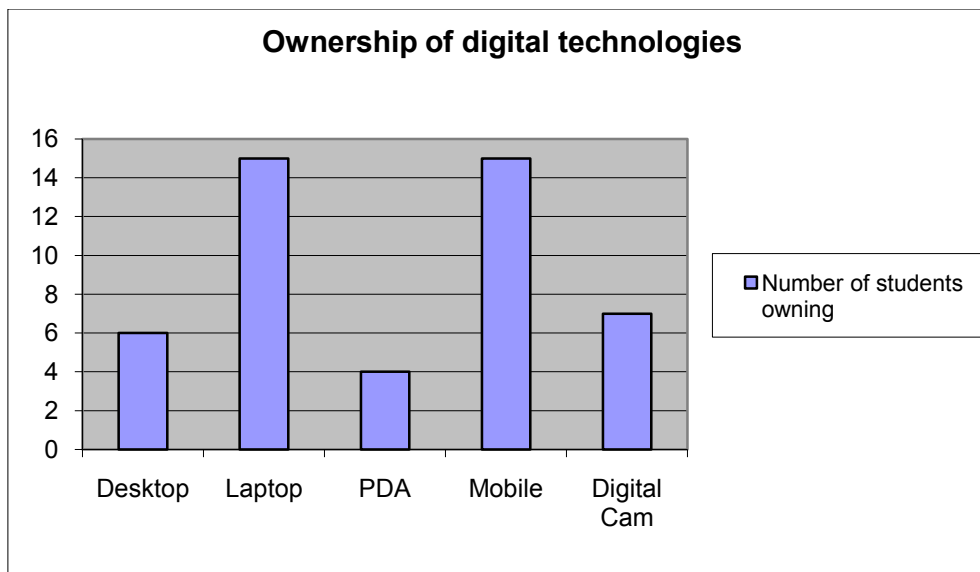


Figure 4.2 Ownership of technology

In addition, six students owned desktops, four owned palm top PDA's and seven owned a digital camera. Interestingly, laptops were clearly preferred to the ownership of desktops. This was indicative of a general preference for portable computing that might allow individuals to work in different locations and contexts within and beyond the university environment.

Estimates of time spent using computers related to academic study compared to hobbies and interests and general life management tasks (such as banking or travel arrangements) provides a degree of insight into what students were doing with these technologies.

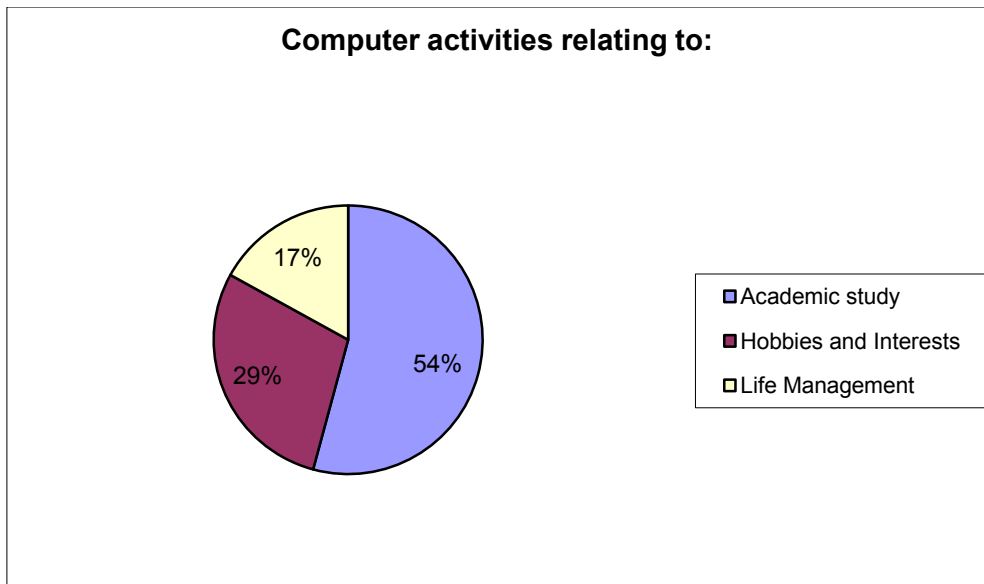


Figure 4.3 Computer use for different types of activity

On average, slightly over half (54%) of the time interacting with computers related to academic study and a sizeable (29%) related to hobbies and interests. Crook and Light's (2002, p.173) study stresses how students continually switched backwards and forwards between study related and leisure activities: 'students would frequently leave a focal task to tinker with a media player, or do some recreational web browsing, or check a news ticker and so on'. However, their interpretation stresses that these kinds of activities undermine students' ability to concentrate. It is interesting to ask whether the hobbies and interests pursued by these students interfered with and disrupted study related practices. However, following Jenkins (2006), we might also consider the possibility that these hobbies and interests provide the key to understanding how students had become enculturated into the use of the web as a learning resource. Questionnaire data started to raise these kinds of questions.

An important finding that vindicated the decision to focus the study on computer use in the study / bedroom concerns the location in which students spent time working on a computer.

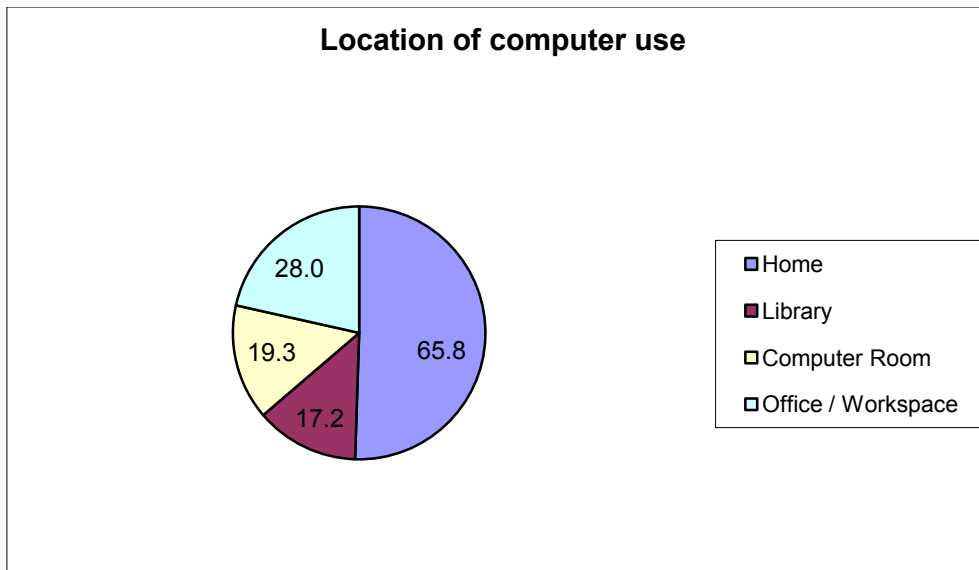


Figure 4.4 Time spent using computers in different locations (estimated)

A mean average suggested that over half (65.8%) of computer use took place in study rooms. The remainder was divided between computer use in the office workspace (only applicable to certain students and thus a source of distortion), the computer room (19.3%) and the library (17.2 %). This measure replicates findings of previous studies, confirmed hunches about the importance of researching students' computer use in their study rooms and suggested further questions⁴⁴.

⁴⁴For example, these findings lead one to ask, are students deserting the libraries and choosing to stay at home and work? If so, how might this be experienced by individuals and what are the long-term implications? Further, how do laptop owners take advantage of the emerging opportunities to 'context-cross' (Winters, 2006) between home, the seminar room, libraries and coffee shops when working on a particular task?

To suggest the kinds of things that students in this group were doing whilst online (apart from engaging in academic work) a list of digitally mediated hobbies and interests was reproduced from the answers to an open ended text box on the questionnaire.

Table 4.2 List of hobbies and interests involving the use of a computer

Music	Internet Shopping	Games
Movies	I-tunes	Burning CD's
File Sharing	Instant Messenger	Playing Flute
Roller Coast Tycoon	Cosmetics and Fashion	Recording
Friendster	Procrastination sites	Making DVDs
Scuba Diving	IQ Tests	Family Tree
Quizzes	Chessbase Tournaments	Chat
Organising Photos	Arranging Social Events	Downloading Music
Photography	Current Affairs	Games are for Geeks
Chess	News / Politics	Arts & Events in London
Relationship maintenance	Music (I-tunes)	Monitoring Gender issues
Self Taught Visual Basic	File sharing	Politics and Current affairs
Sharing Photos	I-Pod	Watching DVDs
Ball Organising	E-baying	Downloading movies
I consider people a hobby	Hot Roding PC	Talking to people
Gardening and food	Dating	Salsa

This is in no way exhaustive. Interviews rapidly uncovered all kinds of additional hobbies and interests. It simply serves to suggest the diversity of non-study related use.

In summary, questionnaire data confirmed a general impression that is immediately apparent to anyone who spends any time living in this culture. Computers were no longer tools that the

university made available for students to use in designated places for study related tasks. For the most part, students used computers that they owned, in quasi-domestic spaces for large parts of the day. Furthermore, students had begun to appropriate ‘free’ unrestricted broadband access to the Internet for a wide variety of purposes that were not necessarily related to their course of study. In short, networked computers had become integrated into the fabric of everyday university life and students were starting to use them to participate in a diversity of activities including study, entertainment and day-to-day life management.

4.4 Research questions guiding data collection and analysis

The research questions, informed by the theoretical framework presented in Chapter 3, are designed to provide insight into the overarching question: *What are the implications of media change for learning and literacy?* Three more specific questions guided data collection and analysis.

1. In what ways are university students appropriating new media to advance learning?
2. How are emerging tensions and contradictions created by media convergence experienced by students? How do these tensions manifest themselves in practices mediated by digital tools and resources?
3. How might we conceptualise the new media literacies required to learn effectively with the aid of digital tools and resources?

The first question guides the researcher to investigate how students are appropriating the new media tools and resources to which they have access. Moreover, it directs one to understand the end point, or purpose, of each student’s tool use. In socio-cultural terms, it directs one to understand how particular tools help students achieve particular goals and then consider how these goals might relate to the wider objective-motive of an activity.

The second question encourages one to look for the tensions or contradictions that emerge in these students' practices and everyday life experience as a result of media convergence. These tensions and contradictions might be revealed through the analysis of digitally mediated practices at a micro-genetic level, or they might manifest themselves in the experiences of living and learning in a networked university, as revealed in interview, at a wider cultural level of analysis.

The third question encourages one to identify the emergent new media literacies required to learn effectively in a rapidly changing media environment. Since students studying at well established universities are likely to be advanced learners who have long histories of Internet use and have the opportunity to use the full fire-power of digital technologies (unhindered by externally imposed constraints), it was anticipated that analysis of the digitally mediated practices of this group might provide direct insights into expert-like new media literacies in action.

4.5 Research design

Methodologically the study is conceived as cognitive anthropology in the tradition of Rogoff (1990), Lave (1984), Hutchins (1995) and Holland *et al.* (1998), informed by post-Vygotskian theory and focussed on micro-genetic analysis of digitally mediated practices. As suggested, university students' use of new technologies might be considered the 'frontier' of media convergence. Hence, the method is referred to as 'cognitive anthropology on the cyberian frontier'. Like other emergent designs, employing ethnographic methods, it moved from general 'foreshadowed problems', the iterative examination of data (through the lens of pre-existing theoretical lenses), to the generation of concepts and the development of typologies and theory (Hammersley & Atkinson, 1995, p. 209).

As the study evolved, it became apparent that each student had a distinctive *style* of computer use. In order to account for this diversity, it is necessary to widen the unit of analysis and take into account a range of factors: individual students' purposes, pre-history of computer use, and priorities and values as well as their relationships with tutors and peers and their socio-economic circumstances. In short, understanding practice as an emergent dialectical process requires the researcher to refrain from privileging particular causes. In Wertsch's (1998) terms, it requires one to 'live in the middle'. Indeed, data that was available - such as notes about the ecology of the domestic environment, informal conversations about future ambitions, past experiences, financial problems and relationships with tutors and peers - started to appear more and more significant when attempting to understand students' individual *styles* of computer use. In the final analysis, presented here, the intention was to combine an understanding of tool-mediated practice in specific socio-cultural contexts with an understanding of each individual's personal motivations, goals and identities as learners.

The above conjectures led to the formation of two additional methodological tenets. Firstly, the necessity of 'following the learner' (Facer *et al.*, 2003). That is, to allow students' own interests, concerns and practices to lead the investigation. This was necessary to identify the various goals towards which naturalistic practice was orientated. Secondly, there was a need to spend a significant amount of time getting to know each participant in order to gain a 'localised insider perspective' (Jenkins, 2006a) of their world, their background, their priorities and their aspirations for the future. All research designs employed in previous studies of college populations fail in one or both of these respects⁴⁵. The accomplishment of

⁴⁵ A critical distinction can be made between studies that use instruments designed by researchers based on assumptions about what is significant (Dutton *et al.*, 2005; Jones, 2002; Lenhart *et al.*, 2001; Livingstone & Bovill, 2001) and research designs that 'follow the learner' and attempt to gain grounded insider perspective into the use of the Internet in everyday life (Facer *et al.*, 2003; Jenkins,

these objectives required a high level of immersion, comparable to that obtained by Gee (2003) and Tobin (1998) who researched the practices of their own children. This was only possible because I (the researcher) had been living in the college among the participants whose practices became the focus of the study. In short, the context gave me the opportunity to get into the ‘back regions’ (Goffman, 1971) of the participants’ lives, conduct interviews and observations in their study rooms and develop an ongoing relationship that lasted between one and, in some cases, three years.

4.6 Value and long term objectives of the study

Ultimately, this exploratory study aims to develop new conceptual tools that might help learners understand and reflect on their own predicament and better understand the mediated nature of their own practice. Indeed, the innovation of conceptual tools for understanding learning and literacy in the new media age is conceived as a necessary prequel to developmental work that might assist practitioners and inform educational initiatives directed towards promoting new media literacy among different groups.

Unlike activity theoretical research, cognitive anthropology does not generally aim to bring about transformation or assist the people studied in a direct way. Nevertheless, conceptual development has an important role to play in developmental work that aims to bring about change. For example, Hutchins, a cognitive anthropologist who has studied the cognitive processes distributed among the officers, shipmates and mediating instrumentation in the bridge of a naval vessel as the ship is brought safely into harbour (Hutchins, 1995a) and the cognitive process distributed between pilots and the instrumentation in an aeroplane cockpit

2006c; McMillan, 2006; Tobin, 1998). The former seem to remain trapped within categories and ways of thinking about learning embedded in traditional practices. The latter start to identify emergent learning and literacy practices associated with new mediascapes.

(Hutchins, 1995b), subsequently applied conceptual insights gained to help the North American Space Agency (NASA) to re-design the cockpit of the space shuttle. Similarly, Norman (1988, 1993, 1998, 2005), a cognitive anthropologist who studied interfaces for everyday things (i.e. control panels of washing machines and video cassette recorders), has generated a body of theory that has been used to inform the design and development of a new generation of user-friendly software interfaces. In these cases, the conceptual knowledge generated through cognitive anthropology is re-deployed to improve design in collaboration with the users of new technologies.

This study does not aim to inform the design of instrumental panels or software interfaces. However, it is intended that the conceptual tools and typologies offered might inform a developmental research agenda aimed at helping people (young and old) become more self-conscious about their digitally mediated practices and consequently more adept at using a range of digital media to achieve their purposes. The development of categories and conceptual tools that might facilitate the process of reflection and discussion plays an important role in this process. These conceptual tools can be used to help students reflect upon and develop their own practices. Further, the insights gained from the study of the existing practices of advanced learners might contribute towards a more developmental research agenda aimed at fostering new media literacies among less advanced and less privileged groups in the wider population.

4.7 Data collection strategy and methods

Pilot interviews were conducted with three of the participants in order to investigate their own use of digital tools and resources⁴⁶. During this phase, the methodology remained under development. A pre-interview questionnaire was modified after each interview and lists of emergent themes were compiled that started to guide and focus further data collection.

Data collection involved the use of multiple qualitative methods. The procedure started with a series of informal conversations. Each participant who consented to take part in the study completed a pre-interview questionnaire at which time some notes were made about the arrangement of their computers and other resources ready-to-hand in their study rooms. Each participant then participated in an interview followed by a period of observation and short stimulated response sessions conducted at their computer⁴⁷. Data collection continued, after the initial analysis, with follow-up interviews and e-mail correspondence. Some of the interviews also prompted retrospective use for tools or websites participants had demonstrated or a period of participant observation in an online affinity space discussed during interview. At this time, further on-screen data could be captured. As stipulated, no data source was excluded that might shed light on the practices observed. A breakdown that provides an indication of the sequence and relative depth of each case study is provided in Appendix 11. The purpose and use of each data collection method is now discussed in turn.

⁴⁶ Pilot studies were conducted with Edina, Clinton and Sue Ellen. During these studies the methodology evolved. Nevertheless, these pilots produced some rich data that is used, and deep insights that inform the final report.

⁴⁷ Screen prints could be captured at this time.

Informal conversations

Informal conversations helped identify potential participants for the study. These invariably took place in social spaces such as the college dining room or bar and often began spontaneously following a few prompts. These conversations provided a rich source of inspiration and a means to facilitate the generation of hypotheses. Only recruits who seemed willing to participate in in-depth interviews and stimulated response sessions whilst working at their computer in their study rooms were considered as potential recruits. A certain degree of frankness and honesty also remained important.

As the study evolved, an attempt was made to recruit a sample that reflected the diversity of the college population. For example, the final sample included approximately an equal number of men and women studying a range of courses in clinical and social sciences. It includes six research students, seven students following taught MSc. courses, a student in the clinical phases of her medical training and a trainee teacher. Further, it included a selection of students who broadly reflected the international diversity of the college population (seven North Americans, six home students, and three from continental Europe). This proved highly significant as a source of variation since all students who had studied in the U.S and Canada had extensive experience of using the Internet as undergraduates compared to the Europeans. In contrast, one Romanian-born student (Anastasia) was targeted because she did not own her own laptop and had minimal experience of working on networked computers before she arrived in Oxford. Further, a couple (Jim and Katrina) were included who lived in an outlying building away from the main college site.

Whilst comparisons with cohorts of Internet users in other studies are made, it is important to stress that the group cannot be considered representative of the student population in the University or the college. It remained essential to respect the specificity of each case and

attempt to understand how each student's circumstances might prove significant when attempting to understand individual styles of computer use.

Pre-interview questionnaire

The pre-interview questionnaire was designed to capture information that could inform subsequent interviews and observations. The full questionnaire that evolved during the pilot studies is presented in Appendix 5. Questions were posed with the use of tick boxes, Likert scale style responses and open-ended response boxes. Besides basic demographic information, topics covered included: ownership of personal computing; estimates of time spent using computer; questions relating to tools used for different types of task (subscriptions to news groups, listservs, *RSS* feeds, *blogs* and *wikis*); experience of online activities (games, file sharing, shopping, chat, banking etc.); and the use of CMC tools (e-mail, chat, telephony, text messages etc.). The questionnaire, designed to take approximately twenty minutes to complete, also included more open ended questions gauging general attitudes towards computers.

Little of the questionnaire data is used in the final analysis. It abstracted aspects of computer use from situated practice and compromised the principle of following the learner. However, since it provided the only structured source of data, it proved useful for organisational purposes; for comparing the group (to populations sampled in other studies) and for throwing interesting points that could be explored in interviews and used to focus stimulated response sessions. A short interview was held upon completion that picked up on any interesting or unexpected responses in the questionnaire.

Observation notes

Observation notes were taken about the layout and arrangement of the study room and non-digital resources that students had placed 'ready-to-hand' whilst the students completed the

pre-interview questionnaire. In some cases, a photograph or short sketch was also taken of the area immediately around the computer with a view to developing a chapter on the ecology of the offline study environment (not included in the final draft). Nevertheless, this data source provided contextual information that proved helpful for understanding certain aspects of practices such as students' relative dependence on digital and non-digital resources.

Stimulated response

Stimulated response sessions provided a rich data source and provided the most direct insight into digitally mediated practice. The method is similar to the 'think aloud protocol' or 'cognitive walkthroughs' used in controlled environments by computer-human interaction researchers to evaluate interface design (Preece et al., 2002, pp. 365-368; Rikard & Langley, 1995). However, Vygotsky's genetic method, illustrated with reference to the method of double stimulation (see Chapter 3.1), provided the model and a source of inspiration. In all cases, the aim was to understand how and why learners actively appropriated and used digital tools and resources to mediate their own learning activities. The method was used to investigate naturalistic practices, following the learner, as they engaged in authentic goal directed tasks. Crucially, unlike methods used by computer-human interaction researchers, the purpose was to understand digitally mediated practice rather than inform design and development. Furthermore, the goal of the learning activity was not prescribed by the researcher and the walkthrough was not restricted to a particular tool. Students' own needs and priorities led the stimulated response sessions. Nevertheless, instances in which learners appeared to appropriate a new tool (or combination of tools) to overcome a tension, contradiction or escape a double bind situation proved especially interesting. Similarly, instances in which students used a tool *against the grain* (in ways not intended by the designers), refrained from using the full functionality of a tool, or innovated strategies to enhance productivity and self-regulated attention proved of great interest. In these instances, the agency of the learner became conspicuous. In short, the focus in each stimulated response

session tended to be shaped by emerging heuristics influenced by readings in the socio-cultural tradition.

In practice, the procedure involved a period of uninterrupted observation, at which point participants were asked to explain what they were doing in an attempt to identify the goal of a particular action⁴⁸. As the activity continued, short unobtrusive questions such as, ‘what are you doing now?’, ‘why did you do that?’, ‘are you experiencing any difficulties?’, ‘why do you use that tool / technique?’, and ‘have you always done it like that?’ were used to stimulate and probe. This approach tended to elicit richer, more interesting and more focussed responses than the less interventionist ‘think aloud protocol’⁴⁹ and provided further insight into the practices observed. The amount of prompting required varied from subject to subject. However, given that users were often describing techniques or strategies that they themselves had developed for performing particular tasks, a simple prompt often elicited a complex and sophisticated response.

The data generated through this method was directly stimulated by on-screen activity and thus directly related to situated practice. In this sense, it provided a ‘raw’ data source that was later used to reconstruct a number of illustrative examples represented in the vignettes. However, stimulated response sessions were unstructured and frequently skipped between topics as participants commented on diverse aspects of their practice. Consequently, the data produced was extremely messy and often needed to be reorganised during the transcription process.

⁴⁸ Later this data could be used to infer the corresponding object-motive of the activity and consider how a particular practice related to individuals needs as learners.

⁴⁹ Interactive designers using the ‘think aloud protocol’ sometimes have two people working together to achieve a similar effect (Preece *et al.*, 2002, p.368).

Reactivity was also a major issue with this data source. However, reactive effects and the theoretical presuppositions that I, the researcher, brought to the process are accepted as a feature of real world research and treated as a source of data (Hammersley & Atkinson, 1995, pp. 16-21).

Interestingly, the method itself appeared to stimulate a form of reflective practice (Schön, 1983) and contributed to insights about the degree to which students were conscious or *mindful* of the various ways digital technologies and participation in a variety of online affinity groups were changing their own learning strategies (see Chapter 10.4). In the case of Jim and Ardash (who both became heavily involved in the study and began e-mailing observations about strategies they had innovated), the initial stimulated response sessions and interviews appeared to inspire a sustained period of self-reflection on their own evolving practice and the tensions and contradictions they confronted on a daily basis. In turn, this indicated the possibility that this method could be used as part of a developmental research agenda that empowered learners to become more conscious of their own practices.

In-depth interviews

All participants took part in one or more in-depth interviews about their computer use. The amount of in-depth interviewing increased as the study progressed. Further, a semi-structured interview schedule (see Appendix 5) evolved that placed more emphasis on each subject's pre-history of computer use and on each subject's aims, goals and priorities as learners. Both were necessary to understand the personal-historical context of practice. For example, questions in the first section included: 'when did you first start using computers?'; 'what did you use them for?', and 'do you have any hobbies or interests that involve the use of computer software?' These proved important for understanding individuals' enculturation into computer use, their relative experience of participation in online culture and the potential origins of new media literacies. Questions in the second section included: 'can you explain

how you came to study at Oxford?'; 'why did you choose to study [x]?', and 'what kinds of career are you considering and why?' These proved important for understanding personal object-motives / life trajectories and for understanding the relative priorities of each subject. In a sense, these questions helped to identify the wider personal goals / motives driving the innovation of particular kinds of practice.

A third section of the interview schedule focussed on students' preferred sites of study and the design of their physical and virtual working environment. This section supplied complementary contextual information about the ecology of the working environment and their relative dependence on digital vs. non-digital tools and resources.

The fourth section did not follow a pre-defined structure. It made use of an interview prompt-sheet that grouped questions under sub-headings loosely corresponding to emergent themes. This format allowed for a more flexible interview style. Indeed, it evolved throughout the study to provide a set of prompts that could be used to pick up and explore issues uncovered during stimulated response sessions. In Appendix 5, questions that were used during interviews are grouped into thematic clusters. However, no single interview followed a set format. The prompt sheet simply provided a resource that could be used to probe various points that might emerge during an on-going conversation led by the informant. In short, the use of themed 'points to explore' lists facilitated a shift between a research led 'respondent interview' and a student led 'informant' interview (Robson, 2002, p. 271). These themed 'points to explore' lists were updated or revised following each interview.

Interviews were recorded on audio tape and later on a digital Dictaphone then summarised and transcribed. Initial interviews were transcribed in full. However, the length of each interview grew as the study progressed and the more in-depth cases studies (Ardash, Tim, Jim, Edina and Miss Lullaby, Tim) involved multiple interviews. These were summarised and the most pertinent sections were transcribed in full.

Follow-up interviews and e-mail correspondence

Seven students (Jim, Ardash, Jacob, Edina, Miss Lullaby, Tim, Katrina, ZeroGBoy) participated in subsequent follow-up interviews after preliminary data analysis. These proved useful as a means to clarify or probe interesting points that emerged. When expedient, these were conducted on a face-to-face basis. However, these were not always recorded. Further, several students were no longer living in the immediate vicinity or (in one case) were away conducting field work by the time data had been transcribed and analysed. In these cases, certain points were probed further via e-mail correspondence. This strategy facilitated the posing of specific questions relating to particular data items (typically an extract of recorded speech) and consequently elicited focussed responses. In addition, several students who had become very involved occasionally e-mailed interesting comments or observations following reflections on their own practice (see Appendix 8). Although not intentionally solicited, these were considered a legitimate and valuable data source.

Retrospective virtual ethnography

During stimulated response sessions, students often demonstrated or discussed their use of a particular tool or participation in an online affinity group. However, it was not always possible to develop a full understanding of the utility of the tool, service or affinity group using data collected through stimulated response and interview. Further, the making of screen shots during stimulated response sessions proved highly intrusive in some instances. Consequently, it proved expedient to experiment with tools and, in some cases, start to participate in online affinity groups discussed during interview. For example, following interviews with participants, I joined the *Friendster* and later *Facebook* online community sites, watched academic and political pod-casts on *YouTube* and *C-SPAN*, started e-mailing news articles to friends, used *Amazon.com* for literature searching and the 'Search Inside Me' tool for finding missing references, used the *Oxford English Dictionary Online* tool,

subscribed to *Flavour Pill*, downloaded and used a *multiple desktop power tool* and investigated interactive websites designed to help people apply ANOVA statistical tests. Further, during analysis, I explored a number of online affinity spaces (including *Aids India*, *Chessbase*, *Co-dependents Anonymous*, and *Vegidate.com*) to gain a fuller understanding of the utility and participatory practices in these online spaces.

This form of ‘virtual ethnography’ resembles an approach recommended by Hine (2000) who spent time as a participant observer in various online spaces recording and documenting on-screen data to investigate a ‘media event’⁵⁰. However, in this study the approach was motivated by a need to gain a better understanding of the online services and affinity groups students had discussed in interviews. Participant observation of this kind helped develop further insights into why and how participants were making use of online resources. It also provided further opportunities to take screen shots of important tools, sites and online user generated content. This method promises to become an important and necessary tool for researching emerging learning strategies now Web 2.0 has come to maturity. It has the potential to provide an alternative perspective of the practices of participants from the perspective of an insider within the online space. In the current study, it started to evolve out of necessity in order to take account of the various ways students were starting to engage with *Participatory Culture*.

⁵⁰ Hine (2000) uses the term virtual ethnography to describe a methodology she developed for researching the online ‘media event’ that erupted on the Internet during the controversial case of British nanny, Louise Woodward, who was put on trial for the murder of a baby in her care. This method involved spending time as a participant observer in online spaces, including websites, newsgroups, blogs and online discussion forums, recording and documenting online data. She also conducted e-mail interviews with selected participants.

4.8 Strengths and weaknesses of the data collection strategies

Table 4.3 and Table 4.4 suggest the strengths and weaknesses of each data collection strategy.

Table 4.3 Strengths of Data Collection Methods⁵¹

<i>Strength</i>	AE	IC	Q	O	SR	II	FI	EC	VE
Useful for hypothesis generation	x	x	x		x	x			
Useful for hypothesis confirmation					x	x	x	x	
Can be used to reconstruct illustrative examples					x	x		x	x
Provides insight into pre-history of computer use		x	x			x	x		x
Provides insight into motives, goals, priorities						x	x	x	
Provides insight into tensions and contradictions		x	x		x	x	x	x	
Data collection in natural setting		x		x	x	x			x
Allows insights that emerge to be probed					x	x	x	x	x
Provides contextual information		x	x	x		x			
Allows capture of user content and on screen data					x				x
Useful for uncovering participant perspectives		x				x	x		
Provides opportunities to directly observe practice				x	x				
Facilitates validity checks and triangulation			x	x	x	x	x	x	x
Facilitates comparisons between participants			x			x	x	x	x
Easy to categorise and manipulate for analysis			x						
Easy and efficient to administer and manage			x						

NOTE: x= strength AE = auto-ethnography; IC = informal conversation; O = observation; Q = pre-interview questionnaire; SR = stimulated response; II = in-depth interview; FI = follow-up interview; EC = EC mail correspondence; VE = retrospective virtual ethnography.

⁵¹ These tables were modified from a format suggested by Marshall and Rossman (1999, p.134)

Table 4.4 Weakness of data collection method

<i>Weaknesses</i>	AE	IC	Q	O	SR	II	FI	EC	VE
Danger of data overload					x	x			
Data distortion due to reactive effects					x	x			
Can lead researchers to ‘miss the forest whilst observing the trees’					x				
Difficult to replicate					x				
Insights into practice must be inferred		x	x			x	X	x	x
Especially dependent on openness and honesty of participants						x	X	x	
Data open to multiple interpretations				x	x	x			
Requires specialised training									
Depended on co-operation of individuals		x	x	x	x	x	X	x	
Fraught with ethical dilemmas									x
Difficult to record	x	x			x				
Highly dependent on the ability of the researcher to be resourceful, systematic and honest		x				x			
Difficult to compare across cases					x	x			
Difficult to manage and organise data					x	x			

NOTE: x= strength AE = auto-ethnography; IC = informal conversation; O = observation; Q = pre-interview questionnaire; SR = stimulated response; II = in-depth interview; FI = follow-up interview; EC = EC mail correspondence; VE = retrospective virtual ethnography.

4.9 Interpretation and analysis

The emergent design generated a voluminous dataset with little internal structure. This created additional challenges during interpretation and analysis. The approach adopted is consequently discussed in order to make the techniques employed more transparent.

Some claim qualitative data analysis is essentially an art, an intuitive and creative process (Loftland, 1977; Wolcott, 1992). In the current study, intuition (informed by the holistic experience of immersion in the field) and an emerging understanding of socio-cultural and activity theory played a major role in the description, interpretation and analysis of a rich and messy data set. This is somewhat inevitable in research adopting a holistic socio-cultural perspective that as Cole (1996, p. 104) has stressed, ‘draws upon methodologies from the humanities as well as from the social sciences’ and ‘rejects cause-effect, stimulus response, explanatory science in favor of a science that emphasizes the emergent nature of mind in activity and that acknowledges a central role for interpretation in its explanatory framework’. Further, it is important to emphasize, along with other theorists who have discussed the topic of hypothesis generation in research employing ethnographic methods, that the interpretation and analysis of data is not a distinct stage of the research. Hammersley and Atkinson (1995) argue:

In many ways, it begins in the pre-fieldwork phase, in information and clarification of research problems, and continues through to the process of writing reports, articles, and books. Formally, it starts to take shape in analytic notes and memoranda; informally, it is embodied in the ethnographer’s analysis of ideas and hunches. And in these ways, to one degree or another, the analysis of data feeds into research design and data collection. This iterative process is central to the ‘grounded theorizing’ promoted by Glaser and Strauss, in which theory is developed out of data analysis, and subsequent data collection is guided strategically by the emergent theory (Glaser and Strauss, 1967; Glaser, 1978; Strauss and Corbin, 1990). However, much the same interactive process is evident in other kinds of ethnographic

research, including those which are directed not towards the generation of theory but to other research products such as descriptions and explanations (p.205).

This study is ultimately directed towards the development of theory, a process that continued through the pre-fieldwork phase, throughout data collection and through to the process of coding, categorising, memoing, and data visualisation. However, the process is unlike the grounded theory research as conceived by Glasser and Strauss (1967)⁵². A conscious effort was made to build on existing theoretical lenses and conceptual tools inherited from the tradition of socio-cultural and activity theory.

Sampling of practices observed

Theory development involved the purposive or ‘theoretic’ sampling of practices observed during data collection. In contrast to prior studies, this frequently included practices that involved tools not specifically designed to facilitate learning or study. This implicitly acknowledges the fact that ‘cultural tools usually emerge for reasons other than to facilitate many of the kinds of actions they in fact end up shaping’ (Wertsch *et al.*, 1995, p.25). Further, some of the practices purposefully sampled tended to illustrate how students actively appropriated new media to overcome or escape ‘double bind’ situations in which they were unable to proceed without the aid of new mediational means. In this respect, there is a tendency to focus on examples that illustrated what Engeström (1987, 1996) calls expansion, or *breaking away* in which students make *horizontal developments* and start to appropriate new media to facilitate personal development. In other cases, the practices singled out in the

⁵² Note: not all advocates of grounded theory have advocated that the researcher approach the data as a blank slate without any theoretical pre-conceptions. Indeed, Strauss and Corbin (1998) took issue with the *Tabula Rasa* brand of ‘grounded theory’ originally championed by Robert Glaser in *The Discovery of Grounded Theory* (Glaser & Strauss, 1968).

analysis illustrate how students were exploiting the affordances of digital media to gain a cognitive advantage. These examples are privileged because they most powerfully illustrate committed learners exploiting new media to maximum effect. In short, they illustrate expert-like digitally mediated practice and advanced new media literacies in action.

Trustworthiness of account

It has been argued that the concepts of validity, reliability and generalisability are premised on positivistic assumptions about the nature of truth wholly inappropriate to qualitative researchers working within a broadly constructivist paradigm (Guba & Lincoln, 1989; Lincoln & Guba, 1985; Wolcott, 1994). Nevertheless, socio-cultural research does not proceed on constructivist assumptions. Not unlike the position adopted by Miles and Huberman (1994), who identify themselves as ‘transcendental realists’, the current study recognises the possibility of making successive approximations to the truth despite the impossibility of certainty (Popper, 1972); a process that involves the development and later the testing of emergent hypotheses guided by the research questions. Further, in accordance with the logic of ‘transcendental realism’, the perennial threats of researcher’s bias, the inadequacies of a purposive or ‘theoretic’ sampling procedures and the tentative nature of conclusions drawn are recognised as problematic. Consequently, in order to bolster the *trustworthiness* and *credibility* of the account but without overburdening the reader with excessive detail, attempts are made to a) provide the reader with sufficient data to judge the credibility of the inferences made, b) search for negative cases that might confound an emerging hypothesis, and c) suggest the limitations of interpretation and alternative credible possibilities where appropriate. It is also hoped that these measures might facilitate other researchers seeking to replicate, build on or critique the findings of the current study. In the interest of additional transparency, some of more practical techniques employed during data analysis are now described. In addition samples of interview transcripts, stimulated responses, memos and matrices used in the analysis process are presented in the appendices.

Techniques employed during data transformation

Hypothesis generation involved a tri-fold process of description, interpretation and cross-case analysis based on purposive samples of practices. In the initial phase selected expert-like practices, illustrative of advanced new media literacies in action, are reconstructed in the form of richly descriptive vignettes drawing on data collected by stimulated response, interviews and screen shots. These descriptive accounts were augmented by interpretative case memos that attempted to conceptualise and understand the practices observed using theoretical concepts, heuristics and models from the literature (see Appendix 9). Selected activities were also conceptualised with the aid of Engeström's (1999) extended mediational triangle. These tools were used to conceptualise particular tool mediated actions as part of wider object-orientated activities. Both models are useful for teasing out the contradictions and tensions experienced by learners living and learning in the networked university. These data displays, in turn, provided the source material for further interpretation and analysis in the form of extended case memos⁵³.

In a second, hypothesis testing and confirmation phase, matrices were used to facilitate cross case analysis. Material relating to each practice from multiple data sources was tagged using the *Atlas ti* qualitative data analysis package. Related practices were then grouped into 'code

⁵³ Several memos evolved into extensive written accounts, involving comparison and juxtaposition of multiple practices, tools and strategies used by an individual to achieve personalised learning objectives. Several of these extended richly descriptive accounts could be presented as standalone case studies that 'particularise' core themes. However, given the wordiness of the richly descriptive accounts, and the fact that many of the theoretical insights remained implicit, for the purposes of this thesis, material written has been condensed or used selectively as vignettes to illustrate key points within the findings chapters.

families' relating to emergent themes and compared with the aid of a conceptual matrix (Miles & Huberman, 1994). Following a period of experimentation it was decided to categorise practices in terms of generic modes of practice. The six basic modes or genres of practice (that are used to organise the chapter structure) include: designing a cognitive ecology; creative appropriation of web-based tools and resources; the creation, nurturing and mobilisation of globally distributed funds of living knowledge; participation in online affinity groups; and self-making activities. The use of matrices (see Appendix 10) also helped to focus the search for confirmatory and confounding, or negative cases, that forced the development and refinement of emergent hypotheses according to the logic of analytic induction.

4.10 Limitations of the methodology employed

A fundamental problem associated with the strategy of *following the learner* concerns the threat of data overload. Further, given that data generated related each individual's use of digital tools and resources to address personal learning needs, it was not always easy to find comparable examples for the purpose of cross-case analysis. In practice, whilst dozens of memos were written during data collection this led to an explosion of emergent themes that could not easily be synthesised into a coherent whole.

The need for further interim analysis to facilitate progressive focussing

In retrospect, there was clearly a need to build in time for interim analysis during and in between case studies to facilitate a process of progressive focussing (Wolcott, 1994). Such a strategy might reduce the overall amount of data generated through interviews and simulated responses and move data collection more swiftly towards a search for practices that confirmed, modified or led to the rejection of emergent categories. This might also facilitate the formation of a slightly more structured data set that facilitated report writing. This need not necessarily compromise the principle of *following the learner*. However, it would require

the researcher to be more selective and to take a more proactive role in focussing unstructured interviews and stimulated response sessions on selected practices.

The relative invisibility of technology refusers and later adopters

This thesis clearly foregrounds the practices of advanced, agentive learners. Whilst all students made use of new media on a daily basis, two students, Peter and Ishani, are almost invisible in the final draft presented. Among the group, they were perhaps the least resourceful users of new media. Nevertheless, both were highly successful students and excelled in their respective subject areas. It appeared that both used new media on a ‘needs only’ basis and actively resisted adopting new technologies for their own sake. Given space and time, a chapter more specifically focussed on the ‘technology refusers’ or ‘technology resisters’ within the group would have proved of great interest⁵⁴.

Organisation of findings chapters

The organisational structure is not entirely satisfactory. Grouping practices into generic clusters invariably requires suppression of descriptive detail and risks obscuring specificity and complexity of each case. In earlier drafts, the vignettes contained considerably more detail and contextual information. This approach limited the potential for cross-case analysis. Nevertheless, in an attempt to keep the theory grounded, each subsection includes rich

⁵⁴ The case of Sue Ellen’s restricted use of the spell checking tool (see Chapter 5) certainly suggested that an ability to self-impose enabling constraints ought to be considered a characteristic of expert-like practice. One could extend this hypothesis to the non-use of new media forms, like *MSN Messenger* and *Facebook* more generally. Indeed, a capacity to resist the potential distractions of the Web might also be considered an advanced literacy. Future research in this area ought to ferret out and give serious consideration to students who actively resist engagement with participatory culture.

descriptions of two or more exemplary practices. However, it is not possible to describe all practices at a comparable level of richness due to lack of space. The aim is to present the reader with sufficient data to *particularise* the theory development whilst leaving room to abstract and discuss categories and typologies extracted from the data.

4.11 Ethical Considerations

Given that all participants were consenting adults, ethical considerations were minimal compared to the LAMS and Revolution studies. Further, there were no responsibilities to the sponsors of the research therefore ethical considerations principally concerned responsibilities to participants. In accordance with the revised ethical guidelines of the British Educational Research Association (BERA, 2004), all participants were given an overview of the aims and purpose of research and informed of their right to withdraw at any time or abstain from answering a particular question. All consented voluntarily and no incentives were offered. Data collected was kept on audio or digital tape and kept in a secure location or on a password protected computer.

The key ethical issue that emerged during fieldwork concerned the need to preserve the anonymity of the participants and the handling of sensitive personal information. To preserve the anonymity of participants, pseudonyms are used. It was helpful to select names that suggested the nationality, ethnicity and gender of participants. In some cases, participants selected nicknames or screen names as pseudonyms. This was the case with ‘Miss Lullaby’ and ‘ZeroGBoy’. These names are used, partly because they suggest the identity play characteristic of online culture and partly because they suggest the personality of the informant.

It is possible that a dedicated detective could identify a particular participant given the amount of information provided about the subject’s age, nationality, gender and course of study.

However, no information is given that might put the participants at risk of harm or prosecution. The name of the college in question is not given.

A slightly trickier problem concerns the use of user content and the use of screen shots. During analysis it became evident that some personal information was visible in data captured digitally. This is handled with sensitivity and never used in a way that might compromise the anonymity of the subject. On occasions, screen shots have been censored to disguise personal information.

Finally, during interview, a few participants disclosed information of a personal nature. Issues touched upon concerned software piracy, plagiarism, dating, online flirting, quasi-illegal file sharing activity and the use of the Internet for surveillance. Again, data of this nature is used with sensitivity and discretion to protect the participants.

Chapter 5 The Learner as Designer

The *Wooton Patent* desk, fashionable at the beginning of the 20th century, was designed to support a structured working environment that facilitated the efficient management of dozens of books, notes, letters and writing utensils.



Figure 5.1 Advert for *Wooton Patent* desk

An advert by the *Wooton Desk Manufacturing Company* implies that the desk will assist the user to manage daily administrative chores, save time and promote ‘peace of mind’:

The operator having arranged and classified his books, papers, etc, seats himself for business at the writing table, and realises at once that he is the ‘*master of the situation*’. Every portion of the desk is accessible without change of position, and all immediately before the eye. Here he discovers that perfect system and order can be

attained, confusion avoided, time saved, vexations spared, dispatched in the transaction of business facilitated, and peace of mind promoted to the daily routine of business.⁵⁵

The advertisement is premised on the assumption that the design of the desk augments its 'operators' information processing capabilities. The cognitive load required to organise, arrange, file and retrieve multiple paper-based information sources is shared between the subject and the pre-designed environment. In this case, the intelligence is designed into the material structures (wooden shelves, drawers and boxes) of a three dimensional desk.

Today, few students own or use such magnificent desks. Before the advent of personal computers, students invariably collected together the tools and instruments of study (pens, notebooks, textbooks, calculators etc.) and arranged these tools on the surface of a flat physical desktop to support particular kinds of study tasks. In the new media age, when working with multiple digital tools and resources on a virtual desktop, the same logic applies. Tools must be made available and arranged to support particular study practices.

From a socio-cultural perspective, when designing this configuration of tools and resources one is effectively engaged in the process of designing an extended cognitive ecology that structures physical movements and regulates attention. However, the capacity a subject has to customise, modify and arrange tools and resources within the digital domain confronts students with fundamentally new design challenges.

Much has been written on the distributed nature of cognition (Hutchins, 1995b; Norman, 1993; Pea, 1985, 1997). However, few theorists to date have investigated this issue with respect to the concept of design, nor teased out the implications for a learner's capacity to

⁵⁵ The quotation is taken from an advertisement by the *Wooton Desk Manufacturing Company* circulated in 1880 and cited in Norman (1993).

engage in advanced knowledge work. Philosophers of cognitive science have identified our capacity to leverage tools to ‘off-load’ and therefore amplify cognitive capabilities as a unique accomplishment of the human species. For example Dennett (1996) argues:

The primary source, I want to suggest, is our habit of off-loading as much as possible of our cognitive tasks into the environment itself - extruding our minds (that is our mental projects and activities) into the surrounding world, where a host of peripheral devices we construct can store, process, and re-represent our meanings, streamlining, and protecting the process of transformation that are our thinking. This widespread practice of off-loading releases us from the limitations of our animal brains (p.178).

This emphasises the capacity of humans to use ‘a host of peripheral devices’ to transform their thinking capacities. However, Dennett is unclear about whether this process is a conscious intentional process or an unconscious ‘habit’. For the most part, the environment is accepted as given. In Clark (2003), the notion of ‘off-loading’ starts to give way to the more active and intentional metaphor of ‘deployment’.

We – more than any other creature on the planet – deploy non-biological elements (instruments, media, and notations) to complement our basic biological modes of processing; creating extended cognitive systems whose computational and problem solving profiles are quite different from those of the naked brain (p.78).

The move towards the use of the ‘deployment’ trope implies greater scope for the individual agent in leveraging the affordances of particular tools, instruments and notational systems. This shift may reflect Clark’s more specific interest in new media tools and resources. Indeed, Clark is interested in the evolution of increasingly more powerful extended ‘cyborg minds’ that combine biological and non-biological components. These ideas suggest some interesting ways to think about Man’s changing relationship with an increasingly technology-rich environment. Both thinkers are preoccupied with stressing the various ways tools

amplify, regulate and extend cognitive capacities. Yet, neither has a great deal to say about the process of designing these extended cognitive systems.

New Literacy Studies theorists have done perhaps more to emphasise the importance of design as a central category for understanding socio-cultural literacies. In this discourse, design emerges as a fundamental element in a practice-based account of literacy. Furthermore, with the focus on design, the creativity and resourcefulness of learners comes to the foreground:

The notion of design connects powerfully to the sort of creative intelligence the best practitioners need in order to be able continually to redesign their activities in the very act of practice. It connects well to the idea that learning and productivity are the results of the designs (the structures) of complex systems of people environments, technology, beliefs, and texts (New London Group, 2000, p. 20).

Indeed, Kress, the member of the *New London Group* who was most directly concerned with understanding *Literacy in the New Media Age* argues:

The world of communication is now constituted in ways that make it imperative to highlight the concept of design, rather than concepts such as acquisition, or competence, or critique. This is particularly essential given new media requirements of education – even if these are not at the moment (officially) recognised (Kress, 2003, p.37).

In fact, he emphatically claims that in the new media age ‘the concept of design is the *sine qua non* of informed, reflective and productive practice (p.37)⁵⁶. Indeed, the concept of *design* replaces *writing* as the central category in multimodality theory and the associated theory of

⁵⁶ *Sine qua non* or *conditio sine qua non* was originally a Latin legal term for "without which it could not be" according to the *Wikipedia* article on the term.

semiosis⁵⁷. This move recognises that meaning making invariably involves the re-combination of multiple semiotic resources (text, image, icon, symbols, sound files) for a specific purpose. However, multimodality theory provides few insights into how design work might play an important role in structuring learning activity. This is crucial since, in new media ecologies, prior to making meaning learners are compelled to design digital environments that allow them to make particular kinds of meanings.

This chapter investigates the design challenges confronting learners in everyday life and attempts to understand an expert-like capacity for designing cognitive ecologies. The theoretical tool-kit provided by the socio-cultural tradition is well-suited to this task principally because, unlike either the cognitive scientists or the *New Literacy Studies* theorists, it encourages us to understand the challenge of design work as an inherently dialectical process. The theme of the agent struggling with an objective environment in an attempt to regulate intentional action from the outside derives from Vygotsky (1987):

The person using the power of things, or stimuli, controls his own behaviour through them, grouping them, putting them together, sorting them. In other words, the great achievement of the will consists of Man having no power over his own behaviours other than the power that things have over his behaviour. But Man subjects to himself the power of things over behaviour, makes them serve his own purposes and controls that power as he wants. He changes his environment with the external activity and in this way affects his own behaviour, subjecting it to his own authority (p. 212).

As Engeström (2005) has noted, ‘Vygotsky pointed out that voluntary action has two phases: a *design phase* in which the mediating artefact is painstakingly constructed and an *execution phase* which typically looks quite easy and automatic’ (p.313). Critically, in the design phase

⁵⁷ Semiosis is the term used by Kress (2003) to describe the process of making meaning out of multi-modal semiotic resources.

the agency of the designer is in tension with the agency of the object of the design process. This study attempts to understand the sometimes ‘painstaking’ work of design that makes advanced knowledge work seemingly effortless.

The case of Timothy (a 3rd year DPhil. student) and Jim (a 2nd year MSt. student), both engaged in the task of writing dissertations, are used to illustrate the learner-as-designer, in action.

Vignette: Timothy designs a personalised mediascape for brain analysis

Timothy, a student of clinical psychiatry, was in the final stages of producing his DPhil. thesis on risk behaviour. It was crucial that he completed the dissertation before the end of the summer. He’d grown weary of clinical research and had applied to re-train as a medical doctor. He had been offered a place on a fast-track medical course due to start in October 2005. However, completion of the DPhil. degree was a pre-condition for starting the course. Consequently, he was under intense pressure to complete his data analysis and write up his thesis by the end of the summer. This pressure seemed to permeate every aspect of his practice, including the design of a complex personalised virtual environment that facilitated rapid analysis and report writing. The need for rapid completion constrained and shaped all aspects of practice.

Timothy’s research project involved the analysis of hundreds of *MRI* brain scans using specialist software⁵⁸. Previously, he had worked in office space at the psychiatry department where he had access to colleagues with whom he might consult. However, he now worked exclusively from his study room on a powerful desktop computer that could support dozens of applications running simultaneously. Multiple digital tools including *Word*, *Excel* spreadsheet, *Corel Draw* and *MRI-Cro* (a brain image analysis package) were used in the

⁵⁸ MRI (Magnetic Resonance Imaging) has been used since the beginning of the 1980’s.

production of the final report. All these tools were installed on the hard drive of his desktop computer. In addition, Timothy frequently consulted a specialist website (hosted by Harvard Medical School) and an online tool called the *SPL Anatomy Browser*. He also participated in an online support group (mediated by an e-mail listserv) set up by the designers of the *MRI-CRO* brain image analysis tool. These online information sources had become integrated into his virtual desktop and remained running in multiple windows as he worked. Paper-based reference manuals were strategically placed on shelves above the computer. However, Timothy used the online alternatives instead on account of the fact that they were easier to search and contained information that was more up-to-date.

Timothy was acutely aware of the way the design, layout and arrangement of his desktop environment impacted upon his ability to work efficiently, at an optimal level, and remain on schedule for the completion of his thesis.



Figure 5.2 Screen shot of Timothy's primary desktop environment

Like many other students working on a long dissertation, he had arranged shortcuts to five folders (containing documents relating to each dissertation chapter) across his virtual desktop and placed links to essential applications on his desktop. However, Timothy spoke about his design strategy with a degree of self-awareness that seemed atypical for members of the group. This was evident in his description of the desktop environment:

“Ok so this is my default desktop and I’m usually very good about structuring my documents. Everything is perfectly labelled [pointing to the shortcuts to thesis chapters] and for the other folders which I need to make references to, occasionally I put shortcuts to at the very top.... Not visually cluttered by any distractions in the middle ... and in fact the closer they are to the centre the more often I use them. So this imaging tool, which I use most often at the moment [pointing to the tool at the centre] it’s about where the eye goes to first. If it’s in the centre of the screen, that’s where it is. These are all time-saving devices. That’s the way I work ... I like to have sleekness and elegance.”

Previously, files, folders and applications could only be accessed by rummaging through the ‘start’ menu or a hierarchical folder structure - a time consuming task that interfered with his concentration. The positioning of documents in the centre and shortcuts to relevant applications to the left of the desktop was important, not simply for ease of access, but as a symbolic reminder of their importance for the task at hand. The whole design process was guided by the principles of ‘sleekness’ and ‘elegance’. In short, Timothy had designed a set of structuring structures that delegated the task of managing and regulating his attention to a meticulously designed desktop environment.

The sophisticated design work, evident in Timothy’s desktop environment, was not confined to the primary desktop as shown above. The number of tools (16 in total) required to synthesise various data sources into an academic thesis made considerable demands on the space available on the virtual desktop. Jim regretted that he did not possess a larger 19”

monitor. However, in order to overcome the limitations of the physical monitor size he'd recently downloaded and installed a multiple desktop *Powertool*. This freeware desktop upgrade, which a friend had told him about, allowed him to work in four different desktop workspaces simultaneously. The same shortcuts were available in each work space. However, rather than maximising and minimising windows on a single desktop, the multiple desktop utility enabled Timothy to switch between workspaces where multiple tools were immediately available for the task at hand. This allowed him to switch, not only between windows, but between multiple combinations of windows by pressing one of four shortcut keys.

Particular configurations of tools were open in each of the four workspaces. Timothy argued that this provided a 'visual way of categorising' tasks. He was extremely proud of this recent design innovation arguing that it had resulted in considerable productivity gains. Further, he argued that each workspace positioned him in a particular role. The first (primary workspace) was for writing. This workspace contained the current dissertation chapter, a virtual 'scratch' pad, a folder full of brain image *JPEG* files, a chart used for mapping co-ordinates, a *PowerPoint* slide show (containing selected scans for quick viewing) and a shortcut to *Google Earth* (a tool Timothy used for virtual study breaks). This space was described as his 'writing down in a presentable format desktop'. The second workspace was designated as space for visualisation and analysis of raw brain image data. A switch to this space revealed the *MRI-Crow* application (shown below) open and running.

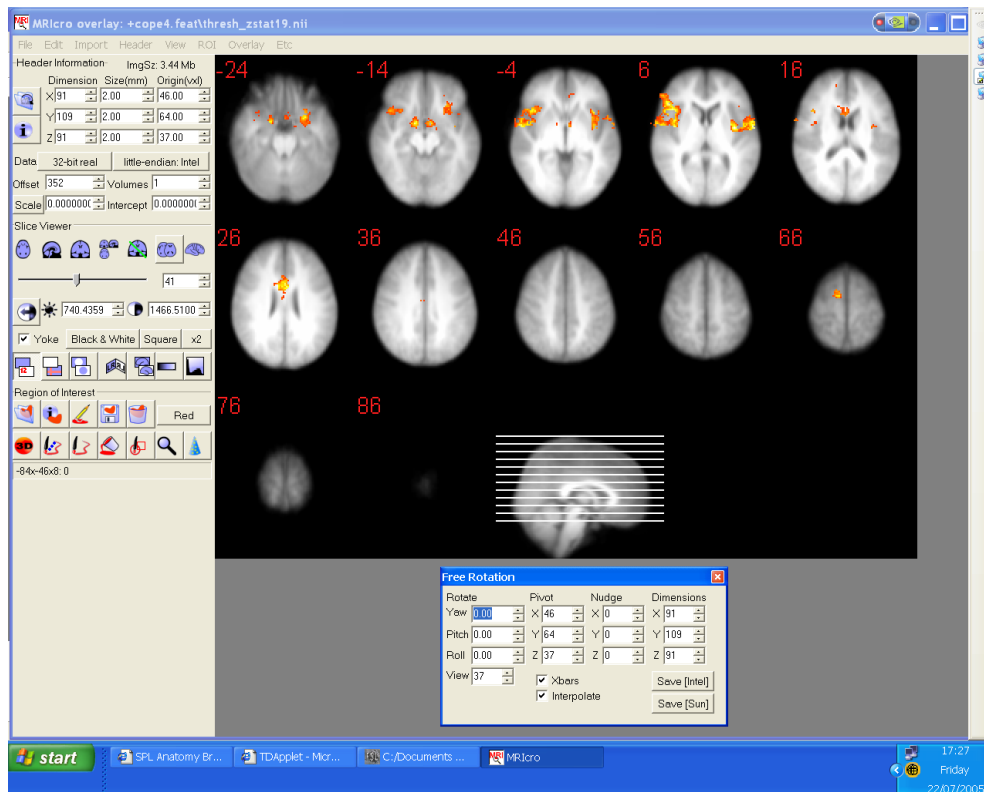


Figure 5.3 Screen shot of *MRIcro* brain image analyzer

The third desktop was dedicated to ‘looking at those images more closely within the brain’ (using *SPL anatomy browser* shown below) in conjunction with the information contained on a brain imaging website. The fourth desktop was a space for editing and touching up images (using *Corel Draw*) that would later be incorporated into dissertation chapters.

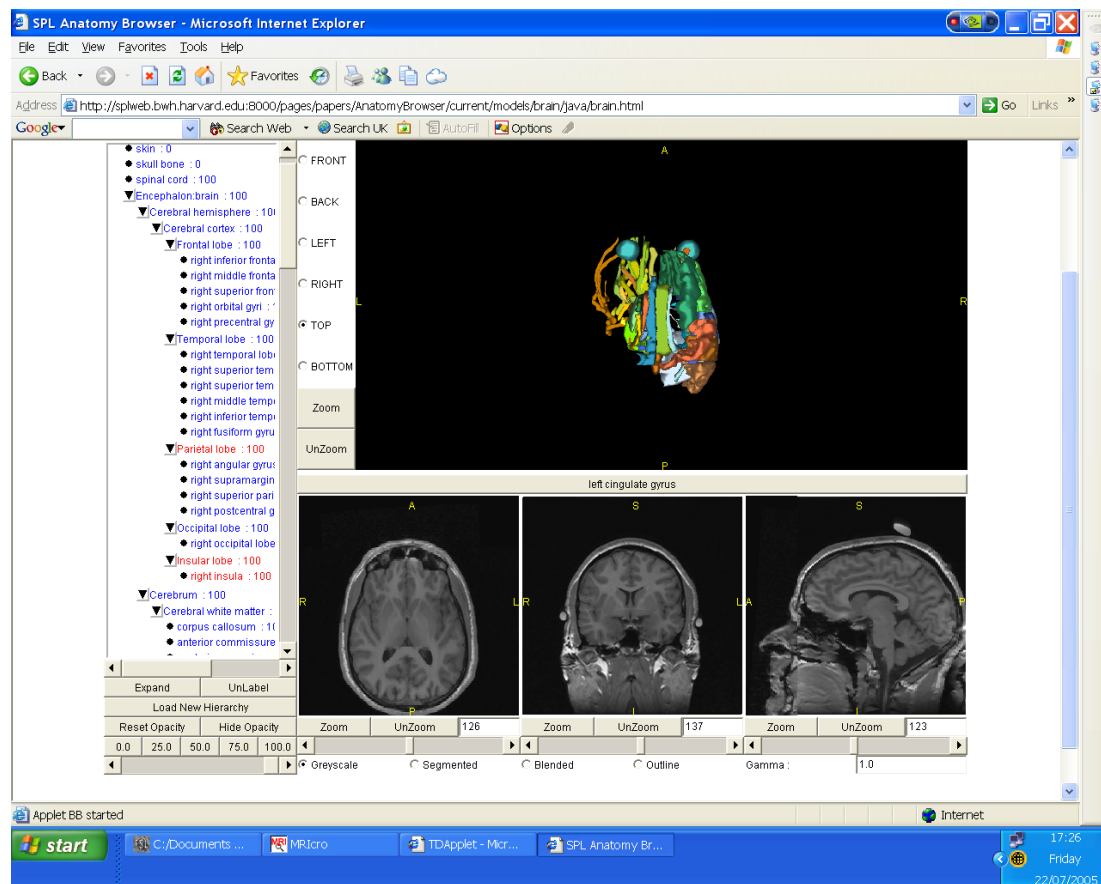


Figure 5.4 Screen shot of *SPL Anatomy Analyzer*

Compiling a data table from raw brain image data was an extremely complex procedure that involved a progression through each of the four workspaces, the use of 16 different applications and the synthesis of visual, textual and numerical data. The action was completed in approximately 90 seconds. The division appeared to break the task down into more manageable units. The cognitive labour required to complete each stage of the task (with a particular toolkit ready-to-hand) was divided between each workspace. Further, Timothy commented that each workspace positioned him in a particular ‘role’. Switching between workspaces enabled him to effortlessly switch between roles without re-configuring the environment. In terms of Burke’s dramaturgical metaphor, in each workspace the stage was

set for a particular scene in an ongoing performance⁵⁹. When the agent switched between desktops, the scene was set (with all props or instruments required ready-to-hand) for a particular act. Further, the scene positioned the agent in a tightly scripted role (graphic designer, analyst, writer, etc.) that he could step into with the click of a mouse. Switching desktops set the stage and positioned the agent in a particular role for the task at hand. In this respect, the learner had designed a series of readymade scenes to support particular acts in an ongoing performance in which a sole actor played multiple parts. Thus, the division of the task, between multiple desktops, imposed structure from the outside. Further, the agent was able to switch between multiple roles whilst sitting at the same physical desk in the same physical room.

In this respect, the design of a complex virtual environment for brain image analysis and report writing enabled Timothy to rapidly proceed towards the objective of completing his thesis in time to start medical school.

The case illustrates a principle that was evident in the practice of all participants who took part in the study. In the new media age, the learner is *compelled* to engage in the work of design. Design is a pre-condition of one's ability to make efficient and effective use of digital media for knowledge work. It might well be objected that the same principle applies for study related practices involving traditional tools and resources. Learners working at physical desks are still required to layout books, notes and articles and place tools (pens, calculators, rulers,

⁵⁹ Burke's dramaturgical metaphor schematised as a dramatic pentad in the *Grammar of Motives* (Burke, 1969) conceptualises purposeful action using five elements: act, scene, agent, agency and purpose. It is recommended by Wertsch (1998) as a powerful conceptual schema for understanding tool-mediated action in particular socio-cultural contexts.

diagrams, etc.) ready-to-hand to support particular kinds of study related practices. Nevertheless, there are only so many ways non-virtual resources can be arranged and configured on a physical desktop. In contrast, the digital domain affords new design opportunities, and the proliferation of digital tools and resources (that can all be customised) presents the learner with new design challenges. Moreover, learners can no longer depend on the intelligence designed into the physical environment and the artefacts themselves. They must take on more of the responsibility for customising this environment to serve their own purposes.

The art of effective design appears related to one's capacity to make design decisions that canalise practice in ways that ease progression towards particular object-motives. A challenge for the researcher is attempting to understand exactly what this object-motive is. The challenge for the learner as designer is to be aware of the object of the activity and consider how particular designs might help or hinder progress towards this object. Further, the analysis of Timothy's practice suggests that effective design must be understood not only in terms of the achievement of a particular outcome (i.e. a dissertation) but also with respect to the conditions under which this outcome must be achieved (e.g. Timothy's need to complete the task by a certain date). In this respect, micro-level design decisions are inextricably related to the pre-meditated designs of possible life trajectories. Both required a considerable degree of foresight and conscious reflection about the consequences of designing an environment to support particular kinds of practice directed towards particular object-motives.

The task of brain image analysis may, on the surface, appear somewhat exotic and too specialised a practice to illustrate these points. No doubt not all study related tasks demand the simultaneous use of dozens of applications. However, design work is not limited to the organisation of tools on a virtual desktop. The use of individual applications invariably requires users to make manifold design decisions that canalise practice in particular ways for

particular purposes. A second vignette serves to illustrate how a capacity for interactive design within a digital domain impacts on a student's ability to produce a digital document. Unlike the example given above, design work is shown in what follows to be an on-going and dynamic process. Further, it explores design with respect to practices involving some familiar (less exotic) office tools.

Vignette: Jim assembles a legal essay

Jim was in his first year studying for an MSt. degree in law. When observed, he was in the process of producing a dissertation. The task required him to produce a highly stylised document that demonstrated extensive subject knowledge and mastery of the conventions of legalistic writing. In this case, a capacity for design had implications for a subject's capacity to participate within an academic community dedicated to the (re)production of a highly conventionalised form of legalistic discourse.

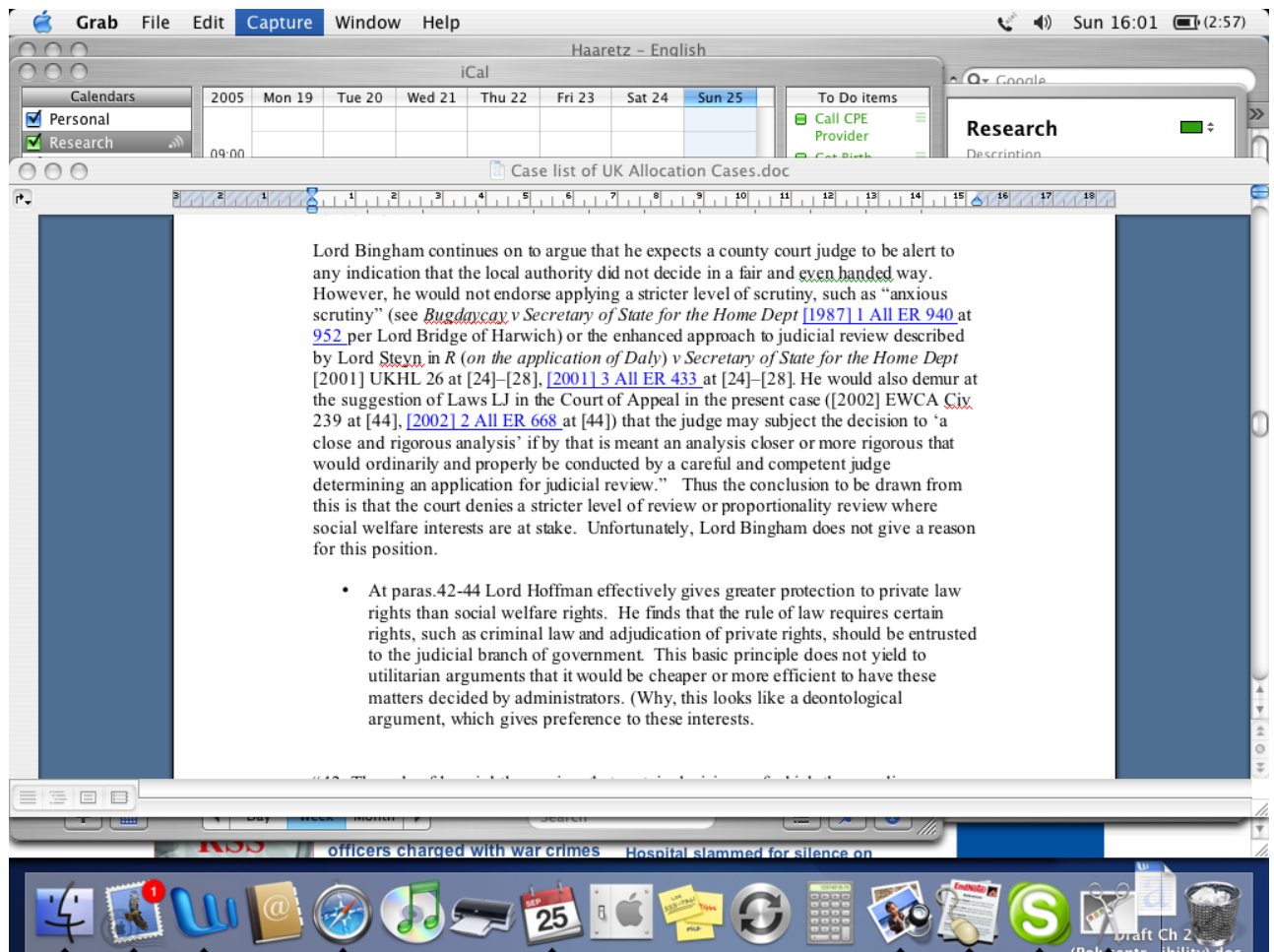


Figure 5.5 Screen shot of Jim’s legal essay

The screen shot shows a draft of a legal essay, the end product or outcome towards which all other activities were directed. The argument is assembled with references to legal principles (‘anxious scrutiny’), precedent cases and the decisions of preceding Judges (‘Lord Bingham’, ‘Lord Steyn’ and ‘Lord Hoffman’). Further, all cases, articles and quotations are precisely referenced. The language is dense, concise and factual and the tone conveys an implicit message of authority and respect for tradition. The force and credibility of the argument depends upon the author’s ability to cite all relevant cases and articles that refer to the legal principles under discussion.

The production of this particular kind of document could only be achieved following extensive literature searching, note taking and planning. Selected aspects of these practices are now described.

Having found articles relevant to his current needs on the *West Law* online database, Jim was required to make notes. A screen shot of Jim's 'notes' folder provides some telling insights into the design work inherent in his note-taking strategy.

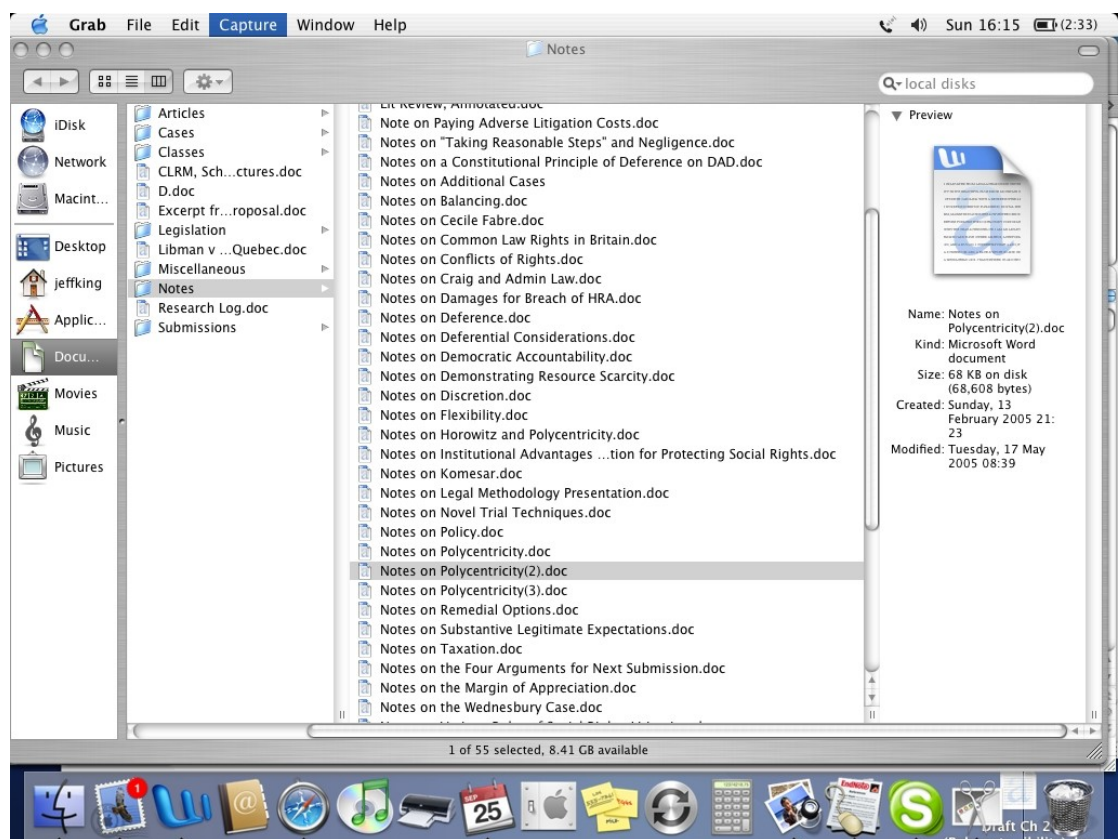


Figure 5.6 Screen shot of Jim's 'notes' folder

The virtual environment allows users to choose between alternative modes of representation.

Jim had configured the settings so that files in this particular folder appeared as drop down list

of small icons. This was an important part of his information storage and visualisation

strategy. It reveals a preference for a flat folder structure with highly specific, long filenames describing the content of each file. Further, in this particular folder, he chose to organise his notes thematically, grouping notes into themes such as ‘democratising resource scarcity’ and ‘polycentricity’. He also created folders of notes organised in terms of ‘cases’, ‘articles’ and ‘legislation’. In short, this was a meticulously designed knowledge representation structure.

As Jim searched, browsed and read articles and case histories on the *West Law* database, the representational structure he had created allowed him to access a relevant note file within seconds and write (or cut and paste) the relevant information into the relevant electronic note file. In this respect, the process of making notes and filing the notes (that remain distinct activities in the paper-based world) had been conflated into an integrated activity.

Jim could provide an extensive account of the advantages and disadvantages of different representational structures. He had experimented with different views and file structures in the past and settled on this particular arrangement. He was now committed to this system. The design patterned or canalised subsequent note-taking activity in particular ways. In time, this system facilitated the emergence of a tightly themed and organised bank of digital notes that could be rapidly accessed and rearranged to serve different purposes.

Design work is further evident in the planning phase of the production process as Jim set about constructing an essay plan. Jim used *Word* as his principal planning tool. However, he used it in ‘outline mode’ as shown below.

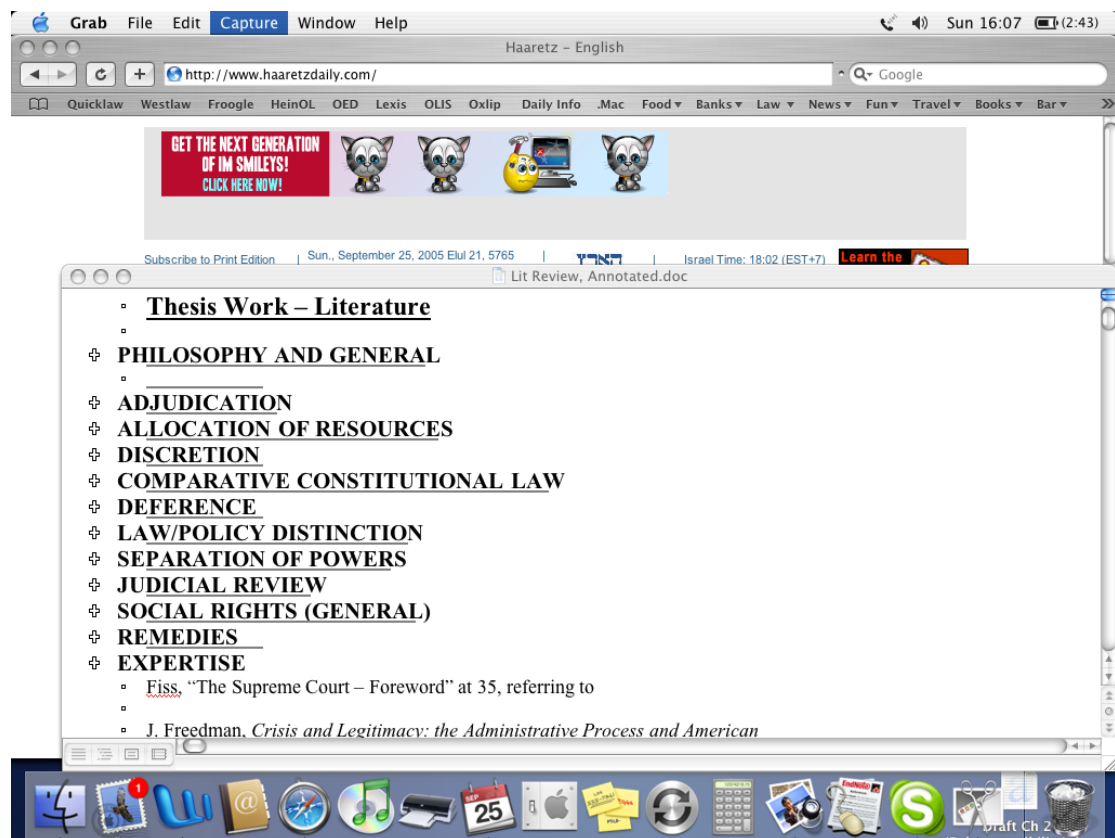


Figure 5.7 Screen shot of Jim’s essay plan (from MSWord outline view)

In contrast to a paper-based essay plan, the digitised essay plan could be viewed at multiple levels of abstraction. This helped Jim when drafting. He could zoom in to view the notes stored under particular headings in detail, or zoom out to view the skeletal structural of the visualised essay.

Initially he typed a series of provisional headings and sub-headings in outline view to provide a structure. Then, with the relevant notes folder open, he selected and copied relevant facts, cases, references or tables, switched back to the outline window, expanded a subheading and pasted the digitised information into place. The process continued until enough information had been collated under each heading to support the process of writing a first draft. This enabled Jim to focus on developing an argument rather than copying out chunks of text. It effectively separated the task of copying from the tasks of composing and editing.

Thus, Jim's ability to participate in the practice of academic law depended, in large part, on his ability to customise, personalise and programme aspects of a virtual environment to suit his changing purposes. The activity of organising and 'theming' notes was clearly not a preliminary activity completed before the creative work of planning and writing commenced. It had implications for the kind of document he was able to produce. Likewise, the dynamic use of the outline view in *MS Word* demanded continual reflection on the implications of design decisions involved for the final shape and structure of the finished document. In both cases, the designed structures had implications for the way Jim regulated the focus of his own attention, and conceptualized and re-conceptualised the information originally contained in the articles on which he had made notes.

This process may not be peculiar to the digital domain. However, the ease with which note files could be accessed, selected, cut and paste and re-arranged introduced a dynamism and fluidity into the process that is absent in the paper-based world. In this respect, the range of possible note-taking styles and planning possibilities in the digital domain far exceeds those afforded by paper-based environment. However, it also confronts learners with hundreds of choices. For Jim, it had become a creative and expressive process, akin to an art form, that was allowing him to make connections, identify problems and see alternative ways of conceptualising legalistic problems. Further, free from the physical constraints of paper, over time these notes could evolve as new information was discovered and inserted into a particular section in a particular file, or copied into multiple files. Thus Jim's capacity to play a role within a discourse community evolved in a dialectical movement, over time, as this externalised re-useable knowledge representation structure evolved.

Jim went on to publish several papers in high impact law journals in his second year as a post-graduate student. This interpretation suggests that the highly refined micro-level design

strategy, invisible to the reader of the end product, had helped Jim compete at the highest levels in a competitive academic field.

5.1 The scope of design work in the new media age

Neither example on its own demonstrates the scope of design work demanded by students working in the digital domain. Design work involves far more than selecting different styles of visual layout and has implications for every aspect of practice. Indeed, design work impacted upon all aspects of subsequent practice. Expert-like designers appeared to anticipate the implications and design with the aim of increasing productivity in various ways. For example, ZeroGboy had deliberately removed icons from the tool bar menu on *Word* to force himself to use shortcut keys – a strategy that he estimated would ultimately lead to more efficient practice. Clinton had activated accessibility functions so he could magnify parts of the screen when news reading and have news articles read out to him (via a text to speech translation tool) whilst he was tidying his room or getting ready to go out. Miss Lullaby worked with *MS Instant Messenger* running in the background on her desktop so she could monitor the movements of friends and chat to course mates for ‘emotional support’. However, she chose to appear offline so she wouldn’t receive too many distracting messages from friends. Ardash had downloaded an *RSS* feed-reader and was in the process of transferring his subscription to multiple e-mail listservs that delivered up-to-date information about developments in the field of Aids research, to *atom* feeds. This design innovation off-loaded the burden of organising and filing the incoming information flows to the new tool and allowed Ardash to effortlessly monitor developments in the field without cluttering up his in e-mail inbox. Timothy had also strategically placed multiple shortcuts within note folders to facilitate lateral navigation between folders; a strategy that effectively subverted the hierarchical constraints of the pre-designed folder system modelled on paper-based folders.

In each case it was apparent that dozens of design decisions had been made: decisions about default templates; auto-save timings; backup schedules; e-mail arrival notifications; RSS feed subscriptions and decisions about file arrangements. Furthermore, designs appeared to become progressively more refined to serve particular purposes overtime. This was particularly noticeable in the desktop designs of research students whose work tended to become progressively more focussed on a specialised field. These designs not only enabled them to process digitised information efficiently, using multiple applications, but also enabled them to participate in multiple online communities.

5.2 Tensions and contradictions confronting the learner as designer

The designs of desktop environments evolve over time in a dialectic movement fraught with tensions and contradictions. As new tools are discovered and incorporated into pre-existing configurations, new tensions and contradictions emerge that demand the adaptation of practice. In turn, these new practices create the need for further design innovations. For example, design work remained important throughout the evolution of Timothy's desktop environment. Timothy was continually experimenting and appropriating new mediational means (e.g. the multiple desktop *Powertool*) in order to overcome the limitations of an existing activity system. However, this tool changed the nature of the activity and necessitated that he develop new strategies. It required him to make further design decisions about the grouping and configuration of tools in each of the four virtual desktops. Further, he started to think about these groupings in terms of roles or parts that he played in the production process. Similarly, Jim's appropriation of various new media tools enabled him to overcome constraints implicit in paper-based planning strategies. However, new tensions and contradictions emerged. For example, he complained that it was all too easy to transfer too much detail resulting in a glut of quotations in the draft. Consequently, he recognised the need to remain highly selective when cutting and pasting information. In short, he had to self-impose an enabling constraint.

In both cases, designs helped each student to manage and regulate attention from the outside. However, in both cases the locus of control remained with the learner. This is quite unlike the experience of someone learning on a pre-designed *Wooten Patent* desk in which the structure is provided from the outside by the designers of the desk. In short, in the new media age, designing is an expansive activity, fraught with tensions, in which learners are compelled to take an active role.

Many of the students observed appeared to have developed advanced design skills. However, this does not imply that design was not a painstaking process involving speculation and a myriad of calculated tradeoffs. Three interrelated challenges confronting the learner as designer are now discussed in brief.

Designing alone

A fundamental contradiction experienced by learners concerns the lack of guidance or models for effective designs. Whilst an aptitude for effective design is a pre-requisite for advanced study in the new media age, learners invariably develop designs without any kind of guidance. Timothy was extremely frustrated that he'd had to devise a system for analysing brain image data almost entirely on his own. He commented:

“I’ve had no help with this and no single person has told me how to find out where brain activations are or how to find out what to do - no one has told me any of this! That might be the idea of a DPhil. but that just hacks me off. There’s someone next door probably, they know exactly what to do but they don’t want to spend the time. What I dislike most is all of the tools that I use are so spread out. As far as I’m concerned there should be one programme into which you put in your raw data and it gives you a table just like that. It should also refer to a database on what those brain regions do. That would be ideal for me and that’s the kind of thing I would love to make myself because its’ all about the synthesis of it all, that’s my thing. But if I don’t know a program exists I can’t find it and what annoys me about this is that everyone is reinventing the wheel.”

In lieu of an integrated analysis system, Timothy was forced to invest considerable time and energy designing and customising the virtual environment for the task at hand, a process he described as ‘re-inventing the wheel’. In short, he was compelled to design and to design alone. Interestingly, he had only found out about the multi-desktop *Power Tool* (that proved essential to the current system) due to a chance conversation with a friend. This suggests how the presence of a community engaged in a related task might support an individual’s capacity to develop effective designs. However, even in the presence of such a community, many learners are required to make the most of these subtle innovations without guidance. Even people who work in close proximity seem largely unaware of the design strategies used by those who work in the same building, office or library. Until tools are invented that make the process of design more visible, it seems likely that design work of this kind will remain a rather private, if not secretive affair.

Conflicting design objectives

Conflicting design objectives invariably frustrate learners’ attempts to customise learning environments to support particular regimes of practices. Laptop computers did not simply function as a cognitive workbench for study related tasks. They also functioned as a workbench for the management of a range of everyday life management tasks. Furthermore, most students also made extensive use of their computers for leisure, socialising, entertainment and play. Each genre of practice placed conflicting demands on the design of the virtual desktop environment. In certain cases tools for study and non-study related practices were consciously combined. For example, Timothy placed the short cut to *Google Earth* in the centre of his desktop workspace to provide quick access to a virtual space that he used for a virtual study break. Rather than take a physical (and potentially time consuming) break away from his computer, he would take a mental break in a virtual world. The tool allowed him to fly around the globe and zoom in on one of the 20 or more ‘favourite places’

he had saved including: the ‘Grand Canyon’, ‘Niagara falls’, ‘New York’, ‘Toronto’, ‘Inside Mt St Helens’ and ‘Bill Gate’s House’. Demonstrating the use of the tool, he commented:

“I’m just taking myself off to my favourite places in the world. I don’t know if you’ve been to Venice, I have, it’s a wonderful place and I just need to get away for a bit so I’ll double click on Venice.”

Later he took me inside the crater of Mt St. Helens, commenting, ‘this is where I go when I can’t get out of my office!’ In this case, Timothy’s use of *Google Earth* seemed part of a conscious strategy to relax in between periods of intense concentration. However, in most cases, the collapse in the separation between study space and leisure space posed considerable challenges. Non-study related activities were invariably regarded as potential sources of distraction. Edina and Miss Lullaby admitted wasting hours chatting to friends on *MSN Instant Messenger*, Jaqueline, who described herself as an ‘E-bay junkie’, frequently treated herself to some ‘retail therapy’ by entering online auctions for fun. Jim, Clinton and Ardash spent a great deal of their time news reading, e-mailing articles to friends and searching for particular pod-casts of political speeches. Other students reported wasting time looking for cheap flights and checking out other peoples’ music collections on *iTunes*. All students complained that the constant flow of administrative e-mail into their inboxes had interfered with their capacity to study.

Given the collapse in any clearly delineated boundary between study space and ‘play’ space (an inevitable side effect of media convergence) in the contemporary university, a capacity to self-impose enabling constraints appears to be an important aspect of new media literacy. Three examples served to illustrate how this manifested itself in practice.

Students like Timothy and Ardash discussed organising their daily routine into distinct sections and allocating time when they were not allowed to check e-mail or read news. Edina chose to use a paper-based diary and wall planner for personal organisation and planning

rather than *Microsoft Outlook* which was installed on her computer, and (when writing her dissertation) Katrina started to go to the library and deliberately leave her ethernet cable at home. In these cases, students imposed an enabling form of constraint from the outside that helped them avoid potential distractions. In Sue Ellen's case, the separation of roles was taken to an extreme. She owned an iMac that she used extensively to 'chat' to friends, share-music, participate in the *Friendster* community and shop. However, she chose to conduct most of her course work on a computer in the college computer room (situated beneath her bedroom). Asked why, she commented, 'the computer downstairs is kind of neutral, it's free of distractions'. It enabled her to focus on a single study related task like writing an essay free of the constant temptation to shop or socialise. Again, she demonstrated a capacity to regulate her own attention, from the outside, by strategically separating her computer use for work and play.

Towards a theory of mindful design

Whilst much of the onus of responsibility for design work required to study effectively appears to have shifted towards the learner. Further tensions emerge when one considers how sophisticated designs evolve. Comparative cross-case analysis suggested that desktop designs can be conceptualized in terms of three factors or agencies that shape the design of personal learning environments. The three core categories that emerged are labeled: *inherited design*, *evolved design* and *mindful design*. Each of the desktops examined had been shaped by each process but in different ratios.

Inherited design

Inherited design refers to default configurations derived from the installation of the operating system and core applications. Although all students in the study had engaged in the work of design, one student's desktop environment was conspicuous because of the notable absence of conscious design work. Ishani's desktop resembled the desktop of a machine with a default

installation. There was little surface evidence of customisation. Her browser's 'favourite' folder contained only six links and few of the short cuts available on the desktop had been created or arranged by her personally. The icons that were present appeared to have been installed by applications automatically. In short, much of the design work guiding her practice had been inherited from the default settings of the operating system and a small number of core applications.

Evolved designs

For the most part, designs had evolved over time, beginning from the installation of the operating system. This was evident in the choice of wall paper, the layout of icons on the desktop, the customisation of toolbars, the compilation of Internet browser 'favourite' menus, instant messenger 'buddy lists' and the design of virtual filing systems. However, the bulk of these design decisions had been made in response to specific needs as they presented themselves. In short, learners adapted, modified and designed just-in-time when a particular need arose. Consequently, the particular designs observed must be understood as the end result of a cumulative and continuous process of design and adaptation.

The ability to adapt the design of a personalised learning environment if and when required might be considered a basic form of new media literacy. Nevertheless, what was interesting (as illustrated in both vignettes described above) was what advanced practitioners did over and above this process of just-in-time adaptation.

Mindful design

The main point concerning expert-like design practice touches on a concept that will be developed throughout the thesis. It concerns the capacity of subjects to monitor their own practice, recognise the tensions and contradictions inherent in those practices and visualise how a re-configuration of their own personalised mediascape might assist them in overcoming

these contradictions. It is tempting to conceptualise this process in terms of the discourse of meta-cognition (Biggs, 1988; Cox, 2005; Gordon, 1996; Kuhn, 2004; Metcalfe & Shimamura, 1994) or reflective practice (Schön, 1987). However, this capability is less inward looking, less grounded on dualistic assumptions about the nature of mind. It is premised on an understanding that cognition is distributed, and consequently concerns a capacity to become more self-conscious about the implications of a designed media environment for cognitive processes in practice. I call this *mindfulness*, simply defined as a capacity to become aware of the mediated nature of one's practice in any given cognitive ecology. This is a pre-requisite for purposive design and adaptation of a digital environment in a manner that canalises practice towards desirable objects.

Timothy and Jim were mindful designers; each took time to reflect on their current practice, in relation to the designed environment, and then proceeded to identifying tensions or contradictions. Furthermore, each then implemented design innovations in order to expand their extended cognitive ecology and enhance productivity. Significantly each had clearly defined design objectives. Timothy's design work was guided by the principles of 'sleekness' and 'elegance'. Jim's design work was finely honed to support the production of a specific form of legalistic discourse. The mindful nature of the design process in each case was evident, not only in designs observed, but implicit in the way each subject articulated the design rationale.

A capacity for *mindful design* appears dependent on at least two more basic capacities. Firstly, to be an effective designer of a personalised cognitive ecology for advanced study, it is essential that the subject has knowledge of the available resources. Kress (2003) argues that as the 'the sculptor must know the potentials of this kind of wood, of that kind of stone, of these metals, of silicone and of fibreglass', likewise the 'designer must know what resources will best meet the demands of a specific design for a specific audience' (p.24). The argument

aptly describes the predicament of the learner as designer of a personal learning environment. Knowledge of the available tools, and their particular constraints and affordances, are necessary before one can engage in the work of effective design.

However, knowledge of the available tools is not enough on its own. A user must also learn how to configure the available resources for their immediate and specific purposes. Kress (2003) also argues: ‘in a world of instability, reproduction is no longer an issue: what is required now is the ability to assess what is needed in this situation now, for these conditions, these purposes, this audience – all of which will be differently configured for the next task (p.49). Again, although originally applied to theorise the design of multimodal texts, Kress’s words might also capture something essential about challenges confronting students designing personalised learning environments. As stressed above, design work requires constant adaptation. All are engaged in this process. However, mindful designers appear to possess a capacity to adapt, modify and customise with a clear sense of purpose.

Optimal designs for any particular task only exist as an elusive ideal state, in activity-theoretical terms, the *object-motive* of design work. Mindful designers appear to have an instinct for how these micro-level design decisions might mediate a movement towards this ideal.

Thus, a capacity for *mindful design* enables learners to customise their working environments for a particular task, monitor their own practice and strategically re-design the environment, if and when required, to facilitate productive practice. In effect, mindful designers are adept at cultivating, managing and fine-tuning their extended cognitive ecologies for specific purposes.

5.3 Mindful design, emotive designs and designs for social futures

There are several other important issues concerning the implications of design work for students living and learning in new mediascapes that beg to be considered in more depth. These are briefly discussed here and revisited later.

Much of the design work observable in desktops was not directed towards study related objects. Play, leisure and general life management tasks also provide design objectives. However, these cannot be simply bracketed off as a potential source of distraction. In many respects, design decisions made for emotive and motivational reasons appeared to play an important role in students' sense of well being. For Miss Lullaby, *MSN messenger* provided an important tool for 'emotional support'. Edina set a photograph of herself surrounded by friends celebrating the completion of her exams as the background wallpaper on her laptop. The bright and colourful imagery, including balloons and popping champagne bottles, obscured some of the shortcuts to functional applications on her desktop. However, she liked the photo and said it made her 'feel good'. Jacqueline had set up a direct *Skype* connection to a computer in her parental home in Paris so she could talk to her 'mum' and left it on (all day) so she could overhear conversations in her family kitchen when she was working in her study room in Oxford. She felt a little homesick and quickly appropriated an affordance of a newly accessible technology - free Internet telephony - to import a sense of home and family into her Oxford study room.

Designing figured worlds

In many respects, participation in multiple online communities mediated by CMC tools (instant messenger systems, listservs, *Skype* and social networking tools like *Friendster* or *Facebook*) allowed students to participate in plural and overlapping lifeworlds and maintain close ties with friends past, present and far away on a daily basis. Observations of the kind described above suggest that the design of an extended online network, through the

integration and customisation of CMC tools into desktop environments, may have implications for one's sense of self and community. In this respect, the notion of the *mindful design* of a cognitive ecology to support advanced knowledge work seems insufficient. There is a need for a concept that includes a sense of designing an environment that constructs one in a particular relationship to others. Thus, it may also be important to consider the implications of design work on identity formation.

In order to theorise a capacity for individuals to take control over their own personal development, a process described as 'self-authoring', Holland *et al.* (1998) introduce the notion of figured worlds. Humans do not only live in the material world. They live in socially constructed figured worlds. Indeed, their sense of self, identity and community are implicated in the figured worlds that they construct. Holland *et al.* develop the notion with reference to the figured worlds of 'caste' among 'untouchables' in India and the figured world of 'romance' among American female college students. Figured worlds are at once produced through practice and mediate the practices, as well as recruit the identities, of participants. In Holland *et al.*'s terms, 'identity in practice' becomes internalised as 'history in person'. Even when a subject enters a new context, 'history in person' continues to influence (or mediate) behaviour⁶⁰.

⁶⁰ This point is illustrated with the story of a lower caste Indian woman who, even when invited into the house of a higher caste member of the community (where the researchers were conducting interviews), refused to walk up the stairs. Instead, rather than 'pollute the hearth' of a higher caste family home, she climbed up the side of the house. In this case, 'history in person' mediates action and behaviour in a way that results in a seemingly bizarre act. The example illustrates how 'history in person' acts as a powerful constraint on human action.

The concept of a figured world provides a tool for thinking about the mediational properties of virtual desktops that transcends the cognitive ecology metaphor. Virtual desktops have an uncanny capacity to absorb the identities of their users; a notion earlier hinted at in Turkle's (1984) concept of the computer as a 'second self'. Indeed, past lives, former affiliations, hobbies, interests and personal relationships all leave their traces on and beneath the surface of personalised laptop computers. During stimulated response sessions, these traces sparked conversations about home, family, personal relationships, travel and memories of life as an undergraduate. Further, most of these students had bought their laptop computers with them as they moved across countries, between institutions and through networks of relationships. Consequently, over time, plural and overlapping lifeworlds - past and present - became inscribed into the design of each student's virtual desktop. In many respects, a student's desktop provides a researcher with a window onto the plural lifeworlds that they currently inhabit. Thus, following Holland *et al.* (1998, 2001), it is tempting to propose the category of 'history in laptop' as a conceptual tool to focus attention on the way modern computers absorb and subsequently start to shape the identities of their owners.

This theme is developed in Chapter 9. Here it seems important to stress that design work, evident in the practice of these students, appeared to have implications for their emerging sense of self, community and sense of where they were heading in life. In Gee's (2003) terms, it is possible that the designs of these virtual ecologies functioned as incubators of powerful 'projective identities'.

Summary

In summary, it is important to emphasize two related points. The first point concerns the character of the newly emergent continually changing hybrid mediascapes in which students are all compelled to study. In a paper-based environment, one's capacity to play an active role in customising and designing a set of 'structuring structures' that regulate attention is

relatively constrained by the physical limitations of paper-based media. In contrast, in new media ecologies, design is a prerequisite of informed and reflective practice. In this respect, media change entails a shift in the onus of responsibility for engaging in the work of design.

The second and main point is that, in increasing degrees, advanced ‘agentive’ learners are exploiting the designability of new mediascapes to support advanced knowledge work. If one accepts Olson’s (1994) definition of literacy, this in turn suggests that a capacity for effective design has already become a fundamental part of what it means to be literate in the new media age. Indeed, a capacity for mindful design of a personalised mediascape for a particular task, to support a particular set of operations at a particular time is, I believe, the most fundamental of all the new media literacies.

Finally, the category of mindful design is distinguished from meta-cognition in the sense that it is premised on the notion that cognition is distributed and can thus be controlled from the outside, and also in the respect that it includes a capacity to reflect upon the implications of design work for one’s emotional and affective state. In this respect, design has wider implications. In Chapter 10 this argument is developed to suggest how ‘history in laptop’ may have implications for students’ emerging sense of self and their capacity to design of social future.

Chapter 6 Creative Appropriation of New Mediational Means

If we could rid ourselves of all pride, if, to define our species, we kept strictly to what the historic and prehistoric periods show us to be the constant characteristic of man and of intelligence, we should say not *Homo sapiens* but *Homo faber*. In short, intelligence, considered in what seems to be its original feature, is the faculty of manufacturing artificial objects, especially tools for making tools, and of indefinitely varying the manufacture.

(Henry Bergson, 1911 / 1983, p.139, cited in Wertsh *et al.* 1995, p.20).

Sly as a fox and twice as quick, there are countless ways of “making do” (de Certeau, 1998, p. 29)

Learners are agentive; they seek out new mediational means to advance their purposes. From a Vygotskian perspective, this is part of what makes us human. Cole and Derry (2005) emphasise this point in an essay entitled *We are Technology and It is Us*. The essay starts with a meditation on the symbolism of the memorable *Dawn of Man* sequence from 2001: A Space Odyssey (Kubric, 1968). The sequence depicts a pre-historic ape-man discovering, for the very first time, that the bone of a dead animal can be used as a weapon. The symbolism of the scene implies that *Homo sapiens*, or *Homo faber* as Bergson recommends, started to pull away from other species in the evolutionary struggle for survival through the creative use of tools that extended their physical capabilities. In the information age, post-graduate students have little need for tools that might be used as weapons, nor for tools that extend their physical capabilities. However, advanced knowledge work is making ever increasing

demands on the biological brain. Consequently, a capacity to seek out and exploit the mediational properties of new digital tools, as they become available appears essential given the rapidity of media change and the increasing demands made on the knowledge worker. If they cannot find them, they seek to make new ones. As Bergson notes, 'tools that make tools' are especially useful in this respect. In the interim, students are adept at 'making do' with the tools at their disposal.

In educational contexts, we know that an increasing number of young people look to the Web, rather than the library, as a source of study aids. Lenhart *et al.* (2001) note this trend, quoting a child who, to the dismay of librarians, argued:

Without the Internet you need to go to the library and walk around looking for books. In today's world you can just go home and get into the Internet and type in your search term. The results are endless. There is so much information that you have to ignore a lot of it (p.4).

Websites and online services that catered explicitly for the study needs of school and university students included: portal sites (including links to other educational resources); articles and information sites relating to specific topics; sites for buying selling and sharing essays; 'Ask an Expert' sites; sites containing book notes and summaries; online encyclopaedias; and sites offering online tutoring services (Lenhart *et al.*, 2001, p.5-7). Similarly (Jones, 2002, p. 13) found that 'an overwhelming number of students reported that the Internet, rather than the library, is the primary site of their information searches'. Three quarters (73%) of college students said they use the Internet more than the library and four fifths (80%) of college students reported using the library less than three hours per week. These mixed method studies identify interesting trends. However, figures like these might no longer surprise.

The aim, in this chapter, is to understand some of the everyday *processes* that characterise the *use* of web-based tools and instructional resources for private study and self-education.

Further, it aims to understand why students might turn to the Web for resources and the degrees to which web-based instructional resources complement, replace or undermine students' dependence on traditional learning media. Data produced through surveys, focus groups, and student self-report can only provide limited insights.

6.1 The concept of creative appropriation expanded

Wertsch (1985, p.22) reminds us that, 'even the most sophisticated analysis of these tools cannot itself tell us how they are taken up and used by individuals to carry out action'. Indeed, drawing on Olson's (1995) work on the evolution of writing systems, he stresses that in many cases the cultural tools used are borrowed from quite distinct contexts and suggests that innovation often comes about through the misuse of tools. He adds, 'most of the cultural tools we employ were not designed for the purposes to which they are being put' (1998, p. 59). In such cases, the notion of *appropriation* emphasises an irreducible tension between the intentions of the tool user and the resistance offered by the tool. This notion derives from the work of Bakhtin (1981) who stresses that speakers are constantly struggling to express themselves by appropriating the words of others:

The word in language is half someone else's. It becomes "one's own" only when the speaker populates it with his own intention, his own accent, when he appropriates the word, adapting it to his own semantic and expressive intention. Prior to this moment of appropriation, the word does not exist in a neutral and impersonal language (it is not, after all, out of a dictionary that the speaker gets his words) but rather it exists in other people's mouths, in other people's contexts, serving other people's intentions: it is from there that one must take a word, and make it one's own (Bakhtin *et al.*, 1981, pp. 293-294).

This provides a useful model for thinking about the various ways learners populate digital tools with their own intentions, adapt them to serve their own purposes and misuse tools, in ways not intended by the designers, to serve their own purposes. Indeed, the concept of *creative appropriation* foregrounds the agency of learners as they start to reach out and find

new tools and resources to mediate their own goal directed learning activities. Further, it encourages us to see the Internet, not unlike Bakhtin conceived of spoken language, as a *site of struggle* in which contradictory agendas are at work shaping the agency of the learner. Given the dizzying array of online tools and services produced by commercial organisations and individual, ethically motivated organisations like *Wikipedia* now freely available on the web, a capacity to appropriate the affordances of these resources for learning appears likely to become an important aspect of new media literacy.

Here the notion of *creative appropriation* is also associated with Engeström's (1987, 1996) notions of *expansive learning* and *breaking away*. As a heuristic, it directs our attention to instances when learners reach out through the Internet and creatively appropriate tools that help them overcome tensions, contradictions and escape double binds. In such instances, students transform the conditions of their own actions and expand the range of learning possibilities open to them. In this respect, the creative appropriation of new mediational means might facilitate a horizontal development.

Finally, the concept of creative appropriation highlights the creativity, ingenuity and resourcefulness of advanced learners as they discover, experiment with and explore the affordances of new mediational means. De Certeau provides a source of inspiration and two sensitising concepts that have proved useful in this respect. His analysis continually stresses the resourcefulness of individual consumers as they employ various *tactics* to play, exploit and subvert the *strategies* of producers, with a fox-like cunning, to achieve their individual purposes. For example, he writes:

In reality, a rationalized, expansionist, centralized, spectacular and clamorous production is confronted by an entirely different kind of production, called "consumption" and characterized by its ruses, its fragmentation (the results of circumstance), its poaching, its clandestine nature, its tireless but quiet activity, in short by its quasi-invisibility, since it shows itself not in its own products (where

would it place them?) but in an art of using these imposed upon it (de Certeau, 1998, p.31).

This line of thinking about the relationship between producers and consumers is used to focus the analysis on the quasi-invisible *tactics* of advanced learners as they creatively appropriated the affordances of new mediational means, in multiple combinations and sometimes *against the grain*, to achieve their purposes as learners. In this respect, the notion of creative appropriation, conceived as a heuristic, focuses attention on the ways advanced learners are actively subverting the intentions of tool makers and tactically exploiting the affordances of the resources at their disposal to *gain an edge* with new media.

The concept of *creative appropriation* is now applied and developed through an analysis of illustrative vignettes.

6.2 Creative appropriation for course-related study

The examples presented in this section illustrate advanced learners creatively appropriating digital tools and resources for course-related study.

Vignette: Anastasia creatively appropriating multiple online resources to teach herself statistics

When interviewed, Anastasia was in the midst of attempting to understand how to apply the ANOVA test on a version of SPSS (a statistical data analysis package). She was in the second term of a taught MSc. course in Evidence-based Social Work, a course established in an attempt to put social work research on a more scientific footing. Modules on statistical analysis were compulsory in her course. However, she had no background in either statistics or mathematics and found the course extremely challenging. The statistics course was conducted in a seminar room, with occasional visits to the computer lab, by a lecturer who made extensive use of paper-based handouts. Asked about her experience of the course,

Anastasia complained:

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“It wasn’t very helpful for me, not only for me but for several of us on the course. We had never done statistics and found it difficult ... because this system with handouts, learning statistics on handouts, it wasn’t very good for me - the Professor would come with handouts that would have ANOVA and under ANOVA he’d have the SPSS table but I did not see how he did it or what all these figures meant. And he’d say “you can see from this ANOVA test that this number is significant.” I would think, why is this significant? What does this mean? This is all completely useless to me!”

The course did include sessions in a computer room in which students used the *SPSS* statistical analysis software package to analyse pre-compiled datasets. However, Anastasia argued that the lectures had jumped ahead so fast she hadn’t acquired the basic conceptual building blocks she needed to progress. This was a tremendous source of frustration. She had taken the course in Evidence-based Social Work because she firmly believed that a more scientific body of evidence was required to inform policy and practice. So much so, that, despite the difficulties she was experiencing, she was one of only two students on her course to opt for a dissertation project that involved the use of multi-linear regression modelling. Consequently, she found herself caught in a double bind. It was essential that she learnt and understood how to use the ANOVA test but the lectures and seminars on her course left her feeling utterly confused.

Having abandoned hope that she could learn statistics via formal instruction, Anastasia had taken matters into her own hands. She started to teach herself statistics with the aid of web-based instructional materials. Rather than relying on a few general web-sites (recommended in her book), Anastasia found relevant resources by ‘googling’ the name of particular tests. A simple *Google* search for ANOVA returned dozens of links to resources dealing explicitly with the analysis of variance tests as shown in Figure 6.1.

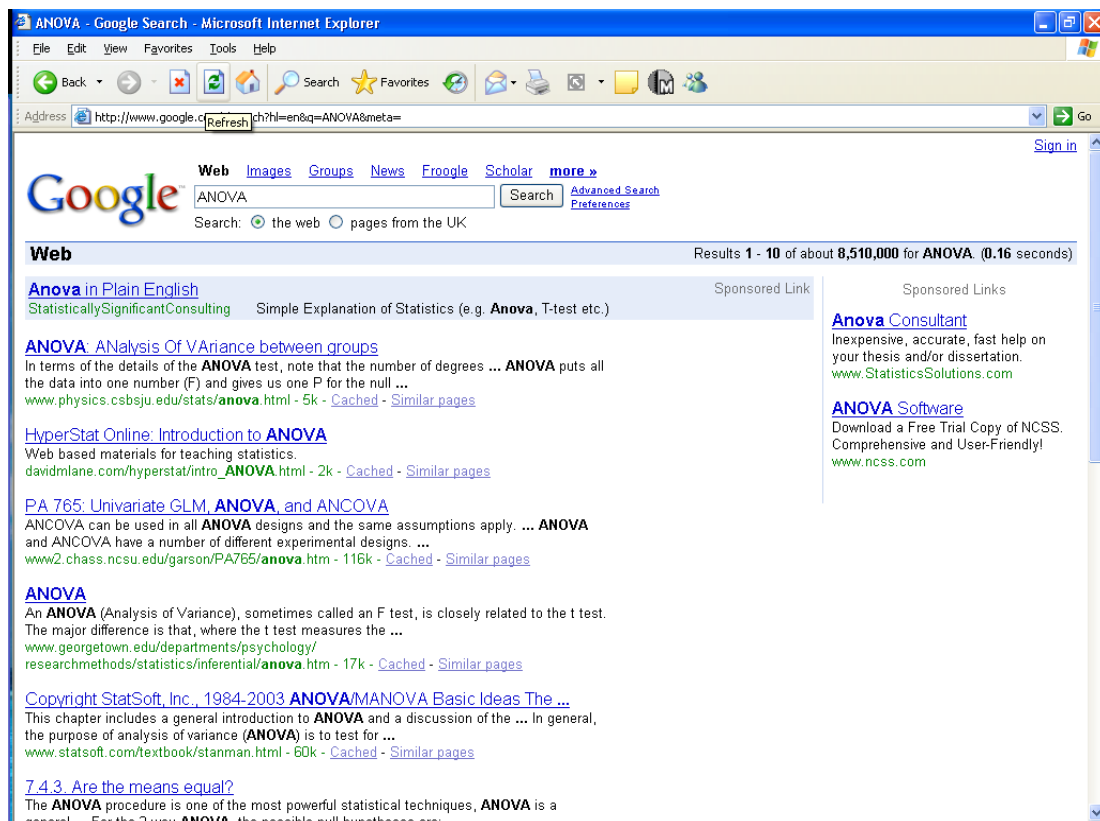


Figure 6.1 Screen shot of *Google* search for ANOVA test

She remarked that ‘one in five’ links returned information directly related to her current needs, but added that many of the sites were too complicated for her to grasp at first. Links to websites judged suitable for her evolving needs were selected and a short cut was created in a folder in her browser’s favourite menu. In this way, she gradually built up a folder of valued resources. Some sites provided interactive demonstrations of core concepts, others provided worked examples and others provided more abstract expositions on the theme of multiple linear regression. She argued that, over time, she had developed a clear idea of the relative utility of each resource in her favourite folder.

During observation, she switched back and forth between resources exploiting the affordances specific to each: a clear explanation, a particular helpful diagram or a particular helpful screen shot sequence demonstrating how to conduct specific ANOVA tests using *SPSS*. In one

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procedure, she switched between three or four online resources and a book, *SPSS for Social Scientists*, whilst simultaneously attempting to apply the test on her own data set on the SPSS program installed on her computer. Web-based instruction appeared to inform practices but problems encountered whilst attempting to apply the test also inspired her to seek further explanation from both online and offline resources.

Interestingly, in the early stages she found the *Understanding ANOVA visually* site (Figure 6.2) particularly useful.

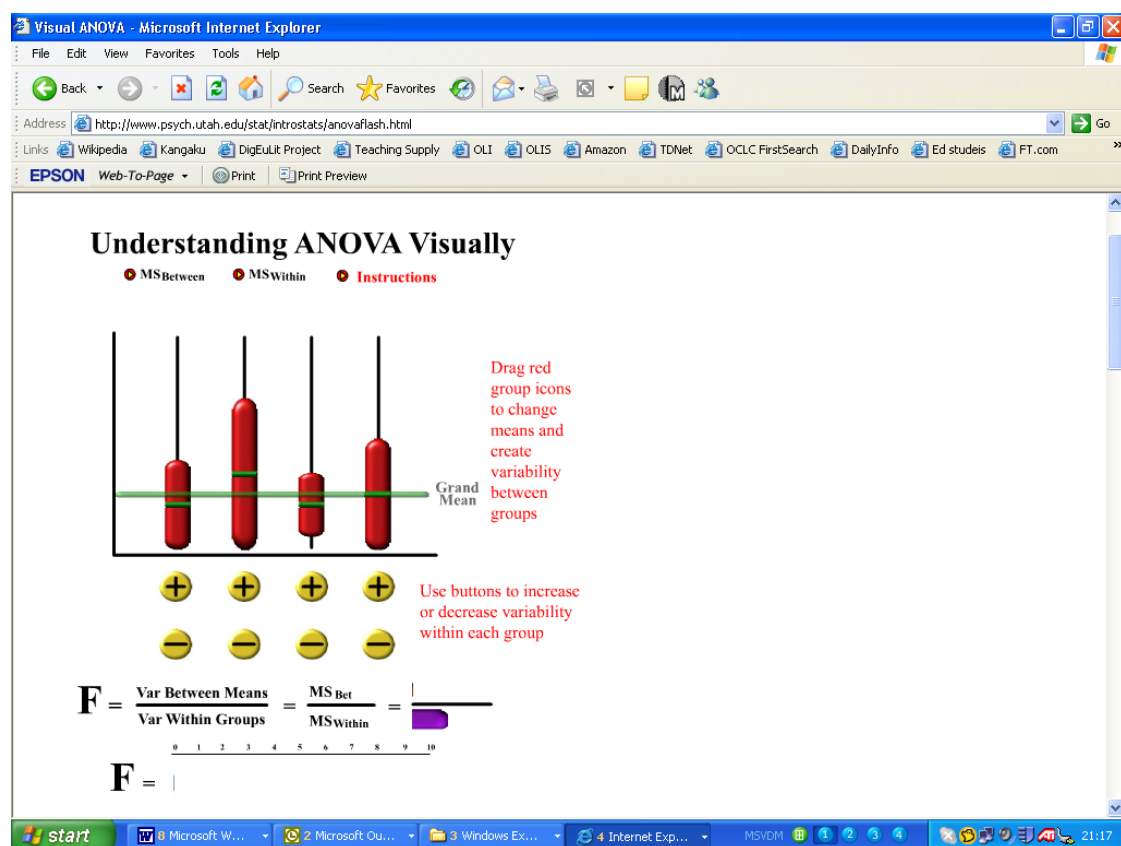


Figure 6.2 Screen shot of ANOVA visually site

With the aid of this diagrammatic representation, Anastasia appeared to acquire a holistic conceptualisation of the ANOVA concept. Initially she attempted to understand the test by applying it to her own data set using SPSS. However, the raw results made little or no sense

arguably because she lacked any kind of intuitive or *spontaneous* concept of variance that might ground the scientific explanations provided in the advanced text books⁶¹. In short, through a process of search and experimentation, she found a web-based resource that equipped her with a cognitive tool which enabled her to escape a double-bind and develop a mature conceptualising of the ANOVA test. In turn, this enabled her to complete her project, complete a dissertation using advanced statistical analysis techniques and go on to becoming a fully qualified evidence-based social worker capable of conducting statistical analysis involving the use of regression modelling.

The vignette illustrates how a student might self-consciously set about appropriating web-based resources to escape a double bind. In these instances, students have a powerful motivation to seek out and find resources that might assist them. Anastasia had no other choice. She turned to the web and creatively appropriated multiple web-based resources, in multiple combinations, to address her own learning need. Significantly, in the seminar, instructional materials were provided, but the level of detail and the pace of the lesson were imposed from the outside. Here, the locus of control remained with the lecturer. With this

⁶¹ For Vygotsky (1986), learning involves a dialectic movement between *spontaneous* and *scientific* concepts towards the formation of a *mature* concepts. Spontaneous concepts tend to precede the acquisition of the scientific concept that later synthesise into a mature concept. For example, as infants most of us develop an intuitive, pre-verbal or *spontaneous* notion of the concept 'brother' before we learn to say the word-concept 'brother'. However, once acquired, the *scientific* word-concept defines and organises the vague and somewhat foggy spontaneous concept. The synthesises of the two is the *mature* concept 'brother'. Overtime, the *mature* concept acquires a more precise meaning as it becomes assimilated into a language system consisting of related concepts (such as father sister, uncle, cousin, sister, etc.).

self-devised and self-managed system, Anastasia could choose between multiple web-based instructional materials, pitched at different levels, and use different representational formats, if and when required, to serve her changing purposes. The agency of control remained with the learner.

Examples of students turning to the web to escape ‘double binds’ were rare; Anastasia provided the only obvious example. It was perhaps more common to discover students creatively appropriating a range of web-based tools and resources to save time and seek out slightly more efficient ways of conducting routine tasks. Ardash provides an example of a student who started to creatively appropriate tools provided by a commercial service, in combination with those provided by the library services to develop more effective literature searching strategies.

Vignette: Ardash appropriates Amazon.com for literature searching

For book searching Ardash generally used OLIS (Oxford Library Information System). However, since living in a study bedroom with an always-on internet connection, he had started to use *Amazon.com* (an online bookstore) in combination with OLIS for conducting exploratory literature searching and reviewing. The interface allowed Ardash to search for specific authors or specific titles, see all other works published by the same author (at the click of a mouse) and read independent third party reviews that had been uploaded by other users. Furthermore, the book recommendation system frequently alerted Ardash to books that he deemed highly relevant. The system afforded Ardash opportunities to benefit from the collective intelligence (Lévy, 1997) of thousands of anonymous others harvested by the tool.

Ardash argued that *Amazon* allowed him to develop a holistic understanding of the intellectual terrain in multiple traditions and understand the ‘multiple webs of influence’ between established authors as he followed links to books recommended. Nevertheless, he was fully aware that the system is designed to encourage readers to buy books. He remarked:

“I look at the recommendations but I feel like there is an agenda that is not mine ... So I don’t often buy upon recommendation but I find information on books like the year that it was published and what it was about is much easier on *Amazon* than on the web or on OLIS or anything else. So in many ways the first step in acquiring a book, whether it’s in the library or online is through *Amazon* - I’ll search a book in *Amazon* and then find out what it is about and whether it’s worth reading... It’s one additional step before wasting your time and going to the library and actually reading it.”

Importantly, the quote indicates that Ardash did *not* see or use *Amazon* primarily to purchase books. Rather, he appropriated the tool, using it against the intentions of the designers, to find out if a book was worth reading before wasting time in the library trying to find it. In short, he was exploiting an affordance of the tool but resisting the commercial agenda informing the design of the tool.

Ardash soon started to discover additional ways the *Amazon* service might be used to support study. One tactic exploited the *Search Inside Me* tool. The *Search Inside Me* tool allows readers to open a virtual representation of a book, read back pages, contents pages and as much of the main body of the text as the copyright owners choose to make available. It also allows the user to search for specific phrases in the main text.

When conducting field work in India, Ardash e-mailed to announce the discovery of the tool:

Hey

I'm writing to let you in on a trick I figured out. Because it's quite difficult to get recent academic books in India, I had to find alternative means. *Amazon* has just begun a new feature of searching keywords inside books. Especially for better selling books, they offer this service. It basically allows you to find all the instances of a word you chose and lets you see that page and two pages subsequent. If you, therefore, pick the keyword 'Introduction' you can read the first three pages. Then, you pick a word on that third page and you can read the next two pages and so on. By using this trick (that I don't think they thought about), I've almost completed two chapters of a recently published book! If not for reading the whole thing, it's a great way to get a feel for some major authors and books before you go buy them.

To have access to this service, I believe you need to have bought something from *Amazon* previously or just sign-up. And then, find the book you're interested in and under the title, if the service is available, it will say 'search inside.' Try it out!

Whilst extremely inconvenient compared to reading a paper-based book, using this strategy it was possible to read whole book chapters online free of charge. The e-mail suggests the degree to which Ardash had become actively involved in exploring and experimenting with *Amazon* as a tool for supporting study in a particular socio-situation with limited access to books.

On his return to the U.K. Ardash no longer needed to read books in this way. Nevertheless, he discovered that the *Search Inside Me* feature could be used to search for specific passages and quotations within books. This proved particularly useful for finding passages and quotations in books he had already read. Further, it could be used to find quotations that included particular words or phrases. Alternatively, it could be used to find the page number of missing references. Even if he had a paper-based version of the book ready to hand, Ardash found that it was frequently faster to use the *Search Inside Me* tool to find a particular paragraph, page

number or quotation that he needed. In this respect, *Amazon* not only facilitated exploratory literature searching. For Ardash, it became a powerful tool that could be used to support the activity of scholarly writing.

In this case, a student exploited the affordance of a commercial tool to break away from dependence on a tool provided by a centralised library service. However, unlike Anastasia, this was not out of necessity. Ardash was not attempting to escape a double bind. Rather, he actively exploited the affordances of new mediational means to save time and gain a deeper understanding of the ‘webs of influence’ between authors by allowing his reading path to be directed by the purchasing decisions of anonymous others. The clever and quasi-invisible *tactics* employed effectively subverted the commercial agenda of the *Amazon.com* system and exploited its affordances to advance Ardash’s performance as a student.

The third example emphasises the need to consider the specificity of the wider socio-cultural context of a particular act of creative appropriation.

Vignette: ZeroGboy appropriates Google Mail as a free backup service

ZeroGBoy was edging closer towards the completion of a DPhil. thesis when interviewed. He was in the process of writing-up, drafting and continually re-drafting chapters. The threat of data loss due to hard drive failure, accidental deletion or the remote possibility of computer theft had become a source of considerably anxiety. He had developed several strategies to safeguard his data. These included making a backup on a USB memory stick (that he kept on his person at all times). However, he also deemed it wise to make daily backups that could be stored in an offline storage location. *Oxford University Computer Services* provides an online backup service known as TSM backup. However, at the time, the use of this service involved a relatively complicated procedure involving security passwords. ZeroGboy had devised an

alternative tactic that allowed him to remain in control. Earlier that year he had received an invitation, from a friend, to open a *G-mail* account. He had no pressing need for another e-mail account. However, out of interest, he opened the account to explore its utility as an alternative e-mail service that he might use beyond graduation.

He subsequently discovered that his *G-mail* account entitled him to more than a gigabyte of free storage space and subsequently started to appropriate the service, not for e-mailing, but as an alternative online storage location for backing up thesis chapters. Following this discovery he got into the habit of e-mailing himself a copy of the latest chapter (as an attachment) at the end of each day as shown in Figure 6.3.

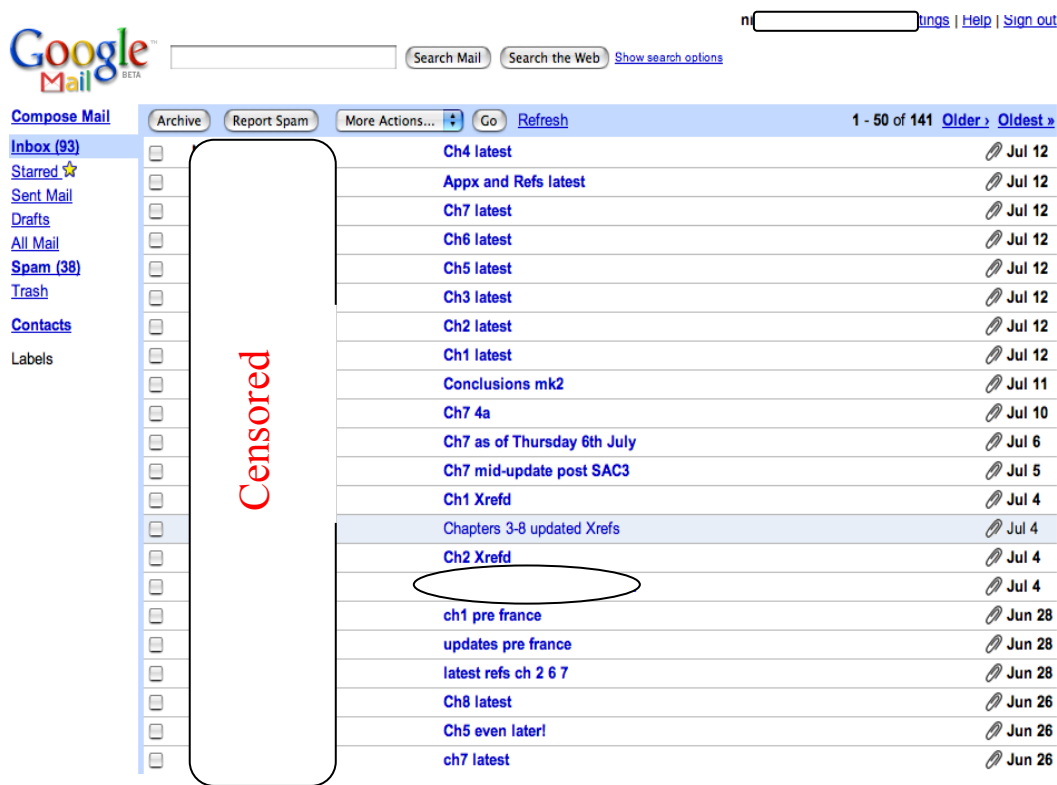


Figure 6.3 Screen shot of ZeroGBoy’s *G-mail* account for backup

In this case, four factors appeared to be involved in ZeroGBoy’s decision to appropriate *G-mail*, against the grain, as a free offline storage location for backing up thesis chapters: a) the

accessibility of the tool; b) the fact that it offered a free alternative to buying an external hard drive; c) the additional security of knowing he had a copy of his chapters in an offline location that could be neither lost, nor stolen; and d) that fact that these were automatically dated and could be easily retrieved, if need be, from any computer with an Internet connection.

The example suggests one way in which a student might exploit a new tool *against the grain* in a manner not intended by the designers to support course related study in an indirect way. In this case, the misuse of the tool enabled the subject to monopolise upon its affordances to address an authentic need. Further, it suggests that in new mediascapes learners have choices. If a centrally administered service proves awkward or difficult to use, new opportunities exist for them to develop alternative strategies using one of many tools or services that are becoming available on the Internet.

The fourth example illustrates how the deliberate misuse of a quasi-intelligent agent might be exploited (against the grain) to serve a personalised learning agenda. Interestingly, it shows how the restricted use of a tool might transform it from a cognitive crutch into a powerful learning tool.

Vignette: Sue Ellen makes restrictive use of MS Words spell checking tool

Sue Ellen regarded herself as a ‘good’ speller although she had experienced problems with differences between English and American spelling conventions. She didn’t like to use spell checking tools but had started to use one (set to U.K. English). As most readers will no doubt know, *MS* spell check places a squiggly red line beneath an incorrectly spelt word the moment the spacebar is pressed. This utility allows users to select the correct spelling from a list of alternatives and replace the misspelt word with the click of a mouse. Interestingly, Sue Ellen

did *not* use it in this manner. She argued that this would prevent her from learning the correct version of the word. Instead, she adopted a somewhat atypical strategy. Whilst demonstrating her use of the tool, in a matter of fact tone, she commented,

“What I tend to do instead of waiting for spell check to change it I just start backspacing and I automatically change it until it will not be underlined ... [pause whilst demonstrating] ... So it basically just alerts me to the fact that it’s been misspelt then I go and change it myself ... I find that’s the best way to use it, well at least it works for me”.

To be clear, rather than right clicking on the word, Sue Ellen placed her cursor in the text, deleted the Americanised version of the word, and then attempted to type the English version of the word. If, on pressing the space bar at the end of word, the squiggly red line re-appeared she knew she had made an error. At this point she backspaced and tried again. The process would continue until the line no longer appeared. Used in this way, the tool forced her to internalise the correct version of the word. Thus, her restricted use of the spell checking tool might be regarded as a tactic designed to guard against the perceived threat of *inhibited internalisation*.

This micro level interaction was emblematic of Sue Ellen’s general relationship with the increasing number of digital tools that had become part of her everyday life. She was mindful about the effect using these tools had on her own performance. In particular, she believed that excessive use of digital tools like spell checking bots, calculators and bibliographic software (that automates the process of compiling bibliographies) would inhibit her capacity to work independently. For example, despite feeling under considerable pressure to start using the *Endnote* program, she made a decision *not* to use it after a very short trial period as suggested by the following extract.

SE. Here's an account of my basic exploration of *Endnote*. I basically double clicked, look at it, read the basic instructions about how to use it and then I thought fuck it, I'll just compile the bibliography on my own.

RF So there wasn't a tangible enough advantage to be gained?

SE No. Because the time it would take me to learn how to use it and then format and .. you'd still have to punch all the information into *Endnote* ...

RF Did you know you can connect to databases and stuff?

SE Yes but that sound complicated as well, plus the style that they want you to use is slightly off from the ones I need to use ... and it's kind of off by parenthesis and stuff like that so that would mean I'd need to go in there and tidy it all up and I think I might as well just do it myself.

Sue Ellen's non-use of *Endnote* serves as a revealing negative case. In certain respects, it suggests that at least some students are making active decisions *not* to appropriate digital tools to save time and cognitive labour. Nevertheless, it also clearly illustrates a student calculating, or forecasting, the relative advantages and potential drawbacks prior to making a full appropriation and assimilating the 'intelligence' of the tool into her own extended cognitive system. In this instance she estimates adoption would create additional work and loss of control to a quasi-intelligent agent that had an alternative agenda. Indeed, the phrase, 'the style they want you to use', suggests that she regarded the intentions of the toolmakers, now designed into the tool, as a threat to her own personal agency.

Thus, both Sue Ellen's restricted use of the spell checking tool and her non-appropriation of *Endnote* can be interpreted as attempts to resist the attempts of toolmakers to control her own agenda. This illustrates the irreconcilable tension implicit in the concept of appropriation, as conceived by Bahktin, within the digital domain.

6.3 Creative appropriation, self education and career advancement

To restrict the focus of attention to new media usage directly relating to formal academic qualifications would create a woefully distorted picture of the sophisticated ways students are creatively appropriating freely available web-based tools and resources to address authentic learning needs. This section explores how three students appropriated new media to advanced personalised learning agendas related to their career aspirations.

Vignette: Clinton developing an independent critical perspective of political speeches using C-SPAN vodcasts

Clinton had always been an avid news reader. He prides himself on his ability to keep abreast topical current affairs issues. Since moving to Oxford, he had started to read multiple online newspapers on a daily basis. This enabled him to save money. Nevertheless, he seemed far more interested in the ways the online format enabled him to develop a complex understanding of a particular issue from multiple perspectives. He argued:

“With so many resources at your finger tips, you are able to read the perspectives of many persuasions and I’m interested in policy and politics and culture... and so for someone like me it’s very important for me to learn about perspectives that are not my own and to do that I read different sources of news from different parts of the world maintained by organisations and individuals with different agendas.”

When interviewed he had recently innovated a tactic for exposing the representational bias in news reports relating to major political speeches. This made extensive use of online vodcast accessible through a subscription to *C-SPAN* that showed the raw video footage of major political speeches as show in Figure 6.4.



Figure 6.4 Screen shot from C-SPAN.org

He watched these and then read articles that reported these speeches in an attempt to tease out the bias. His strategy is suggested by the following stimulated response:

“... you can watch the events and then read the coverage about them and see the bias very easily ... even more so than if you are comparing different news sources ... what I do now is watch the major policy speeches and the committee hearings and even the general assembly and I watched Tony Blair’s questions for the press and Prime Minister’s question time. I watch these things. Then you can see amazing discrepancies in what you have just read and how it’s reported. That opens my eyes more than just the comparative new readings ... actually watching the events and reading transcripts of events.”

Interestingly, the quotation suggests how he was exploiting the opportunity to access the news through different representation formats (audio-visual and online news articles) and tease out representational bias. As a result, Clinton claimed that his stance on a number of policy issues had shifted. For example, when discussing his opposition to the war on Iraq he argued:

I've learnt more about the war in Iraq. I read what everybody in the world is saying about it. Not just leaders and governors but citizens. I'm learning what their views are and why they are learning certain things. My opposition to the war on Iraq has grown stronger in reading the news sources from different parts of the United States and different parts of the world and the different kinds of reports I see on *C-SPAN*...

Indeed, not unlike Ardash's use of *Amazon* for exploring the 'webs of relationships' between different authors, he felt that he had developed a more in-depth knowledge and understanding of the complexity of the issues explored.

Clinton's creative appropriation of pre-recorded vodcasts in combination with multiple online newspapers can be conceived as a learning strategy directed towards a very personal object-motive. He had a firm conviction that he was destined for a career in politics and was deeply committed to educating himself in preparation for entrance into this world. Indeed, he was investing considerable time and energy into this self-directed learning agenda. In this respect, we might start to understand creative appropriation of online new media in terms of a strategy that individuals might use to advance a self-directed learning agenda directed to a remote object-motive of an intended career trajectory.

Indeed, creative appropriation becomes somewhat conspicuous when exploring the various ways students were exploiting new media to advance self-directed learning agendas. This is now illustrated in a vignette that describes how Jim discovered, evaluated and creatively appropriated *Wikipedia* as a resource to prepare for himself for an interview.

Vignette: Jim appropriates *Wikipedia* to prepare for an interview as a trainee barrister

Jim considered himself as something of an outsider when it came to the British legal establishment. As a Canadian, born and raised in Ottawa, he had a distinctively North American accent. When visiting court, he found the emphatic use of deferential statements,

such as “m’Lord” in the procedural protocol of the English Crown Court system rather amusing. Moreover, he felt concerned that his sketchy knowledge of the history, traditions and institutions of the English legal system might show him up as an outsider in the world he was venturing into. Consequently, in addition to his academic studies, Jim had embarked on a self-directed learning agenda designed to address this gap in his knowledge. He’d recently spent an evening ‘googling’ in order to brush up on his understanding of history and institutions that characterised the English legal system. Upon ‘googling’ ‘House of Lords’ and ‘Lord Chancellor’, he discovered a *Wikipedia* article on Baron Woolf, the current Lord Chief Justice as shown in Figure 6.5.

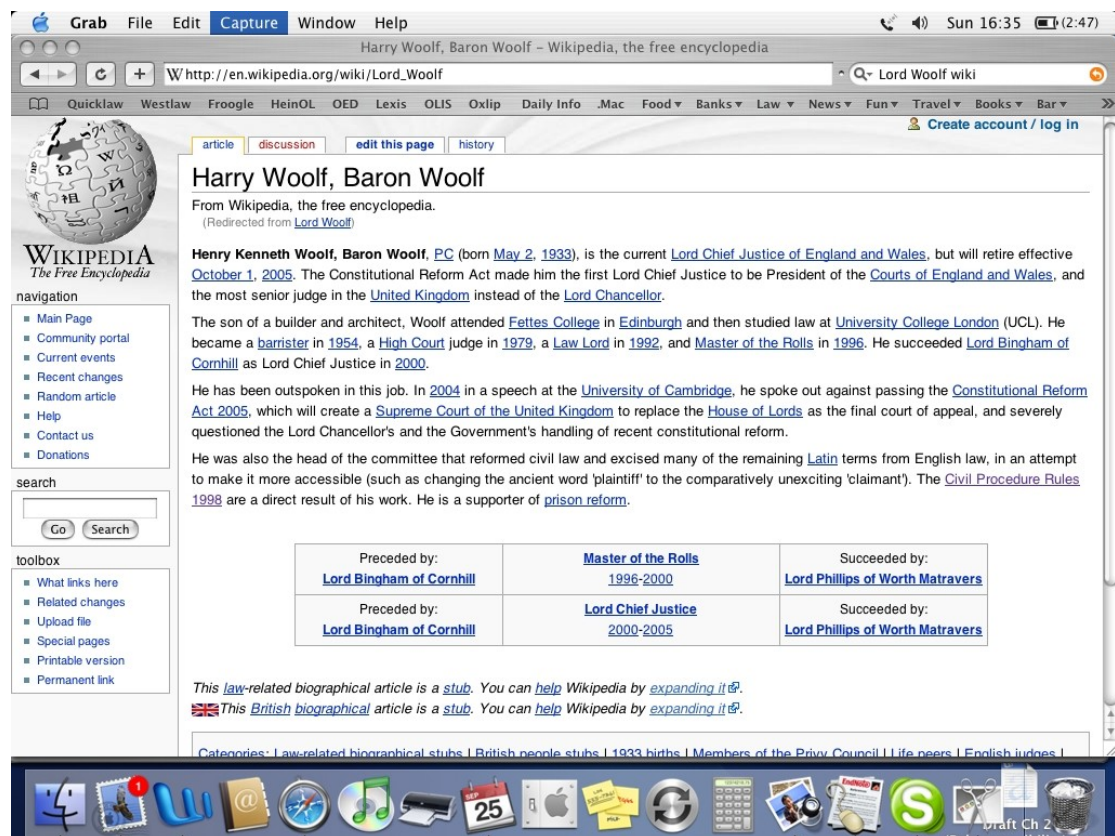


Figure 6.5 Screen Shot of *Wikipedia* article on Lord Chief Justice

This was the first time Jim had come across *Wikipedia*; he'd literally stumbled across the resource in cyberspace (an increasingly easy thing to do). However, he immediately started to explore its potential as a learning resource, following links and searching for other topics of interest. Jim had used *Wikipedia* about 'twenty five' times since discovering the tool (two weeks previously) and was rapidly discovering that it could be very useful for particular kinds of tasks. An extract from the interview transcript conveys Jim's initial discovery, enthusiasm and rapidly evolving use of the tool.

RF: What kind of things have you used it for?

Jim: umm... a few things, general things. Like, I don't know about this subject or I want to know where such and such a person lived, like William Pitt and bang it comes up on *Wikipedia* and then I discover that there's a detailed article about his life.

RF: So what do you think of it?

Jim: How do I like it? I think it's terrific! I love the idea ... I like it for its utility, the spirit of the idea to provide free information ... and the idea that all of these people acting independently can get together and produce such an enormous and high quality volume of information that will someday end up being one of the most comprehensive sources of information because they are just hyper-linking more and more and more stuff. And this is just the beginning. I really think that in five years you'll have almost everything up there. I don't know how quality control will be managed in the end but it seems to be pretty well run so far.

RF So can you just take me through a few examples of what you were looking for?

Jim: Yep, the Lord Chancellor's Office, it had the history, the background, what functions they have, their responsibilities... The other thing, I wanted to know about the court structure in Britain, so I typed in "Queen's Bench" or something. Because the way the court system has evolved is very organic and piecemeal - as opposed to one person's idea of what the courts should be... erm and so it's tricky knowing what's what with constitutional reform in Britain. Incidentally, I was looking at the House of Lords and I wanted to know what the reform proposals were – they were

planning to abolish the judicial committee in the House of Lords and establish a supreme court. Well they are not prepared they've actually passed the act to create a supreme court.

RF Really?

The passage shows Jim in the process of discovering, evaluating and creatively appropriating a curious new media form - an encyclopaedia authored and edited by a massively distributed knowledge sharing community – for a very specific purpose. This involved a period in which he discovered and started to evaluate the potential utility of the tool. He quickly became committed to the ‘spirit of the idea’ but remained slightly concerned about ‘quality control’. Indeed, he appeared to be in the process evaluating exactly what kind of role *Wikipedia* would play in his evolving self-directed learning agenda relative to other resources. Further, his comments, ‘incidentally, I was following....’ suggest that the use of the tool was leading him to discover and explore related interests.

Jim had not placed the tool in his toolbar. However, he was quick to point out that if you typed any word into *Google* and put ‘wiki’ at the end, it would take you straight to the *Wikipedia* article. In short, once connected to the Internet, the tool was accessible at the click of a mouse. Consequently, it could be used or consulted ‘on the fly’ for a range of purposes. Thus, he had also started to deploy tactics that maximised the utility of the resource and, in a very short space of time the tool became assimilated into his standard toolkit for independent learning.

The vignette describes a specific case. However, it is also emblematic of the way students are discovering new tools, designing these tools into their personal learning environments and using them to address authentic learning needs. Further, it illustrates one instance of a student engaging in a form of self-education with the aid of user content uploaded and shared by

others with very specific interests. Finally, it suggests why a student might start to buy into the ethic of *Participatory Culture* as they recognise the utility of a freely available collectively produced content that in time they might start to contribute to themselves.

The final example vignette illustrates how a young professional starts to appropriate online resources and subsequently redeploys tools discovered as a student as he or she ventures into a profession.

Vignette: Karen creatively appropriates and redeploys tools for teaching and learning about chemistry

Karen was training to become a chemistry teacher. She had access to standardised lesson plans and teaching materials in resource books that could be adapted. However, Karen argued that she now did the bulk of her resourcing on the Web. Not unlike Anastasia, she had established a folder of links to sites containing resources for teachers. *Creative Chemistry*, an online resource containing hundreds of worksheets, lesson plans and interactive demonstrations proved useful.

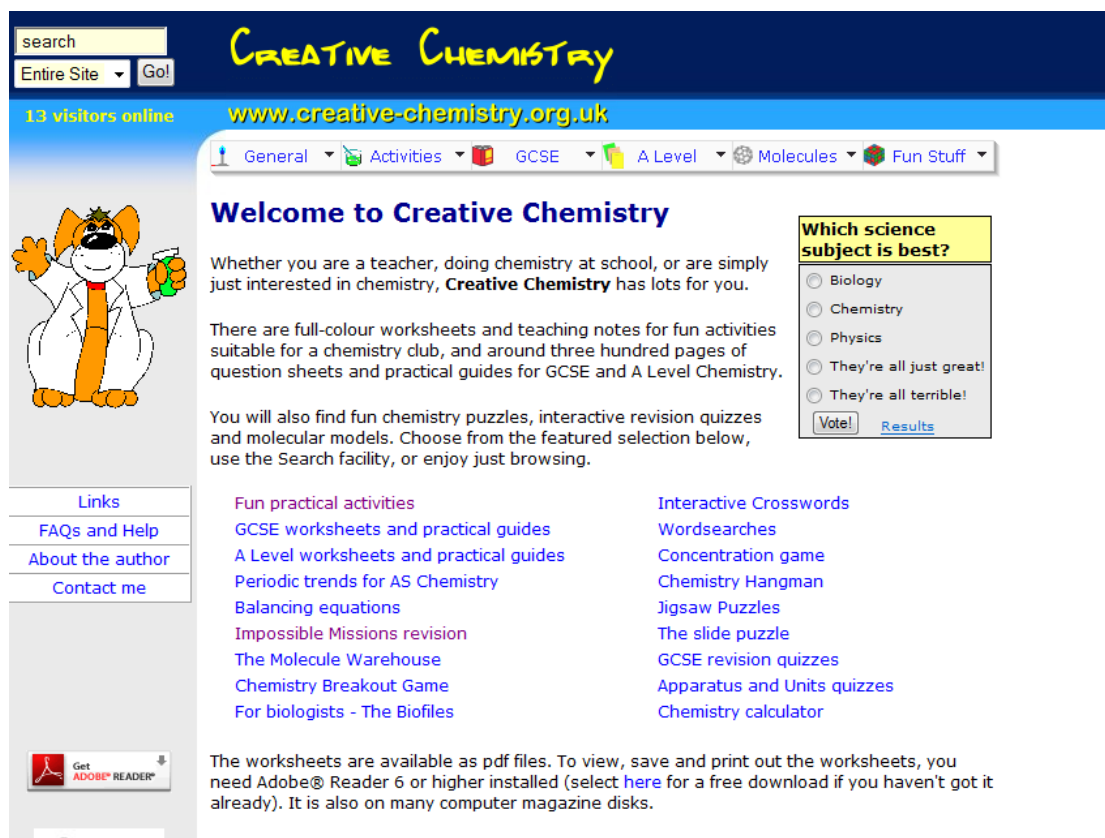


Figure 6.6 Screen shot of *Creative Chemistry*

However, she found that the most valued sites were those produced and maintained by other practicing chemistry teachers. When planning a new scheme of work and looking for resources, she used these as a first port of call. She scanned through these sites and cherry picked materials that she then incorporated into her own lessons / presentations. As a result, she quickly assembled a re-usable bank of digital resources by poaching materials uploaded by more experienced chemistry teachers.

Karen also made habitual use of a tool called *ChemFinder* that she had discovered, following a conversation with a friend. The tool provided rapid access to important information (molecular weight, boiling point water solubility, etc.) and links to diagrammatic representations of chemical structures.

ChemFinder.Com
Database & Internet Searching

SciStore.Com ChemFinder.Com
ChemBioNews.Com ChemClub.Com
CambridgeSoft.Com

Enter a Chemical Name, CAS Number, Molecular Formula or Weight.
Use * for partial names (e.g. ben*).
Search here for free. For professional searching, use ChemINDEX.

Sodium [7440-23-5]
Synonyms: Natrium; Sodium; Sodium, 30 wt% dispersion in toluene, <0.1 mm particle size;

Na	Tools	OpenChem
	BUY AT CHEMACX.COM	VIEW LINKS
	VIEW CHEMDRAW STRUCT	ADD COMPOUND
	VIEW CHEM3D MODEL	ADD/CHANGE PROPERTY
	CAS RN Lookup	ADD LINK
	THE MERCK INDEX	
	NCI DATABASE	

Formula	Na	Molecular Weight	22.98977
CAS RN	7440-23-5	Melting Point (°C)	97.8
ACX Number	X1000092-9	Boiling Point (°C)	892
Density	0.9	Vapor Density	
Refractive Index		Vapor Pressure	824
Evaporation Rate		Water Solubility	decomposes.
Flash Point (°C)	4	EPA Code	
DOT Number	NA 1421 Flammable solid; UN 1428 Flammable solid; UN 1424; UN 1429	RTECS	VY0686000

Figure 6.7 Screen shot of *ChemFinder.com*

Karen had started to use this tool whilst studying chemistry as an undergraduate. However, as a trainee teacher, she now routinely used it to prepare lessons or to check the results of students' work. Karen claimed that without the tool it would have taken her hours to find the same information by consulting paper-based reference manuals. Initially, she was rather reluctant to show it to her pupils for fear that they would exploit it to do their home work. However, she had subsequently planned lessons that required students to make use of the tool in combination with a freely accessible interactive version of the periodic table of the elements as shown in Figure 6.8.



[Chemistry »](#)
[WebElements Periodic Table »](#)
[Home page](#)

WebElements™ periodic table

WebElements Scholar - for university/school students.

Shop: periodic table posters, mugs, t-shirts, molecular model kits, games...

Chemdex directory

Chemistry News

Chemistry Forums

Printable periodic table

Promote your website

FlashElements

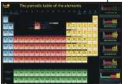
PalmElements (Palm)

WapElements (Wap)

Link to WebElements

Chemistry search engine

Posters from our shop:



Group	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
Period																			
1	1 H																	2 He	
2	3 Li	4 Be											5 B	6 C	7 N	8 O	9 F	10 Ne	
3	11 Na	12 Mg											13 Al	14 Si	15 P	16 S	17 Cl	18 Ar	
4	19 K	20 Ca	21 Sc	22 Ti	23 V	24 Cr	25 Mn	26 Fe	27 Co	28 Ni	29 Cu	30 Zn	31 Ga	32 Ge	33 As	34 Se	35 Br	36 Kr	
5	37 Rb	38 Sr	39 Y	40 Zr	41 Nb	42 Mo	43 Tc	44 Ru	45 Rh	46 Pd	47 Ag	48 Cd	49 In	50 Sn	51 Sb	52 Te	53 I	54 Xe	
6	55 Cs	56 Ba	*	71 Lu	72 Hf	73 Ta	74 W	75 Re	76 Os	77 Ir	78 Pt	79 Au	80 Hg	81 Tl	82 Pb	83 Bi	84 Po	85 At	86 Rn
7	87 Fr	88 Ra	**	103 Lr	104 Rf	105 Db	106 Sg	107 Bh	108 Hs	109 Mt	110 Ds	111 Rg	112 Uub	113 Uut	114 Uuq	115 Uup	116 Uuh	117 Uus	118 Uuo
*Lanthanoids	* 57 La		58 Ce	59 Pr	60 Nd	61 Pm	62 Sm	63 Eu	64 Gd	65 Tb	66 Dy	67 Ho	68 Er	69 Tm	70 Yb				
**Actinoids	** 89 Ac		90 Th	91 Pa	92 U	93 Np	94 Pu	95 Am	96 Cm	97 Bk	98 Cf	99 Es	100 Fm	101 Md	102 No				
Chemistry Books (USA)			Chemistry Books (UK)					Chemistry Books (CA)					Chemiebücher (DE)						

Figure 6.8 Screen shot of *Web Elements* interactive periodic table

She suggested that whilst *Chemfinder* was a more professional tool suitable for ‘A level’ students, the interactive periodic table of the elements was more user friendly and could be easily used by students of all ages. One clicks on an element in the interactive periodic table to instantly reveal more detailed information about that particular chemical: a diagram, audio recordings introducing the essential qualities of the chemical and *Quick-time* movie illustrating experiments that involved the use of the chemical. Like *ChemFinder*, this quasi-intelligent interactive tool rapidly became assimilated into her standard toolkit of teaching resources.

The vignette illustrates how one student was opting to use shared user content in preference to material produced by publishing houses. In this respect, it provides a perspective on *Participatory Culture* on the rise as it moves from the margins to the mainstream, from a digital subcultural practice to a powerful site of learning that has become part of young professionals’ everyday lives. The vignette also illustrates how students are finding ways to redeploy tools they start to use as students to address authentic needs as they embark upon their careers. Indeed, this suggests that a capacity to find, evaluate and redeploy particular

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tools, for particular purposes, has become very much part of the routine practice of everyday life for trainee teachers in particular as they venture into their careers.

6.4 Tensions and contradictions associated with the creative appropriation of digital tools and web-based resources

This section elaborates the tensions and contradictions manifest in the practices of students as they attempt to appropriate web-based tools and resources for course-related study and self education.

The perpetual revolution and the need for continual adaptation

Media change continues unabated confronting users with additional challenges and choices as new tools, with overlapping functionalities, become available. Nevertheless, new media rarely replaces old media. New media becomes layered on top of existing media; a process that invariably results in a reconfiguration of the utility of individual tools with respect to the available toolkit. During the course of this study dozens of freeware tools, such as *Wikipedia*, *YouTube*, the *OED online*, and thousands of special interests blog which give students access to volumes of user generated content, went online. These tools didn't replace traditional study resources. Nevertheless, many students started to use these tools in combination with existing resources to gain an advantage. Furthermore, adoption was not always a matter of personal preference. Within communities of post-graduate students, individual students may find themselves under considerable pressure to adopt. Failure to adopt and stay up-to-date with learners like Ardash and Karen could have serious implications for their capacity to remain competitive as a student venturing into the knowledge economy.

The anxiety of choice

In addition, as more and more tools, resources and user generated content become accessible, learners are confronted with choices as they attempt to find, select and evaluate which

resources are appropriate for their changing needs as learners. With increasingly powerful search tools like *Google* (that rank sites according to the number of hyperlinked references made to a site) learners are not entirely alone when attempting to find quality web-based instructional material. The rank order of material presented reflects the valued judgements of thousands of anonymous others. Their ‘collective intelligence’ is harvested through the use of a clever commercial search algorithm that assisted learners like Ardash and Anastasia. Nevertheless, the user remains responsible for evaluating and categorising the utility of each resource for their individualised and specific purposes. Further, a single *Google* search might return links to university courseware, for profit and not-for-profit organisations and personal web-sites hosting uploaded content. In such cases, the user has to choose, often on the basis of partial information, about the quality, purpose and pitch of each resource. In short, given the loss of structure, absence of guidance and access to a global depository of potential learning resources learners are confronted with an *anxiety of choice* when attempting to creatively appropriate web-based tools and resources to address their learning needs. Moreover, in most cases they are compelled to choose alone.

Consumer tactics in a space governed by attention economics

A related tension concerns the competing demands made on students’ attention. According to Goldhaber (1996), when the learner goes online they enter into a space governed by the economics of attention. Indeed, as students like Anastasia, Karen and Ardash searched for suitable resources, they were exposed to countless commercial agendas which were attempting to recruit their attention. Sponsored and unsponsored links with hidden commercial agendas all compete for the attention of the user. Further, genuine educational sites double as sought after advertising spaces. Increasingly, they contain sponsored links to additional tools and services promising to assist learners. Thus, learners who appropriate these resources must be prepared to employ counter tactics to work around these commercial strategies.

6.5 Creative appropriation as an aspect of media literacy

The range of examples suggested that, not unlike the capacity to design a personalised learning environment to support advanced knowledge work, a capacity to *creatively appropriate* digital tools and resources to support course-related study and self-education must be considered an important aspect of new media literacy. The vignettes suggest several important characteristics of expert-like creative appropriations.

Firstly, the vignettes suggest that a capacity to explore, play and tinker with the available resources should be a necessary pre-requisite for a successful creative appropriation. This is perhaps most conspicuous in the way Ardash discovered and subsequently started to experiment with different ways he might explore *Amazon.com* for exploratory literature searching and then subsequently appropriated the *Search Inside Me* tool to read chapters and find missing quotations. However, as other examples suggest by different degrees, a generally capacity to explore, play and tinker with the new tools one finds appears to be a necessary prequel for effective creative appropriations.

Successful *deployment* of a new tool requires a learner to do more than play, explore and experiment. It demands a capacity to anticipate the potential benefits and drawbacks of using a particular tool for a particular purpose. Those who effectively appropriated new tools were generally mindful of the ways the adoption of tools might have negative as well as positive implications. For example, Jim immediately recognised the potential utility of *Wikipedia* as a powerful tool that could be used to educate himself about the history of the British legal system. However, he also remained cautious, commenting that ‘quality control’ might be an issue. Indeed, the data suggests that a capacity to evaluate, critically frame and anticipate the relative merits and potential limitations of particular resource is placing additional challenges on learners and must also be considered an emergent aspect of new media literacy.

In addition, the data suggests that a capacity to use tools *against the grain* in ways not necessarily intended by the designers is an inherent feature of creative appropriation. The degree to which a tool is used against the grain, however, depends on the fit between the intentions of the tool maker and the intentions of the tool user. If a good fit exists, tools may be used as intended. In this respect, a challenge for the learner is to find the right tools for the right job. This occurred when Anastasia found the ANOVA visually site. However, the effective use of *Amazon.com*, *G-mail*, and the spell checking tool, as learning resources, required Ardash, ZeroGboy, and Sue Ellen to use tools *against the grain*, to achieve their purposes and address their specific learning needs. In such cases, the tension between the intentions of the tool-maker and the intentions of the tool-user are most acute. In these cases, we witness learners appropriating tools in the Bakhtinian sense, resisting the intentions of the designer and innovating tactics that exploit certain features of the tool to their own advantage. Interestingly, now learners enjoy new opportunities to customise, adapt and modify digital tools to serve their individual needs, we may be witnessing a closure in the gap between the tool-maker and the tool-user.

It should also be emphasised that effective use of tools *against the grain* invariably requires users to *self-impose enabling constraints*. Indeed, a capacity to self-impose enabling constraints might be regarded as a critical feature of expert-like creative appropriation. It was perhaps most conspicuous in Sue Ellen's restricted use of the spell checking tool to guard against the perceived risk of *inhibited internalisation*. But it is also evident in Ardash's resistance to *Amazon.com*'s marketing strategies and Anastasia's selective use of multiple Statistics web sites. Thus, in multiple respects, a capacity to self-impose enabling constraints appears closely coupled with a capacity to use tools *against the grain*.

Finally, in new mediascapes, tools are rarely used in isolation. Users typically used multiple combinations of tools with overlapping and complementary functionalities. For example,

when conducting literature searches Ardash used *Amazon.com* in combination with *OLIS*, *Endnote*, *TDNet*, and *Google Scholar*. Similarly, Anastasia juggled between multiple online statistic resources, a paper-based copy of *Statistic for Social Scientists*, and a working version of *SPSS* for *Windows* that she had installed on her computer. Multi-tasking, switching back and forth and using these tools in multiple combinations afforded additional learning opportunities. This is highly conspicuous when one considers how Clinton appropriated *C-Span* vodcasts of political speeches in combination with online news reports to tease out representational bias.

Thus conceived as an aspect of new media literacy, creative appropriation demands a capacity to: a) seek out, play and tinker with digital tools; b) evaluate their utility as learning resources; c) self-impose enabling constraints; d) use tools against the grain; and e) use digital tools and resources in multiple combinations to maximise their utility as resources for learning.

6.6 Creative appropriations driving cultural change from the bottom up

It is helpful at this stage to stand back and consider how creative appropriations on a micro-genetic level might be driving cultural change from the bottom up. This requires a short digression.

Those interested in the relationship between cultural and media change invariably become embroiled in a debate that polarises into two camps: those accused of technological determinists, often linked with the work of McLuhan (1962; 1994); and advocates of the *Social Shaping of Technology* who emphasise that technologies are always invented and adapted by real people in particular socio-historical circumstances (MacKenzie & Wajcman, 1999). Socio-cultural theory provides an alternative way to think about the implications of media change that stems from the centrality of the idea of the dialectic in post-Vygotskian thought. Wertsch (1998, pp. 23-72; 1995a, pp. 65-68) develops this line of thinking using an

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analogy that makes reference to the history of pole-vaulting following the invention of fibreglass poles that young athletes exploited to gain an advantage in a competitive Olympic sport as shown in Figure 6.9.



Figure 6.9 Olympic athlete exploiting the elastic properties of fibre glass to vault

The technique allowed vaulters to exploit the elastic properties of glass fibre to sling shot themselves over the bar and thereby far surpass the records that lasted until 1957 set by the likes of Cornelius Warmerdam who used a rigid bamboo pole. Young athletes rapidly appropriated the new mediational means and developed techniques that exploited its affordances. However, old timers who had risen to the top of sport using techniques that exploited the relative rigidity of the bamboo poles, and who therefore depended on physical strength and speed, claimed that the rules of the game had fundamentally changed. Indeed, some claimed it wasn't the same sport and retired.

Significantly, the invention of new mediational means (i.e. glass fibre poles) didn't cause change. Change was driven from the bottom up by young vaulters as they exploited its

affordances to gain an edge in a competitive Olympic sport. This provides a model for thinking about the changing culture of university learning in the new media age. Access to new media does not cause change; rather change emerges from the bottom up as advanced learners exploit the affordances of the new mediational means accessible through networked computers and seek out various ways to gain an edge in various competitive academic games.

6.7 Creative appropriation, identity and authentic need

To further understand what motivates a learner to creatively appropriate a new tool or resource, the evidence suggests that it is also important to identify the authentic learning need a single act of creative appropriation addresses. Indeed, when authentic needs existed, these students were adept at exploiting new media to meet these needs regardless of their age or their prior level of immersion in digital subcultures. Furthermore, a student's individual style of computer use appeared to relate to their personal values, priorities and internalised ethics. For example, one can't understand Anastasia's resourcefulness without understanding her commitment to becoming a social scientist capable of using advanced statistical analysis procedures. Similarly, one can't understand why Ardash appropriated the book recommendation system and used it to explore the 'webs of influence' among various authors without taking into consideration his internalised commitment to educating himself beyond the confines of his particular topic of study.

Similarly, when considering creative appropriations of new media for informal learning and self-education, learners' identities start to figure as powerful mediators (and motivators) of learning activity. For example, Jim's use of *Wikipedia* was originally motivated by a feeling of being an outsider venturing into a very British legal establishment. Similarly, Clinton's creative appropriation of *C-SPAN* vodcasts was driven by a commitment to developing an in-depth knowledge of politics and current affairs in preparation for a career in politics. In this

respect, the evidence indicates that a learner's needs are invariably related to a learner's sense of self and sense of who they might become.

Summary

Some of these examples might seem ingenious, some might appear trivial. On one level, they suggest some of the playful, creative, exploratory and inventive ways some students are now exploiting web-based tools and resources to advance their purposes. However, these examples also serve to illustrate some of the broader implications of media change for learning. They suggest why we need to understand creative appropriation, like design, as a fundamental aspect of new media literacy. Further, they suggest how creative appropriations on a micro-genetic scale might be driving media change from the bottom up. Finally, the analysis suggests that creative appropriations are invariably driven by authentic needs as learners develop strategies and tactics that exploit the full potential of the Internet as a resource for learning. In summary this chapter provides a set of conceptual tools that can help us to reflect upon the predicament of the learner in an age during which an increasing number of individuals are actively appropriating a variety of digital tools and resources directly from the *World Wide Web* to learn independently.

Chapter 7 Learning with others through new media: cultivating, nurturing and activating globally distributed funds of living knowledge

The digital information technology is important for learning and education, not primarily because it offers a mechanism to transfer pre-packed information. That is a too one-dimensional perspective. Its consequences touch on more basic displacements in the ways in which knowledge is produced and mediated. It contributes to the creation of new arenas to communicate in, and new virtual contexts to develop in (Säljö, 2004, p.227).

Our living knowledge, skills, and abilities are in the process of being recognized as the primary source of all other wealth. What then will our new communication tools be used for? The most socially useful goal will no doubt be to supply ourselves with the instruments for sharing our mental abilities in the construction of collective intellect or imagination (Lévy, 1997, p.9).

Few would object to Lévy's (1997) utopian and humanistic vision of a world in which a new generation of tools provide the technical infrastructure that allows the dynamic sharing of collective intelligence amongst distributed communities for mutual advantage. However, much of the existing research within the field of *Computer Supported Collaborative Learning* (CSCL) suggests that many learners are not so quick to engage, share knowledge and learn collaboratively with others through new media. Crook and Light (2002, p.171) note that electronic seminar spaces, set up by university computer services to support taught courses

remained unused by over 90% of course tutors. Of the remaining 10% that were used, the online discussion was dominated by a small number of individuals⁶². Muukkonen *et al.* (2005, p. 535) highlight the ‘interrelated difficulties’ that arise when tutors attempt to integrate online discussion forums into structured courses. Recurrent themes in existing research include: problems with intensity of participation, shortness of discourse threads and lack of reciprocity. Kreijns, Kischner, and Jochens (2003) stress that many tutors erroneously take it for granted that participants will socially interact simply because it is possible. Moreover, their review of the CSCL literature stresses that a sole focus on cognitive processes in instructional activities neglects the social, cultural and economic circumstances that impact on students’ participation. Indeed, when one shifts the focus of attention away from ‘online discussion forums’ and ‘electronic seminar spaces’ established by tutors to support course-related study, one starts to recognise the relative insignificance of these virtual arenas compared to a myriad of less easily defined and under-researched informal arenas of learning activity. What appears to be missing from the literature is an understanding of how learners, left to their own devices, might be appropriating CMC tools to tap the help, support and cognitive resources of others in and beyond the same institution. Nardi *et al* (2002, p.205) argues:

Paradoxically, we find that the most fundamental unit of analysis for computer-supported cooperative work is not at the group level for many tasks and settings, but at the individual level as personal social networks come to be more and more important. Collectively subjects are increasingly put together through the assemblage

⁶² In addition Crook and Light (2002) discuss: a) the breakdown in the turn taking protocols associated with face-to-face group discussion; b) the very measured style of participation attributed to a visible log created that left every contribution open to public display; and c) the ‘abrasive, irrelevance, and irreverence’ that welled up the when no moderator was present.

of people found through personal networks rather than being constituted as teams created through organizational planning and structuring. Teams are still important but they are not the centrepiece of labour management they once were, nor are they the chief resource for individual workers.

Nardi's theorising follows her analysis of how professionals create, build, and nurture personal networks and then activate sub-networks of individuals when need arises to work on specific problems. It is interesting to consider how students, the young professionals of tomorrow, start to build, nurture and activate extended personal networks whilst at university to achieve these purposes (study related and otherwise) prior to the jump into the job market.

The following two chapters attempt to redress the imbalance that has arisen as a result of a preoccupation with collaborative spaces purposefully established by course tutors to support learning. Both attempt to shift the focus of attention towards an emergent and possibly far more significant arena of informal learning activity afforded by what Säljö (2004, p.227) describes as 'more basic displacements in the ways in which knowledge is produced and mediated'. The current chapter explores how informal personal networks emerge from the lifeworld of everyday college life, and how these networks are nurtured and how sub-networks and individuals are then activated to address learning needs as they arise. Chapter 8 explores how some individuals are breaking away from traditional lifeworld communities and expanding their interests through participation in online affinity spaces with anonymous others who share very specific interests.

7.1 Conceptual building blocks for understanding informal modes of collaborative learning in the networked university

Socio-cultural and activity theory equips us with a number of powerful conceptual tools that help us understand how and why individual learners might exploit the affordances of digital tools to connect with others. The notion of *socially shared cognition* (Brown *et al.*, 1997; © Russell Francis 2007

Resnick, 1996; Resnick *et al.*, 1991; Wertsch, 1996) provides general orientation for thinking about how new media might facilitate the distribution of knowledge and expertise across communities of practice. However, there is a need for more refined heuristics that focus attention on the way students' appropriate new media to design very personal networks that transcend the lifeworld of university life. This chapter builds on several pre-existing conceptual tools within the socio-cultural tradition.

Moll *et al.* (1992; 1997) use the term 'funds of living knowledge' to suggest how an extended family operates as a living system of shared knowledge and expertise. The research team conducted a cognitive anthropology of learning in and out of schools in Mexican working class communities in Tuscon, Arizona. Their research suggests how the exchange of knowledge, skills and labour essential for a family's functioning and collective well being are interconnected through the 'household'. Indeed, the 'household' mediates the formation of a 'living system of knowledge' (Moll *et al.*, 1997, p.140). Each family studied had developed strategies and arrangements that facilitated the exchange of 'funds of knowledge'. Interestingly, the comparison with classrooms, in which access to living 'funds of knowledge' is relatively restricted, reveals that 'the social environment does not take a neutral view towards the acquisition of knowledge and skill, but is instead highly interested, and often directive, controlling or even denying access to information'(p.260). The concept provides a powerful tool for understanding informal learning in the networked university.

However, there remains a need for tools that focus attention on the ways individuals exploit and leverage the knowledge and expertise accessible through their funds of knowledge. Rogoff (1990) stresses the active role played by learners in recruiting the assistance of more capable peers. Within the construct of 'guided participation', the sub-category of 'intent participation' identifies a genre of practice in which 'children are active in directing the

support of adults and the adjustment of that support as their skills develop' (p.106)⁶³. In contrast to the dominant metaphor of *scaffolding* (Wood *et al.*, 1976), the notion of 'intent participation' suggests how toddlers actively manage the assistance of their caregivers adjusting the level of assistance and guidance provided if and when required⁶⁴. It is interesting to consider how 'intent' or active management of others may also be an extremely important lens for thinking about the various ways learners recruit and maintain the assistance of others in virtual spaces. This is particularly important given that much of the scaffolding associated with traditional learning environments is conspicuously absent. Nevertheless, whilst useful, 'intent participation' tends to assume a significant age and skill gap between the learner and the tutor, a differential that is rarely so pronounced or significant among groups of post-graduate students.

Edwards (2004, in press, forthcoming) is developing the concept of *relational agency* within the CHAT framework for understanding how active, agentive individuals learn to be resourceful practitioners. Relational agency is regarded as a 'capacity which involves recognising that another person may be a resource and that work needs to be done to elicit, recognise and negotiate the use of that resource in order to align oneself in joint action on the object' (Edwards, 2005, p.172). The concept is offered as a conceptual tool for understanding informal modes of collaboration among professions in workplace and educational settings. Edwards and D'Arcy argue:

⁶³ Rogoff (1990) suggests that children actively recruit adult assistance when in need of assistance and quotes corroborating evidence to support her claims. Carew (1980), for example, noted that of 'non-contrived' interactions observed at home 82% were initiated by the toddlers (Rogoff, 1990, p.100).

⁶⁴ Interestingly, the concept of intent participation is strongly associated with learning in informal as opposed to formal contexts. It also appears to be prevalent as a practice in non-western cultures (Rogoff, 2003).

Relational agency is not simply a matter of collaborative action on an object. Rather it is a capacity to recognize and use the support of others in order to transform the object. It is an ability to seek out and use others as resources for action and equally to be able to respond to the need for support from others. Relational agency is therefore based on a fluid and open-ended notion of the ZPD. In our analyses of evidence from the studies, we are working with the idea of the ZPD as a set of interactions which is on-going in a social setting i.e. not simply a contrived interaction aimed at achieving one learning outcome (Edwards and D'Arcy, 2004, p. 149).

For Edwards, relational agency might be observed in a variety of collaborative contexts. The category does not describe a particular kind of *intentional network*, *knotwork*, *coalition* or *community of practice* (Nardi *et al.*, 2002) so much as the 'micro-relations' between learners in 'open ended learning zones'. Indeed, Edwards claims to get inside Engeström's systemic approach to understanding object-orientated activities and illustrate how individuals might reach out and connect with others to create a mutual (sometimes fleeting) zone of proximal development that enables both parties to achieve more than they would be capable of achieving unassisted. She stresses:

In and outside the classroom these ZPDs may be short lived as in the fleeting linkages of knotworking (Engeström *et al.*, 1999) and they may be found as easily in dislocated and shifting networks (Castells, 2000) as in established communities of practice. (Edwards and D'Arcy, 2004, p.150)

Moreover, unlike Rogoff's notion of intent participation, it is recognised as a expert-like capacity to work across the 'mobile and dislocated communities of late capitalism' in which 'individuals are connected as never before', creating 'paradoxical intentions' for those who inhabit transient communities which consequently put a 'strain on a sense of self' (Edwards, 2005, p. 169). In this respect, *relational agency* is conceived as a capacity of an individual to seek synergistic personal relationships across multiple interconnected networks, contexts and activity systems.

The concept of *relational agency* is particularly useful for understanding student learning in infinitely open spaces (i.e. online spaces accessible through the Internet) that facilitate access to globally distributed expertise. A key component concerns the capacity of ‘knowing how to know who’ (Edwards, in press). In cyberspace, ‘knowing how to know who’ would appear to involve a capacity to select particular individuals that might serve to guide, support or advance a personalised learning agenda. However, given the vast numbers of connections to others afforded by web-based communication tools, new demands are made on learners attempting to select potential learning companions and collaborative partnerships. Further, it becomes important to understand how the choice of tool mediates the process of ‘knowing how to know who’ and then mediates the nature of the relationship that subsequently develops. Below several examples serve to illustrate how the identification, recruitment and management of distributed expertise via online communication tools require a range of advanced practices or new media literacies.

Finally, it is important to understand how learning companions exploit CMC tools to coordinate collaborative work. In the post-Vygotskian tradition, the very possibility of communication and collaboration assumes a degree of ‘intersubjectivity’. Trevarthen (1980, p.530) defines intersubjectivity as “both recognition and control of co-operative intentions and joint patterns of awareness” (cited in Rogoff, 1990, p.20). In this respect, intersubjectivity is perhaps not so easy to achieve. It requires members engaged in communicative practice to understand the others’ existing state of knowledge and adjust communication and / or instruction accordingly. Within the Vygotskian framework, this is a prerequisite for effective learning and instruction. In a networked society, learning with others through new media requires a capacity to use digital tools to create and maintain inter-subjective relationships. This might involve sustaining an inter-subjective relationship that has already been achieved or it might involve exploiting the affordances of digital tools to achieve intersubjectivity with disembodied minds.

The concept of intersubjectivity seems implicit in Edward's notion of relational agency. However, what remains under-theorized in existing work on the inter-related concepts of the *ZDP*, *funds of knowledge*, *inter-subjectivity* and *relational agency* concerns the various ways knowledge workers (like university students) might be actively appropriating CMC tools to enhance their capacity to locate, connect and achieve inter-subjective collaborative working relationships with others.

7.2 The emergence of distributed funds of living knowledge from object-orientated collaborative learning activity

The following vignettes tell a story. By assembling fragments from various localized insider perspectives into a narrative account, they attempt to suggest how students: a) appropriate simple CMC tools (like e-mail) to build and sustain a fund of living knowledge; b) nurture and maintain a fund of living knowledge through the creative use of screen-based communicative practices; and c) mobilise a globally distributed fund of living knowledge if and when required to address authentic learning needs. Each section provides a concrete example that describes a particular practice followed by interpretative commentary.

Vignette: Daisy activating, co-ordinating and driving an informal study group

It is not uncommon for students studying humanistic MSc. courses with heavy reading loads to form study groups in preparation for exams. Study groups allow students to divide the workload required to revise topics, assimilate notes and facilitate the assimilation of knowledge through collective discussion. There was a strong tradition of informal study groups in the Anthropology department. Both Daisy and Katrina had participated in informal study groups that students organised in order to prepare themselves for four three hour exams they were required to sit in the same week. Their experience provides some interesting insights into the way simple electronic communication tools mediated the formation of an

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informal learning community. However, it also illustrates the role of pro-active individuals within this collective activity. The following vignette describes Daisy's use of group e-mail to facilitate the co-ordination and management of a study group and how this helped foster an informal community of learners.

Daisy took an active role in establishing a study group. She had collaborated with other students on course work assignments who shared the same supervisor. In order to prepare for exams in the third term, the three of them agreed to meet once a week and share notes and discuss topics. Daisy also recruited two others, a male friend (who she persuaded to defect from a rival study group) and another female friend who, she argued, "could provide different perspectives" because she'd followed a slightly different reading list with a different supervisor. Daisy's supervisor had suggested that previous cohorts of students had formed study groups but played no active role in the formation or management of the group.

After a series of informal face-to-face discussions, Daisy activated the network with a group e-mail:

Hello gang!

Exams are on their way (boo!) so let's get together and work out our strategy! The sooner the better I think. I will be in London tomorrow but how about Tuesday? I assume we will all be at Gellner's lecture at 12 and Jake, I know you have your option from 3 onwards so let's meet at 10:30 at ISCA? That would give us an hour and a bit to chat and figure out what we are going to focus on and how we will divide the work. Maybe it would be good to bring reading lists, etc.? Let us know if you have any better suggestions re: time/location...

See you Tuesday otherwise,

Daisy convened an initial meeting where members drew up a list of essential and non-essential topics to cover and selected preferred topics to summarise. Each student then went away and prepared notes that were shared at the next meeting. This continued at meetings scheduled on a weekly basis.

Individuals were responsible for photocopying notes to facilitate face-to-face discussion at each meeting. In addition to the photocopied handouts, members e-mailed a copy of the notes they had made to the group. This ensured they had an electronic copy for cutting and pasting. There was little need to attach copies of articles as most of the articles were available on *AnthroSource*, a service subscribed to by the university that acted as a portal for the top anthropology journals integrated with older articles on JSTOR (a free electronic archive of old articles)⁶⁵. A few articles on the reading lists were only available on paper. Daisy commented that if an article was not online she was unlikely to read it.

⁶⁵ See: <http://www.anthrosource.net/action/doSearch?searchText=individualism>

The group mail allowed group members to post queries such as, “has any one read Kusserow on individualism?”, or request specific assistance from an individual within the group. Daisy felt she was often the target of such requests, such as the one made by Jake.

Hey, D: I remember you saying how much you liked this topic - would I be able to take a look at your essay on this one? Sorry for bugging you so much...!

xo, Jake

However, it also enabled her to receive critical or supportive feedback from those who read her essays.

hi Daisy,

just read your essay on gender in west africa. it's a good essay, i think, and it was useful to me to supplement my readings on gender (basically piot and ferme).

thanks for sending it. and good luck with your last week's of preparation!

best

Dean

She estimated 10 to 15 postings on the list would be made in-between weekly meetings. However, initially at least she argued that she had to “drive” the process.

Hello everyone!

Am sending more revision notes but not sure who has what or what you need... Also, Daniel and I are meeting Friday 10am to go through some exam questions and try to come up with ideas about outlines...you are all welcome! Hope studying is going well...what a gorgeous day!

Love,

D

As suggested, Daisy also sent out regular updates describing what she had done (including current notes) and encouraged others to do the same. She argued that this helped to “speed things up”, it worked as a strategy to motivate others and thereby motivate herself. When sharing personal essays, students also included comments relating to feedback they had received from their supervisor.

Hi Guys! Sorry for being so absent from everything I've had a few things going on other than studying. Here is my colonial essay though. Beth said: super essay! Thoughtful balanced and well argued. You could take a broader perspective and think about power or colonialism in a very particular or historically bounded version of wider power relations.

This strategy fed knowledge acquired through private conversations into the collective learning process.

This vignette describes an example of the way a simple group e-mail mediated a collaborative learning experience. However, it highlights that a tool facilitated the formation of a personal network which arguably started to function as a ‘fund of living knowledge’ among group members. Members had already started to discuss the prospect of reading and reviewing each others’ dissertations in the final term. Thus, it also seemed to provide the basis of future collaborations.

Importantly, the study group described was not an online community. The medium of e-mail did not displace the cultural practice of informal face-to-face study groups. However, it afforded an additional sphere of learning activity that proceeded in between face-to-face meetings. It formed in response to a specific need (the forthcoming exam) that provided the concrete object-motive for the formation of the study group. However, it was not necessarily experienced in this way by group members. As a potential fund of knowledge, it grew out of

day-to-day conversations and informal collaboration between members of a particular academic department. Indeed, it comprised a very personal network of students who referred to themselves as “friends”.

Nevertheless, the friendships and bonds that started to grow among this community of learners did not necessarily exist independently of the study group. Daisy repeatedly stressed that the activity “bought the group together”. For her, at least, the bonding and camaraderie among course mates was as important as the productivity gains achieved through the division of labour. The posting of regular updates appeared to create a sense of commitment to a collective group activity. This also had a motivating effect. In short, whilst discussion (focussed on the article summaries) took place at the face-to-face meetings, the flow of daily messages helped to create a sense that the group was making steady progress towards a common objective. Further, it afforded members different perspectives on the readings through the discussion. Arguably, the diversity of interpretations and knowledge available enabled members to expand their understanding of the subject matter. Nevertheless, the successful operation of this group appeared to depend upon an individual’s capacity for relational agency. Daisy pulled in additional human resources into a collective group activity, she allowed for the fact that not all contributed to the same degree and took an active role in sustaining the momentum of the group.

7.3 Cultivating and nurturing globally distributed funds of living knowledge with social software tools and away messages

The example described above hints at the way the operation of group study facilitated the formation of a personal bond between some of the group members. However, it doesn’t suggest the way CMC tools might allow individuals to sustain close ties with a personal network of course-mates beyond a particular collaborative learning experience. Engagement in a shared activity, such as an informal study group, provides an arena in which intellectual

relationships are formed. However, other case studies revealed a far less object-orientated genre of practice in which students appeared motivated by a need to remain connected and nurture the intellectual relationships formed through participation in these kinds of non-formal learning activities. Both Edina and Miss Lullaby's use of *MSN Messenger* serves to illustrate the social, personal and affective dimension of group formation.

Vignette: Miss Lullaby working with MSN Messenger always on

Miss Lullaby worked with her *MSN Messenger* always on. This tool included a 'buddy list' entitled 'Uno Folkitos' (see Figure 8.2). Interview revealed that the tool helped her seek 'emotional support' and create a sense of 'solidarity' with other course-mates. It could also be used for self-motivation as a result of the exchange of comments between students regarding their progress on particular assignments. It was not used to discuss academic work directly. However, she used it to create a supportive virtual context and remain connected to a distributed community when working alone in her study room. Whilst demonstrating the use of the tool she remarked:

“...when I'm in the middle of working and I'm feeling frustrated I can just IM someone and say look, 'how's it going for you?' and they'll say, 'I have so many words but having a hard time with this'. Then I realize that it's not me doing something incorrectly, it's just part of the process.”

The tool was not used to discuss academic work directly. However, she used it to create a supportive context when working alone in her study room. For example, during a stimulated response session, she remarked:

“Like right now we're working on our dissertations and you know, I'll say how much work are you getting done each day? How many sources are you using? Are you quoting? You know really general stuff.”

She was not in direct contact with everyone on her taught course through the tool. Indeed, she now only exchanged instant messages with three others who had now become ‘close friends’. Interestingly she stressed that these three course mates already had *MSN Messenger* accounts. When they met, the tool came up in conversation and they exchanged *MSN* screen names. In short, the fact that they were already participants in this online community created an opportunity for these relationships to develop within a virtual sphere mediated by *MSN Messenger* tool. Nevertheless, Miss Lullaby stressed, “but I wouldn’t have that sort of conversation with somebody who I wasn’t beginning to get close to in the first place”. The tool enabled her to bond closely with people she felt inclined to bond with. She commented that the tool “helps us have friendships”, argued that “it helps the normal feel of a friendship” and suggested “it increases the solidarity that we feel with each other”. When asked, “Do you think it has actually improved the quality of your work?” Miss Lullaby replied, “Well, I think it does because it gives me confidence... it helps to know that other people are having the same issues that I’m experiencing”.

In contrast to Miss Lullaby, Edina no longer required a tool to support her through a period of study. However, *MSN Messenger* remained an important tool for sustaining a sense of community and maintaining links with course mates that she would no longer see in face-to-face situations on a regular basis. This is important for understanding how this community may have started to function as ‘fund of living knowledge’ that could be exploited as a learning resource in the years to come.

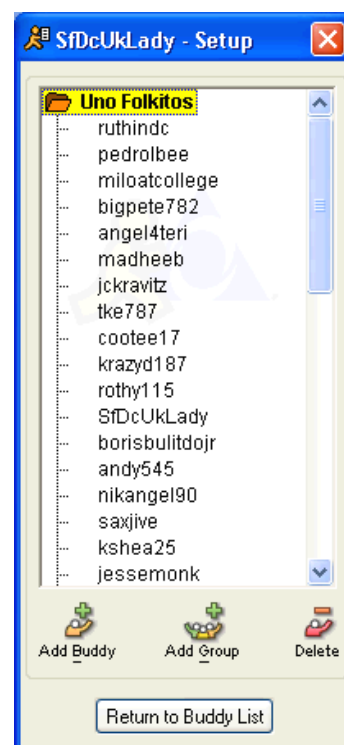


Figure 7.1 Screen shot of Miss Lullaby’s ‘buddy list’

While Miss Lullaby remained highly selective about the people she permitted to enter her personal network, Edina was in contact with most of her course mates through *MSN Messenger*. She liked the way it enabled her to monitor what people were doing. However, for the most part, this was *not* achieved through the exchange of instant messages. Indeed, Edina was mindful of the potential messages popping up on her screen to distract her and choose to “skulk” most of the time: a practice that involves adjusting ‘privacy settings’ so as to appear ‘busy’ or ‘offline’. This allows one to monitor the posts and online status of others (including their ‘away messages’) whilst appearing to be offline. Both Miss Lullaby and Edina regularly scanned others’ away messages and updated their own.

The posting of away messages (visible to all members of her ‘buddy list’) allowed ‘buddies’ to suggest what they were doing at a particular point in time. Edina herself suggested, “It’s also a good way of sending a message to everyone to let them know about the general lie of the land at your end”. She changed her ‘away message’ everyday. At the start of the stimulated response her away message read: ‘Flowers for everyone’. She explained she had been feeling “expansive and generous” that day and laughed. In recent weeks, her ‘away messages’ had changed to reflect her changing mood. She explained:

“When I was writing my dissertation I could just write one line explaining how I felt about things. One day I’d be ‘Refugees traumatise me’ because I was studying psycho-social trauma for refugees. Another day I’d be ‘Send ‘em back!’ which was a kind of joke. But we all call each other different things. When we finished our dissertations I was, ‘It’s over thank God!’”

During the course of the stimulated response, she decided to change her away name to ‘Forced to Migrate’ because she was being “kicked out of her room” at the end of the month. The play on words connoted her field of academic enquiry but also signified that her personal predicament and concern about finding somewhere else to live. In short, she used the ‘away

message' broadcast her changing circumstances and mood to a community who had been very much part of her everyday life.

Significantly, the community that formed around the taught MSc. course was beginning to disperse, move away from Oxford and seek jobs. She was starting to use the tool to monitor the movements, moods and activities of this dispersing community. Further, they were becoming part of a more personal and distributed network with which Edina already maintained links through *MSN Messenger*. Taking me through her 'buddy list', pointing at the screen she provided a short commentary on the movements of this group:

“... he's in Birmingham, he's in France, she's in Spain, she's in Canada, she's in Lebanon, he's in Canada, she's in Lebanon, he's in Reading, he's in Oxford, she's in Canada... her - I have no idea - I haven't seen her online for several years now. [Interviewer interrupts] - “Why does it say, “I am King Kong's Banana!” [Edina responds] yes that's my cousin she always puts up these funny away messages. Yes he's in Greece.”

The comment suggests that her course mates (she had met that year) were now becoming part of a more widely distributed community that also included friends from former courses, friends from school, friends she had made socially and certain members of her extended family. She had clearly started to relate to some of her course mates on a very personal and informal level. Picking out a particular away message that read 'Refugee happy', she smiled and said, 'that's my friend, Alan. That means he's finished his exams'. Indeed, she claimed that she could tell what various friends were doing and how they were feeling just by looking at their 'away messages'.

The vignette suggests that whilst tools like *MSN Messenger* might not support study or informal learning in a direct way they may help to create and sustaining a virtual social context conducive to study. Importantly, they created a sense of community among course

mates who were spending large parts of their day alone in their study rooms working on dissertation assignments. Thus, although the tool didn't facilitate the exchange of information or critical feedback, it did function as a source of motivation and emotional support among a distributed community.

The practice of posting 'away messages' also appeared to foster a sense of belonging to a particular community and provided an efficient strategy to maintain very personal and emotive bonds with a dispersing community. Changing an 'away message' took seconds rather than minutes and was available for all to see. It functioned as a highly efficient means to maintain an extended personal network of loose ties and to nurture a potential distributed fund of living knowledge, in large part because it facilitated one-to-many communication. In this respect, it was far more efficient and less time consuming medium than e-mail, instant text message or even a telephone conversation to nurture a dispersing network. The word play and widespread use of humour, irony and caricature appeared quite normal within this mode of communicative practice. Nevertheless, the community sustained via the use of this medium promised to become a powerful fund of knowledge for all involved.

Edina was seeking a job with a "higher purpose" and was beginning to look for employment in the NGO sector focussing on refugee policy, a world where strong and loose ties with others seeking employment in the same field could become potentially a valuable resource. Indeed, Edina went on to work for the U.N. doing refugee determinations in sub-Saharan Africa. The case study hinted at the way a personal network may have assisted. However, it does not shed light on the process of mobilising this distributed community for more than emotional support. At time of interview, Edina had not yet started to draw upon the distributed expertise of this community.

MSN Messenger was certainly not the only tool that might be used to this effect. Other students used different tools to foster and sustain personal networks. Sue Ellen had migrated

to *Friendster*, a social software tool that she had started to use instead of *MSN Messenger* to maintain links. For the most part, her *Friendster* activities appeared wholly playful and social. The tool included a messenger service but also afforded the capacity to upload, share and tag photographs, write personal ‘testimonials’ about friends and send electronic gifts. Sue Ellen talked enthusiastically about the various ways she used these tools to nurture her personal network. However, she also suggested that she foresaw how this growing personal network might one day become a powerful resource for someone who was intending to return to the U.S. and work in public policy. Katrina resisted using instant messenger or social software tools altogether. Nevertheless, she periodically circulated an update of her life to a globally distributed network of friends using a group e-mail (in effect she used the tool as a personal blog). This appeared to serve a similar one-to-many nurturing function akin to the posting of away messages. Clinton, who treated the challenge of social networking as an essential part of his self-directed training for public office, made extensive use of a ‘birthday reminder tool’. Similarly, Jacqueline made extensive use of *Skype* internet telephony combined with *Skype* instant relay chat to maintain a network of close ties to her friends and family. Towards the end of the study, many started to migrate to *Facebook*, a social networking tool specifically designed to facilitate the maintenance of distributed communities of college graduates that supported multiple personal and ‘just for fun’ networks as special interest groups.

7.4 Mobilising the distributed expertise accessible through well nurtured globally distributed funds of living knowledge

Miss Lullaby had used a range of social tools for many years. Her practice illustrates how a well-nurtured personal network, maintained through social software, might be leveraged as a powerful learning resource or *globally distributed fund of living knowledge*. The following

vignette illustrates how individuals within her personal network were activated to address a specific learning need and escape a double bind.

Vignette: Miss Lullaby activates a personal network of critical friends

Besides being something of an “e-mail junkie”, “chat addict”, and self-confessed “cyber flirt”, Miss Lullaby was a fierce critic of the death penalty. She was following the Social Policy MSc. course with a view to researching and writing about the social implications of capital punishment⁶⁶. Further, although confident when speaking about her academic interests, Miss Lullaby lacked confidence with written work that she felt was often ‘too wordy’ and ‘repetitive’. Over the years, she’d developed an extensive network of ‘critical friends’ who proofed and edited her work. This distributed network of writing partners, proof-readers and critical friends had evolved since her undergraduate days at UCLA and had now become integrated into her general writing strategy.

The course mates with whom she exchanged instant messages about “general stuff” were not necessarily the people she contacted when she required more explicit feedback on the content of an essay. To gain specific critical feedback, editorial advice and assistance with proof-reading, Miss Lullaby typically requested help from friends from “back home” in California. Not unlike Edina, she knew what these friends were doing on a daily basis through browsing their away messages and maintained frequent contact via *MSN Messenger*. However, during the case study a serious learning need arose due to a particular configuration of circumstances.

⁶⁶ After leaving Oxford, Miss Lullaby took a job working for an NGO in Texas. The job involved investigating the backgrounds of inmates on death row in an attempt to find exonerating evidence that might be used by attorneys to overturn sentences or more typically to stall execution dates.

A deadline for the submission of her dissertation was looming. However, her academic supervisor was often overseas as part of her job and had not responded to several e-mails. Miss Lullaby found herself in a double bind. However she had already started to activate members of her personal network to escape it. Two former associates, on her 'buddy list' but in this case contacted by e-mail, had agreed to read her paper. She had selected a "subject specialist" - whom she knew from her undergraduate days - and a "non-specialist" for the task. She summarised her rationale thus:

"I've got two people who are going to look at it for me. One who is a specialist in the field and one who doesn't know anything about it. He's just going to look at it as well. It's sometimes good to have someone who doesn't really know the field so they can look at it and question whether you are really explaining things well enough. So that someone who is a novice can pick it up and really understand you're argument. So I really like it when someone reads a paper of mine before I submit it who doesn't have any experience with the topic at all."

Both reviewers also agreed to use the track changes facility in *MS Word*. Unlike Edina, Miss Lullaby had used this tool routinely for a number of years. In general, she felt that this encouraged reviewers to provide more specific and detailed feedback. Moreover, she liked the option of either rejecting or accepting the changes with a click of the mouse. In her estimation, by asking her critical friends to use the tool she was increasing the probability of receiving focussed and detailed feedback and reducing the time it would take her to make the corrections.

The success of this strategy depended a great deal on her ability to maintain and develop her personal network of critical friends. She had built a distributed team consisting of over a dozen potential reviewers and was constantly seeking new recruits. One such recruit was Paul, a medical doctor, whom she found 'exceptionally good' at providing critical scrutiny on her interpretation of data she'd collected on the healthcare system. Building her network with specialists like Paul over time enabled her to spread the burden of requests and elicit

particular kinds of specialist feedback if and when required. However, finding people whose opinion she trusted and respected on her particular topic, which was becoming increasingly more specialised, posed considerable difficulties. In these cases, reciprocation became particularly important. She considered it a duty to provide a similar service to any of her critical friends. However, this created additional tensions and concerns.

On one level she felt “honoured and privileged” when asked to review the work of a friend because it signified that they trusted her opinion. Further, she felt she had learnt a great deal from the peer review process:

“I learn about different styles of writing of academic work. I think that you can become very accustomed to doing things in a particular way. And so it’s good for me to see work in progress, and see what that progress is like... and how someone is choosing to structure their paper. It’s interesting to look at the logic behind papers sometimes.”

The comment suggests that she was learning through the peer review process, intently studying the ‘structure’ and ‘logic’ of her friends’ essays. However, exposure to the work of others had become a problem with one ‘critical friend’ whose style she’d started to imitate. At times this undermined her confidence in her own style. She suggested that she felt as if she were losing her own ‘sense of self’. Moreover at times she worried whether her work was really her own. This same over immersion effect had created considerable tension with another a female ‘critical friend’ with whom she’d had a long collaborative writing history:

“Yes, I have a very close friend who hates looking at my work, because every time she sees it she feels that there is something wrong with her own work. She doesn’t like to read people’s work because she doesn’t want to second guess her own work. So whenever I ask her to look at something we always get into an argument about it. She’s like the only person I’ll ask to look at my work sometimes because I really trust her judgement on it. So - but she hates it.”

In short, despite knowing that her close friend from undergraduate days “hated” reviewing her work, Miss Lullaby felt she had every right to demand assistance.

In this example, Miss Lullaby’s need to mobilise members of her personal network had arisen due to the absence of her supervisor. Miss Lullaby suggested that, in the past, she had routinely called upon members of her personal network (maintained principally through *MSN Messenger*) to provide feedback and proof-read her work. Nevertheless, she suggested that, over time, this process was helping her internalise the knowledge and expertise of her distributed community of learning companions. When asked if she had become dependent on this strategy she responded:

“Well actually, I’m becoming less dependent because I don’t seek help as much as I did before. At my university, my undergraduate university, there was a thing called the writing centre and you could make appointments with professors who would look over your work. It could be a letter; it could be a huge paper. I would make appointments; I would have an hour consultation about my work. It was easy to get access to professional proof readers basically. But here, because there is no such facility, I feel like I’m not typical in asking for assistance, I’m almost embarrassed to ask for help from my course mates here. Because they wonder what it is that I’m so nervous about.”

Thus, the distributed personal network of peer reviewers seemed to function in a manner akin to the writing centre at her previous university. It compensated her for the absence of the powerful resource of which she had made extensive use as an undergraduate. Access to CMC tools had allowed her to become less dependent on a particular writing centre and develop a distributed fund of reviewers and proof-readers that she actively managed and controlled. It seems that the burden of responsibility for supporting written assignments had shifted from the writing centre at UCLA and her current supervisor to this self-regulated and self-managed distributed affinity group of critical friends. In this respect media change had allowed her to become a more independent learner, to break away from the provisions the university

provided and to take control of her own learning curriculum. In short, she had taken ownership over the tools and human resources she needed to produce a written assignment and thereby become independent on the human resources accessible through her academic department.

In understanding how and why students developed these strategies several factors need to be considered. Miss Lullaby serves as an exemplary case in this respect. She had: a) a very long history of Internet use⁶⁷; b) an authentic learning need (i.e. difficulties with writing); and c) access to a distributed community that afforded a means of support that she could activate without her supervisor or anyone on her course becoming aware of her writing difficulties. Finally, her extensive history of CMC use for social purposes seemed to have sensitised her to the various ways CMC tools could be used to maintain and activate this distributed community.

The practice of drawing on distributed communities of ‘critical friends’ did not seem representative of the group. However, other students demonstrated a capacity to exercise relational agency in different ways with different tools. ZeroGBoy regularly sought advice from his mother regarding application forms and career planning via e-mail. Anastasia maintained a link to her former supervisor in Romania via e-mail and regularly received advice and guidance. Interestingly, Ardash started e-mailing drafts of thesis chapters to specialists working in his field requesting they read them and provide feedback. He complained that they often failed to respond. It appears that he had not invested time

⁶⁷ Miss Lullaby had visited internet chat rooms from an early age and used e-mail on a daily basis for as long as she could remember. She now used multiple e-mail accounts, checked her e-mail multiple times an hour and also made extensive use multiple instant messenger systems.

cultivating and nurturing the relationship prior to making a request for assistance. This merely emphasises that a capacity to mobilise the distributed expertise accessible through a globally distributed fund of living knowledge requires extensive preliminary nurturing work.

In summary, these examples illustrate how funds of living knowledge start to form through participation in object orientated group activities. They show students using CMC tools to sustain these personal networks as they begin to disperse. Further, they illustrate how some advanced agentive learners might be exploiting CMC tools to build more enduring and robust globally distributed funds of knowledge that they take with them when they migrate across institutional contexts. Finally, they illustrate how a student might proactively mobilise small subnet work to escape a double bind situation.

7.5 Globally distributed funds of living knowledge and new media literacy

All examples suggest that the Internet opens up new opportunities for relational agency, conceived of as ‘an ability to seek out and use others as resources for action and equally to be able to respond to the need for support from others’ (Edwards, 2004, p.149). The kind of interactions and collaborative exchanges initiated by students were not ongoing. Indeed, the subnetworks they drew upon tended to pulsate, remaining dormant for periods of time before springing into a flurry of activity for particular purposes (i.e. proof-reading, critical feedback or finding a job). Nevertheless, they grew out of on-going participation in a virtual ‘social setting’ mediated by social software tools that functioned in a capacity akin to Moll *et al.*’s ‘household’. Once established, these globally distributed funds of living knowledge afforded students new opportunities to move in and out of zones of proximal development through the resourceful exploitation of the cognitive resources of other minds.

The nurturing practices highlighted above should not be considered independently of a capacity for activating distributed expertise. Game theorists, often citing the prisoners’

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dilemma experiment (Poundstone, 1993), have stressed the logical benefits of collaboration. A willingness to subscribe to an *ethic of reciprocity* certainly appears to be an important prerequisite for the effective collaboration among distributed communities. Nevertheless, this may radically underestimate the degree of social and emotive bonding involved. Miss Lullaby's insistence on making demands on a former classmate who supposedly 'hated' editing her work is revealing. The bond, or obligation, that existed between the two appeared to resemble the kind of obligations that exist between the members of extended families that inspired Moll *et al.* (1997) to develop the notion of 'funds of living knowledge'. Indeed, the personal networks that formed through tools like *MSN Messenger* consisted of heterogeneous groups from multiple lifeworld communities, past and present. Thus, it may be misleading to think in terms of *online* learning companions. For the most part, these personal networks were forged through shared lifeworld experiences (taking courses, preparing for exams, graduating together and going to college parties). In this respect, it may be more reasonable to account for the *ethic of reciprocity* in terms of an emotional bond forged through shared experience like participating in an informal study group.

This draws attention to what might seem like rather trivial and playful practices: the posting of humorous away messages, the sharing of i-tunes music files, the use of instant messenger emoticons, the sending of e-birthday cards, the writing of testimonials on the *Friendster* community site and the exchange of electronic gifts among members of social software communities. Indeed these practices appear to play an important role in creating a sense of community and obligation among members of distributed personal networks. In short, they can help to transform a list of contacts into a globally distributed fund of living knowledge.

Knowing how to know who in new mediascapes

Knowing how to know who might be able to assist with a particular task is a prerequisite for the exercise of relational agency (Edwards, in press). Within the context of distributed online

communities, given that the number of accessible potential collaborators multiplies, *knowing how to know who* has become an increasingly important aspect of new media literacies for students in the networked university. However, as students and academics increasingly make more information about themselves, their work and current activities available online, new opportunities are also emerging for learners to seek out and assess the likelihood that particular individuals will be able to provide the assistance or expertise required to address authentic learning needs. Both Ardash and Edina reported e-mailing academics who published in their respective fields directly to ask for advice having researched their research interests on the web. Similarly, although Miss Lullaby had met her medical friend ‘Paul’ through a social engagement, she had discovered more about his work through looking at his webpage; information that seemed influential in her plans to recruit him into her distributed work of critical friends. In this respect, *knowing how to know who* in the new media age involves a capacity to exploit CMC tools and the Internet to optimise one’s knowledge of potential collaborators.

Knowing how to know who also requires learners to estimate the likelihood that a potential collaborator will respond and commit to providing assistance. Daisy could depend on the fact that all her course mates were motivated by a shared and very concrete object-motive (i.e. the formal examination). Edina and her dispersing community of former course mates shared a loosely defined complex runaway object (seeking employment in a specialised field). Similarly, Clinton’s growing network of ‘politicos’ had a mutual interest in assisting one another to advance their careers in the world of public policy. In this respect, *knowing how to know who* requires an understanding of the object-motives of collaborative activities that potential collaborators are engaged in.

However, others appeared to rely on strong emotional ties to leverage assistance from others. For example, ZeroGboy drew heavily on his mother’s knowledge and expertise because she

was emotionally invested and committed to assisting in helping to advance his career. Miss Lullaby's request to the friend who 'hated' reading her work could be read as an example of relational agency in a state of disrepair. However, this would perhaps underestimate the amount of nurturing work previously invested. The sense of obligation between these two life-long learning companions appeared deeply embedded in this ongoing personal friendship, forged during their time together at UCLA as undergraduates and maintained, for the meantime, with the aid of *MSN messenger*. Indeed, the sense of obligation between the two appeared comparable to that between ZeroGBoy and his mother. In this respect, *knowing how to know who* involves a capacity to estimate the degree to which a potential learning companion is emotionally invested and feels a sense of obligation to responding to a request for assistance.

Achieving inter-subjectivity with remote learning companions

Once recruited and mobilized, the virtual context demanded that learners found new ways to establish inter-subjectivity with remote learning companion. Both Edina and Miss Lullaby had used the *track changes* tool to elicit feedback and assistance from course mates. Edina had found feedback provided in this way so useful she was now encouraging her supervisor to use the tool to provide feedback on drafts of her dissertation. She argued that the process of flagging up problems with 'comments' and making editorial suggestions with non-destructive editing tools afforded a far more efficient and effective way to focus discussion on a piece of written work. However, in the absence of visible facial gestures and bodily movements (that remain central to Rogoff's (1990) work of 'intersubjectivity' between toddlers and care-givers), there appears a need to signify one's emotional state to others when engaged in collaborate work mediated by online tools. The expressive use of emoticons, or poetic 'away messages' such as 'Flowers for everyone!' that conveyed mood and affective state seemed important in this respect. Indeed, the expressive use of new media to communicate emotion and affective states may have an important role to play in the formation of intersubjectivity

between remote learning companions and should be considered an important new media literacy.

7.6 Learning with others: emergent tensions and contradictions

The new possibilities afforded to create and maintain distributed funds of knowledge, exercise relational agency and resource the expertise available through the Internet remain possibilities. However, with new possibilities come new tensions and contradictions. This has been suggested implicitly in the vignettes. Here the emergent tensions associated with this broad genre of practice are abstracted and brought to the foreground for analysis.

Edina's 'skulking' strategy testifies to some cases in which these extended personal networks threatened to become a considerable source of distraction. Several of the male students deactivated or uninstalled instant messenger systems for this reason. In addition to the disruptive impact of pro-active intelligent agents, pop-ups and e-mail alerts, connections to others can place additional demands on learners' capacity to self-regulate their own attention. Indeed, since students' identities are at stake, the pressure to participate or respond to a request for assistance might be difficult to resist. It is easier to ignore a message from an automated alert bot than a request for assistance from someone who you might bump into at next week's research seminar. Further, these kinds of requests might be received at anytime of the day. Again, this alerts us to the loss of enabling constraints in traditional learning environments like libraries that protected learners from attempts by others to usurp their agency.

In addition, learners are confronted with an *anxiety of choice* when attempting to maintain and manage extended personal networks. They must make decisions about who to include in their 'buddy list', what privacy setting to select in the *MSN Messenger* 'options' or *Facebook* 'secrecy' facilities and which tools to use to maintain relationships with others. Advanced practitioners, like Miss Lullaby, had become mindful about who they recruited into their

personal networks, who to contact for assistance when need arose and which tools to use to communicate with different people for different kinds of purposes. As the capacity to maintain and nurture extended personal networks with multiple social technologies grows, additional choices must be made and invariably made alone.

The new possibilities afforded to learn and internalise the knowledge and expertise of remote learning companions also appear in tension with the threat of becoming overly dependent on the knowledge and expertise of others. Tools, like *MS Trackchanges*, used extensively by Edina and Miss Lullaby, appear to facilitate the formation of intersubjective writing partnerships – guiding and focussing a collaborative writing task in a way that might facilitate the transfer of expertise between writing partners. Nevertheless, a capacity to self-regulate or (to modify the scaffolding metaphor) *self-fade* the level of assistance required appears important to assist progression towards autonomous performance, if indeed, autonomous performances is regarded as desirable.

Finally, tensions and contradictions are created by the rapidity of media change. Now that social networking tools have become identified as a potentially lucrative source of business in the attention economy, developers compete to offer services that encourage users to migrate to new networking services. A major migration from *MSN Messenger* to *Facebook* occurred towards the end of the study. Services such as *Google*, *Yahoo*, *AOL* and *Skype* also offer free community building tools. Each service attempts to tie its existing users into the community it supports. Students with long histories of Internet use invariably end up with multiple social software accounts. Moreover, membership tends to accumulate as they crossed institutional contexts. Nevertheless, tensions invariably arise. For example, whilst both were avid users of instant relay chat, Edina complained that she could not “IM” Sue Ellen because she used *AOL Messenger* as opposed to *MSN Messenger*. This suggested that a students’ capacity to access a distributed fund of living knowledge is dependent upon their membership in virtual

communities supported by particular social software tools. Furthermore, some students, like Peter and Ishani, were not even aware of the existence of dedicated social software services like *Facebook* that now support thousands of Oxford University clubs, societies and research groups. In this respect, there appears to be a danger of a new form of digital divide opening up between those who do and those who do not have access to globally distributed funds of living knowledge through social software technologies.

Summary

This chapter started by arguing that we need to look beyond electronic seminar spaces and online discussion forums established by course tutors to understand the full implications of media change for computer supported collaborative learning. It certainly lends weight to Säljö's (2004, p.227) assertion that new media contributes to the creation of 'new arenas to communicate in, and new virtual contexts to develop in'. Indeed, it illustrates some of the ways that selected individuals from among a group of advanced agentive learners are appropriating the freely available 'instruments for sharing our mental abilities' that Lévy (1997, p.9) had the foresight to identify as the 'most socially useful goal' for which new technologies might be appropriated. However, this assemblage of localised insider perspectives simply scratches the surface and illustrates a few of the informal learning possibilities associated with the creation, nurturing and activation of distributed funds of living knowledge supported by social software and CMC tools. At the very least, these examples suggest that collaborative learning in online spaces purposefully established by tutors to support formal courses of study may be relatively insignificant compared to the complex hive of informal learning activity, supported by freely available CMC and social software tools. Moreover, it suggests the need for considerable investment in further research that will be required to understand the full implications for the future of (self) education.

Chapter 8 Group Life: learning with others through participation in online affinity spaces

In an affinity space, people relate to each other primarily in terms of common interests, endeavours, goals or practices, not primarily in terms of race, gender, age, disability or social class. These latter variables are backgrounded, though they can be used (or not) strategically by people if and when they choose to use them for their own purposes if and when they choose to use them for their own purposes (Gee, 2005, p.255).

The previous chapter explores how learners leverage the distributed expertise accessible through well nurtured globally distributed funds of living knowledge. This chapter moves beyond the concept of a distributed fund of living knowledge to explore how learners leverage the distributed expertise accessible through online affinity spaces. Crucially, unlike the extended personal networks described in Chapter 8, online affinity spaces allow individuals to leverage the distributed knowledge and expertise of others who share very specific interest but may have little else in common. Moreover, one can benefit from participation in an affinity space without necessarily needing to invest time in building, maintaining and activating a personal network. As Gee notes, in affinity space ‘people relate to each other primarily in terms of common interests, endeavours, goals or practices, not primarily in terms of race, gender, age, disability or social class’ (2005, p.225). This suggests that an individual’s capacity to leverage the distributed knowledge and expertise accessible through affinity space is unlikely to depend on prior participation in a particular life-world community.

Indeed, the concept of affinity space provides a powerful heuristic for understanding collaborative and communicative practice in the networked university. Gee's formulation of the concept is closely coupled with a particularly mature kind of affinity space - 'fan' sites of popular commercial video games such as *Age of Mythology Heaven* (AOM Heaven) as shown in Figure 8.1⁶⁸.

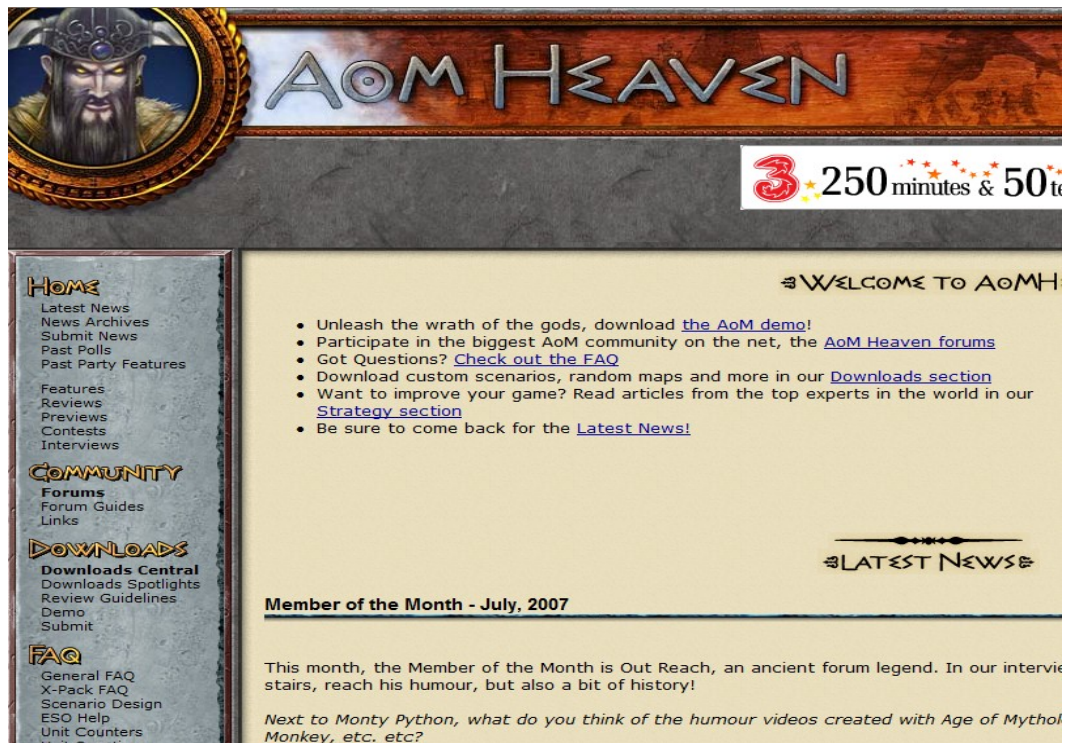


Figure 8.1 Screen shot from *Age of Mythology Heaven* (fan site)

Video game fan or community sites allow thousands of fans to meet up, share and celebrate their gaming experiences. Tools and service integrated into these online spaces allow

⁶⁸Gee's treatment of the affinity space concept is based on a reading of chapter 6 of *Situated Language and Learning* (Gee, 2004) and a chapter contributed to Barton and Trusting (eds.) *Beyond Communities of Practice* (2005).

participants to read news and interviews, share reviews, hints, tips, upload artwork, download demos, find playmates and organise online tournaments. Whilst gaming fan sites provide a powerful (if somewhat exotic) example of a mature affinity space, they are not representative of the variety of affinity spaces emerging on the web. A screen shot from *Yahoo Groups*, one among many dedicated web-services that support the formation of online affinity groups, suggests the diversity of interests now catered for (Figure 8.2).

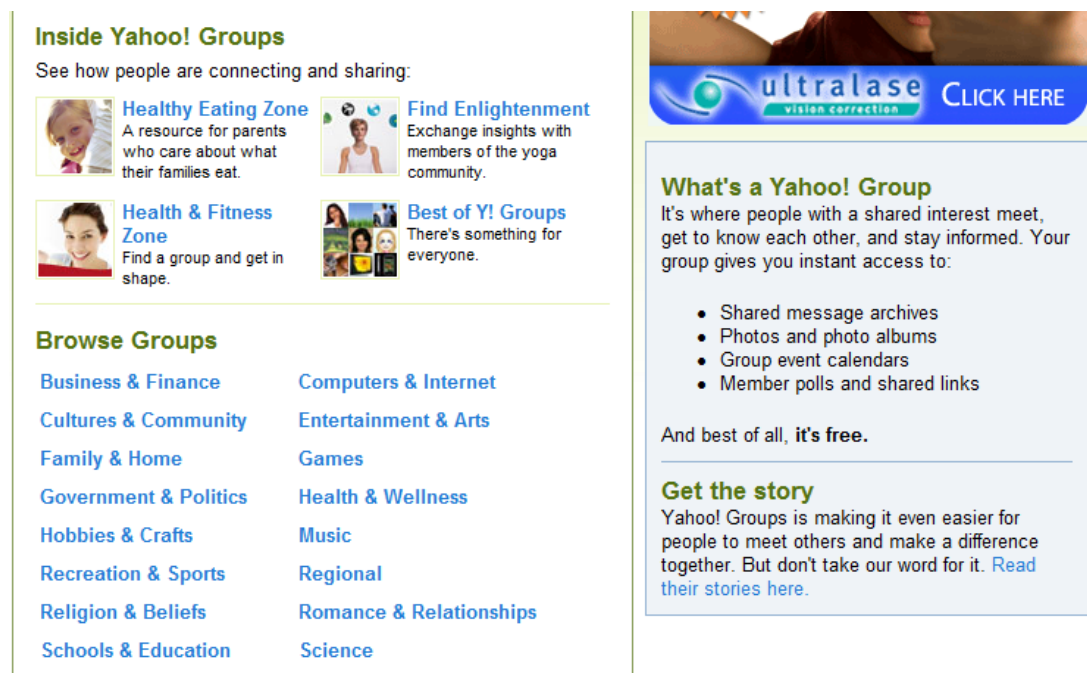


Figure 8.2 Screen shot from *Yahoo Group's* front page

These include interests as diverse as 'business and finance', 'health and wellness', and 'religion and beliefs'. Members can use these spaces to share messages, browse through archives, upload photos, share links to further resources and monitor a group calendar. In this chapter, the purpose is *not* to document the range and diversity of affinity groups emerging across the mediascape. This is an almost impossible task given the rapidity of media change. Rather, here an attempt is made to understand how advanced students are engaging in affinity

group culture and exploiting this emergent cultural form as a powerful resource for independent learning or self education.

8.1 The concept of an online affinity space expanded and critiqued

Gee (2005, p.233) argues that ‘affinity spaces are a particularly common and important form today in our high-tech new-capitalist world’; a statement that resonates with Engeström’s (2006, p.332-33) assertion that ‘agency and collective intentionality may be taking on interesting new qualities in the context of network and post-network organizations’. Indeed, unlike life-world communities of practice in which a learner invariably starts as an apprentice and progresses towards a position of mastery. In an affinity space, experts, specialists, novices, ‘rookies’ and those with a fleeting interest might enter, participate, leave or lie dormant for long periods of time and then re-engage for a very specific purpose. According to Gee (2005, p.228) there are ‘multiple different routes to participation’ and ‘lots of different routes to status’ in online affinity spaces. Moreover, unlike communities of practices (that might be controlled by a centralised authority figure), in affinity space ‘leadership is porous and leaders are resources’ (Gee, 2005, p.228).

Affinity spaces are not new. University clubs and societies allow people with similar interests to connect, share and engage in shared endeavours. Traditionally, these collaborative activities were mediated by monthly newsletters and memos posted in pigeon holes and face-to-face group meetings. Online affinity spaces can support participation on a massive scale. The scale of participation is not constrained by physical resources such as the size of a meeting room or the budget for printing and disseminating newsletters.

Affinity spaces evolve over time as a result of the participation of members. In this respect, they typify Jenkins’ (2006b) *Participatory Culture*. Unlike traditional websites that are typically designed by a single web developer, much of the content within affinity spaces is produced by the participants themselves. With reference to the *AOM Heaven* affinity space,

Gee (2004, p.85) highlights the fact that ‘fans create new maps, new scenarios for the single-player and multi-player game, adjust or redesign the technical aspects of the game, create new artwork, and even give tutorials on mythology as it exists in the game or outside the game’.

Finally, Gee stresses that affinity spaces are not confined to online interactions, they lead to various spin off activities. For example, Gee (2004, p.84) argues that *AOM Heaven* ‘encourages people to learn about mythology in general, including mythological facts and systems that go beyond the AoM game itself’. From a socio-cultural perspective, this amounts to highlighting the fact that an affinity space serves as a mediator, not unlike how the social software tools functioned in the capacity of a virtual ‘household’, that facilitates the emergence of distributed, collaborative activities and affords individual participants new opportunities to exercise relational agency, form relationships, seek out potential learning companions and collaborators and learn from the distributed expertise of others available.

Researching students’ participation in online affinity space

Gee’s conceptualisation of online affinity spaces is deeply indebted to the tradition and terminology of social semiotics. For example, he argues every social semiotic space can be viewed ‘internally as a set of signs (a type of content) and externally in terms of the individual and social practices in which people engage in respect to the set of signs’ (Gee, 2005, p.218). However, his analysis tends to infer the kinds of practices afforded from analysis of what he calls ‘social semiotic spaces’. In short, his analysis tends to remain on the screen. There remains a need to understand why people join and start to participate in online affinity groups and a need to understand the various modes of participation that individuals might adopt.

Investigating learners’ participation in online affinity groups poses considerable challenges. If one starts to analyse an affinity space with a focus on the user generated content, there is a danger that the practices of active participants will eclipse the activities of those who spend time in affinity spaces but rarely contribute or remain passive or dormant participants. In

short, this could lead to a distorted understanding of why and how people use affinity groups in everyday life. The approach adopted here avoids this problem. Unlike Gee's attempt to understand fan sites, here the analysis focuses on how individuals engage and participate in a variety of online affinity spaces to serve their purposes. In short, here the aim is to understand how and why individuals appropriate a variety of affinity spaces during everyday university life to advance personal learning agendas.

8.2 Advanced learners' participation in online affinity spaces: four localised insider perspectives

When selecting vignettes to present for illustrative purposes, the challenge is to find examples that illustrate students participating in affinity spaces to address authentic learning needs. The vignettes illustrate how individuals with very distinctive identities and personal learning agendas are breaking away from a dependence on traditional lifeworld communities and resources accessible through the traditional university and creatively appropriating these spaces as a learning resource. The examples focus on the practices of four high-end users and juxtapose a variety of examples. This selection strategy was adopted because it highlights how students' participation in group life needs to be considered in relation to students' emerging sense of self, rather than as a means to advance a formalised learning agenda related to formal accreditation.

Vignette: Timothy 's participation in the MRI Crow and co-dependency affinity groups

Timothy frequently leveraged the expertise of an affinity group who used the *MRI Crow* brain image analysis tool. According to Timothy, 'thousands' of brain image researchers working in hospitals and research centres from all over the world participated. The software developers had set up a help website and listserv for people who used the tool. This allowed users to upload and share *Visual Basic* scripts and post questions (or provide answers to questions)

when they encountered a particular problem. He himself had become wholly dependent on the group. Participation in the group thus appeared embedded in the life-world of a highly specialist academic research community. Few of the participants were ever likely to meet each other in a face-to-face context except at international conferences. In this respect, the group was massively dispersed and relatively invisible to non-participants. Indeed, Timothy had only found out about the group because his supervisor had said, 'you ought to join this group' when he started to ask about a specific problem he was encountering. Previously, he had 'no idea of its existence'. Timothy had little understanding of the majority of posts that were made to the group. An extract of stimulated response suggests his attitude and the peripheral position he adopted with respect to the majority of posts:

[Timothy is looking at an e-mail sent to him concerning the brain imagining software. He laughs and reads out the example.]

T So I haven't got a clue what that's all about. Look at the response. I'm meant to know this [reads out the response. Laughter]. This is why I e-mail individually for help.

RF So this is just an example. So you feel completely alienated by the examples that these people use?

T So you see why I don't normally like my work?

RF So what would you normally do? Delete these? Do you actually bother to read these?

T Not anymore, if I see something with a title I recognise I just don't – it's all gobbledygook.

RF Where did the reply to that request come from?

T The reply was from the guy who helped to write the software and that girl was from Texas.

RF So this is a globally distributed group. And this Mark guy, the guy who actually wrote the software and is providing this level of support. He's not getting paid for it, but it's essential just to promote their product?

T Yes, well, at the moment it's freeware because it's in the development phase, but it will eventually be sold and it will be worth hundreds of pounds per computer.

RF So this level of support that they are providing is important to build a community of users?

T Absolutely.

Timothy was clearly not actively engaged in the community; he felt alienated by the technical jargon. Nevertheless, he depended on the membership of the affinity group to seek advice and solve problems as they arose. He monitored the postings of others in case they touched upon a problem he was encountering and posted requests for assistance when specific problems arose. He commented, 'I often asked questions about how I integrate a piece of code I've got with the scanner software'. On one occasion, he uploaded the 'buggy' visual basic script he had written and described the problem in a text box integrated into the site. He received an e-mail response with a solution the next day.

Most of the responses to requests for help came from members of the development team. Nevertheless, increasingly advanced users had started to respond to requests for help. Timothy had only responded to a request for help on one occasion. He actively avoided becoming too involved and felt alienated by the technical jargon. He stressed, I 'really am a novice, I don't speak the language and erm... I'm not afraid to look stupid but I really feel that when I speak to the people on this list I can't speak their language so I avoid it basically because people will blow you out actually if they feel you are a novice'. Interestingly, on the one occasion he did respond to a request for help, he e-mailed the requester directly. He argued that he assisted because he could tell by the way she phrased the question that she herself was a novice who wouldn't understand the technical jargon used by advanced

practitioners. He chose to e-mail her directly, rather than post to an open forum because he wanted to assist, but did not want to expose himself as a novice user. In short, his desire to remain relatively anonymous constrained his level of participation.

Timothy did not play games, participate in chat rooms, use instant messenger or participate in the kinds of activities that are typically associated with digital subculture. His use of the Internet in general and participation in affinity spaces in particular tended to be driven by authentic need. He reached out through the net to find resources (including other people) if and when required to address these needs. For example, in interview he discussed participating in an affinity space for people who suffered from a condition known as co-dependency.

Co-Dependents Anonymous - UK

- About CODA
- About Co-Dependency
- Further Info
- CODA Meetings



NEWS UPDATE - August 2007

Members of the IMG please could one of you [contact CoDA UK](#) to confirm if this group is still open.

Women's CoDA Retreat 31st August-2nd September 2007 [Download the booking form here](#). Please note that the closing date for payments is now 20th August.

The next **London & SE Regional meeting** is on **Tuesday 11th September** from 7-8.30 in London. Details on the [events page](#).

Sponsorship Workshop Sat 17th November 2007 10am-4pm Waterloo Action Centre, London SE1. Help with tea and registration needed. Volunteers please contact Victoria 07949 739821 More details on the [events page](#).

About CoDA UK - information for newcomers

Co-Dependents Anonymous (CoDA) is a set of informal self-help groups made up of men and women with a common interest in working through the problems that co-dependency has caused in their lives. CoDA is based on AA (Alcoholics Anonymous) and uses an adapted version of their Twelve Steps and Traditions as a central part of its suggested programme of recovery.

To attend CoDA meetings, all you need is the willingness to work at having healthy relationships. This means that all kinds of people attend meetings. Individual members can and do have differing political, religious and other affiliations, but since these are not relevant to the business of recovery from co-dependency, no comment is made about them.

REGISTER HERE

To receive news about CoDA

Email Address

Figure 8.3 Screen shot from *Co-dependents Anonymous*

He started participating in this space following a relationship breakdown. The story is conveyed through selective extracts of interview transcript:

T: Approval from other people was my sole source of self worth so I would get to a stage where I would literally do my own assessed essays and my projects in as few hours as possible - until two then I would go down to my girlfriend's flat, get her out of bed (because she was depressed) and literally write all her essays for her. She was in the year below me in psychology. And she was using that, abusing it completely, and erm as a result I missed the 1st that I was predicted and because of the time I spent like that she dumped me in quite a callous way really and I had a massive sense of loss and started questioning what I was doing and what had I become then someone - not a close friend - said you are doing all this and you think you're helping someone but you're not and you are not doing yourself any favours because you're very co-

dependent. So I searched co-dependency on the Internet and I found a website *Co-dependents Anonymous* ... it was saying - if you have 3 out of 12 or maybe 18 of these personality traits then you have a problem and I had all of them. It was me on a page.

He joined the site and immediately met people who had been through a similar experiences. Most were much older and Timothy felt, 'a bit out of place'. Nevertheless, he listened to what they had to say, adding: 'It could not be otherwise, I had to rely on their attention and kindness to build myself back up again'.

In this case, the Internet enabled Timothy to quickly find a distributed community of anonymous others who identified themselves as co-dependents and enabled him to explore his own self-diagnosed emotional problems with those who were likely to be sympathetic. In this respect, the group afforded a free and very private form of therapy that allowed him to gain the support he needed without making demands on friends or family and without making recourse to professional help through the university counselling services.

Combined, the two examples suggest how an individual might start to participate in an online affinity space for very different reasons. However, in both instances participation in the affinity space allows the individual to address an authentic learning need. The first mode of participation is motivated by the need to solve a technical problem; the second is motivated by need to talk through self-diagnosed psychological condition. Both needs were addressed by connecting to a distributed community of anonymous others who shared or had experienced a similar problem.

The next vignette illustrates how an individual might participate in a variety of affinity spaces to expand a broad range of intellectual interests.

Vignette: Ardash: Left In, Academci, Chess Base and Aids India

Ardash liked the relative freedom of the Oxford DPhil. programme, compared to more structured PhD. programmes offered in the U.S. He argued that it gave him time to read widely and expand his general knowledge beyond the confines of his research topic. He was possibly the most active participant in multiple affinity groups of all the participants. These included: *Left In* (a discussion forum for ex-Harvard Democrats); *Academci* (a service purposefully designed to support multiple academic special interest groups); *Chess Base* (an affinity space for chess enthusiasts); and *Aids India* (a *Yahoo Group* for people interested in Aids research). His mode of engagement in each of these groups is described below.

Ardash described *Left In* as a Harvard based affinity group for young Democrats dedicated to shaping the vision and policy direction of the Democratic party. Participants submitted leftish articles from different sources and discussed pertinent themes online. Ardash joined the group after a friend (who acted as a moderator) had said, ‘why don’t you just be a listener on it and you’re welcome to contribute at any time’. Recently, he had been involved in a discussion that aimed to develop a vision for the Democratic party of the year 2020. All members were Harvard alumni or closely connected through personal networks. However, many, like Ardash, now lived, worked or studied in other countries. In this sense, the group remained exclusive and somewhat embedded in the lifeworld of his former university. Ardash complained that it tended to be dominated by a small insider group that often ‘blazed out’ infrequent posters. He had grown somewhat fed up with the dominance of the group by a small ‘insider group’ and was considering unsubscribing. Nevertheless, he could not bring himself to do so.

Ardash joined *Academici*, an online service dedicated to facilitating collaboration among academics with specific interests working in different institutions. *Academici* introduces itself as a ‘global resource providing a web-based environment in which knowledge workers can

interact, collaborate, transfer knowledge and conduct commerce with each other, with commercial and governmental organisations'. The space supports shared bookmarks, lists events and conferences, online forums focussed on specific topics and special interest groups. As such it mediates knowledge sharing among a globally dispersed community of academics who shared specific interests. As an affinity space, it transcends institutions and facilitates knowledge sharing across research groups (see figure 8.4). The affinity space itself persisted beyond the contributions of any particular individual over years. Further, whilst individual groups within the *Academici* affinity space might pulsate and die, new groups emerge on a weekly basis.



Figure 8.4 Screen shot of *Academici* front page

The service is clearly designed purposefully for the task of supporting globally distributed affinity groups of academics with very specific interests. However, Ardash commented that

despite an initial period of excitement about the peer learning opportunities it might afford, he struggled to find any groups that related to his interests and that supported a lively exchange of ideas. At the time of interview he said he made no use of it. Nevertheless, he remained a member and occasionally searched through the groups to see if anything new or interesting caught his interest.

In contrast, Ardash had become a very active participant in *Chess Base*. This space offers an example of a mature advanced affinity space that serves a globally dispersed community of chess enthusiasts on a massive scale. Unlike the *Left In* group, the site is non-exclusive and open to anyone with an interest in the game. The site persists as individual levels of participation vary and allows people to find players of a similar ability level who have time to play and fellow enthusiasts to share and discuss chess news.

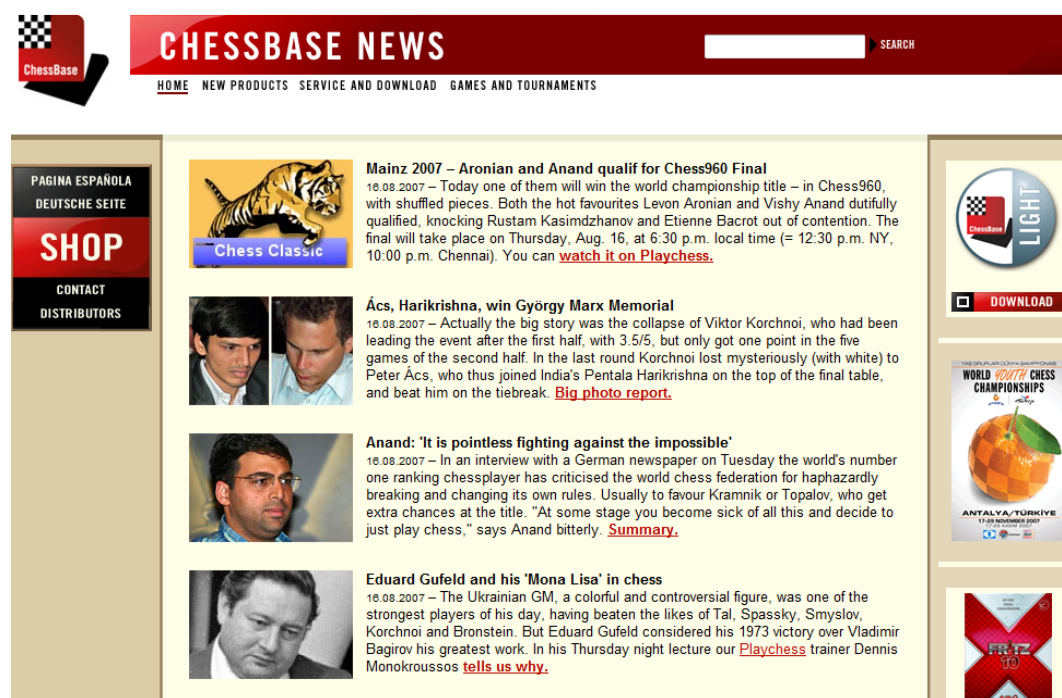


Figure 8.5 Screen shot from *Chess Base* home page

The space allows a globally distributed affinity group of chess players and enthusiasts to play chess either against an online computer, against a friend or against another member of the affinity group. Further, it provides tools that allow users to following tournaments and share, read and discuss chess related articles. For example, referring to one article, Ardash commented:

“So here’s an article about a leading GM Susan Polgier who played a 1021 consecutive games. In one session faced 326 opponents simultaneously, walked 9.1 miles, and won an unprecedented 99.3% of the games.”

He pointed out that tools now exist to allow spectators to take an active role in ongoing games by grand masters. These allowed users to make moves as though they were an opponent, and compare their move to the one made by the real opponent. One could also retrace the moves taken within a particular game and then play against an artificially intelligent chess computer. In effect, these tools allow spectators to become active participants in an ongoing tournament. Ardash used these tools to develop his own game. He commented: ‘Yes, I’m testing myself, I’ll never do what they do, but I’m interested in seeing how weird their moves are and how beautiful some of them end up becoming, it’s just amazing’⁶⁹. He added, ‘my instincts in chess are becoming more and more developed through this process. I mean this is part of the learning process.’ However, this mode of participation was essentially a preparatory exercise. Ardash was tuning his skills in order to take on real opponents whom he met and played online, via *Chess Base* or using *Yahoo* e-mail chess.

Interestingly, within *Chess Base*, many of the topics under discussion had little to do with chess. For example, whilst demonstrating his use of the site he commented on a spin-off

⁶⁹ *Chess Base* also gave users access to two artificially intelligent tutorial programmes, one called *Shredder* and one called *Chess Genius* that could analyse one’s performance and provide critical feedback. Ardash had not used these tools, but was planning to do so.

discussion on the theme of UFOs. Leading chess personalities had been posting various photographs that claimed to show UFOs and the group, including a Russian UFO expert, analysed and proposed possible arguments for and against the credibility of the claims made.

Ardash's participation in *AIDS India* provides an interesting perspective on how a learner might expand their understanding of a globally distributed network of individuals working on a shared object. *AIDS India* is a *Yahoo Group* founded on March 30th 2000 which now has over 4000 members that serves as globally distributed open access affinity group for people engaged in combating the spread of AIDS on the Indian subcontinent.

AIDS-INDIA · HIV & AIDS Analysis India eNewsletter

[Home](#)
[Messages](#)

Members Only
[Post](#)
[Files](#)
[Photos](#)
[Links](#)
[Polls](#)
[Calendar](#)
[Promote](#)

Info [Settings](#)

Group Information
Members: 4700
Category: [AIDS-HIV](#)
Founded: Mar 30, 2000
Language: English

Do you think social software can change the world?
We do. If you want to join us, check out these [Yahoo! Groups job opportunities](#).

Home

Activity within 7 days: **30** New Messages

Description
[AIDS INDIA e FORUM] A virtual organization responding to HIV and AIDS crisis in India, by connecting the key stake holders together. This FORUM facilitates networking, communication and collaboration among those who are involved or interested in HIV and AIDS related issues in India. Increase HIV AIDS related knowledge sharing, connect key stake holders, facilitate ongoing policy dialogue, enhance HIV prevention and care response effectiveness, improve stake holder transparency and contribute to capacity building. This FORUM strives to become an active body of conscientious public opinion on HIV AIDS related issues in India. All messages are moderated and may be edited for clarity. You may receive 4-5 messages daily. (Monday to Friday) The moderator encourages active discussion. Contributions are welcome in response to articles that have appeared on this forum or on any matters related to HIV and AIDS in India. Manuscripts should be submitted to the forum via web site or send by e-mail as a text file to aids-india@yahoo.com (subscribers only). The views presented are of the contributors. They may not represent the views of the moderator or his affiliates.

HON @ CODE ACCREDITED We comply with the HONcode standard for trustworthy health information:

Figure 8.6 Screen Shot of the Yahoo Group AIDS India

As shown in Fig 8.6, it promotes itself as a ‘virtual organization responding to HIV and AIDS crisis in India’ and aims to ‘connect stakeholders’, ‘facilitate networking’, and promote ‘communication and collaboration among those interested in HIV and AIDS related issues in India’. The affinity space allows members to post AIDS related articles, engage in topical

discussion via text-based chat forums, follow or add links and access a calendar which provides information about aids related virtual events and conferences. Thus, the affinity group exists to facilitate work on a very complex runaway object: the global struggle against AIDS. Participation is massive, open and globally dispersed⁷⁰. It constantly pulsates with activity (postings, new links and a constantly updated calendar) and persists over time and individual researchers and NGO workers join, actively participate and leave.

Ardash had joined the group because he felt it would be important for his research to keep in touch with the most important and up-to-date Aids information in India. He commented, ‘a lot of the biggest NGO groups contribute to this and add stories to this and at first it was very useful to keep up to date’. Thus, he saw the *Yahoo* group as a hub that (in theory) would enable him to keep up-to-date with developments in one space. However, interestingly, he later he became suspicious of the angle promoted by the group and the selection of the articles. He argued that it promoted an anti-government agenda intentionally designed to promote sympathy for the NGO groups working in India. As a result, he had started to rely less on the articles accessible through the group and seek information through ‘more legitimate sources’ such as academic journal articles. These provided a different perspective that alerted him to the agenda of the group. In retrospect, he argued that his participation in the group had taught him, more than anything else, about the politics of the NGO sector and the various mobilization strategies employed by NGOs that are making increasing use of web-based forums and new technologies to amplify their impact.

It is important to note that Ardash also participated in a variety of affinity groups not described above. Having recently downloaded and installed an RSS feed reader, he could

⁷⁰ This claim ought to be treated with caution. The *Aids India* group uses English. Consequently access to non-English speakers is restricted by an implicit ‘language’ constraint.

browse topics and subscribe and unsubscribe to dozens of listserv based groups that interested him. This enabled him to overhear and keep track of various discussions that connected to his various interests as they changed over time. This simply illustrates one way in which participation in affinity group culture might enable an individual to radically expand their capacity to keep abreast of developments in multiple loosely related fields.

Vignette: Jim and the Economic and Social Policy Rights affinity group

Jim participated in multiple distributed online affinity groups relating to his long-standing interest in human rights and social justice issues. Here a brief summary of his participation in the *Economic and Social Policy Rights Network* (ESPRN) network is provided as this illustrates how students might maintain contact with a distributed affinity group that had little direct relevance for his current academic work but appeared important for his ongoing sense of identity.

In Jim's opinion, the ESPRN helped grassroots NGOs from all over the world to stay in direct contact with one another. He argued that postings consisted largely of left wing polemics that combined a mixture of ideology and reportage. He had personally been actively involved in a several subgroups including one on budget analysis and adjudication. Jim summarised his mode of participation thus:

“I participate by replying to other peoples' requests for information. For example someone sends out a request for information on globalization as it related to International Human rights and I replied that I had attended a conference on that subject in Strasbourg and gave them the URL. Another person gave an update on what was going on in the UN with regard to their adoption of a new protocol and I replied expressing my support and giving my views on a few strategy issues.”

Participation in the group took a considerable amount of time. He argued that he felt duty bound to participate at times arguing that ‘there should be solidarity between these different activities’. Further, since he had read extensively within the field of International Law, he felt

he could best serve by providing information to NGO workers and activists if and when required drawing on his existing knowledge. In this respect, the case suggests one way an individual might contribute a very specific kind of expertise to a distributed community dedicated to promoting a particular cause.

Vignette: Jacob, chocolate groups, the vegan food collective, *Vegidate* and permaculture affinity groups

Jacob's story provided some interesting insights into the process of enculturation into group life. Jacob recalled joining and participating in newsgroups at an early age. Through participation in text-based groups dedicated to vegetarian cooking, he had developed an 'intimate knowledge' of chocolate, sweets and various recipes for vegan desert specialities. He frequently cooked vegan cookies and vegan chocolate fudge cake and shared these with other students. Later, he had joined and participated in various sites dedicated to permaculture and sustainable development. He argued that he was interested in this topic before newsgroups came along. Nevertheless, newsgroups gave him the ability to link to likeminded people who 'could be anywhere, anywhere in the world'. He never really inquired 'where they came from', nor 'who they were', nor 'what they were interested in' outside of their special interests.

Jacob had since got into the habit of seeking out affinity spaces to connect with others for a variety of purposes. For example, he participated in *Vegidate.com*, an online match making service for vegetarians. This space required him to: upload digital photographs; describe his interests, personality and tastes; describe his ideal partner; search and browse the profiles of other members; display photographs and establish e-mail contacts with potential partners.

Jacob had also set himself the challenge of building a computer that would enable him to play '*Half Life II* in all its visual glory' for as little money as possible. He disliked the idea of being at the 'mercy of the computer manufacturers'. Having researched various graphic cards,

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sound cards, chipsets and hard drives using price comparison web-sites, he participated in a series of E-bay auctions strategically searching and bidding on particular items in order to obtain the best possible price. Using these strategies, he purchased and arranged the delivery of all the parts he required. However, when attempting to assemble the computer he encountered a number of technical difficulties. For example, he was disappointed to discover that his new motherboard did not seem to recognise a hard drive he had purchased at a discounted rate. His first port of call was to *Google* the error codes produced. Through this procedure he discovered specific URLs that connected him directly to technical affinity spaces used by fellow hotrodders. At first, he searched through archives in order to find if anyone had encountered a similar problem. If answers to solutions were not available, he posted a request for assistance describing the problem he was encountering including relevant error messages returned by his computer.

Since arriving at Oxford, Jacob had also started to exploit the access he enjoyed to online affinity spaces to advance his research interests. Whilst studying for his MSc he started to exploit his participation in various environmental groups to gain inside and up-to-date information that informed his studies. Indeed, he argued that he had ceased looking for articles on the reading lists provided by his course tutors. He now regarded these as ‘five years out-of-date’ and sourced relevant material directly online. Using these techniques, he had developed in-depth knowledge concerning the aggressive and arguable illegal marketing strategies of *Monsanto* (the genetically modified food producer) and the concept of ‘learned helplessness’ that he intended to use in his MSc. dissertation.

Crucially, access to the Internet and various online affinity groups afforded Jacob the possibility for personal empowerment. The use of online resources and affinity spaces to advance his interest in environmental issues and health foods enabled him to become relatively independent of the resources accessible through his academic department.

Similarly, when asked why he like to 'hotrod' he replied, 'I can get just the parts that I want if I build it myself and I can upgrade it myself, I know how to upgrade, so I can do that and also it's fun, it's like the geeks hotrodding', adding, 'I'm not going to get a car'. In effect, the process of using various online tools and affinity spaces to build a powerful computer at minimal cost and thereby beat the system appeared to have become something of a game in itself. However, like the other examples given, in each case Jacob engaged in affinity spaces to become more independent and self-sufficient. Participation enabled him to reduce his dependence on lifeworld communities of practice.

8.3 The growth of affinity group culture

It is important to note that the vignettes presented above merely suggest the diversity of online affinity groups that some of the students studied had started to participate in to address authentic needs. It is extremely difficult to assess the scope and level of participation for the whole group, or for any particular student, using the methods employed. This is undoubtedly a limitation of the method. Nevertheless, following the learner combining observations of practices with interview and insights gleaned from retrospective virtual ethnography does allow one to gain a series of localised insider perspectives that provide a more in-depth insight into the various modes of engagement and motivations for participating in group life. This chapter provides a grounded data set from which a series of typologies and categories can be derived to conceptualise aspects of practice, identify emergent tensions and delineate some important new media literacies. This process of abstraction and conceptualisation begins by considering these students motivation for engaging in group life.

8.4 The ends of participation

Hobbies and pastimes

Participating in affinity spaces for leisure and entertainment purposes appeared relatively widespread. Examples include Ardash's active participation in *Chess Base* and Jacob's active participation in 'hotrodding' affinity groups. Similarly, Katrina received and participated in *Flavour Pill*, a 'life style' affinity space for people with an interest in culture, music and festivals and ZeroGBoy actively participated in affinity spaces for Roller Coaster enthusiasts. In each case, participation extended a pre-existing interest and allowed students to connect with others with the same interests. Participation in affinity spaces for hobbies and leisure purposes is generally active, voluntary and self-motivated.

Course-related study

In one respect, all students belonged to multiple course related affinity groups. For example, all were in receipt of regular group e-mails from departments and research groups. These served to disseminate information and helped to create a sense of community among students with similar interests. Several students had started to participate in *Web Learn*, a dedicated Virtual Learning Environment supported by Oxford University Computer Services (OUCS) that incorporates notice boards, chat rooms and social areas. For example, Ishani used *Web Learn* for medical students to nominate other students with whom she would like to work with on her next placement and Karen was encouraged to upload lesson plans to share with fellow trainee chemistry teachers. Since these affinity spaces were purposely established by tutors, participation was expected if not compulsory. Nevertheless, Ishani and Karen only appeared to participate actively in these groups when they addressed an authentic learning need. Moreover, many students were simply not aware of spaces set up within the institutional VLE to support their course of study.

One might assume that affinity spaces purposely designed to support a course of study will become increasingly central to students' experiences of university life. Somewhat surprisingly, it was not these kinds of spaces that figured prominently in students' accounts of group life, nor were these purposefully designed 'Virtual Learning Environments' always found to be the most useful.

Self-education

Participation in online affinity groups for self-education indirectly or marginally related to a course of study seemed more significant. These groups offered some distinctively new opportunities for informal learning and self-education. Nevertheless, these opportunities were only fully exploited by three students within the cohort studied: Jacob, Jim and Ardash. In many respects participation in these groups extended what might traditionally be referred to as 'wide reading'. However, within affinity space they learnt through exposure to the dynamic exchange of ideas between member and could become actively engaged in discussion. Furthermore, these groups appeared to provide an alternative mode of learning and (self) instruction that students could engage with largely independently of the formal structures of higher education often without any cost.

8.5 Deconstructing the ends of participation

To categorise the ends of participation in terms of hobbies and interests, course related study and self-education sets up a series of artificial categories. Individuals were engaging in multiple groups in diverse ways to achieve their purposes. These purposes might emerge from particular learning objectives (i.e. Timothy's participation in the *MRI Crow* group to solve a specific technical problem), more complex personal learning objectives (maintaining an awareness of the activities of grass roots human rights activists or seeking help with an emotional problem) or far more elusive and ill-defined complex learning objectives (Ardash expanding his understanding of the relationship between the NGO sector and government

with respect to AIDS policy). Indeed, in order to understand how and why individuals participated, it is necessary to respect the specific circumstances and needs of each learner.

Following the learner reveals that individuals' appropriate affinity spaces in sometimes surprising and unexpected ways, often 'against the grain', or against what appears to be the stated purpose of the group. For example, Ardash participated in *Chess Base*, partly to improve his game, but to also to engage in quirky conversations about the existence of UFOs. Jacob, in contrast, engaged with the 'hotrodding' community because he didn't want to be 'at the mercy of the computer manufacturers'. Students thus participated for very personal reasons relating to their emerging sense of self and identity.

It is also important to stress that the same student might participate in a single group for a variety of purposes. For example, Ardash reported participating in his scholarship group to eavesdrop on debates about the Palestinian / Israeli crisis on one occasion and to sell a bed on another. Students might also participate in multiple online affinity groups for a range of interrelated purposes. For example, Jacob actively sought fellow vegetarians through affinity groups to save money, to connect to like-minded others, find new vegan dishes, to expand his knowledge of environmental issues and to find a partner with similar lifestyle preferences. His participation in what might appear to be dissimilar affinity spaces did in fact all relate and, in a sense, reinforce a principled commitment to a certain kind of lifestyle.

Finally, the most obvious motivation for participation might not necessarily be the only motive at work. As suggested by Ardash's engagement with online discussions about the existence of UFOs compared to his relative non-use of *Academici*, one cannot make assumptions about the quality and focus of the learning that might occur based on surface observations about the stated purpose of the group. It is important to remain close to the lifeworld of individuals and follow learners as they attempt to achieve their personal goals to

understand the ends of participation and the learning opportunities afforded. This leads one to conceptualise the learning opportunities afforded in terms of modes of engagement.

8.6 Modes of engagement in online affinity groups

The data suggested at least five categories are required to conceptualise the different ways students engage with online affinity spaces. These are delineated from the most to the least active and include: pro-active mobilization, active participation, restricted participation, intent lurking and dormant participation.

Pro-active mobilisation

Pro-active mobilisation occurs when individuals mobilize others to advance a personal agenda. Pro-active mobilization as a category is comparable to the practice of activating individuals within a personal network to address a specific learning need. However, it differs because the individual who initiates the action need not know, nor have a prior personal commitment to reciprocating. This category might be further broken down into two subcategories: pro-active mobilizers who actually create affinity groups to connect with others with similar interests and pro-active mobilizers who actively mobilize the distributed expertise within an existing affinity group.

Examples of individuals actually creating affinity groups to serve particular purposes were extremely rare in the study⁷¹. Nevertheless, with the advent of freely available groupware like *Yahoo* and *Facebook* groups, it seems far more likely that when a shared authentic need does

⁷¹ Jim had initially been actively involved in the mobilization of the ESPRN network. Jacob actually created an affinity group to connect with others dedicated to purchasing health foods at discounted prices (see Chapter 10). Katrina recounted mobilizing a group using an e-mail listserv for the purpose of redecorating the college bar. However, at the time there were few instances of pro-active mobilization in which individuals actually created groups for academic purposes.

exist, it will be relatively easy for individuals who are not necessarily in positions of authority to adopt the position of a pro-active mobilizer and create affinity groups to support very specific interest⁷². In general, it seems reasonable to surmise that groups are likely to spring up only when a distributed community share a very specific need. However, this clearly depends on the initiative of pro-active mobilizers who set up and actively participate within the group.

Nevertheless, there were a number of instances in which individuals mobilised sub-networks or attempted to mobilise individuals within a group to assist them with work related tasks. Timothy's account of uploading *Visual Basic* script to the *MRI Crow site* for experts to comment upon provides a vivid example. Likewise, Jacob pro-actively mobilised the distributed expertise of fellow "hotrodders" by 'googling' error codes when his attempts to install a new hard drive, purchased over E-bay, failed. Interestingly, the college IT officer commented that this was the primary method he used to resolve problems he was confronted with during the course of everyday life. In effect, pro-active mobilization within affinity space

⁷² More recently, virtual ethnography has revealed Oxford University students participating in *Facebook* groups to develop an interest in First World War poetry, to learn Arabic, and to discuss the question: 'Panda's, why are they here?' It is unclear whether these groups are used in the ways intended by the pro-active mobiliser in each case. Further research would be required to address this point. Nevertheless, these groups have *not* been created by course tutors and appear to facilitate radically distributed peer learning opportunities. Further, groups like the 'Panda's, why are they here?' group and the 'World War 1' group transcend institutional boundaries by including participants from different institutions who share the same interest. This simply highlights the fact that advanced learners are now participating in groups that function as powerful learning resources that have sprung into existence relatively independently of the provisions provided by the traditional university.

allows learners to expand the possibility of identifying and recruiting potential collaborators who will recognise and might respond to their call for assistance.

Active Participation

Active participation is perhaps the most conspicuous mode of engagement. It describes a mode of participation in which users engage and occasionally contribute content to an affinity space. Unlike pro-active mobilization, a subject may remain an active participant, contributing content, sharing information and learning vicariously through comparing contributions without the need to recruit, mobilize or solicit the assistance of specific individuals. Indeed, in many respects the power of an affinity space as a learning resource depends upon its capacity to make the experience of individuals who experience a particular problem available for others to learn from. In this mode, the consumer becomes an active producer of content that others might use or benefit from. Indeed, the capacity of the affinity group to remain a vibrant source of activity demands a critical mass of active participants. In contrast, it may only require one pro-active mobilizer.

Restricted participation

Restricted participation describes a mode of participating in affinity space in which a member participates or contributes to the space occasionally on specific themes but has a vested interest in maintaining a marginal role. For example, Timothy's response to another student who had encountered a specific error constitutes a minimally committed mode of participation. The example suggests a way someone might give back to a community that had helped them, whilst guarding themselves against those who might seek to pull them into a more active mode of engagement. Interestingly, Timothy's restricted participation seemed motivated by a desire to save time and partly by a desire to disguise his identity as a relative novice who had little interest in mastering the technical language used by the majority of the group.

Lurking with intent

This study suggests that even among advanced learners, non-contributory roles in which learners simply lurked were common. This is not to say that lurking is not a legitimate, albeit peripheral, mode of participation in which a great deal of learning occurs. The notion of *legitimate peripheral participation* (Lave & Wenger, 1991) highlights the opportunities available within many informal learning situations for apprentices situated in a particular location to learn vicariously, monitoring, observing and later imitating the practices of more advanced practitioners. In certain respects, affinity spaces also afford opportunities for vicarious learning or legitimate peripheral participation. Jacob tended to spend much of his time lurking in “hotrodding” affinity spaces, reading archives. Similarly, Ardash tended to lurk, rather than actively participant in *Left In* and *Aids India*. In both cases the adoption of a marginal position to vicariously observe the activities of others suggests a parallel with the *communities of practice* model.

However, affinity spaces also afford experts in particular domains opportunities to learn by lurking in affinity spaces that might consist of non-experts. For example, Jim had become a relative expert within the field of human rights law; nevertheless lurking in the ESPRN allowed him to stay in touch with a community that he described as ‘grassroots’ activists and thus remain aware of issues that were important to a community that he hoped his academic work might ultimately help but from which he was somewhat removed. This confirms Gee’s (2005, p.218) assertion that in affinity space culture ‘newbies and masters and everyone else share common space’. Furthermore, affinity spaces are not necessarily embedded in the lifeworld of contributors. Therefore, they afford individuals opportunities to learn from those who they might never see in person. In this way, relative novices, like Timothy, might learn by vicariously monitoring the exchange of information about more experienced practitioners physically located in research centres around the world. Indeed, several students lurked in online affinity spaces with intent to ‘cherry pick’ information that served very specific

purposes. Indeed, participants, like Timothy who scanned the e-mail headers of the *MRI Crow* group to see if anything was relevant without becoming actively involved, became *intent lurkers* when they recognised that information might be available that could help them address a specific need.

Lurking is not necessarily a passive strategy; one can lurk with different degrees of intent. Significantly, intent lurkers ‘cherry pick’ information to serve their own agendas as opposed to the agendas of dominant insider groups. In this respect, Jim’s current mode of participation in the *EPSRN* might be considered a mode of intent lurking. Intent lurking provides individuals with new opportunities to stay informed of areas of inquiry and develop broad understanding of the shape, dynamics and key personalities at work within particular fields. For example, whilst Ardash’s became somewhat disillusioned with the partisan agenda of the *Aids India* group, he remained an intent lurker and argued that this enabled him to develop a sophisticated insight into the relationship between the NGO world and its antagonistic relationship with central government. In these cases, students can learn and expand their understanding of particular issues without the need to post queries or upload content of any form.

Dormant participation

Finally, it is necessary to allow for the fact that subscriptions to many online affinity spaces tend to fall redundant after a period of time. Dormant participation might be considered the residue of previous active modes of participation or it might suggest laziness with respect to the design work required to keep one’s personalised mediascape fit for purpose. Multiple information flows that stream into students’ personalised mediascapes as a result of subscriptions to multiple affinity groups tend to create a certain amount of informational clutter that may retard the agency of the learner. Nevertheless, dormant participation also affords students the possibility of re-entering or re-engaging in affinity spaces after months or

even years of inactivity with minimal effort. Not unlike sleeping friends within an extended personal network maintained through social software tools, these online affinity groups can be reactivated at any time if and when required.

The need for further category refinement

In summary, this section has described five modes of participation in online affinity groups: proactive participation, active participation, restricted participation, intent lurking and dormant participation. These categories are not entirely distinct and could be refined further. A more focussed study would be required for this purpose. Nevertheless, they do provide a set of heuristics that might help to focus attention on the diversity of ways that students engage in group life. In particular, there appears a need to understand the ways students lurk intently within multiple online affinity spaces to expand personal learning agendas. This genre of practice cannot be understood by focussing on screen-based content. It requires an ethnographic approach that follows that learner and attempts to understand how and why students participate to address authentic learning needs.

8.7 Learning with others through participation in online affinity groups: some emergent tensions and contradictions

Three tensions or contradictions that emerge as advanced students start to use online affinity spaces as an alternative learning resource were identified as potentially significant. There appeared a tension between: a) students' participation in affinity spaces as an alternative to lifeworld communities of practices; b) the need to stay connected with an affinity group and the threat of information overload; and c) time management in certain online affinity spaces that appeared to engage students in 'flow' like states of engagement (Csikszentmihalyi, 1996).

Affinity groups vs. lifeworld communities of academic practice

Whilst participation in online affinity groups appear to afford agentive learners the opportunity to break away from a prior dependence on traditional resources and life-world communities of tutors and course mates, this can create tensions that impact on students' sense of self and community. This discontinuity manifests itself in various ways. For example, Jacob had become interested in the concept of 'learned helplessness'. The concept had become a tool that was helping him understand and theorise the strategies *Monsanto* used to coerce poor countries to buy and use genetically modified seeds. However, this interest had arisen due to his participation in various environmental affinity spaces rather than directly from his course. In fact, he argued that he had become somewhat disillusioned with the articles on reading lists provided by tutors. He argued that the articles recommended were 'five years out of date'. As a result, he became even more dependent and habituated into developing his interest through participation in affinity space. However, comments also suggested he had become somewhat removed from the academic community at his department. Similarly, Ardash complained of feelings of alienation and loneliness. This may have been related to his deep engagement with affinity space. His interest in chess was developed online rather than through a university-based chess club; he developed his specialised interest in AIDS related issues and peer learning largely through participation in online affinity groups rather than through a particular research group. Similarly, when commenting on his minimal participation in the affinity space set up to support members on his scholarship programme, he argued:

“Being at Oxford is very disconnecting in general, especially being a graduate student. You just, you feel very lonely, so this connection, even to just a very rather superficial place where you don't get real personalities, you get virtual personalities... You feel an identity and I don't think you'd get that very easily and you'd lose that if you weren't a member.”

This is not to suggest that participation in group life is alienating. The widespread uptake of the social networking tool appeared to foster rather than fragment participation in university life. However, it suggests that the new opportunities to develop highly specialised interests through participation in online affinity groups may lead to feelings of relative isolation from lifeworld communities that may have fostered a degree of homogenisation of interest among group members.

Thus, if affinity spaces afford new opportunities for agentive individuals to surge ahead, explore special interests and advance personalised learning agendas, individuals who exploit these opportunities might also find themselves somewhat removed, detached or alienated from the lifeworld communities upon which they are no longer dependent to the same degree.

Staying connected vs. managing information overload

A central tension, evident in the practice of high-end users of affinity groups, concerns the trade-off between the advantages of subscribing to multiple affinity groups and the potential for distraction. This problem appeared to afflict both Jim and Ardash. Jim complained of ‘information overload’ and commented that the flow of e-mails from these various organisations had become a huge problem. In interview he commented, ‘to be honest, I’m ambivalent about how useful these different listservs are’. The *EPSRN* provided the biggest problem. He commented:

“... that’s mostly people saying attached is the budget report from our fly by night NGO tucked away in the middle of the Peruvian jungle. That kind of stuff. I don’t mean to sound condescending at all, but what I mean is that there’s stuff which is not necessarily of broad interest. On the other hand, there are hundreds of human rights activists all over the world, grass roots NGOs that are in direct contact with each other. But I’d have to say that about 99% of the stuff that goes through that list is of no interest to me.”

He'd been considering unsubscribing to the network for some time. In the end, he decided to remain subscribed. Ardash, experienced similar problems and was considering unsubscribing to the *Left In* listserv. He was in the midst of experimenting with an RSS feed reader. He aimed to transfer some (but not all) of his subscriptions to e-mail-based listserv to the RSS feed reader. This strategy was designed to reduce the number of e-mails flooding his e-mail inbox without compromising his capacity to stay abreast of developments in multiple fields. The strategy seemed designed to streamline his personal attention economy, reduce the amount of information clutter streaming into his inbox and thus reduce the risk of distraction whilst working on his computer. In short, he was designing an environment that placed him in control.

As students progress through higher degree programmes it seems likely that they will acquire affiliations to more and more online affinity groups, listservs, newsletters and 'just for fun' social groups. Thus, it appears that in time this tension is likely to become far more widespread and will require students to develop counter strategies to regulate their attention and reduce the risk of distraction.

Time management in and out of online affinity groups

A related tension concerns the problems posed to day-to-day time management by extensive participation in group life. Concerns about 'wired' teens wasting their lives away playing violent video games are widespread. Surprisingly, however, little attention to-date has been paid to the addictive behaviours that appear to be induced by participation in online affinity groups. Although slight, there is some evidence to suggest group life is potentially addictive. Jacob's "hotrodding" escapades took days away from his studies and Jim commented that a single post from the *COHRE* or *Shelter* networks could sometimes take two or three hours out of his day. Ardash's comments about his participation in the *Chess Base* community also suggested that he was spending considerable amounts of time immersed in this affinity space.

In certain cases, these kinds of addictive modes of participation may have distorted students' sense of priorities as individuals become invested in the identities they acquire within certain online affinity spaces. The problem may be exacerbated further as designers of contemporary affinity groups devise more sophisticated mechanisms, such as tagging and alert services, purposefully designed to retain participation within the group and maintain the attention of potential consumers. In this respect, effective self-regulation of time spent participating in online affinity groups seems in tension with the time required to perform other activities.

Agenda of the group vs. agenda of the individual

The agenda of many groups may well be at odds with the agenda of individual participants. For example, Timothy's mode of participating within the *MRI Crow* affinity group was not in alignment with the dominant object-motive of the group. His purpose was to complete a dissertation and move on to medical school. The group became a means to that end and this necessitated his restricted mode of participation. Similarly, over time Ardash formed the opinion that the *Aids India* group was dominated by people with an anti-government agenda. He continued to participate, largely because he became interested in the politics and dynamics of the NGO world. However, he suggested that he had returned to 'more legitimate' sources of information in order to develop his research interests. Again, we witness a tension between the dominant agenda of the group and that of individual participants. In fact, both intent lurking and minimally committed modes of participation might be considered as strategies that enable participants to exploit affinity spaces as a learning resource whilst resisting pressure to become a more active participant and align with the object-motive of the dominant or most active members of the group.

8.8 Effective participation in online affinity groups

In *Situated Language and Learning: a critique of traditional schooling* (Gee, 2004), the affinity space concept is developed to highlight how the practices of learning in traditional

schools are increasingly out-of-step with the emergent modes of independent self-directed learning in the new media age. The implication is that informal modes of collaborative learning in online spaces offer more engaging, stimulating and naturalistic modes of learning than those supported by formal educational structures modelled on a 'factory', 'production line' or 'piggy bank' model of education. Later he argues:

Young people today are confronted with and enter more and more affinity spaces. They see a different and arguably powerful vision of learning, affiliation, and identity when they do so. Learning becomes both a personal and a unique trajectory through a complex space of opportunities (i.e. a person's own unique movement through various affinity spaces over time) and a social journey as one shares aspects of that trajectory with others (who may be very different from oneself and inhabit otherwise quite different spaces) for shorter or longer time before moving on. What these young people see in school may pale by comparison. It may seem to lack the imagination that infuses the non-school aspects of their lives (Gee 2003). At least they may demand an argument for Why School? (Gee, 2004, p.89)

We might also inquire into the implication for students' experience of higher education and ask: do they enable students to navigate through a complex space of new learning opportunities and develop intrinsically motivating personalised learning agendas? If so, how might this impact on their experience of traditional modes of learning and instruction: the lecture, the seminar, time spent in the library or coffee bar with a book? Furthermore, what are the implications? Indeed, are participants likely to demand an argument for 'Why University'? The empirical data presented here suggests probably *not*. For the most part, learners tended to adopt marginal position or intently lurk to 'cherry pick' information or tap the expertise of anonymous others if and when required. In short, we witness students exploiting affinity spaces to address authentic learning needs as they arise when they can't be addressed by services provided through the traditional university.

When the university caters for these needs, individuals have little need to participate in group life. Nevertheless, affinity spaces *do* provide an alternative space that individuals can use to

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break away from a dependence on the lifeworld communities of learners and connect with others who have similar needs and interests. Further, the evidence suggests that advanced, agentive students were adept at exploiting these opportunities to break away from a dependence on centralised resource and communities embedded in the lifeworld of university life. Consequently, it is important to understand the practices or affinity space literacies that are required to make effective use of affinity spaces as a resource for learning.

The following categories are offered as heuristics that might guide further research and allow us to develop the notion of affinity space literacy. These categories might serve to focus attention on an emergent set of practices required to successfully use online affinity groups as a resource for learning.

Developing an awareness of various affinity groups

When discussing the activation of globally distributed funds of living knowledge in Chapter 7, the principle of *knowing how to know who* was invoked as a characteristic of expert-like networking practice. Within the context of group life, the burden shifts from finding individuals with specific interests to finding groups whose members might possess the distributed expertise required to address a specific learning need. The challenge confronting the learner concerns *knowing how to know which group* might serve as a learning resource. Once a suitable group is found, the burden of responsibility for accessing domain specific distributed expertise is considerably reduced. Consequently, it is important to ascertain how advance learners become aware and identify groups that might serve their specific learning needs.

Self-diagnosis of learning need as a prerequisite for effective participation

Those who went on to actively participate or lurk within affinity spaces invariably demonstrated a capacity to self-diagnose an authentic learning need. For example, Timothy's

decision to seek out the co-dependence anonymous group followed a period of reflection and a chance conversation. The conversation equipped him with the term ‘co-dependency’ that subsequently enabled him to conduct a search and find an online support group. Similarly, Ardash’s initial participation in *Aid India* and Jacob’s participation in permaculture groups were both motivated by the self-identification of a learning need that could not be addressed using existing resources. In this respect, a capacity to diagnose a learning need appears a prerequisite for effective participation.

Pro-active exploration of available affinity groups as potential learning resources

Those who participated in multiple affinity groups exhibited a tendency to explore the range of groups available that may or may not correspond to their emerging interests. Both Ardash and Jacob spent time exploring the range of online groups that existed which might help them expand their respective interests. This was highly conspicuous in Ardash’s practice. Despite not actively participating in any *Academci* group, he had searched through the various subgroups available and evaluated their utility as a potential learning resource. He didn’t wait for authentic needs to arise. His zeal to search, explore, map out and independently evaluate the utility of various groups did not depend on self-diagnosis. Rather, it appeared motivated by a more general resourcefulness. Thus, it could be argued that *knowing how to know which group* requires a pro-active and exploratory stance towards participation in affinity group culture in general.

Evaluating the utility of an affinity groups

Assessing an affinity group’s fitness for purpose following an initial period of exploratory participation is a prerequisite for effective participation. Most affinity spaces describe their function and purpose. This information can be used as an initial filtering mechanism. Nevertheless, Ardash, Timothy and Jim all demonstrated a capacity to critically frame the

purpose and agendas of groups they engaged following an initial period of participation. For example, Ardash's comments about the anti-government agenda within *Aids India* and Jim's complaints about the blurring behaviour of activities from 'fly by night NGOs tucked away in the middle of the Peruvian jungle' suggest that each had identified the object-motives of the dominant activity systems at work. This might be summarised as a new media literacy that involves a capacity to critically frame affinity spaces given the available information, and then quickly identify the object-motives driving dominant activities within affinity spaces.

Strategically adjusting ones mode of participation in online affinity groups

Finally, advanced practitioners demonstrated a capacity to adjust their mode of participation, over time, to suit their changing needs as learners. Indeed, a capacity to strategically shift between different modes of participation appears essential if an individual is to exploit the full potential of affinity space as a resource for learning. For example, Ardash became an intent lurker within *Aids India* having identified the anti-government agenda; a shift motivated by recognition that a marginal role would enable him to expand his understanding of the institutional politics surrounding *AIDS* research. Similarly, Jim shifted from a pro-active participant in ESPRN to an intent lurker. This enabled him to maintain an awareness of the activities and concerns of grassroots human rights activists (and occasionally offer advice) whilst minimising the demands made on his time. All tended to remain dormant participants in multiple online affinity groups rather than cancel their membership. Further, at times individuals like Ardash, Tim and Jim would re-engage to provide help or assistance to others if a request provided them with an opportunity to share their own knowledge, articulate an opinion or learn by assisting others.

Thus, in general, learners tended to become active or pro-active participants in affinity spaces in an attempt to address an authentic learning need and then adopted a marginal or legitimate peripheral mode of participation. This allowed them to monitor and maintain an awareness of

the group's activities with a view to re-engaging if, and only if, new learning opportunities emerged. This is quite unlike the communities of practice model that assumes a movement from the periphery to the centre over time. Indeed, characterising a student's participation in multiple online affinity groups demands a far more fluid, flexible and amorphous model that captures an individual's capacity to move in and out of multiple affinity spaces, exercising relational agency and leveraging the distributed expertise of thousands of anonymous others, if and when required, to suit their changing needs as learners.

Summary

This chapter identifies Gee's (2003) concept of an affinity space as a powerful heuristic that can direct our attention to emergent opportunities to learn within an increasing variety of online affinity spaces. However, it identifies a need to shift attention away from analysis of the semiotic traces produced by active participation towards an analysis of the various ways individuals might participate within a variety of affinity groups over time. Affinity spaces clearly do afford university students the capacity to *break away* from a dependence on lifeworld communities of learners and offer new opportunities to leverage the distributed expertise of anonymous others with very specific interests. Nevertheless, engagement with group life has the potential to distract, disorientate, absorb and usurp the agency of learners in undesirable ways. Therefore, affinity space literacy is conceived as a capacity to find, evaluate, critically frame and shift between various modes of participation in order exploit the full potential of group life as a resource for learning.

Chapter 9 Identity and Agency in Virtually Figured Worlds

Self-making is powerfully affected not only by your own interpretations of yourself, but by the interpretations others offer of your version (Bruner, 1991, p.76).

There are three types of design that reap large rewards in the new capitalism: the ability to design new identities, affinity spaces, and networks. These three types are all interrelated. In turn, people who are adept at taking on new identities, adept at using and interacting within affinity spaces, and are well connected within networks will flourish (Gee, 2004, p.97).

Play is also the medium of mastery, indeed of creation, of ourselves as human actors. Without the capacity to formulate other social scenes in imagination, there can be little force to a sense of self, little agency. In play we experiment with the force of our acting otherwise, of our projectivity rather than our objectivity...Through play our fancied selves become material (Holland *et al.*, 1998, p.236).

In attempting to understand the predicament of the learner in the new media age, this thesis has explored various ways learners are appropriating new media tools and resources to advance course related study and self-directed learning agendas. It emphasises how resourceful and agentive individuals are creatively exploiting the affordances of the new mediational means becoming available through the Internet to achieve their purposes. In the context of the networked university, it becomes apparent that many individuals are engaging with *Participatory Culture* for a variety of purposes: to design cognitive ecologies to support advanced knowledge work, to offload cognitive chores to quasi-intelligent agents, to cultivated extended personal networks and to break away from traditional academic

communities of practice and learn with others in globally distributed online affinity groups. All emphasise the new possibilities for individuals to take more ownership over their own learning. This thesis has tended to highlight examples of advanced students exploiting some of the emerging possibilities in creative and interesting ways. Nevertheless, an attempt has also been made to highlight the tensions or contradictions confronting learners in a world characterised by perpetual media change and identify some of the new media literacies required to make effective use of digital tools and resources to good effect. Furthermore, when attempting to understand exactly what, how and why students make use of digital technologies, that is, in attempting to understand personal agency in the networked university, one is invariably forced to understand practice in relation to students' emerging sense of self. In short, the relationship between identity and agency in virtual worlds becomes central to the task of understanding the predicament of the learner in the new media age.

Attempts to account for the diverse ways teenagers appropriated new media in the LAMS and Revolution classrooms pointed to the need to understand learners' identities as powerful mediators of learning activity. Similarly, when attempting to account for students' individuated styles of computer use, one is forced to take into account their emerging sense of self. Indeed, multiple vignettes and examples illustrate that one cannot account for the diverse way students individuated 'styles' of computer use without making reference to personal work ethics, values, principles, priorities, preferences and commitments which in turn appear to relate, not only to students' pre-history of computer use, but also to their sense of who they are and who they might become⁷³. In short, a socio-cultural approach on its own cannot account for students' individuated styles of computer use. One is also forced to understand digitally mediated practices within the personal-historic context of an individual student's life

⁷³ The individual 'styles' of computer use described in the vignettes are indicative of these personal commitments to becoming certain kinds of persons.

trajectories. In turn, this leads one to conceive of learners' internalised identities and projective identities (Gee, 2003) as powerful but invisible mediators of learning activity.

The power of identity as a mediator of learning activity becomes even more conspicuous when one starts to explore the various ways advanced learners are appropriating new media for informal learning and self-education beyond the requirements of course related study. Nevertheless, these insights remain underdeveloped. In this penultimate chapter, the relationship between identity and agency in virtual worlds is put under the analytical microscope.

To elaborate this argument, I draw principally on the work of four theorists interested in the relationship between identity and intentionality; works by Bruner (1991), Turkle (1984, 1997), Gee (2000c, 2003, 2004) and most importantly Holland *et al.* (1998). These theorists provide some valuable insights and offer a number of conceptual tools that allow one to start thinking about identities as powerful mediators of learning activity. Here the aim is to use these tools as building blocks to develop derivative constructs and develop some new concepts that can help us understand the importance of the relationship between identity and agency in virtual worlds.

9.1 Bruner on self-making and world-making

In the early 1990s, under the influence of philosopher Nelson Goodman, Bruner and fellow researchers turned their attention to what they called 'self-making' and the related process of 'world making' (Bruner, 1991). His thinking constitutes a more general reaction against assumptions about an 'essential self' assumed in autobiographical and biographical writing. Bruner argued that in autobiography we 'set forth a view of what we call our "Self" and its doings, reflections, thoughts, and place in the world' (p.67). These ruminations are not entirely hypothetical. The research team gathered and analysed a series of 'spontaneous', 'non-artful' autobiographies of ordinary people who were recruited and prompted by the

simple instruction: 'Tell us the story of your life'. The analysis showed that the process of constructing a life story could not be understood apart from the available cultural toolkit: narratives, genres, metaphors, figures of speech, archetypes and dramatic devices that interviewees appropriated to construct their life stories.

Pondering on the findings, Bruner (1991, p.68) stresses, 'we have come to reject the view that a "life" is anything in itself and to believe that it is all in the constructing, of the text, or in the text-making'. This leads him to surmise that that rhetoric and rules for constructing narrative, inherited from one's culture, cannot be regarded as a neutral or transparent medium. Rather, 'like all other aspects of worldmaking, self-making (or "life-making") depends heavily upon the symbolic system in which it is conducted – its opportunities and constraints' (p.68). In short, narrative devices inherited from the available cultural toolkit mediated individuals' attempts to present a coherent account of their lives.

From this perspective, 'Self', not unlike cognition in the work of post-Vygotskian scholars, might be considered as distributed. Bruner argues:

It becomes plain, as one observes this process of self-formation, that it is probably a mistake to conceive of Self as solo, as locked up inside one person's subjectivity, as hermetically sealed off. Rather Self seems also to be inter-subjective or "distributed" in the same way that one's "knowledge" is distributed beyond one's head to include the friends and colleagues to whom one has access, the notes one has filed, the books one has on one's shelves (1991, p.76).

If so, this leads one to consider how new distributions of 'Self' might be afforded through personalised mediascapes that are designed, adapted and customised by individuals to serve their own purposes and address individual needs. How, we might ask, is 'Self' distributed in quasi virtual worlds that allow individuals to design their own personal learning environments, connect with friends and colleagues in globally distributed personal networks, leverage the distributed expertise available through globally distributed funds of living

knowledge and participate in online affinity groups with anonymous others with very similar interests?

Bruner found that when asked, interviewees invariably constructed a life story that presented the individual as the central protagonist in an unfolding drama. Further, the version of the ‘Self’ constructed through narrative depended, in large part, on the commitment of individuals to a certain set of presuppositions, their relations to others, their view of the world and their place in it. This commitment, what Bruner calls ‘taking a stand’, and presenting one’s ‘Self’ as a certain kind of person, is the essence of ‘Self-Making’ and critical to understanding the riddle of human agency.

So, given that autobiography is also a form of “taking a stand,” it is perforce rhetorical. And when one combines the rhetoric of self-justification with the requirements of a genre-linked narrative, one begins to come very close to what Goodman describes as “worldmaking” in which the constructed Self and its agentive powers become, as it were, the gravitational centre of the world. And the force that relates the centre to the rest of the world is a commitment that endures over time – a commitment that ensures a certain stability in self-conception, but also permits the autobiographer to maintain a sense of alliance with others – alliance and opposition as well (Bruner, 1991, p.76).

This talk of commitment resonates with earlier observations about the commitment of advanced learners to self-motivated tasks that characterised their individual styles of computer use and is evident in the three vignettes presented below.

In summary, Bruner’s work highlights three important points relevant to the current discussion. Firstly, identities are not essential; they are constructed and sustained through the work of self-making. Secondly, self-making is an ongoing activity mediated by the available cultural resources (principally genre, narrative devices and figures of speech but also the ‘books on one’s shelves’ and the ‘notes one has filed’). Thirdly, self-making involves work to sustain a particular projection of oneself; it involves “taking a stand” and making a

‘commitment that endures over time’. In this respect, it becomes important to inquire into the origins of this commitment and the resilience of learners committed to taking a stand. Finally, it is important to emphasise that, for Bruner, self-making is an inherently social process; he stresses, ‘self-making is powerfully affected not only by your own interpretations of yourself, but by the interpretations other offer of your version’ (Bruner, 1991, p. 76). Consequently, he argues, ‘what was once regarded as ‘the most “private” aspect of our being, turns out on closer inspection to be highly negotiable, highly sensitive to bidding on the not so open market or one’s own reference group’ (Bruner, 1991, p.76). This encourages one to consider the activity of self-making as a collective activity that depends as much on the networks and communities one chooses to position oneself in as on an internalised commitment to become a certain kind of self.

9.2 Virtual worlds as psycho-social moratoriums for identity play

Bruner’s ideas provide an interesting way to consider the new possibilities for ‘Self-Making’ afforded by participation in virtual worlds. They encourage one to consider how relatively new cultural toolkits that includes designed desktop environments, e-mail accounts, personal-web sites, social software profiles, listserv subscriptions and shortcuts to multiple online affinity spaces might, in conjunction with linguistic devices and physical artefacts (like ‘books on one’s shelf’), mediate the process of self-making. Nevertheless, for Bruner self-making remains a linguistic activity, constructed in retrospect when people are challenged to recount the stories of their lives. It doesn’t account for how people develop identities through participation in various forms of social practice. In this respect, Bruner’s work focuses on how ‘Selves’ are constructed in retrospect. In contrast, the work of Turkle (1989) and Gee (2003, 2004) suggest how different ‘Selves’ might be experienced through role-play in virtual worlds. Concepts they have developed might be used as heuristic tools that allow one to consider some of the new possibilities for self-making in a variety of virtual worlds.

In *Life on Screen: Identity in the Age of the Internet* (1997), Turkle explores the new opportunities for self-making afforded by virtual role-play in text-based Multi-User Dungeons (MUDs). Data collected through virtual ethnography is used to illustrate examples of computer ‘geeks’ and obsessive MUDers exploring alternative identities that remain repressed or inhibited in real life (or RL) through virtual role-play in the MUD. Turkle documents instances of gender bending (men playing women hitting on women playing men) and stories of individuals mistakenly making a pass at an artificially intelligent flirt bot. These stories might read like amusing and somewhat exotic anecdotes about the self-indulgent sub-cultural practices of small minority of eccentric individuals. However, selected chapters have become almost symbolic of themes that are now central to recent thinking about the importance of identity play in virtual worlds (see Gee below). Indeed, Turkle (1997, p.185) argues that MUDs have become ‘objects-to-think-with’ and reveal important insights into the ‘post-modern self’. Importantly, they afford individuals opportunities for perspective taking. For example, she recounts the story of Julee who shaped her game persona to reflect her own deep wish for a relationship with her mother and suggests:

Playing her ideal of a good mother allowed her to bring mother and daughter together in a way that had been closed off in real life. During the game, Julee was able to experience something of her own mother’s conflict (Turkle, 1997, p.188).

In short, the virtual world allows Julee to step out of her real life identity and experience a different way of being and experiencing her world from the perspective of another. A similar effect was evident in the experience of Ariana playing Hannah, the virtual house slave, in the Revolution workshops as discussed in Chapter 2.2.

Turkle argues that for many young people virtual worlds function akin to ‘psycho-social moratoriums’ a phrase coined by Erik Ericson (1963) in his attempt to understand 1950s adolescent subculture. Psycho-social moratoriums are spaces that give young people a certain licence to engage in identity play and experience with alternative lifestyles and relationships.

Traditionally, Turkle argues, college provided a space for young people to explore alternative identities and lifestyles. But she suggests that today the idea of college as time out seems remote given the increasing pressure in individuals to prepare for a career in a competitive workplace. Nevertheless, she argues:

... if our culture no longer offers an adolescent moratorium, then virtual communities do. They offer permission to play, to try things out. This is part of what makes them attractive (Turkle, 1997, p.203-204).

Her theorising leads one to consider various ways virtual spaces might function in the capacity of a psycho-social moratorium for advanced learners in the contemporary networked university. In particular, it encourages one to consider how students might exploit the pseudonymity of their online personas to experiment and play with aspects of their self.

9.3 Experiencing alternative projective identities through virtual role-play in immersive game worlds

Gee (2003) picks up and develops some of Turkle's insights in his work on the situated learning possibilities afforded by virtual role-play. He stresses that one cannot understand how and why learners acquire new literacy practices in informal contexts without considering their emerging sense of self. He stresses that acquisition is 'heavily tied to identity issues' and adds it is 'tied to the learners willingness and trust to leave (for a time and place) the "everyday" world and participate in another identity – one that for everyone represents a certain loss' (Gee, 2004, p.94).

Gee's interest in video games as a new kind of mediational means that might inspire young people to engage in deeply committed learning rests, primarily, on their seeming capacity to afford learners new kinds of designed experiences in virtual worlds. Gee suggests that the identifications made through the experience of virtual role-play are quite unlike those made when reading a novel or watching a movie. The experience of virtual role-play 'transcends

identification with characters in novels or movies because it is both *active* (the player actually does things) and *reflexive*, in the sense that once the player has made some choices about the virtual character, the virtual character is now developed in a way that sets certain parameters about what the player can now do' (Gee, 2004, p.113). Further, he suggests that the acquisition of the knowledge and skills required to play a character in a video game provides a model for thinking about how good learning occurs in real world situated practice in which identities and reputations are at stake.

I am arguing that learning to read, or any learning for that matter, is not all about skills. It is about learning the right moves in embodied interactions in the real world or virtual worlds, moves that get one recognised as "playing the game": that is enacting the right sort of identity for a given situation (e.g. science class in middle school) (Gee, 2004, p.48).

Indeed, for Gee, committed or intrinsically self-motivated learning occurs because the acquisition of knowledge and skills is bound-up with becoming a certain kind of person.

People can only see a new specialist language as a gain if: (a) they recognize and understand the sorts of socially situated identities and activities that recruit the specialist language; (b) they value these identities and activities, or at least understand why they are valued; and (c) they believe they (will) have real access to these identities and activities, or at least (will) have access to meaningful (perhaps simulated) versions of them. Thus science in school is learned best and most deeply when it is, for the learner, about "being a scientist" (of some sort) "doing science" (of some sort). This is why video games are so good at getting learning done. They allow people to be and do new things in new worlds, sometimes far beyond what they could be or do in the "real" world (Gee, 2004, p.94).

Gee argues that virtual role-play in immersive game worlds has the potential to afford a powerful new kind of holistic learning experience because it allows learners to acquire knowledge and skills through situated practice in a designed virtual environment and thereby rehearse, in practice, various kinds of possible selves. Games like *Sim City 2000* and *Roller*

Coaster Tycoon position players in the role of a town mayor and theme park developer. Gee is interested in the emerging possibilities to design immersive environments that might give children from lower socio-economic backgrounds a simulated experience of being a professional doctor or lawyer. Indeed, so called epistemic games (Shaffer, 2005) might be used as powerful learning resources to shape learners' sense of possible future selves.

The concept of a 'projective identity' becomes central to Gee's thinking. In many respects, virtual role-play allows learners to explore different projective identities. Indeed, he argues that the activity of playing a virtual character involves an interplay between a player's real world identity (that which one brings with them to a role within a virtual space), a virtual identity (that which one develops through the design decisions and choices one is compelled to make) and a player's 'projective identity' (the quasi-virtual self that the player is struggling to become within the game)⁷⁴. The three way play of real world, virtual and projective

⁷⁴ This concept is described with reference to the experience of playing a female Half Elf in the video game *Arcanum*. Gee (2004, p.112) argues: 'a game like *Arcanum* allows me, the player, certain degrees of freedom (choices) in forming my virtual character and developing her throughout the game. In my projective identity I worry about what sorts of "person" I want her to be, and what type of history I want her to have had by the time I am done. I want this person and history to reflect my values – though I have to think reflectively and critically about these, since I have never had to project a Half Elf onto the world before. At the same time, this person and history I am building also reflects what I have learned from playing the game and being Bead in the land of *Arcanum*. A good role-playing game makes me think new thoughts about what I value and what I don't'.

identities in virtual role-play is regarded as a powerful experience that might support deeply committed learning through designed experiences in immersive game worlds. In short, virtual worlds become incubators that afford learners opportunities to acquire knowledge and skills as they work towards the actualisation of various projective identities. In this respect, immersive role-playing environments function in the capacity of psycho-social moratoriums or 'sand boxes' for exploring possible future selves.

Gee's conceptual work is suggestive and provocative. However, on its own, it doesn't capture what this study suggests may be the most important implication of media change for self-making. The focus on video games as the only kind of virtual environments that position people in particular roles and allow them to engage in deeply committed, intrinsically motivated learning activities is too restrictive. It diverts attention away from more familiar but less conspicuous ways that virtual environments position people in roles and allow them to rehearse various projective identities. His work on affinity spaces and shape-shifting portfolio people starts to expand and develop these themes (Gee, 2004). However, this work is insufficiently grounded in empirical research.

In the current study, only one student played video games and there was little evidence to suggest any of the students appropriated new media to live out double lives or experiment with alternative identities in virtual psycho-social moratorium as Turkle's earlier work might suggest. However, the data indicates that some advanced learners are exploiting the designability of their personalised mediascapes to bootstrap themselves into the actualisation of a strong projective identity. Significantly, unlike the designed experiences afforded by role-play in predesigned immersion video game environments, these students were actively designing their own personalised mediascapes (invariably using a wide variety of more familiar technologies) that allowed them to play particular kinds of roles and become new people in quasi-virtual worlds of their own making.

Here an attempt is made to explore the expanding opportunities that new mediascapes afford individuals to bootstrap their own personal development through participation in virtual worlds that they themselves, rather than game designers, have designed and cultivated over years; personalised mediascapes that evolve as a result of participation in various kinds of goal directed practices.

9.4 Bootstrapping one's personal development towards the actualisation of a projective identity

To develop these ideas, it is helpful to turn to return to the work of a cognitive anthropologist Dorothy Holland and colleagues. In *Identity and Agency in Cultural Worlds*, Holland *et al.* (1998) propose a practiced-based account of identity formation that emphasises the agency of individuals. Five interrelated concepts, *history in person*, *identity in practice*, *figured worlds*, *the space of authoring* and *making worlds*, provide useful conceptual tools for understanding the new opportunities for 'self-making' through active participation in designed virtual environments⁷⁵. Further, in combination with Gee's concept of a projective identity, Holland *et al.*'s (1998) theory can be used to suggest ways that these designed virtual environments might help individuals to take control over their own life trajectories or play an active role in designing their own social future.

In Holland *et al.* (1998) theory development is grounded in ethnographic case studies of situated practices in diverse contexts. For example, one case explores practising members of *Alcoholics Anonymous* re-constructing their identity (as non-drinking alcoholics) through the ritualistic rehearsal (with others) of a non-drinking identity. Significantly, the case illustrates how individuals are capable of establishing new social practices which support the emergence

⁷⁵ Holland *et al.* (1989) are not concerned with virtual worlds or new mediascapes. However, the concepts innovated provide powerful conceptual building blocks for further category development.

of new selves through dialogue with others. Moreover, these re-constructed selves become powerful tools that help non-drinking alcoholics resist a dangerous addiction. In effect, this case study illustrates how a form of semiotic mediation empowers individuals to overcome or escape a condition that threatens to destroy their lives, re-construct their self and thereby actively choose an alternative social future⁷⁶. Thus, like Bruner, Holland *et al.* reject essentialist notions of self, but also reject constructivist concepts of self that fail to take account of the overbearing influence of socially constructed *figured worlds* on individual behaviour. Their thinking is close to that of Bourdieu (1977, 1986). However, in contrast to Bourdieu's somewhat overbearing, if not over-determining *habitus*, the notion of a *figured world* allows for the possibility of individuals taking an active role in transforming themselves following a recognition that their figured worlds are not necessary or natural.

Unlike Gee (2004), Holland *et al.*'s theorising is more directly influenced by the work of the Soviet theorists - in particular, Vygotsky's ideas about semiotic mediation as a means to escape or overcome the deterministic tendencies of one socio-cultural circumstances and Bakhtin's notion of the dialogic imagination that creates space for individual agency through selective identifications with voices, narratives or versions of the self. The concepts of mediation, the dialectic and the dialogic are integral to her thinking about the possibilities for individuals to exercise personal agency in socially constructed or *figured worlds*. Below I attempt to illustrate how Holland *et al.*'s concepts might be used to understand how learners might take a pro-active role in self-making (from the outside) through the mindful design of a personalised mediascape. The argument suggests that participation in new mediascapes

⁷⁶ Similar stories of self-emancipation and resistance through a process of identity re-construction are recounted with reference to the ritualistic singing of Nepalese women and stories of female college students who resist the social pressure to enter into the figured world of romance.

effectively expands what Holland *et al.* conceptualised as a *space of authoring*. First, to ground the category development, three descriptive vignettes are offered to particularise the thrust of the argument.

Vignette: Clinton playing the politician in the making

Previously, Clinton had been the student president of a prestigious U.S. university. In this role, he had become actively engaged with student politics and had personally met a number of leading statesmen and senators. He chose to study for the MSc. in Social Policy at Oxford with a view to returning to the U.S. to pursue a career in politics. He was also an active member of *Democrats Abroad* and, when not directly engaged with his studies, spent much of his time in the college bar meeting people from diverse nationalities, ethnicities and religious orientations. Indeed, he argued that meeting people from diverse backgrounds and engaging in debate on a range of current affairs issues was the primary purpose of his year in Oxford. These informal activities enabled him to practise an emerging identity as a young politician in the making.

New media radically expanded Clinton's capacity to prepare him self for a career in politics. Indeed, Clinton aggressively exploited the affordances of new media to construct and actively engage in the virtually figured world of U.S. politics. Whilst he lived in a study room with simple furnishings and a dozen or so books on his bookshelf he had designed a personalised mediascape that brought the world of U.S. politics streaming into his everyday life. He read multiple online newspapers on a daily basis, downloaded and shared vodcasts of political speeches, programmed alert bots to notify him of breaking news on particular new stories and followed and subscribed to *C-SPAN* to gain directed access to raw video footage of important congressional debates.

Asked why it was so important to maintain this high level of immersion in the world of politics and current affairs, he replied:

“Well that’s who I am, I’m a policy person, I love policy, I love politics, and I love current affairs. This is what I do. Now I recognize that people don’t all do that. But I enjoy it, I enjoy watching policy speeches, I enjoy listening to governmental leaders and political leaders talking about what they believe in and what their ideas are.”

The phrase, ‘that’s who I am, I’m a policy person’ suggests he had internalised a particular projective identity that was practised through a form of serious play in his virtually figured world. He didn’t just read about politics, he didn’t simply watch vodcasts of political speeches. He pro-actively engaged in this virtually figured world. Indeed, active participation in the figured world of politics was not an interest, nor a discrete activity that he ‘tuned into’ at particular time. Clinton had designed a media environment that allowed him to immerse himself in this virtually figured world.

With the aid of a powerful laptop and access to a fast ‘always on’ Internet connection, Clinton transformed his simple study room into a newsroom, a communications centre and a debating chamber that positioned him at the nexus of a host of information flows and exposed him to the voices, opinions and policy agendas of political allies and adversaries. Indeed, this meticulously designed virtually figured world had become integrated into the fabric of his everyday life as suggested in the following extract:

“Umm ... it takes me much longer to listen to the speeches but I can listen to the speeches when I’m getting ready to go out for the day, when I’m shaving and when I’m brushing my teeth or combing my hair I can pop up the Arnold Schwarzenegger speech or yesterday it was the John McCain speech and I can listen to Senator McCain’s speech at the Republican convention (as long as I can stomach listening to his words) and list them. Now with the Democratic convention I listen to all the speeches and everything like that...”

Views, opinions and strategies that were also actively discussed, debated and critiqued through active participation in a distributed community of ‘politicos’ mediated by the *Democrats Abroad* affinity space (as shown in Figure 9.1).



Figure 9.1 Screen shot of *Democrats Abroad* front page

This was an affinity space that radically expanded Clinton’s capacity to connect and engage with other committed Democrats from across the world; a space that, not unlike Holland *et al*’s alcoholics anonymous, may have constantly reinforced his emerging identity as a politician in the making (from the outside) through dialogue with others. Clinton now works for the Democratic Party in Washington D.C.

The first vignette illustrates how new media might afford an agentive individual to engage in serious play in a virtually figured world that, in a dialectical movement, supports the emergence of a particular projective identity. Moreover, it seems plausible to surmise that this virtually figured world was canalising the subject's personal development towards the actualisation of a projective identity and a consciously designed social future. In this respect, it illustrates one of the ways a committed learner might appropriate new media to bootstrap themselves towards the actualisation of a projective identity and a consciously designed social future.

The second vignette illustrates how another student with a very different set of priorities might engage in the work of self-authoring. Here, more emphasis is placed on the ways new media enables the subject to recruit others into a virtually figured world.

Vignette: Jacob playing the environmental guy

As suggested, Jacob led a principled life committed to the values of self-sufficiency, sustainable development and healthy living; principles that, through an evolved and mindful design of a personal mediascape, situated him in the figured world of environmental activism. He had designed a web of quick links and shortcuts that subjected him to multiple information flows and allowed him to participate in multiple online affinity groups. These exposed him to the voices, opinions and views of environmental activists from around the world. Significantly, Jacob didn't simply construct himself as the 'environmental guy' in conversation. Through pro-active engagement in chocolate, permaculture, and environmental groups, he rehearsed this identity in digitally mediated practice.

Jacob had been an active participant in the virtually figured world of environmental activism for some time. The move from North America to Oxford barely disrupted his on-going and

proactive engagement. No matter where he was in the world, given access to an Internet connection, Jacob could turn on his computer, step into role and enact this identity. Further, he sought out opportunities to expand this space of self-authoring. For example, shortly after arriving in college to commence his MSc. course, Jacob stood for election as the college environmental officer and immediately started a campaign to extend the range of recycling services available throughout the college. Much of his campaigning was conducted through the medium of the college *Grapevine*, a listserv that went out to all members of the college. This medium of communication enabled him to broadcast and promote his values to others throughout the college community. In this case, Jacob was not simply rehearsing a distinctive identity in a virtual psycho-social moratorium or immersive game world, he was enacting a role for a real audience who, in turn, recognised and for the most part, respected his principles.

In addition, Jacob constantly sought out ways to recruit others into this figured world. For example, shortly after arriving at college Jacob had set up a vegetarian food co-op. He was frustrated with the limited availability of health foods in Oxford and rather than accept the situation as given Jacob appropriated new media to expand the context of action. This involved ordering a catalogue of health food products from an online supplier and sending out an e-mail through the college *Grapevine* to see if anybody else was interested in making bulk purchases. Having recruited a group that had a fluctuating membership of 10-15 people, Jacob periodically sent out the electronic catalogue, via an e-mail attachment, to group members who would then meet in Jacob's kitchen to finalise arrangements before submitting a bulk purchase order to the wholesalers. Jacob clearly led and drove the group. He was the proactive mobilizer. Nevertheless, over time the group developed into a community of friends who all shared interrelated interests in environment issues, animal rights and healthy eating.

This vignette suggests that new media doesn't simply afford agentive individuals, like Jacob, the opportunity to broadcast his views and rehearse their identities in a virtually figured world. It suggests how new media might also be used as a tool to recruit others into a figured world who, in turn, confirm the subject in a particular role, in this case as 'the environmental guy'.

The final vignette illustrates a similar process at work. However, here an attempt is made to illustrate how: a) a subject's projective identity might take shape in ontogenesis as a result of participation in multiple regimes of practice and b) how a subject might appropriate new media to maintain a commitment to a particular version of self as they migrate across countries and across institutional contexts. Unlike the previous two vignettes, this one illustrates how a subject might play with the pseudonymity afforded by new media to strategically shapeshift through a plurality of virtually figured worlds as they negotiate their way towards a desirable social future.

Vignette: Jim playing the 'human rights guy'

As suggested, Jim was extremely successful in his role as an academic. He published multiple papers in top law journals and organised a research group. However, despite the heavy demands of his academic course and his preparation for a pupillage at an Inn of Court, he invested considerable time engaging in the virtually figured worlds of human rights activism. For example, Jim's engagement with *COHRE* (Centre on Housing Rights and Evictions) an organisation 'dedicated to reducing the amount of forced evictions in the world' often resulted in him receiving four to five e-mails a day. The work was sporadic and Jim simply lurked and monitored the development of many of the issues. However, occasionally something 'came up' in which he became heavily involved. Such was the issue regarding forced evictions in Zimbabwe. He commented that he 'really pushed the envelope out on that one'. In addition, he participated in the *Economic & Social Rights Network* (as discussed in 8.2), *Business &*

Human Rights, *Human Rights* and *The Shelter Network* as well as subscribing to alert services to track specific news stories. For example, he became very concerned about the issue of forced evictions in Zimbabwe so programmed a *Google* alert bot to automatically e-mail him any web-based news article that related to this emerging human rights issue.

In order to participate in these multiple online communities, Jim maintained six e-mail accounts. He used these strategically, not only to organise his mail, but also to actively participate in a plurality of figured worlds. An extended extract of dialogue recorded in response to the question, ‘why do you need six e-mail addresses?’ suggests the complexity of the identity play involved.

J I have my Oxford account, I have my McGill alumni account that I use all the time, I have my CISDL (Centre for International Sustainable Development Law) account because I’m a research fellow there, and I have my COHRE account, and then I have my Hotmail account that I kept just because I’d given that to a lot of people over the years and I have a Mac.com account which I never use, it was something that was given to me.

RF So why do you need all these e-mail accounts?

J I have four of my accounts downloaded to my laptop every day, and I typically send from each account often. And I use them as ways to categorise my work too. So I don’t want someone whom I am working with at CISDL to send mail to my Oxford Account – which happens often and I have to tell people to send to my CISCL account because I want to keep all those messages in the same folder.

RF So it helps you compartmentalise your life and you play a different role, in these different communities and you want to keep those roles separate?

J That’s right. And of course I exploit the different identities. Well, if I’m contacting someone who is going to respect an Oxford account more then I allow it, but if I want to come across as someone who is possibly more established then a DPhil candidate I might want to come across as a research fellow, in which case I use CISEL and then sign it with my signature at the bottom.

RF Why would that give you a more professional status?

J Say I'm dealing with a senior partner at a law firm for instance on a topic that I deal with at the CISDL. I'm going to use that address so that it doesn't betray the fact that I'm also a student which is exactly what happened in one case. Or if I'm liaising with some activists I might want to write from my COHRE account or if I might have to deal with a Government official and I want them to send to my Oxford account because that carries more weight with the person who is on the other end of it ... depending on who it is.

RF So you're very aware of the identity that your e-mail address conveys and the credibility that it's going to give you and you're conscious of constructing the right identity for the right person?

J That's right.

RF That's fascinating.

The dialogue illustrates that Jim was acutely aware of the implicit messages conveyed to people he corresponded with by the e-mail address and the domain name. Further, he anticipates how a particular address might shape certain peoples' perception of his credibility as a participant in particular communities. Moreover, it powerfully suggests how he tactically exploits these multiple online identities (Jim the Oxbridge law student, Jim the NGO worker, Jim the COHRE consultant) to maximise his credibility in particular communications. In short, Jim was a shape-shifter (Gee, 2003, pp.91-115) adept at shifting between different identities, different discursive practice to suit his changing purposes. In this respect, he was aggressively exploiting the pseudonymity of his multiple online personas.

Jim's practice illustrates how an expert-like practitioner might exploit the affordances of new media to maintain and manage multiple online identities and participate in figured worlds characterised by multi-voicedness. However, what it doesn't explain is why Jim was so committed to retaining such a high level of immersion. Asked why he was committed to

spending so much time engaging in multiple human rights activities not directly related to his studies, Jim replied:

“Because I think this should be. And I think there should be solidarity between these different activities and one thing I can bring to it is – I’ve read a lot in that field and I’m abreast of a lot of developments so I can be of assistance by providing information.”

In short, Jim had internalized a deep commitment to a particular set of values that was now shaping his digitally mediated practices which in turn shaped his emerging sense of self. Understanding the origins of Jim’s commitment to this virtually figured world of human rights activism requires a detour back into his past. This account also illustrates how a complex, multidimensional projective identity is forged in practice.

Jim’s account of early school years was not particularly remarkable; he was an able student but not particularly distinguished. He described school as a ‘mixed experience’. However, Jim described his father as an ‘encyclopaedia of knowledge’ who had a ‘massive study’ with ‘thousands of books’ and who had a ‘massive influence on his intellectual development’. Indeed, he was identified as the original source of Jim’s interest in ‘justice related issues’. He recalled spending hours talking about politics, economics, racism and his favourite topic, ‘What’s wrong with capitalism?’ He argued that from ‘at least the age of 11’ he had a strong sense that he would become a doctor or some kind of job that involved ‘helping others’; sentiments that were strongly encouraged by both parents.

Later Jim gained a place to study Philosophy at Ottawa University. It was also around this time that he came across two works that seemed to play a highly significant role in shaping Jim’s trajectory through life. The first was the *International Charter of Human Rights*, the second was a reading of selected works by Friedrich Nietzsche. Jim argued that the *International Charter of Human rights* provided him with a focus and a new way to think about ‘justice related issues’ without committing himself to his father’s radical left wing

political views. In the philosophy of Nietzsche, he found the concept of 'self-overcoming' compelling. Jim argued that these readings encouraged him 'to really consciously think about what kind of person I was and how I could make myself better'. He set about trying to 'improve himself in many different ways in many different directions'. To this end, he started reading the classic literary texts, started conducting independent reading of 'scientific journals' and starting learning the Japanese martial art of Jui-jitsu.

After graduating, Jim travelled. He planned to study the poor and oppressed in Ecuador, he planned to 'try and work out what their problems were' by conducting a 'person to person study' and then dedicated his life to solving them. However, his self-proposed study quickly developed into a form of activism. In Ecuador, he started to provide human rights activists with English tuition free of charge. He had recognized the importance of the English language as a way to help these activists promote their causes. Further, he set about securing financial support for the project and established the school as an NGO with charitable status. It was also at this time he first started to use computers in a pro-active way. He needed to 'put together parcels' that included 'timetables, charts and a few graphics' to make promotional material using *MS Publisher*. These activities seemed to allow Jim to combine his internalised ethic of 'self-overcoming' with a desire to promote 'human rights'. In this respect, the activity can be perceived as highly committed.

After a year living in Ecuador and building up the NGO, he decided that his ability to tackle issues of poverty and injustice as a teacher of English were somewhat limited. Consequently he resolved to return to Canada, acquire a professional legal qualification and study the legalities of International Human Rights at McGill University. Jim recalled that there 'was no single group at McGill dedicated to International Human Rights' so he decided to set one up. This involved the extensive use of e-mail to co-ordinate the group's activities. Not unlike the NGO project, the group soon attracted like minded people and grew into a series of seminars

and workshops with visiting speakers from far and wide. Jim commented that this also made him well known among members of the faculty and he often found himself participating in informal discussions about legal and development issues with senior faculty members in the law school.

Upon graduation, Jim found himself in considerable debt and took a job at a corporate law firm in New York. He described the first year at the law firm as, ‘the worst years of my life in many ways.’ When asked to explain, Jim replied, “Well, I went from being the human rights guy at McGill to a corporate lawyer in New York. Those were at the polar opposites of the spectrum... So for me it was extremely difficult”. The conflict between his identity as a corporate Lawyer and human rights campaigner appeared to be a source of considerable stress. The role he stepped into didn’t feel authentic. Further, he was constantly required to re-invent his former identity in order to fit in with the prevailing ethos of the corporate law firm.

Having saved money and paid off his debts, Jim applied and was accepted to study for a MSt. in law at Oxford where he reconnected with the world of human rights activism through a plurality of virtually figured worlds. Even whilst working from the comfort of his student flat, or from his favourite spot in the back of the law library down the road, Jim was at once a post graduate student, an NGO worker, a human rights activist, a barrister in training, a respected fellow of the *International Centre for Sustainable Development* and a paid consultant for CORHE. He was at once the recipient of information, and the disseminator of information, an apprentice and a tutor, a legitimate peripheral participant and a pro-active mobiliser, an advisor, and activist, a facilitator and a researcher. Each role demanded Jim to constantly re-construct himself as he responded to e-mail and participated in different discourses.

From the personal-historic perspective, the subject’s participation in the figured world of human rights activism, at first perplexing, starts to make perfect sense. Indeed, engagement
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with this virtually figured world no longer appears like an additional, extracurricular activity. Rather, it appears essential for understanding commitment and success. Jim felt alienated and inauthentic whilst working as a corporate lawyer. However, when studying academic law at Oxford, he was able to appropriate new media to maintain a strong link with the people and communities he ultimately wished to help and re-construct his identity as ‘the human rights guy’ in practice. This was an identity, in alignment with his principles, forged in practice as an NGO worker in Ecuador which now gave meaning to everything he did. In a sense, this identity served as a foundation and a source of energy that was driving him forward towards the actualisation of his projective identity as an International human rights lawyer.

Thus, Jim’s story suggests more strongly how a projective identity might be formed through participation in multiple forms of practices and maintained through a form of serious play in multiple overlapping virtually figured worlds. Further, more than any other, it suggests why a personal-historic perspective is required to understand the importance of the relationship between identity and agency in virtually figured worlds.

9.5 Conceptual tools for understanding self-making in new mediascapes

These vignettes illustrate some of the ways advanced learners are exploiting the designability of new mediascapes, not merely to off-load or delegate information processing tasks (as suggested by the metaphor of an extended cognitive ecology) or tap the distributed expertise of others accessible (as used in the discussion about the cultivation of globally distributed funds of living knowledge) but to engage in the work of self-making through the customisation and design of a radically personalised mediascape. To abstract and generalise it is helpful to develop some categories that might be used to theorise self-making activities in new mediascapes. Building on the conceptual tools developed by Holland *et al.* (1998), below

conceptual tools or heuristics are offered that might help us unpack some of the insights suggested in the vignettes.

Identity in digitally mediated practice

Essentialism assumes that identities are fixed, innate and biologically determined, whilst constructivism assumes that individuals have the power to arbitrarily construct themselves as a particular kind of person with scant regard for socio-cultural circumstances. For Holland *et al.* (1998), identities are neither essential nor constructed; rather, identity is forged in dialectic through participation in practices. In the three examples presented, individuals engaged in particular kinds of mediated practices that in turn appear to confirm or reify an emergent identity in practice. Jim defined himself as the ‘human rights guy’ in interview but enacted his identity as the ‘human rights guy’ through participation in a range of self-directed practices. Likewise, Jacob’s identity as the ‘environmental guy’ was at once rehearsed and confirmed through a range of online activities that transcended the requirements of his degree course. Similarly, Clinton confirmed his identity as the ‘policy person’ on a daily basis by enacting this identity in practice. Thus, to greater or lesser degrees, the identities of these learners were enacted, not simply through oral accounts of themselves, but through a variety of digitally mediated practices supported by their networked computers.

Importantly, participation in these kinds of activities did not require them to be immersed in a particular lifeworld or to be located in a particular physical place. Personal computers with Internet connections afforded these individuals the opportunity to enact these identities whenever they sat down to work at their computer from a variety of locations including bedrooms, libraries and coffee bars. Unlike Holland *et al.*’s original concept, identity in digitally mediated practice affords opportunities for identity work independently of communities of practice embedded in physical contexts.

History in Laptop

As discussed in Chapter 3, over time, traces of students' lives, past and present, become ingrained into students' personal media environment through a process of inherited, evolved and mindful design and adaptation. Traces of Jacob's participation in various environmental groups, traces of Jim's participation in multiple human rights organisations and traces of Clinton's long history of avid news reading were evident in the links, shortcuts and contacts designed into their personalised mediascapes. Archives of e-mails, letters, essays written as undergraduates, digitised photographs and digitised music collections also started to accumulate on many students' laptops that they took with them as they migrated across institutional contexts and across continents. Traces of their connections to others accumulated in the form of entries in contacts folders and instant messenger 'buddy lists' and social software tools further kept students in touch with former lives and former practised identities. Thus, in a very real sense, and to an increasing extent, sediments from past experience accumulated leaving traces and associations of personal histories in students' laptops.

Holland *et al* defines *history in person* in terms of the 'sediment from past experiences upon which one improvises; using the cultural resources available, in response to the subject position afforded one in the present' (1998, p.18). *History in person* acts as a form of symbolic or semiotic mediation that canalises future development. Further, *history in person* is a powerful determinant of future activity but can be overcome. She stresses, 'the constraints are overpowering, yet not hermetically sealed' (p.18). She adds that persons bring 'a history to the present – an important aspect of which is usually an untidy compilation of perspectives, some developed into symbolized identities' (p.46). Thus, *history in person* might be conceived as *identity in practice* that has become internalised and subsequently works as a powerful mediator of action and behaviour. Moreover, she argues, 'history in person is likely to have an agenda and momentum of its own' (p.46).

In an age in which an increasing number of students' connection with the former lives, former friends and former selves appears to be mediated through the laptop computers they carry around with them in their backpacks, it appears we need new conceptual tools to understand how and why past experiences, relationships and experiences might continue to shape students' identities and behaviour. The category *history in laptop* serves this purpose. Like Holland *et al*'s concept of *history in person*, *history in laptop* has a certain 'agenda and momentum of its own'; it may sustain individuals in particular practised identities, such as the 'environmental guy', the 'human rights guy' or the 'policy person' over time. *History in laptop* starts to work as a mediator of action the moment a student sits down and turn on their computer. In some cases, as suggested in the vignettes, this appears to canalise the emergence of a desirable projective identity. However, it might also trap learners in a former identity that inhibits personal development.

If *history in person* is conceptualised as internalised *identity in practice* stored as patterns of neuron firings in a biological brain, *history in laptop* might be conceptualised as *identity in digitally mediated practice* that has become externalised and recorded as patterns of computer code and symbolic representations in a personalised mediascape. As concepts, both *history in person* and *history in laptop* point to the possibility for the past to remain present and to exert its influence over subsequent practice, self-making activity and hence, personal development.

Significantly, *history in laptop* does not depend on the human memory. It may be lost as a result of a hard drive failure or accidental deletion of data. Moreover, *history in laptop* accumulates over time; layers upon layers of connections to others are maintained as students progress through life. Jim's participation in the *ESPRN* and Ardash's participation in *Left-In* had all begun when they were living elsewhere. Nevertheless, these connections and their capacity to participate were not diminished when these students moved across contexts. In a

sense, *history in laptop* preserved these symbolic associations with their quasi-virtual communities that had become designed into their virtually figured worlds.

Finally, it is important to note that *history in laptop* is non-material. It resides in each individual's personalised mediascape rather than a physical computer. Indeed, it can quite literally be transferred across physical-state devices when, for example, a student transfers their documents and settings to a new computer. Indeed, increasingly *history in laptop* resides in online spaces, such as the *Democrats Abroad* affinity space, *Vegidate.com* or on emerging technologies like *Facebook*.

In many respects, *history in laptop*, is more robust than *history in person*. Thus, it seems likely that it might play a significant role in the process of self-making in the new media age. *History in laptop* works to keep the past-present, it works to remind learners who they are, and positions them in particular roles reminding them what they are supposed to be doing when they sit down at their computers. *History in laptop* also positions users in a particular relation to others and directs their attention to activities within particular online affinity groups. The constraints imposed by *history in laptop* may be overbearing at times. However, they are not 'hermetically sealed'. Certain voices, information flows and subscriptions to distributed communities can be silenced; others can be given more prominence. Significantly, *history in laptop* affords individuals new opportunities to re-invent their sense of past selves through the work of design. Both Jim and Clinton charged ahead subscribing to information flows that canalised their self-making activities in line with their projective identities. In contrast, Timothy (who had decided to retrain as a medical doctor) was actively cutting himself off from information flows related to his practised identity as a psychiatric researcher and exposing himself to associations that confirmed him in his newly found projective identity – as a medical doctor in the making. In short, he appeared to be wilfully engaged in

the process of destroying a former identity in preparation to break away, horizontally, into a new life trajectory.

Personalised mediascape as figured world

As suggested, for Holland *et al.* (1998) the concept of a *figured world* is pivotal for understanding of the relationship between identity and agency. Figured worlds emerge as a result of collective human activity. They are created through practice and thus can be changed by conscious and purposeful identity work with others who, like members of *Alcoholics Anonymous*, are determined to take control over the social organisation of their lives and forge a brighter future. Nevertheless, this involves commitment and sustained effort and requires the support of other voices or identifications that enable individuals to break away from their existing practised identities. Figured worlds are inherently social rather than products of a single human imagination. Holland *et al.* (1998) stress that a figured world is ‘peopled by the figures, characters, and types who carry out its tasks and who also have styles of interacting within, distinguishable perspectives on, and orientations toward it’ (p.51). They claim:

The identities we gain within figured worlds are thus specifically historical developments, grown through continued participation in the positions defined by the social organization of those worlds’ activity. They are characteristic of humans and society (p.41).

All varieties of human activity give rise to figured worlds that exert a determining force on participant behaviour. Holland *et al.* (1998) stresses:

Under the rubric of culturally figured worlds or figured worlds we include all those cultural realms peopled by characters from collective imaginings: academia, the factory, crime, romance, environmental activism, games of Dungeons and Dragons, the men’s house among the Mehinaku of Brazil (Gregor 1977). These are worlds made up of Geertz’s (1973b) “webs of meaning.” Figured worlds take shape within

and grant shape to the co-production of activities, discourses, performances, and artefacts (p.51).

Given this variety, it is not difficult to conceive of a personalised mediascape, the product of thousands of individual design decisions, in which individuals participate in multiple virtual communities with others as a figured world. Jacob participated in the figured worlds of environmental activism and veganism, Clinton in the figured world of U.S. politics and Jim in the figured world of law and human rights activism. Holland *et al.* (1998, p.50) highlight that ‘people have the propensity to be drawn to, recruited for, and formed in these worlds, and to become active in and passionate about them’. Indeed, ‘people’s identities and agency are formed dialectically and dialogically in these ‘as if worlds’ (p.50). In a similar manner, the virtually figured worlds designed by Jim, Jacob and Clinton appeared to draw them in and recruit their identities, shaping their sense of self to the extent that they became active and passionate about the various roles they played.

Personal mediascapes as an expanded space of authoring

Holland *et al.*’s work continually stresses, figured worlds remain culturally and social constructed artefacts. Consequently, they can be re-configured through sustained effort. Nevertheless, this is not easy. Members of *Alcoholics Anonymous* can not merely wake up and decide never to drink again. They have to work at reconstructing their identities as non-drinking alcoholics in a group. Through collective activity they re-configure their worlds and thereby transform their ‘selves’. In Holland *et al.*’s work, spaces that allow individuals to engage in the work of self-making in collaboration with others are conceptualised as a *space of authoring*⁷⁷. Holland *et al.* (1998) argue:

⁷⁷ The concept owes a great deal to Bakhtin’s (1981) concept of the dialogic imagination.

The world must be answered – authorship is not a choice – but the form of the answer is not predetermined [...] authoring is a matter of orchestration: of arranging the identifiable social discourses/ practices that are one’s resources in a time and space defined by others’ standpoints in activity, that is, in a social field conceived as the ground of responsiveness. Human agency comes through this art of improvisation; the space of authoring includes Vygotsky’s zone of proximal development. The “voices” that make up Vygotsky’s space of authoring are to an “author” as Vygotsky’s instructing adults are to the neophyte: they do not so much compel rote action as extend, through their support, the competences, the “answerability,” of persons to operate in such as diverse yet powerful social universes (p.272).

The learner as Designer emphasised that learners are compelled to engage in the work of design and suggested how the *mindful designer* of a personal learning environment might be configured to support advanced knowledge work. Conceived as a space of authoring, personalised mediascapes also offer *mindful designers* new opportunities to manage and orchestrate the voices and identifications they make when compelled to make an answer. They afford access to alternative cultural resources, alternative voices, and alternative practised identities through opportunities to participate in multiple virtually figured worlds.

In Holland *et al*’s case studies of the disenfranchised peoples living in developing countries, the variety of cultural resources they might draw upon to resist appears extremely limited. For example, Holland *et al* (1998, p.3-18) describes a lower caste Indian woman who can’t bring herself to enter the house of a higher caste neighbour despite the fact she has been invited into the house by researchers. She improvises a solution and, rather spectacularly, climbs up the side of a house to get up on to a balcony rather than violate the dictates of the figured worlds of caste. Her action constitutes a creative improvisation in a particular situation that enables her to negotiate an immaterial yet forceful internalised constraint. Nevertheless, the improvisation enables her to conform rather than reject her position within the figured worlds of caste. She has no prior experience of living in a society where the rules and prohibitions of the caste system do not apply.

In advanced western societies in which students and young professionals are invariably compelled to move across contexts and engage in relationships with others from diverse backgrounds, individuals have a wider variety of ‘voices’ or practised identities that they might draw upon as cultural resources when compelled to ‘make an answer’. They might also draw upon fictional voices they have experienced through the mediums of literature, film, drama or television. These alternative voices constitute the dialogic imagination and furnish individuals with cultural resources that might be used to enhance personal agency.

Thus, if the hybrid multi-cultural context of complex modern societies expands the space of authoring, it seems feasible that access to a hybrid, global participatory mediascape expands it further still. In the context of new mediascapes, as emphasised throughout this study, learners have choices. Indeed, with respect to the myriad of information flows, affinity groups and connections to others made possible individuals are often confronted with an *anxiety of choice* and are compelled to choose alone. This may well place an additional burden of responsibility on individuals who can’t always rely on the support of a lifeworld community with a homogenised set of values or clearly defined code of conduct. Nevertheless, it also affords individuals new opportunities to engage in the work of self-authoring through selective identifications with particular voices.

9.6 Self-making as bootstrapping oneself towards the actualisation of a projective identity through serious play in virtually figured worlds

For Holland *et al.* (1998), a capacity for making new figured worlds is fundamental for understanding the origins of human agency. New figured worlds become a part of the culture through the activity of serious play.

The fourth context of identity is that of *making worlds*: through “serious play,” new figured worlds may come about, in the peculiarly Bakhtinian way that feeds the personal activities of particular groups, their “signatures,” into the media, the cultural

genres, through which even distant others may construe their lives. Vygotsky's understanding of play is crucial to this argument. Just as children's play is instrumental in building their symbolic competences, upon which adult life depends, so too social play – the activities of “free expression,” the arts and rituals created on the margins of regulated spaces and time – develops new social competencies in newly imagined communities. These new “imaginaries” build in their rehearsal a structure of disposition, a habitus, that comes to imbue the cultural media, the means of expression, that are their legacy (p.272).

In short, *making worlds* through serious play creates a context that allows new identities to emerge through participatory practice within these worlds; worlds in which individuals are free to engage in the activity of self making and rehearse or play their projective identities. In turn, these playful activities become instrumental facilitating the development of new competences within these virtually figured worlds. Hence, self-making becomes a process of bootstrapping oneself into a new kind of practiced identities, from the outside, through serious play in a virtually figured world.

Given access and control over their virtual environments, conceived as a space of authoring, Jacob, Clinton and Jim effectively sought out opportunities to play or rehearse their projective identities. Indeed, the opportunity new media afforded these individuals to play projective identities appears fundamental when attempting to account for the commitment and enthusiasm with which they engaged in these intrinsically motivated activities. Seemingly inspired by Vygotsky's (1978, p.102) claim that ‘play creates a zone of proximal development of the child’, Holland *et al.* (1998) stress:

Play is also the medium of mastery, indeed of creation, of ourselves as human actors. Without the capacity to formulate other social scenes in imagination, there can be little force to a sense of self, little agency. In play we experiment with the force of our acting otherwise, of our projectivity rather than our objectivity [...] Through play our fancied selves become material (p.236).

Indeed, in the examples of Jacob mobilizing the vegetarian food co-op and Jim acting in the capacity of a legal advisor, new media appears to afford new opportunities for individuals, not only to play but also to *be* the people they wish to become. Jenkins (2006c) makes this point implicitly in his case study of Heather, the teenager who created, managed and edited the *Daily Prophet*. Likewise, by pro-actively participating in virtually figured worlds Jim and Jacob were not simply playing or rehearsing projective identities, they were enacting projective identities in practice. That is to say, their ‘fancied selves’ became material through serious play in their virtually figured worlds. In this respect, the distinction between serious play and *being* begins to break down.

Development through play is certainly not a new mode of personal development. However, what appears distinctive is the range and complexity of props and scaffolds available to support role-playing activities. Vygotsky draws attention to the fact that play can be stimulated with simple props or pivots that stimulate imaginary play. Indeed, drama teachers invariably stimulate dramatic improvisation with a box full of simple props: masks, or everyday objects – a briefcase and bowler hat or sword and a pirate’s hat for example that suggest the figured worlds of city finance and piracy on the high seas. These props thereby help the drama student construct a figured world in their imagination and thereby stimulate imaginary play in improvisational drama. New mediascapes radically extend the available stimuli that might enable individuals to engage in various forms of serious-play.

Jacob didn’t merely read about environmental issues on the web, he became pro-actively involved and enacted his emergent identity through participation in a range of online affinity spaces and the mobilisation the vegetarian food co-op and by actively seeking a partner who shared his values through *Vegidate.com*. Likewise, Clinton didn’t simply watch political speeches via *C-Span* vodcasts, he actively engaged in heated discussions and debates with other members of the *Democrats Abroad* affinity space and networked with other politicians

in the making with the aid of social software technologies. In short, Clinton, Jacob and Jim were not merely experimenting with alternative identities that might remain repressed with real-life. They were actively managing and seeking opportunities to rehearse these identities in practice, and thereby bootstrap their selves towards the actualisation of a projective identity through serious play in a virtually figured world.

9.7 Committed learning in new mediascapes

Finally, it is important to emphasise that Clinton, Jacob and Jim all appeared to have a very strong sense of who they were, what they stood for and who they wanted to become. In Gee's terms, they all had a very strong projective identity. This was highly conspicuous in the configuration and design of their virtually figured worlds that evolved through participation in practice, and that sustained certain kinds of practices. All appeared to be engaged in the activity of self-making in which these projective identities operated as the *object-motives* of their self-managed life-long learner agendas. Indeed, through practice directed towards the actualisation of their projective identities they had designed virtually figured worlds that placed them in a particular relation to others, afforded access to multiple online affinity groups and exposed them to highly specialised information flows. In turn, these tools and resources appeared to canalise their personal development towards the actualisation of the 'fancied self' or projective identity.

Further, all three were deeply committed to becoming particular kinds of people. Jacob's commitment to healthy living and sustainable development, Clinton's to left of centre Democratic politics and Jim's to helping the disenfranchised through his legal expertise were evident in all aspects of their practice and, in a sense, defined them as individuals. This resonates with the emphasis placed by Bruner, who in discussing the activity of self-making through autobiography, argued that 'the force that relates the centre to the rest of the world is a commitment that endures over time – a commitment that ensures a certain stability in self-

conception' (1991, p.76). These commitments appeared to anchor their practice, the process of iterative design and their playful rehearsal of respective projective identities. Indeed, it was this commitment to becoming a certain kind of self that seems to account for the advanced and sophisticated ways these students appropriate new media and innovate advanced new media literacies.

This becomes even more conspicuous when one considers the practices of other individuals. It became evident in Edina's commitment to create, maintain and nurture an extended personal network of friends and colleagues seeking work in the NGO sector around the world through the daily posting away messages. It became evident in Anastasia's commitment to self-teaching herself statistics. And indeed, it was evident in Sue Ellen's commitment to internalise the correct spellings through the restricted use of a spellchecking tool. All of these examples further highlight the need to consider an internalised commitment to becoming a particular kind of person as an important mediator of self-directed learning activity.

Summary

The examples and concepts developed in this chapter illustrate how agentic students are *bootstrapping themselves towards the actualisation of a projective identity through serious play in virtually figured worlds*. For these students, access to tools and learning resources accessible through the traditional university remained important. The aim is not to suggest otherwise. However, access to traditional resources was not essential, nor central, to their self-making activities. In short, the traditional university had become *decentred* as the primary site and resource for learning in these students' everyday lives. Formal academic qualifications remained important; however, they did not define these learners or function as the primary object-motive of learning activity. Rather the actualisation of a projective identity appeared to become the object-motive of their life-long learning agendas. In other words, these advanced agentic students appeared to have assumed full responsibility for their own personal

development and became actively engaged in the project of self-making by designing and constructing virtually figured worlds that enabled them to enact their projective identities and literally *be* the people they aimed to become.

Chapter 10 **The Predicament of the Learner in the New Media Age**

This investigation began with the question, what are the implications of media change for learning and literacy? In a world which an emergent web-based participatory culture is converging or colliding with the remnants of a top down, hierarchical culture industry associated with formal education and paper-based and broadcast media this question seem timely and pertinent. Each of the findings chapters has attempted to address this question by identifying how individuals are appropriating new media to expand learning opportunities, by teasing out the tensions and contradictions they confront and by identifying the new media literacies that characterise expert-like digitally mediated practice. Nevertheless, since each of the findings chapters is closely grounded in the nitty-gritty detail of digitally mediated practices there is a danger that, to use a metaphor, one can't see the wood through the trees. In this final chapter, an attempt is made to zoom out, summarise the key arguments, highlight the essential findings and provide a model for conceptualising the predicament of the learner situated at the fault lines of media convergence. In addition, this chapter considers the problem of generalisation, proposes a provocative hypothesis to focus debate about the long term implications of media change for the future of university learning and considers directions for further research.

10.1 Summary of thesis

A review of existing literature highlighted some of the contradictions emerging as a result of media convergence. In particular, it highlighted the growing discrepancies between learning in and out of formal educational contexts (Buckingham & Scanlon, 2003; Facer et al., 2003; Jenkins, 2006c; Lenhart et al., 2001; Livingstone, 2002; NAACE, 2004; Sefton-Green, 2004a;

Selwyn, 1998) and some of the emerging opportunities to learn independently beyond formal educational contexts (Francis, 2004; Jenkins, 2006c; Lenhart et al., 2001; NAACE, 2004; Sefton-Green, 2004b, 1998; Selwyn, 1998; Selwyn et al., 2006; Tapscott, 1998; Tobin, 1998; Wellington, 2001). However, attempts to close the gap between (technology assisted) learning in and out of schools appeared somewhat naïve, premised on the assumption that we can re-engage learners and transform education simply by incorporating new media forms into classroom-based learning activities. This is nowhere more conspicuous than in the excitement surrounding the new possibilities for engaging learners with ‘serious’ or educational games (Barab et al., 2005; Beavis, 1998a; de Freitas, 2006, forthcoming; Egenfeldt-Nielsen, 2005; Francis, 2006c; Gee, 2003; Jenkins & Squire, 2003; McFarlane, 2005; McFarlane et al., 2002; Prensky, 2001a; Sandford et al., 2005; Squire, 2004a, 2004b). However, it is also this optimistic belief in the transformative potential of ICTs for education that has driven policy initiatives aimed at accommodating the expectations and changing practices of an emergent digital generation (Buckingham 2006).

Nevertheless, the evidence that ICTs are transforming education in the ways envisaged remains ambiguous (Harrison *et al.*, 2002; Somekh, 2004). Indeed, some have started to question what we mean by ‘impact’ (Oliver & Harvey, 2002) whilst others have highlighted the degree to which computers are ‘oversold and underused’ (Cuban, 2001). Significantly, Lankshear and Knobel (2003) draw attention to the pervasiveness of an ‘outsider’ mindset that has inhibited the progressive use of new technologies in schools that might unleash their potential. However, progressive initiatives that integrate new media into constructivist pedagogies are conspicuous by their absence. Design experiments reviewed that have attempted to make school more like home rarely became integrated into mainstream curriculum teaching (Egenfeldt-Nielsen, 2005; Kist, 2005; Lankshear & Knobel, 2003; Squire, 2004a). Indeed, these studies suggest as many problems as solutions and indicate that

the notion that we can transform education through the progressive use of ICTs in formal educational contexts remains highly problematic.

Both the LAMS and Revolution case studies, that specifically explored attempts to incorporate new media forms into classroom-based learning activities, revealed how learners committed to the 'official' or teacher defined learning objectives enjoyed the relative freedom to move ahead at their own pace within a loosely constrained virtual environment. However, they also show learners veering off task to explore more personal interests and learners exploiting the relatively low level of structure and surveillance in the digital classroom to take an 'easy ride'. Finally, both studies highlight the fact that a sizeable minority of learners actively subverted the 'official' teacher-defined learning objectives of the lessons. Indeed, the priorities of the group classified as the 'gamers / hackers' appeared to be under the influence of commercialised and eroticised popular culture that was seeping into the classroom through the Internet. Viewed holistically, these studies stress the importance of understanding what young people bring with them to the digital classroom: their personal values, priorities and aspirations for the future as well as personal histories of computer use.

This line of thinking is crystallised in the hypothesis that we need to understand learner identities as powerful mediators of learning activity. In turn, this leads to the conclusion that a key challenge facing educators attempting to facilitate learning in media rich environments concerns how to recruit learner identities into a culture of achievement. This appears fundamental, for without an internalised commitment to worthwhile learning objectives it is unlikely that many young learners will appropriate and use new technologies in productive ways. Nevertheless, as others have argued, a capacity to exploit a range of digital tools and resources in a self-regulated manner to achieve specific aims and objectives has become critical in the information age in which success in higher education and employment involves advanced knowledge work (Kellner, 2002; Leu *et al.*, 2004; Luke, 2000; Snyder, 2002a, 1998,

2002b; Tyner, 1998). From this perspective, a fundamental challenge confronting educational researchers is to better understand how we can best prepare young people to live and work in what has variously been called the 'attention economy' (Goldhaber, 1997), the 'networked society' or the 'information age' (Castells, 2000) and produce resourceful learners capable of taking control over their own learning trajectories and using the Internet and a range of web-based tools and resources for independent self-directed learning. This is regarded as the most fundamental research challenge confronting educational researchers today.

The main study, *The Agency of the Learner in the Networked University*, attempts to address this research challenge by exploring how a group of advanced, resourceful and agentive learners, currently living and learning in an environment in which Internet access is near ubiquitous, are actively exploiting new media to advance personalised learning agendas. This group had succeeded in the 'game' of formal schooling and appeared set to embark on successful careers in a range of professions. All (but one) had a long history of Internet use. All enjoyed unrestricted access to the Internet from their study rooms, and all had a range of authentic needs that could be addressed through the creative appropriation of web-based tools and resources. Consequently, this group seemed likely to provide valuable insights into the full potential of the Internet as a learning resource. Further, following Olson (1994, p. 43) who viewed literacy 'not just as a basic set of mental skills isolated from everything else' but as the 'competence to exploit a particular set of cultural resources' and the 'knowledge and skills to exploit these resources for particular purposes,' I argue that an analysis of the digitally mediated practices of this group can provide an insight into what it means to be literate in the new media age.

The distinctive perspective provided depends upon a commitment to several methodological protocols. Most importantly, this thesis has attempted to understand the implications of media-change by *following the learner* in an attempt to gain various *localised insider*

perspectives and build theory on the basis of richly descriptive vignettes of exemplary digitally mediated practices. This was deemed a safe way to advance an exploratory research agenda given: a) the rapidity of media change and b) the fact that we have no objective vantage point upon which to stand. This approach ensures that the conceptual tools or heuristics offered are well grounded in the analysis of digitally mediated practices and draws attention to the tensions and contradictions confronting learners as well as the new learning possibilities afforded.

Empirical inquiry uncovered many examples of students exploiting new media in creative and sometimes unexpected ways to advanced personalised learning agenda. Indeed, the method described in Chapter 4 allows us to glimpse a variety of advanced new media literacies in action. Nevertheless, empirical investigation on its own cannot advance this research agenda beyond the descriptive level. Each chapter aimed to develop categories and typologies, grounded in the qualitative data, to conceptualise the various ways advanced students are appropriating new media to advance learning and to identify associated new media literacies.

As Synder (1998) has suggested, in a discursive field that remains in its infancy a degree of hybridisation and borrowing is necessary. Indeed, a high degree of borrowing, synthesis and hybridisation of conceptual tools is evident in the writings of all academics working at the intersection of new media, literacy and education (Gee, 2003; Jenkins *et al.*, 2006; Lankshear & Knobel, 2003; Snyder, 1998, 2002b). Similarly, this theory building project demanded the creative appropriation of sensitising concepts, categories, heuristics and models from diverse sources. However, this study is distinctive. Here theory is built more self-consciously on existing constructs within the socio-cultural tradition. Further, conceptual innovation is always informed (if not dictated) by objective observations of digitally mediated practice (as opposed to subjective experience or speculation). Such a move allows a theory building project to build cumulatively upon prior research in the learning sciences and remain focussed

on genres of practice that are routine (if not mundane) but fundamental to understanding emergent self-directed learning strategies that comprise new media literacy. Importantly, this required the analysis to be focussed on committed learners who were using new media to address authentic learning needs as opposed to a small minority of tech-savvy gamers or hackers.

In *The Learner as Designer*, distributed cognition theory (Clark, 2003; Dennett, 1996; Norman, 1993; Pea, 1997; Perkins, 1997), multimodality theory (Kress, 2003) and the Vygotskian notion of self-regulation 'from the outside' are used to explore ways learners designed quasi-digital cognitive ecologies to facilitate advanced knowledge work. The category of *mindful design* is identified as a fundamental aspect of new media literacy.

Chapter 6 builds on theoretical work by Wertsch (1998), Bahktin (1981) and de Certeau (1998) to conceptualise how learners are *creatively appropriating* a variety of digital tools, sometimes *against the grain*, against the intentions of the designers, to exploit the affordances of digital tools and resources for course-related study and self-education.

Chapter 7 explores how students are cultivating extended personal networks through the active appropriation of social software tools. Here conceptual tools offered by Nardi *et al* (2002), Moll *et al.* (1997) and Edwards (2005) are used to conceptualise how and why students create, nurture and activate *distributed expertise* and exercise *relational agency* through *globally distributed funds of living knowledge*. Further, I suggest ways these globally distributed funds of living knowledge might be activated for course related study or career advancement.

In Chapter 8, theoretical constructs developed by Gee (2004, 2005) and Lave and Wenger (1991) are used to draw attention to the various ways advanced students are now *breaking away* and strategically shifting between various modes of participation in online affinity spaces to exploit the distributed expertise of thousands of anonymous others. The strategy

described as *intent lurking* on the margins of affinity space is identified as a distinctive new mode of learning that requires further investigation.

Chapter 9 adopts a personal-historic perspective and explores how learners' emerging sense of self or identity is mediated by active appropriations of new media forms. Concepts offered by Bruner (1991), Gee (2004), Turkle (1997) and Holland *et al.* (1998) are used as building blocks for further category development. The vignettes illustrate the diverse ways Jim, 'the human rights guy', Jacob, 'the environment guy' and Clinton, 'the politician in the making' design personalised mediascapes that allow them to *be* the people they aim to become and thereby *bootstrapping themselves towards the actualisation of a projective identity through serious play in a virtually figured world*. The chapter concludes by proposing that a personalised mediascape can be conceived of as an expanded *space of self-authoring*.

Thus, in each chapter an attempt is made to pull together conceptual resources that might be integrated into a socio-cultural mode of thinking about the implications of media change for learning and literacy. Existing concepts are used as heuristics to read the data and serve as building blocks for the development of new derivative concepts. These concepts might be used as conceptual tools to facilitate further theoretical and empirical and theoretical work in this area.

10.2 The problem of generalisation

The use of multiple qualitative methods to follow the learner tends to produce an extremely messy data set based on micro-genetic observations of a wide variety of practices that can not be easily compared. Indeed, when attempting to understand individual 'styles' of computer use it remains important to respect the specificity of each case. Consequently, it might be argued that the insights gained cannot be generalised beyond the individual or group studied. Nevertheless, the aim is not to generalise to a wider population so much as to engage in the work of conceptual or ontological innovation (diSessa & Cobb, 2004). Furthermore,

following Vygotsky, the aim is to particularise instances of digitally mediated practice which are essential to the ‘microanatomy’ of the whole. If successful, the vignettes serve as emblematic instances of much wider cultural trends that may be in ‘epistemological harmony’ with the experience of the reader and thus facilitate a form of naturalistic generalisation (Stake, 2000). Finally, if the conceptual tools offered and the model described below help learners reflect on their own predicament and become more self-conscious about the tensions and contradictions they encounter as a result of media change, this theory building exercise succeeds as a preliminary investigation that might evolve into a developmental research agenda aimed at empowering diverse groups of learners to exploit the full potential of new media and the Internet as a resource for learning and personal development.

10.3 Conceptualising the predicament of the learner with Engeström’s extended mediational triangle

In response to the overarching question, *what are the implications of media change for learning and literacy*, it is helpful to advance a more abstract, if somewhat tentative, model to conceptualise the most important findings of the current study. This might help to clarify and illustrate the interconnected nature of many of the emergent themes explored throughout the thesis and provoke further debate. This is attempted with the aid of an activity theoretical schema in attempt to conceptualise the predicament of the learner situated at the fault lines of media convergence.

This schema is specific to the predicament of graduate students living and learning in a networked university. However, given that this group are invariably early adopters of new technologies and innovators of new practices, in time it may also serve to conceptualise the predicament of the learner more generally. Of course, further research would be required to establish whether or not this is indeed the case. Thus, the following should be considered as a working hypothesis designed to provoke debate.

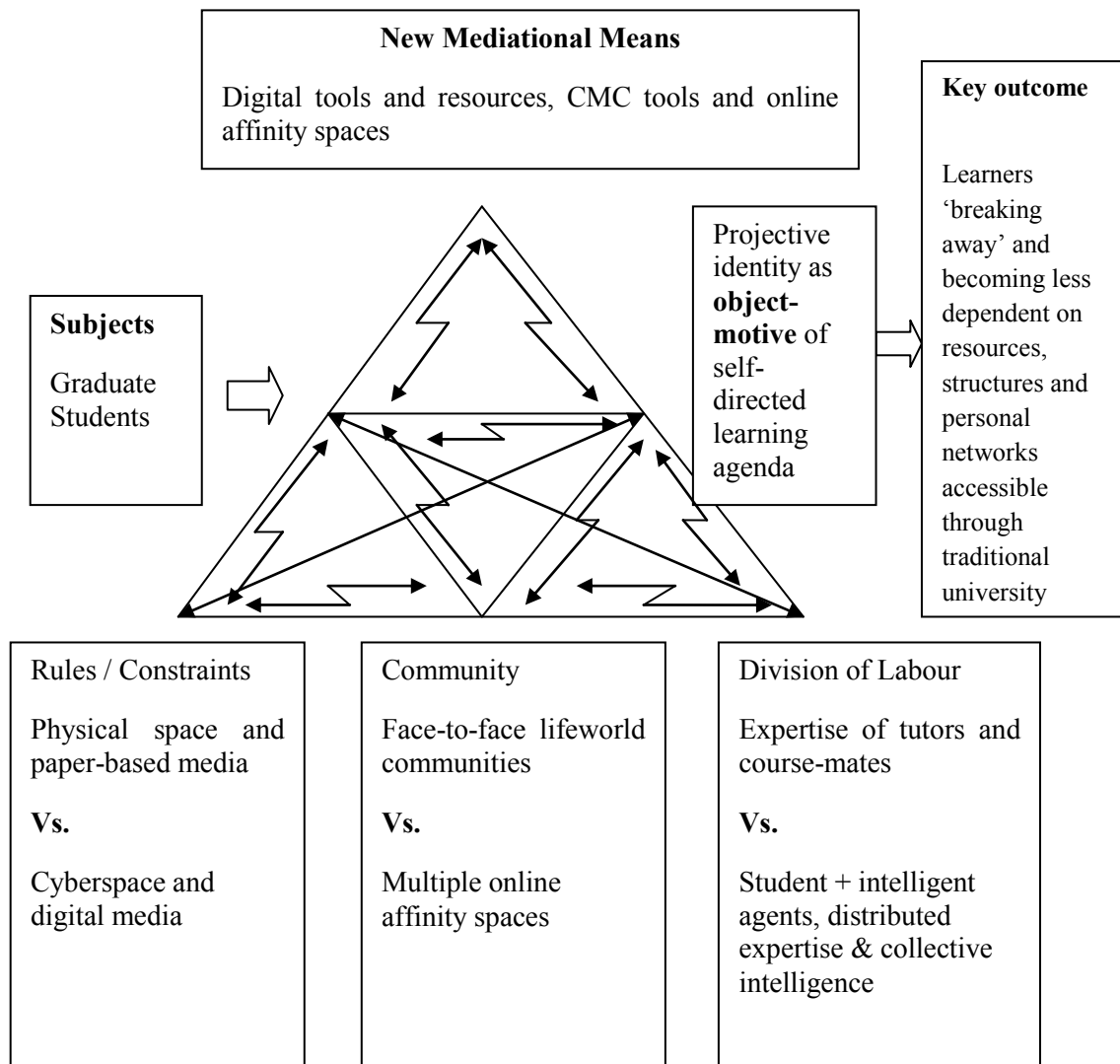


Figure 10.1 Activity theoretical conceptualisation of the *Predicament of the Learner in the networked university*

The diagram attempts to conceive of the university as an activity system in the process of transformation as a new generation of digital tools and resources become available (top of triangle). It builds on theoretical work conducted by Engeström (1987, 1999) developed to

conceptualise object-orientated activities⁷⁸. Here post-graduate students are conceived of as the subject/s of the activity system. A narrow view might assume that they attend university to gain formal academic qualifications. However, such a perspective would effectively ignore a wide variety of digitally mediated practices related to informal learning, self-education, socialising, entertainment and leisure. Therefore, this schema assumes that students go to university for a variety of reasons: to gain academic qualifications; to build personal networks; to find space and time for self-education; to gain valuable experiences through participation in clubs and societies; to make new friends; and to find partners. All of these activities might be subsumed under the umbrella term of ‘self-making’ activities (Bruner, 1991) in which students develop identities in practice (Holland *et. al.*, 1998). Further, as discussed in Chapter 9, new media affords individuals new opportunities to rehearse identities through digitally mediated practices in virtually figured worlds that in turn canalise personal development towards the actualisation of a productive identity⁷⁹. Consequently, in the diagram, students’ projective identities (right) are conceived as the personal object-motives of a lifelong learning agenda that includes both course related study, informal learning and self-education and a variety of social and recreational activities⁸⁰.

⁷⁸ Significantly, the Vygotskian subject-tool-object triangle (top) used to conceptualise tool mediated action is extended with the additional of three categories: rules (or constraints); community and division of labour.

⁷⁹ This insight effectively extends insights from small scale ethnographic studies of tech-savvy teens managing fan fiction sites like *The Daily Prophet* (Jenkins, 2006c) and developing reputations as experts in digital subcultures (Tobin, 1998).

⁸⁰ Such a move risks subverting a central tenet of Leont'ev's (1979) original formulation of the object as that towards with the collective activity (such as the primeval hunt) is directed. In this respect, the notion of a personal object-motive might appear too individualistic. Nevertheless, following Bruner,

The bottom of the triangle directs one's attention to consider the *rules* (or constraints), the *community* and the *division of labour* entailed in the activity of self-making in the networked university. The zig zag arrows within the triangle and the 'vs.' sign in the boxes suggest the tensions created as set of once dominant practices is displaced or subverted by an emergent set of practices associated with new media. The tensions and contradictions relating to the rules, community and division of labour are now discussed in turn.

Physical space & paper-based media vs. cyberspace and digital media

The *rules* or *constraints* box directs our attention to the tensions between learning activities mediated by physical spaces and paper-based media in the traditional university to self-making activities mediated by cyberspace and digital media in the networked university. As students migrate out of libraries and opt to work in their study / bedrooms with their own computers and unrestricted access to the Internet, they are no longer restricted by the implicit constraints of physical spaces (libraries, seminar rooms and lecture theatres) designed to support learning, nor the constraints designed into paper-based learning media. The 'cup half full' (Wertsch, 1998, pp. 38-41) perspective might celebrate the new opportunities for students to learn independently, at their own pace, leveraging digital applications and online resources designed into a personalised mediascape just-in-time and on demand if and when

'self-making' is conceived as a collective activity that is 'powerfully affected not only by your own interpretations of yourself, but by the interpretations others offer of your version'. Similarly, the notion of *bootstrapping ones' self towards that actualisation of a projective identity through serious play in a virtually figured world* is conceived of as a distributed process of self-formation in which information flows, participation in online affinity groups and connections to others through personal networks designed into a personalised mediascape are extremely important. Thus, in a sense projective identities remain the end point of a distributed collective activity.

required. This is the uncritical utopianism fuelling the ‘personalisation’ discourse (Green *et al.*, 2005). However, the ‘cup half empty’ perspective might stress the enabling nature of the constraints designed into physical learning spaces (libraries, seminar rooms and private study areas) that have evolved over centuries to protect learners from the distractions of popular culture, information overload, disorientation and the perennial threat of distraction. Further, such a view might highlight that the intelligence designed into paper-based media (text books, journal articles and paper-based notes) serves to regulate attention and guide, structure or scaffold the cultural practice of concentrated study.

Indeed, this thesis confirms that despite the emerging opportunities of self-directed learning, as students start to spend more of their time learning in online spaces with digital media many of these implicit constraints are lost. Instead students are confronted with an *anxiety of choice* when designing personal learning environments, selecting information flows, evaluating the relative utility of hundreds of electronic information sources and deciding which hyperlinks to follow. Furthermore, as the active designer of a complex cognitive ecology, the orchestrator of a legion of quasi-intelligent agents and the cultivator of multiple, intersecting distributed personal networks that might function in the capacity of a *fund of living knowledge*, learners are compelled to take on more of the onus of responsibility for managing and regulating learning activity. In effect, they are compelled to take on more of the responsibility previously designed into the structuring structures of traditional learning environments and paper-based learning media.

Face-to-face lifeworld communities vs. multiple online affinity spaces

The *community* box directs our attention to the emergent tensions as learners spend more of their time learning as members of hybrid quasi-virtual communities. In particular, this thesis draws a distinction between learning in traditional face-to-face communities of academic practice (with course mates and tutors) and learning with remote learning companions and

anonymous others through participation in multiple online affinity spaces. Again the ‘cup half full’ perspective might highlight the capacity of learners to leverage the distributed expertise accessible through *globally distributed funds of living knowledge* and the capacity to learn through various modes of participation (including *intent lurking*) in an increasing variety of online affinity groups. Indeed, advanced learners appeared adept at seeking out, exploring and participating in a range of online affinity spaces to address very specific learning needs and expand their own capacity to learn independently. Nevertheless, the ‘cup half empty’ perspective highlights the additional burdens of responsibility placed upon learners who exploit these opportunities. Again, learners attempting to design and leverage the resources of other minds available on and offline are confronted with choices. They must learn how to create and nurture their distributed funds of living knowledge and confront the challenge of *knowing how to know who* might be best assist with very specific tasks at specific times. Similarly, learners participating in ‘group life’ are invariably confronted with the challenge of *knowing how to know which group* to subscribe to and of strategically adjusting their mode of engagement in a manner that most effectively addresses their changing needs as learners.

In addition, learners must continually evaluate the benefits and drawbacks of continued participation in particular groups over time and remain on guard against the threat of disorientation, the dangers of addictive and time wasting immersion in group life, and be prepared to resist attempts by the dominant groups within affinity spaces to usurp their personal agency. Advanced learners remained mindful of the various ways participation in online affinity spaces affected their priorities, values and sense of community.

Shifts in the division of labour required to engage in advanced knowledge work

The third box (bottom right) draws our attention to the shifting distributions of cognitive labour required to learn and engage in advanced knowledge work. From a Vygotskian

perspective, the cognitive load for engaging in advanced knowledge work is always distributed between the biological brain and the tools of culture at an individual's disposal (including other minds). However, the opportunities to leverage the intelligence distributed in the environment or the intelligence distributed among communities of learners is highly dependent on context. For example, L.B. Resnick (1987) highlighted the degree to which formal educational contexts provide relatively restricted opportunities for learners compared to a range of real world contexts in which learning and cognition has always been a highly situated, distributed and socially shared. In the traditional university, the cognitive load required to study was invariably distributed between course mates, tutors and mediated by a range of paper-based resources. In the networked university, this remains the case. Nevertheless, the division of labour for completing many tasks is shifting.

Today, many students are leveraging the intelligence designed into dedicated applications to support advanced knowledge work and off-loading a variety of cognitive chores (like literature searching, filtering, proofing, formatting bibliographies, and monitoring new publications) using a variety of programmable quasi-intelligent agents and bots. Moreover, emerging opportunities exist for individuals to leverage the distributed expertise accessible through their distributed funds of living knowledge, to learn from anonymous others through participation in online affinity groups and to tap the 'collective intelligence' harvested by so called Web 2.0 technologies, like the *Amazon* book recommendation system, to manage, filter and process information. Again, the 'cup half full' perspective tends to celebrate the fact that students, like Timothy, can now engage in advanced knowledge work with the aid of dedicated applications (like the *MRI Crow* brain image tool) for highly specialised tasks, drawing on the expertise of a distributed affinity group of others if and when required. However, the 'cup half empty' perspective would highlight the dangers of *inhibited internalisation* and dependency as knowledge workers become increasingly dependent on the distributed expertise of others' minds and the intelligence designed into their personal

learning environments; a phenomena nowhere more conspicuous than in students' anxiety and recollections surrounding the catastrophic impact of hard drive failure. In Clark's (2003) terms, such an event might be considered as the loss of an extended cyborg mind.

Thus, whilst new opportunities exist for students to benefit from the distributed intelligence available with and through new media, these opportunities place additional responsibilities on learners. Learning in what Perkins (1997) described as 'person solo' mode is no longer an option. Our capacity to engage in advanced knowledge work depends on the information processing powers of a 'persons plus' a range of digital tools, resources and mediated conversations with others. In such a world, it appears that students must now take on more of the onus of responsibility for managing and regulating how, with what and with whom the cognitive labour for advancing learning is distributed.

10.4 Are we witnessing the decentring of the traditional university?

Finally, the 'outcomes' box highlights what this thesis identifies as the key implication of media change for the learning in the networked university. It suggests that as students break away from traditional lifeworld communities of learners and creatively appropriate new mediational means, cultivate globally distributed funds of living knowledge and start to learn through participation in multiple online affinity groups, they become less dependent on learning media and lifeworld communities of academic practice accessible through the traditional university. This raises the question: are we witnessing the *decentring* of the traditional university?

The decentring metaphor appears appropriate. It doesn't negate the continued importance of paper-based resources, structured learning environments, or formal learning activities orchestrated by a teacher such as a seminar, lecture or even an online forum supported by an institutional VLE. Indeed, many informal learning opportunities take place in between, or on the margins of the structures created by more formalised and purposefully orchestrated

activities. However, it does suggest the shifting locus of agency for managing and regulating learning in an environment in which the Internet and new media has become infrastructural. Whilst the Internet doesn't determine practice, as McLuhan (1994) once argued with respect to the impact of the invention of the light bulb on western civilisation, its pervasiveness is such that it effects all aspects of everyday life.

This study illustrates how students inevitably start to exploit the new learning opportunities afforded. In a world in which, as Timothy found, it is quicker to look up a word in the *Oxford English Dictionary Online* than the *Oxford English Dictionary* sitting on one's book shelf, changes in routine everyday practices should be expected. Indeed, in the vignettes we catch a glimpse of a new and emergent culture of learning in which learners are turning to the Internet as the primary site of learning; a culture in which learners are designing radically personalised and increasingly portable learning environments that support learning in a variety of locations; a culture in which learners are creatively appropriating web-based statistics tutorial, using *Wikipedia* to research the history of the British legal system in preparation for a job interview, and using C-SPAN vodcast to gain an insight into art of public speaking, policy rhetoric and representational bias. Significantly, these students are not turning to web-based resources out of necessity. They are breaking away from traditional practices and creatively appropriating new mediational means to address authentic learning needs and gain an edge in the knowledge economy. In this way, traditional learning media and traditional modes of knowledge dissemination are displaced as hundreds of individuals seek out more efficient ways to learn and educate themselves.

This process of decentring, as students take control, is manifest in a variety of practices. Significantly, these are not historically new forms of cultural practice. Students have been appropriating new mediational means, like photocopiers, calculators and e-mail listservs, to expand learning opportunities and connect with others with similar interests for decades.

However, today's students are not only building personal networks through participation in clubs, societies and attending social events. They are doing it through the posting of 'away messages' on *MSN Messenger*, through the practice of tagging photographs on *Facebook* and by writing flattering testimonials about each other's personal profiles on the *Friendster* community site. In turn, these extended personal networks, mediated by digital community building tools, open up further opportunities for individuals to break away if and when required. Hence, we find the likes of Miss Lullaby turning to her former course mate "back home in California" when in need of help with a written assignment as opposed to one of the students studying on the same course living in the local vicinity.

This model of cultural and systemic change is compatible with Jenkins' (2006) *convergence* model that draws attention to the way *Napster*, and the distributed file sharing communities it supported, subverted and undermined the monolithic control of the music industry, or the way *Skype* Internet telephony has started to unsettle the power, control and financial interests invested in the telecommunications industry. It is also compatible with a far older discourse, inspired by the dialectical materialism of Marx and Engels (1970) that argues that real and sustained systemic transitions are always driven from below as thousands of individuals, working through existing contradictions, innovate new practices that eventually bring about systemic change. Indeed, Engeström (2005, p. 214) argues that 'new qualitative stages and forms of activity emerge as solutions to the contradictions of the preceding stage of form'. This, in turn, takes place in the form of 'invisible breakthroughs' from below. The case is made with reference to Illyenkov who himself argued that sustained systemic changes cannot happen in any other way.

In reality it always happens that a phenomenon which later becomes universal originally emerges as an individual, particular, specific phenomenon, as an exception from the rule. It cannot actually emerge in any other way. Otherwise history would have a rather mysterious form. Thus, any new improvement of labour, every new

mode of man's action in production, before becoming generally accepted and recognised, first emerges as a certain deviation from previously accepted and codified norms. Having emerged as an individual exception from the rule in the labour of one or several men, the new form is then taken over by others, becoming in time a new universal norm. If the new norm did not originally appear in this exact manner, it would never become a really universal form, but would exist merely in fantasy, in wishful thinking (Ilyenkov, 1982, p.83–84).

If this model of cultural or systemic change is accurate, then it is plausible that the practices of advanced, agentive learners who are emerging as the 'exception from the rule' may, in time, be 'taken over by others' and become a 'new universal norm'. Indeed, if this model is accurate, then it seems more than likely that the documented practices of this group and tentative hypotheses proposed do indeed provide a glimpse into the future of higher education in particular and, given time, the future of (self) education more generally. Obviously, further work will be required to ascertain exactly how this process of cultural change continues. This is particularly important now that many so called *Web 2.0* technologies have come to maturity and tools such as *Wikipedia*, *YouTube*, *Facebook*, and social book marking technologies (that remained something of a novelty to many students in 2005-6 when the bulk of the data was collected) appear set to become integrated into the routine practice of everyday life in homes, universities, schools and among the retired⁸¹.

If this is indeed the case, the consequences for educational policy are profound and wide ranging. Significantly, this model implies that change doesn't come about as a result of the decisions taken by centralised committees and university administrators. Indeed, as an increasing number of students seize control of the means of knowledge production and dissemination, they have choices. Further, not unlike like Daisy who, when discussing her use

⁸¹ White's (2007) survey data clearly indicates that tools such as *Wikipedia* are now being used by people of all ages. Indeed, the over 65s were the second highest user group after the under 18's.

of journal articles argued, ‘if it’s not online, I’m not going to use it’, it seems likely that students will make choices that policy makers and those in positions of authority will be compelled to take heed of. Failure to do so would risk leaving the educational provisions provided by the traditional university somewhat obsolete.

10.5 New media literacy as mindful design and mindful practice

If indeed we are witnessing the decentring of formal education in people’s everyday lives, the need to direct research funding into projects designed to explore how we might empower people of all ages to become more new media literate becomes even more pressing. This thesis identifies genres of digitally mediated practice that might serve to guide further research and offers conceptual tools, categories and typologies that might be used in a developmental research agenda aimed more specifically at helping learners to become more aware of the tensions in their own digitally mediated practices. In turn, these cognitive tools might serve to assist an individual and a tutor to engage in a dialogue directed towards developing and enhancing existing new media literacies.

To single out an overarching characteristic of expert-like practice that might be regarded as the object-motive of a developmental research agenda, this thesis points to the importance of what I have called *mindful design* and *mindful practice*. These categories are offered as an alternative category to the more familiar term *metacognition* (Biggs, 1988; Kuhn, 2004; Metcalfe & Shimamura, 1994) or *reflective practice* (Schön, 1983) that do not take sufficient account of the mediated nature of learning and cognition. Mindfulness, as a term, enjoys considerable currency in eastern thought. Here *mindfulness* is suggested as a category on a par with meta-cognition compatible with the socio-cultural tradition. It might be regarded as a meta-level characteristic of expert-like new media literacy.

The *mindful designer* is self-conscious of the various ways their personalised media environment, and a variety of digital tools, mediate their own learning activities. Further, the

mindful designer is conscious of the way their personal mediascape constrains and affords access to the cognitive resources of other minds and places them in a particular relation to others. Further, as suggested in chapter 9, *mindful design* not only expands a learner's capacity to engage in advanced knowledge work, it also shapes their emerging sense of self and thus increases their capacity to take control over their own life trajectories.

The *mindful practitioner* explores and evaluates the mediational properties of new tools as they become available and develops a capacity to use a variety of tools in multiple combinations and *against the grain* to optimise their capacity to achieve their own agendas (learning and otherwise). Likewise, the *mindful practitioner* remains conscious of the various opportunities to work in joint participation with quasi-intelligent agents and conscious of the degree to which dependency on such tools might inhibit mastery of automated practices. Moreover, the *mindful practitioner* remains aware of the mediational properties of their physical learning environments (home, the library, the office, the coffee bar) and conscious of how this environment relates or interconnects with the mediational properties of their designed virtual learning environments. In addition, the *mindful practitioner* remains self-conscious about the implications of their participation in various virtually figured worlds for their changing sense of self and community and demonstrates a capacity to adjust their mode of participation accordingly.

In a sense *mindful design* involves taking responsibility for one's personalised mediascape and recognising one's agency as its gardener. It requires an acknowledgement that this mediascape is not fixed, natural or permanent but exists as a result of innumerable design decisions that can consequently be re-designed. In addition, the *mindful designer* actively engages in the work of redesign.

Given that all is in flux, and as Kress (2003) has highlighted, anything and everything is open to design, learners are now *compelled* to engage in the work of design. Nevertheless, the

mindful practitioner is conscious about the selection of worthwhile goals and adept at transforming the conditions of their own action to realise these goals. In contrast, the unmindful practitioner simply accepts the current configuration of the mediascape as a given, and thus allows their practices to be over-determined. In these cases, the mediascape positions the subject who thereby forfeits to the mediascape something that is proper to the learner. In this respect, *mindful practice* constitutes a form of mediated self-control, mediated self-regulation and mediated non-alienated activity. In short, the *mindful practitioner* exploits the affordances of their media environment to augment their agency (from the outside), achieve worthwhile goals, and move towards the actualisation of projective identities whilst resisting forces at work in the mediascape that usurp personal agency.

10.6 Directions for a developmental research agenda

The methodology developed and deployed illustrates one way the conceptual insights might be used to conceptualise the predicament of the learner. However, the concepts offered might also be used to inform and guide analysis in a variety of research designs aimed at addressing more specific questions. Such research might take the form of grounded theory building exercises aimed at category refinement or survey research aimed at mapping out practices among different sectors of the population. However, conceived as a utopian research agenda committed to empowering learners, ultimately it is envisaged that the conceptual tools offered could be used to help learners to become more mindful about their own digitally mediated practice.

The value of the conceptual tools developed in each chapter depends on their utility as psychological tools that learners might use to reflect upon their own practice, identify emerging tensions and contradictions and consider how they might better exploit the full fire-power of new media as a resource for learning. To this end, the concepts of *inherited designs*, *evolved designs* and *mindful design* (Chapter 3) might be used in a developmental research

agenda that empowered learners to design more powerful personal learning environments that enhanced their capacity to engage in advanced knowledge work. Similarly, the notion of *creative appropriation* might be used in a developmental research agenda devised to encourage learners to consider creative ways they might use a variety of digital resources (not necessarily developed for educational purposes) in multiple combinations and sometimes *against the grain* to address their changing needs as learners. Likewise, the notion of *globally distributed funds of living knowledge* might be deployed in developmental work aimed at alerting young people to the power, importance and potential benefits of cultivating and nurturing extended personal networks that might give them access to the distributed expertise of other minds. This seems increasingly important given the migratory nature of modern life and the new opportunities, afforded by social software tools, for individual students to cultivate expanded networks of loose ties as they migrate across countries and across institutional contexts negotiating diverse career trajectories.

The new media literacies described as *knowing how to know which group, intent lurking* and *dormant participation* might be used to help learners consider how they might benefit from engagement with group life and remain aware of the associated risks. In time, the emergence of affinity group culture might start to undermine the authority and control of established authority figures as a vibrant exchange of ideas and opinions, that currently remains metaphorically ‘under the radar’ of the traditional university, rages among members of distributed online communities. In this respect, it seems particularly important to understand this emergent arena of informal learning activity and consider the various ways it might empower or disorientate learners.

The interrelated notions of *history in laptop*, *identity in digitally mediated practice*, and *serious play* direct our attention to some of the ways learners might experience new ways of knowing, being and doing in a purposefully designed *virtually figured world*. Consequently,

they encourage one to consider how a *virtually figured world* might start to function in the capacity of an expanded *space of self authoring*. Indeed, when one starts to conceptualise learning in terms of self-making activities that involve course-related study, informal learning and self-education it becomes essential to understand how and why new media ecologies afford new opportunities for self-making activities. While Turkle (1997) and Gee (2003) opened the door to this line of research, I have attempted to probe further by building on conceptual tools offered by Holland *et al* (1998). However, the ultimate value of this line of research depends upon the potential of these conceptual tools to guide developmental work that aims to help learners become more conscious of the various ways their own virtually figured worlds might shape their sense of who they are and who they might become. In turn this might empower learners to take a more active role in designing *virtually figured worlds* that bootstrap their own personal development towards desirable social futures.

The variety of ways individuals might shape their sense of self and thereby take a more proactive role in designing a social future through serious play in a virtually figured world remains woefully under-researched. Given students' changing sense of self and community implied throughout this thesis, further empirical research in this area is deemed a high priority. Indeed, the dominance of the metaphor of distributed or socially shared cognitions in much work within the socio-cultural tradition (Littleton & Light, 1999) has to date left the issue of the ways new media might shape a learner's identity largely under researched. This is worrying given the potential of this mode of engagement with new media to expand the range of possible social futures open to individuals.

10.7 The need for further category development and refinement

It is important to stress that the concepts offered should also be treated with a degree of caution. Many remain rather crude tools in need of refinement. Most could be refined and developed through more rigorous cross-case analysis. Some remain too heavily indebted to

the constructs from which they are derived and insufficiently sensitive to capture the nuances of emergent practices. In general, further conceptual development will require more fine grained and tightly focussed empirical work combined with additional conceptual borrowing and synthesis. Indeed, this is essential if this research agenda is to advance with sensitivity to the subtleties of emergent practices and not remain stuck in the trap of mapping the old onto the new. For example, once one starts to think in terms of *affinity spaces*, it becomes apparent that the *community of practice* model, originally developed to conceptualise craft apprenticeships, is wholly inappropriate for conceptualising distributed online learning communities (Barton & Tusting, 2005). In this respect, further empirically grounded conceptual development should remain a high priority.

A rich depository of sensitising concepts exists beyond the socio-cultural tradition that might be able to assist with this research challenge. Indeed, whilst not always conspicuous, much of the background thinking informing this theory building exercise has been influenced by writers from a diversity of disciplinary backgrounds. Besides the movements explicitly outlined in the literature review, this study was influenced by thinking emerging from the *Birmingham School of Contemporary Cultural Studies* (Gelder, 2005; Hall, 1976); the Toronto School (Havelock, 1963; McLuhan, 1962; McLuhan & Lapham, 1994; Olson, 1994, 1995), computer-human interaction research (Nardi, 1996; Suchman, 1987); existential philosophy (Sartre & Maitre, 1948); media studies (Lister *et al.*, 2003; McLuhan & Lapham, 1994; Thorburn *et al.*, 2003; Williams, 2003); Game Studies (Castronova, 2001; Poole, 2000; Prensky, 2001a; Rieber *et al.*, 1998; Salen & Zimmerman, 2004; Shaffer, 2005; Steinkuehler, 2005; Wolf & Perron, 2003); studies of *The Internet in Everyday Life* (Wellman & Haythornthwaite, 2002); the philosophy of cognitive science (Clark, 2003; Dennett, 1996; Norman, 1993), management science (Beck & Wade, 2004; Brown & Duguid, 2002; Zuboff, 1988); research into the economics of the Internet (Anderson, 2004; Battelle, 2006; Goldhaber, 1997); and contemporary sociology (Beck, 1992; Castells, 2000, 2004; Giddens,

1984, 1991). Very few of these theorists are concerned with questions relating to learning and education in a direct way. Nevertheless, these traditions offer sensitising concepts and heuristics that can inform educational research. For example, the notion of the *attention economy* (Goldhaber, 1996), *remediation* (Bolter & Grusin, 2000) *cyborgification* (Clark, 2003), *semi-permeable membranes* (Castronova, 2005), *informating vs. automating* (Zuboff, 1988) and *real virtuality* (Castells, 2000) have or might prove useful in a future research agenda aiming to understanding predicament of the learner in a changing media environment. Neither should one ignore more abstract meditative forms of cyber theory. Whilst empirical researchers have been dismissive of the value of abstract, speculative theorising (Facer et al., 2003, pp. 3-4), I would argue that these theorists have an important role to play in helping to develop conceptual tools, metaphors and tropes that can be productively used to sensitise educational researchers to the predicament of the learner. Indeed, rather than dismiss metaphors like ‘speed space’ (Virilio, 2000), ‘cyborgification’ (Harroway, 1991) or ‘collective intelligence’ (Lévy, 1997), educational researchers need to read these texts with a critical eye to identify those heuristics that might best serve to illuminate issues relating to learning, literacy and education. Only then can an educational research start to fully understand and address the real challenges confronting young people in an increasingly technology-rich world.

Finally, educationalists need to consider how empirical investigation focussed on the practices of advanced, agentic learners studying at well established universities can be used as part of a wider developmental agenda. Indeed, the ‘social justice’ value of the current study can only be appreciated when one starts to consider how the findings might inform developmental research aimed at teaching less capable (and less privileged) groups how to exploit the full potential of the Internet as a learning resource. This challenge appears particularly important in a world in which a fast, always-on wireless Internet connection, like the telephone, radio

and television before it, seems set to become part of the fabric of everyday life for the vast majority of people living in advanced industrial societies and much of the developing world.

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Appendix 1: Timeline of research and dissemination activities

	Research Activities	Dissemination
2002-2003	- Completed MSc. in Educational Research Methodology - Completed ethnographic study of collaborative game play for dissertation project.	MSc. Dissertation Report: <i>Learning, motivation, play and the X Box generation: an investigation into the educational potential of collaborative computer games</i>
Year 1 (Oct 2003 - Sept 2004)		
Michaelmas	- Wide reading (techno-literacies & ethnographic studies of digital subcultures) - Reviewing educational software produced for curriculum online scheme	
Hilary	- Discovered <i>LAMS</i> at BETT Show (Olympia, London) - Wide Reading / literature reviewing - Attempting to negotiate access to observe LAMS lessons	Review of <i>Screen Play: Children and Computing in the Home</i> . (ROSE, issue 1, 2004).
Trinity	- Wide reading / literature reviewing - Initial readings in socio-cultural tradition - Met Henry Jenkins (director of M.I.T's Comparative Media Studies at <i>Digital Generations</i> conference, London) - Negotiating access to observe LAMS in real classrooms with real learners - Assisting with JISC sponsored	Summary report of lecturers experience of LAMS practitioner trials for JISC

	practitioner trials of LAMS at pilot school in Kent. • Started auto-ethnography focussed on my own experience of using web-based tools and resources. • Assisting with <i>LAMS for English</i> project (OUCS) • Started to conduct pilot interviews with college students about their use of computers in their study rooms.	Presented <i>Cognitive Tools: An investigation into the relationship between mind and digital technologies</i>. (OUDE, Research Student Seminar, July, 2004).
Year 2 (Oct. 2004 - Sept. 2005)		
Michaelmas	• Extensive reading (methodology / games and learning in and out of schools literature) • Drafting possible research designs. • Transfer of Status exam	Presented <i>Learning, Motivation, Play and the X Box Generation</i> (London Knowledge Lab, Nov. 2004). Invited talk. Presented <i>Theorising Games Culture</i> (University of Wales College Newport, Nov. 2004). Invited talk.
Hilary 05	• Interviews and Observations of LAMS lessons at school participating in Specialist School Trust trial. • Report writing (LAMS) for School. • Continued auto-ethnography and recruitment for Agency of the Learner in the Networked University. • Comparative virtual ethnography of <i>Neverwinter Nights</i> vs <i>Revolution</i>	Summary Report on LAMS pilot for school.
	Institutional visit to M.I.T (March – May 2005) • Designing Scheme of work for use with Revolution. • Followed M.I.T.'s Experiments Involving the use of Human Subjects course. • Attempted to set up Revolution in local high school.	Presented <i>Recycling Games Texts for the Classroom</i> (MIT Media Lab, Media in Transition, March 2005). Presented <i>Revolution</i>. (Education Arcade

	• Revolution workshops 1-5.	Conference, Los Angeles, May 2005). Invited talk.
Trinity 05	• Extensive reading of Games / Digital subculture literature • Report writing for <i>Revolution</i> project • Developed instruments for cognitive anthropology focussed on students use of the Internet in their study rooms	Presented <i>Learning about history through virtual role play</i> (OUDES), E-learning Research Group, June 2005)
Year 3 (Oct. 2005 – Sept. 2006)		
Michaelmas 05	• Continued field work, data collection • Analysis and memo writing • Contributing to drafting of white paper for M.I.T's Project NML.	Presented <i>Playing to Learn</i> . (London Knowledge Lab, 27 th Nov. 2005). Invited talk.
Hilary 06	• Extensive reading of socio-cultural theory • Analysis • Extensive memo writing / planning • Completed data collection for <i>Agency of the Learner in Networked University</i>	Presented <i>Towards a Theory of a Games Based Pedagogy</i>. (Innovating E-learning 2006: Transforming Learning Experiences, March 2006). Guest Speaker. Audio-visual presentation available online. Presented <i>Revolution: learning about history through situated role play in a virtual environment</i>. (American Educational Research Conference, San Francisco, April 2006). Peer Reviewed.
Trinity 06	• Continuing with data analysis • Extensive memo writing • Experimental report planning / drafting	

Year 4 (Oct. 2006 – Sept. 2007)		
Michaelmas 06	• Participating in OSAT research group • Analysis and drafting	
Hilary 07	• Confirmation of status exam (earlier drafts of Chapters 4 and 5 submitted). • Read cognitive anthropology of Dorothy Holland <i>et al</i> (1998)	
Trinity 07	• Extensive report writing (Chapters 6-10) • Redrafting / reorganising (Chapters 1-3) • Writing Research Proposal for <i>Web 2.0 in College Life</i> project based on DPhil. (Successful bid to John Fell fund).	Presented <i>Web 2.0 in College Life</i> (University of Bristol, Department of Educational Studies, 27th June, 2007). Presented <i>The Agency of the Learner in the LAMS classroom</i> (European LAMS Conference, University of Greenwich, 5th July, 2007). John Furlong Presents <i>Following the learner back home: lessons for understanding technology enhanced learning</i> (New Millennium Learners and Educational Performance (OECD- KERIS meeting)
Oct. 2007 - Jan. 20 07 (Granted extension of status)		
Michaelmas 07	• Redrafting selected chapters • Final feedback and proofing of report • Thesis submitted	Presented Web 2.0 in College Life Poster. (OUDES)

Appendix 2: Methodology for LAMS study

Background

The LAMS initiative promised to provide access to a variety of lessons in which new media forms were used in creative ways to enhance teaching and learning across the curriculum. The study focussed on learners' experiences of LAMS lessons was originally conceived as the sole study for a DPhil. project that explored the ways new media could be used to enhance teaching and learning in the humanities classroom. However, this research design was subsequently abandoned due to the access issues, technical problems and ethical considerations as described below.

Access

Gaining access to observe LAMS lessons in a real classroom with real students proved an extremely difficult and time consuming process. The DfES selected a pilot secondary school in Kent to spearhead the roll out of LAMS. Selected teachers from the school were flown to Sydney (Australia) and trained to design LAMS sequences at Macquarie University E-Learning Centre of Excellence (MELCOE). These teachers developed a portfolio of LAMS lessons with their students. Further, the school became the U.K. training centre.

I first visited the school as a research assistant working on the JISC practitioner trials where I interviewed and observed teachers participating in a two day LAMS workshop for FE and HE lecturers and produced a summary report for the JISC. I also took the opportunity to interview the teachers / trainers who had experience of using LAMS with real students. Later I returned to the school and observed these teachers using LAMS to teach Geography, History, and ICT.

These observations proved a valuable source of insight. However, as a training centre, the school had a vested interest in promoting the system. Many of the teachers tended to sell

LAMS. However, it was evident from observations and interviews that LAMS was not

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actually being used on a regular basis as part of normal classroom teaching due to recurrent technical problems. In short, whilst the school wished to maintain their role as the U.K. training centre for the LAMS system they appeared to be waiting for a ‘debugged’ version of LAMS before resuming their own plans to integrate the tool into classroom teaching.

Following this visit, I continued to work as a research assistant on the JISC funded practitioner trials. This involved interviews with participants at the university of Bristol where students on an E-learning course had attempted to design sequences, observations of LAMS lessons at Greenwich university where P.G.C.E students were designing and testing LAMS sequences, workshops held at Oxford University Computer Services and a workshops at Aston University where FE and HE lecturers who had participated in the JISC practitioner trials gathered to share their experiences. These workshops and interviews provided valuable insights. However, it was difficult to identify a research site in which LAMS had become integrated into regular curriculum teaching largely due to technical issues. Indeed, the dissemination workshop at Aston culminated in the production of a ‘wish list’ of developments to the LAMS system that could improve its utility as a learning design tool.

Access to observe students in a school participating in the Specialist Schools Trust (SST) trial was finally granted following a conversation with a deputy Head Teacher who attended the JISC dissemination workshop. The school was keen for a researcher who had observed LAMS being used in other context to ‘help’ them with their own launch. Teachers involved had already attended a two day Learning Design workshop (on full pay) and had subsequently designed and developed their LAMS sequences for teaching their regular classes. I was invited to visit the school for a three day visit starting on 1st February 2005, the week the school had scheduled for the launch.

Research Design

The research agenda was meticulously managed by the school. Following an e-mail correspondence, the school presented me with a schedule for the three day visit. A summary of the schedule is shown in Table A2.1. An additional column (right) indicates the focus of each interview and observation.

This tight schedule enabled me to interview all the key personal involved in the LAMS trial, observe five LAMS lessons and teach a lesson (using a LAMS sequence) I had designed myself. In short, this proved an extremely intensive data collection period. However, it also compromised my capacity to focus exclusively on the experience and practices of learners as intended.

Table A2.1 Summary of research schedule for three day visit

Time	Research Activity	Location	Focus
Day One Tuesday 1st February 2005			
9.00 am.	Tea / interview with Head Teacher	Head Teacher's office	History of the school / Development Plan and Research Ethics
9.45 am	Interview with Deputy Head Teacher	Board Room	The Technology College Context
9.45am	Observation of LAMS for Teaching English	Library / ICT centre	Learners experiences of LAMS lesson
11.00	Observations of LAMS for Y8 Media (Media Effects Debate)	Library / ICT centre	Learning experience of LAMS lesson
	In-depth Interview with teacher design of Media	Library	The development of a

	sequence (with ICT pedagogy officer)		LAMS sequence
12.00	Lunch with staff participating in LAMS trial	Board Room	Diversity of ways teachers appropriated LAMS and digital media to facilitate teaching and learning across the curriculum
1.00pm	Interviews with staff	Board Room	
Day Two – Wednesday, 2 nd February 2005			
8.45am – 9.45am	Observation of LAMS lesson (Mathematics: Trigonometry)	Library	Learners experience of LAMS
10.15 – 11.15am	Extended Interview with ICT Office		Role of the ICT pedagogy officer and technical challenges involved with administering LAMS at school
11.30 – 12.30	Meeting with Deputy and LAMS co-ordinator	Board Room	LAMS development strategy
12.30 – 1.15pm Lunch		Board Room	Various
1.15 – 2.45pm	Observation of LAMS lesson (Year 9 Geography)	.	Learner experience of LAMS lesson
Day Three – Thursday, 3 rd February 2005			
8.45 – 9.45am	Observation of LAMS lesson (Year 7 Food	Library	Leaner experience of LAMS lesson

	Technology)		
9.45 – 10.45am	Observation of LAMS lesson (Year 10 Business Studies)	ICT Room. U2	
10.45 – 11.00	Extended focus group with students who participated in Business studies lesson		
11.00am – 12 noon	Meeting with staff	Board Room	Diversity of ways teachers appropriated LAMS and digital media to facilitate teaching and learning across the curriculum
12 noon	Lunch	Board Room	
1.45pm – 2.45pm	Taught lesson ('Great Inventors') with Year 8 English class.	Library	Experience of teaching a LAMS lesson
2.45pm	Feedback to Head, Deputy Head and LAMS co-ordinator	Board Room	

Whilst I remained principally interested in the experience of learners in the LAMS classroom, it made no sense to ignore the experiences of the school leaders and staff and documentary material (such as the schools OfSED report). Consequently, the research design was re-conceived as a holistic case study of a school in the process of integrating the LAMS system into classroom teaching and learning. Each LAMS lesson was conceived of as a design experiment. Further, the aim was to develop an account of these LAMS mediated learning

activities by triangulating multiple localised insider perspectives of students who participated in each LAMS lessons.

It is important to stress that I agreed to produce a full report for the school documenting the various activities observed and summarised emergent issues. In short, the school expected me to help them explore how LAMS might most effectively be used to enhance teaching and learning across the curriculum. In this respect my research was part of a developmental research agenda. The report was produced and delivered as agreed.

Ethical issues

Two ethical issues proved highly problematic: a) the issue of informed consent and, b) the issue of responsibilities to sponsors.

The issue of informed consent

The school were accustomed to having researchers, advisors and E-learning specialists present in the school in order to observe lessons and advice upon the ICT development strategy. Further, the school aimed to reduce teacher workload by keeping paperwork to a minimum. As a consequence it was not deemed necessary, practical or desirable by the school to ask teachers participating in the LAMS trial to send and collect consent forms from all students participating in the LAMS lessons. Consequently it was not possible to gain signed informed consent from students (or their parents). This issue was discussed with the LAMS co-ordinator (via e-mail correspondence) and the Head Teacher on the first day of the visit. The observations went ahead as scheduled with the full support of the Head Teacher, the Deputy Head and the classroom teachers of each lesson. Further, all students were told that they could decline to answer questions or participate in focus group discussions. However, no one objected at any stage and the risk of harm to any student who took part in stimulated response session or focus groups was deemed negligible. Nevertheless, given the absence of

informed consent from individual students (and their parents) the data produced by stimulated response sessions (described below) and focus group discussion is suppressed. Furthermore, the name of the school and all participants is treated as confidential.

Responsibilities to sponsors

The second issue involved responsibilities to the sponsors. The school were extremely generous to me personally. They put on a special buffet lunch in the board room, picked up the tab for taxis and arranged accommodation at a local Travel Lodge. Moreover, I was only able to gain access to the school and conduct the research due to the assistance of the JISC, LAMS International and the Specialist Schools Trust. As a result of these factors I felt under considerable pressure to shape the research to address the needs of the various sponsors. Continued access to observe LAMS lessons might depend upon my ability to do so. In effect, I was not free to develop a research agenda independently of those who directly or indirectly sponsored the LAMS trials. Further, these obligations started to create additional work that was not directly related to my DPhil. study. In combination with the issue of informed consent and access problems these factors contributed to the decision to *not* to develop the LAMS study into the sole study in a DPhil. project.

Summary of data collection methods

This section describes the multiple qualitative methods used to collect data during the course of the three day visit.

Interviews

A broad overview of the school, the LAMS trial and the diversity of ways teachers were planning to use LAMS in the school was provided by semi-structured and unstructured interviews with staff. Each method is described in turn.

Semi-structured Interviews with key personnel involved in LAMS trial

One-to-one interviews were held with the Head Teacher, Deputy Head Teacher, a Media Studies teacher, a SEN specialist, the LAMS co-ordinator and the ICT Pedagogy officer. Prior to each interview I constructed a list of points to explore. However, each interview evolved in an open ended manner. The interviews with the Head Teacher and Deputy Head Teacher (who spear-headed the LAMS trail) provided valuable contextual information concerning the schools' history, catchment area and the whole school development plan. The interview with the LAMS co-ordinator focussed more specifically on the strategies used to train staff and plans to integrate the use of LAMS across the curriculum. The interview with the ICT pedagogy officer focussed on his role and various technical issues that were inhibiting the use of LAMS.

Unstructured interviews with staff participating in LAMS trial

Interviews with subject specialists - including the head of the unit for the hearing impaired - focussed more explicitly on the ways teachers were attempting to use LAMS to tackle 'curriculum trouble spots' and engaged different groups of learners. The 'board room' in the school was used as a base for these interviews. The room was located a short distance away from the library / ICT centre where all but one of the LAMS lessons taught. The school generously arranged for tea, coffee and a buffet lunch to be set up in the board room and all the staff participating in the LAMS project were invited to 'drop-in' at their convenience to discuss and share their experiences of designing and using LAMS. As a result, I was able to speak to most of the staff participating in the trial. These conversations provided a general insight into the diversity of ways LAMS had been appropriated across the curriculum.

As a data source, these conversations were rich and insightful. However, it was difficult to conduct structured in-depth interviews in this environment. Teachers would frequently drop-in, start discussing their experiences and then have to leave to teach a lesson. Further, these interviews frequently developed into small group discussions as additional teachers arrived,

joined the conversations and started to share their experiences. In short, I had little control over the format, structure or focus of these interviews. This actually created problems. Several very interesting interviews were interrupted by the sudden arrival of new staff members. Further, when it came to reviewing the tapes, it was not always possible to identify who was speaking. Nevertheless, substantial interviews (lasting more than 15mins) were recorded with staff who had designed LAMS sequences for the teaching of Maths, English and Media, Geography, Business studies, PE, Science, ICT, Languages.

Observation of LAMS lessons

Five lessons were observed in total as suggested in table A2.2.

Table A2.2 LAMS lessons observed during visit to school

Subject	Purpose of lesson
Mathematics (year 9)	Trigonometry
English (year 9)	Life and times of Charles Dickens
Media (year 8)	Media Effects Debate
Food Technology (year 7)	Calories / balanced diet
Business studies (Y10)	G.C.S.E Revision Modules

Each observation involved the use of multiple qualitative methods. The LAMS sequence used to teach each lesson was reviewed in advance. General observation notes were made (on a laptop) whilst the teacher introduced the lesson. Observation notes and stimulated responses (with selected students) were recorded on a Dictaphone during the course of the lesson. A short focus group discussion was held at the end of the each lesson and selected content generated by students and captured by LAMS was reviewed following each lesson. The relative merits of the various data collection methods are briefly discussed.

Analysis of LAMS sequence

I was given access to the schools LAMS server. This enabled me to access all the sequences designed by teachers participating in the LAMS in a browser on my own laptop in advance of the lesson. This data source proved a valuable source of insight into the design, structure and purpose of each LAMS sequence. Further, since LAMS captures all the user generated content, following each lesson it was possible to review these sequences and capture responses posted by students. This method was used to capture data retrospectively after the lesson. Data captured using this method is shown in Figure 2.7.

Observation notes

It was relatively easy to make observation notes about the layout, arrangement, group and introduction to each lesson on a laptop computer whilst the teacher introduced the lesson. However, once the lesson had started it no longer proved feasible to record notes in this manner. The computers in the school library were spread out and it was not possible to observe what individual students were doing without standing behind them as they worked through a LAMS sequence. Observations about specific practices observed could be made far more effectively orally using a Dictaphone. This method allowed me to roam around the room observing students or pairs of students working at their computers. This proved a far more effective way to note a range of practices (e.g. students backtracking to re-read instructions) and off-task behaviours (such as the pupils who were looking at pictures of Ferraris). In such cases I would typically take a few steps back and describe the incident whilst holding the Dictaphone to my mouth. As suggested, this data source proved extremely valuable for triangulation purposes.

Stimulated responses with students working through LAMS sequence (recorded on Dictaphone)

During each of the lessons, I recorded 4 or 5 stimulated response sessions (or mini interviews) with students or pairs of students as they worked through the LAMS sequences. This took place in between the more general observations described above. Typically, I would start by asking a student if they would mind explaining what they were doing and how they found the lesson so far. Students on adjacent computers would often join in and add comments. This provided a 'raw' source of data directly related to learner's immediate experience of progressing through the LAMS sequence. However, given that students had not provided signed consent specific data items generated using this method are not presented.

Focus groups with students following LAMS lesson

Following each lesson it was possible to hold a short focus group discussion with the whole class in conjunction with the teacher. This lasted about 10 minutes and often carried on into a break. These discussions would start by asking students what they thought of the lesson. They also provided opportunities to investigate how students' experience of using computers in the home compared to their experience of using computers in the classroom.

Focus groups held around a large table in the centre of the library were not very successful. Many students seemed rather shy and reluctant to elaborate in front of the whole class. As a result, the focus groups with the Y7 Food Technology was convened in the board room following the lesson. I'd suggested that we ask a smaller subset of 6-10 students to participate. However, the teacher suggested that the others might feel "left out". Consequently, the whole group came into the board room. Again shyness proved a problem. The recorded transcript did not compare to the richness and frankness of the stimulated responses recorded whilst students were working through LAMS sequences.

A slightly more successful focus group was conducted with the Y10 Business Studies group in small ICT equipped classroom. These students were older and more confident and this

focus group started to produce some interesting discussions. A teacher was present at all times during focus group sessions.

Interview with teachers following LAMS lessons

It was not possible to interview every teacher who taught the lessons observed in-depth following the lesson. However, most were interviewed in the board room as described above. However, a more in-depth interview (lasting approximately $\frac{3}{4}$ hour) was conducted with the Media Studies teacher (and the ICT pedagogy officer) during a free period following the Media Studies lesson. This interview provided a deep source of insight in the process of developing a LAMS sequence and the fundamental importance of the role of the ICT pedagogy officer in the design and development process.

Full participation as a teacher / researcher

In the final session, I was given the opportunity to lead a LAMS that I had designed with a Y8 English class. The sequence was designed to exploit the vicarious learning opportunities afforded by LAMS. The 'Great Inventors Balloon Debate' required students to research a great inventor and then persuade others (in writing) why they should not be thrown out of an imaginary balloon. I spent most of the time introducing the lesson and assisting individual pupils. Thus opportunities for data collection were limited. Nevertheless, this lesson provided a first-hand experience of what it felt like teach a LAMS lesson. Indeed, it confirmed what many of the teachers had said during interview about feeling slightly 'out of control' having delegated much of the responsibility for guiding and structuring student learning to the pre-designed LAMS sequence.

Evaluation activity designed into a LAMS sequence

The 'Great Inventors' sequence also included a mini-questionnaire designed to encourage students to reflect upon and describe their experience of the lesson. As suggested Chapter 2.2,

this data source was deemed suspect due to the preponderance of phrases that appeared to mimic things that the teacher / researcher had said when introducing the system. Nevertheless, this technique could be developed to gain feedback from all learners participating in a LAMS lesson and could prove a valuable data collection method for future research involving the use of LAMS.

Reactivity

The problems encountered with both the focus group discussions and the mini-questionnaire (designed into a LAMS sequence) may have been exacerbated by my presence. As suggested, there was considerable excitement in the school surrounding the launch of LAMS. This seemed particularly evident during focus group discussions in which some of the students appeared reluctant to elaborate on problems observed or discussed during the lesson. In short, students seemed reluctant to say anything negative about their experience of the lesson in the presence of their teacher. It is possible that they viewed me as some kind of inspector who had come to evaluate the school. This reactive effect pervaded the entire visit. It was impossible to factor out. Therefore, in the analysis these reactive effects, such as the incident with the photographer from the local newspaper, became objects of analysis.

Analysis

The condensed account of the LAMS study presented in Chapter Two makes eclectic use of data that shed light on the agency of the learner in the LAMS classroom. The four tier schema that classifies learners in terms of their commitment to the ‘teacher defined’ learning objective was devised much later, following readings in the social-cultural tradition and first presented as a conference paper at the European LAMS conference 2007 (Francis, 2007). Analysis involved the categorisation of the practices of students (captured via observation notes, stimulated responses and analysis of student generated context). Given that stimulated responses and observations were only recorded with selected students this scheme remains

impressionistic. Further, the assumption that each practice documented correlates to an internalised commitment to the teacher defined learning objective involves an inference that cannot be justified empirically. Nevertheless, after considerable experimentation this scheme proved the most powerful way to organise and categorise the diversity of practices observed. Thus, the scheme is offered as a means to focus attention on diversity of ways students appropriated the new media accessible in the LAMS classroom that draws attention to the shifting locus of agency and the variety of mediators the compete to recruit the commitment of learners. However, it should be considered a tentative working hypothesis.

Dissemination

The report produced for the school identified a range of emergent technical, pedagogical and cultural issues that might inform the development of the whole school LAMS strategy. This document drew heavily on the interviews with teachers and my knowledge of developments at others institutions. In addition, findings have been disseminated at a presentation to the students research group at Oxford University (Francis, 2005a) that focussed more specifically on the design and development of the Media Studies lesson and a presentation to the European LAMS conference (Francis, 2007).

Relevant Links

LAMS International www.lamsinternational.com

Macquarie University E-Learning Centre of Excellence <http://www.melcoe.mq.edu.au/>

Appendix 3: Methodology for Revolution study

Background

The Revolution study was conducted as part of during ESRC funded Overseas Institutional Visit at M.I.T.'s Comparative Media Studies Lab between February and April 2005. A team of graphic designers and game developers had spent two years modifying the Neverwinter Nights game to create a playable virtual reconstruction of 18th Century Colonial Williamsburg in collaboration with the Williamsburg living museum. The prototype had been tested with M.I.T. students to identify bugs and assist development. However, plans for a full evaluation with students in local high schools were behind schedule. As a qualified secondary school teacher I offered to devise a scheme of work that made use of the simulation to explore its potential as a resource to teach 12-15 year olds in local high schools about aspects of social history. This required: the development of a scheme of work; ethnical clearance from M.I.T.'s Committee on the Use of Human Subjects as Experimental Subjects (COUHES); discussions with history teachers and ICT officers at local high schools; e-mail correspondence with members of the Massachusetts home school community; and the development of instruments for data collection. Finally I led five Revolution workshops designed to explore the potential of Revolution as a learning resource in the Teacher Educational Lab at M.I.T. An overview of the various activities is summarised in Table A3.1

Table A3.1 Outline of Research Activities conducted for Revolution Project

February 2005 (prior institutional visit)	• Comparative virtual ethnography of Revolution simulation (playing all roles) and Neverwinter Nights game. • Review of gaming literature and Revolution design documents (Weise & Squire, 2004) • Correspondence with Philip Tan (lead developer)
March 2005	• Completion of M.I.T. Research involving the use of human subjects' ethics course. • Developed consent forms. • Developed scheme of work and additional (paper-based) resources for use in Revolution workshops. • Correspondence with history teachers, school leaders and ICT officers in local high schools • Attempted to set up Revolution in local high school
April 2005	• Correspondence with parents in the Massachusetts home-schooled community • Workshops 1-3 with home school students
May 2005	• Presentation at M.I.T's Media in Transition Conference (Francis, 2005c) • Presentation of preliminary findings at Education Arcade Conference in Los Angeles (17th May) • Workshop 4 with home schooled students • Workshop 5 with group of fifteen students from local high school
Return to UK.	• Report writing and dissemination (Francis, 2005b, 2006a, 2006b, 2006c)

Recruiting participants and setting up the workshops

Initially attempts were made to set up Revolution in two local high schools with a view to testing the system. However, in both cases technical issues prevented the full networked version of the game from functioning. In addition, traces of the Neverwinter Nights game (that included occult imagery) were evident in the start-up sequence. This created concern among the ICT officer about potential complaints from parents. Therefore, a decision was taken to invite students to the Teacher Education Lab at M.I.T. where the full multiplayer version of the game was installed and tested on twelve networked computers. Photographs taken during the workshops with home school groups are shown below.



Figure A3.1 Photograph of M.I.T Teacher Education Lab.



Figure A3.2 Student prepares a machinima movie using windows movie maker



Figure A3.4 Students completing questionnaires

Invitations to history teachers in local high schools were greeted with interest⁸². However, it was not easy for teachers to schedule time away from the standard curriculum for a full half day workshop at M.I.T. However members of the Massachusetts home-schooled community who were also invited were more flexible. Therefore, the first four workshops consisted of home-schooled students accompanied by their parents. This solution solved most of the technical and ethical issues that had thwarted attempts to set-up the game in local high schools. Technical experts were available to assist with problems that might arise and interested graduate students were able to assist with data collection.

A group of fifteen students from a local high school (accompanied by their history teacher) were recruited for the fifth workshop. This did not proceed as planned due to cultural, rather than technical issues as described in Chapter 2. Table A3.2 summarises the number of students and (others present) who participated in each workshop.

Table A3.2 Summary of Workshops

Workshop	Number of Participants	Others present
Home School 1	7	Parents & research assistant
Home School 2	5	Parents
Home School 3	4	None
Home School 4	3	Parents & research assistant
Local high school	15	History Teacher

The numbers involved in each of the workshops varied considerably. When working with the home-schooled community it was not possible to get firm commitments from all of the parents who expressed an interest in participating on particular dates. Further, some parents

⁸² Adverts were sent out via SOCRAT: An e-mail listserv for teachers interested in ICT based initiatives and activities.

chose to remain and work through the activities with their children whilst others left their children and returned at the end of the workshops to pick them up. Several parents became actively involved in the discussion and one actually took a role in the game in order to play alongside their child. Those parents who remained in the workshops provided a very rich source of information and provided insights into the various learning activities their children routinely engaged in as part of their home-schooled curriculum.

Scheme of work

The scheme of work designed for the workshops was based on a model proposed by the New London Group (1996). In summary, the strategy can be broken down into four phases.

1. Situated learning in a virtual environment

Through situated role play within the virtual world students develop ‘embodied empathy’ for their virtual persona and gain a deep, but tacit, understanding of a web of social relationships whilst talking and interacting with dozens of player and non-player characters.

2. Overt instruction and reflective discussion

The teacher leads discussion or devises activities that encourage systematic analytic reflection of the knowledge acquired through situated role play. This stage enables students to consciously articulate knowledge that might otherwise remain tacit.

3. Practical media production

Students are assigned a production task that requires the re-application of the knowledge they have acquired in steps 1 and 2. Each student designs and produces a video diary, recycling visual material they have captured during the game, in a manner that explores the political conflict from the point of view of a particular character.

4. Critical framing

The *New London Group* (1996) define critical framing as ‘interpreting the social and cultural context of particular designs of meaning’ and argue that ‘this involves the students standing back from what they are studying and viewing it critically in relation to its context’. Critically framing an interactive game text might require a student to question the representations embedded in the game world and consider how the ‘bottom up’ model of history implied by the game medium might differ fundamentally from that implied by a text book or by audio or film media.

In practice this translated into the scheme of work summarised in Table A3.4 that took approximately three and half hours to complete.

Table A3.4 Summary of scheme of work devised for workshop

Time allocated	Student Activity	Teacher/ Researcher Activity	Resources
10-15 mins	Introduction to Revolution and the learning objectives		PowerPoint introduction
5 mins	Students complete first section in questionnaire		Questionnaire
30 mins	Students play single player game whilst following 'learning the controls' sheet	Recording short stimulated responses with students as they play the game	Revolution Game Learning the controls sheet
15 mins	Students participate in whole group discussion about initial experience of colonial Williamsburg. Topics include: geography of town; crafting; social class; race and gender roles	Teacher leads discussion. (recorded on digital Dictaphone)	
45 mins	Students participate in multiplayer Revolution game	Recording short stimulated responses with students playing the game	FRAPS (Digital data capture tool) used to capture in game content
20 mins	Students participate in whole group discussion. Topics include political affiliation, strategies of resistance, slavery, communication and the circulation of information	Teacher leads discussion (recorded on digital Dictaphone)	
20-30 mins	Practical Production Diary entries (Home School Groups 1 & 2) Machinema (Home School Groups 3 & 4, High School Group)		Word Processors Windows Movie Maker FRAPS (Digital data capture tool)
20 mins	Practical productions are shared and discussed	Teacher / researcher co-ordinates and leads discussion	Student productions shared on PowerPoint
15 mins	Students complete questionnaire about experience of workshop		

Research Design and Data Collection

In line with the sociocultural tradition, Revolution was conceived as a tool that might be used in combination with a variety of other tools (i.e. worksheets, PowerPoint presentations, Windows Movie Maker) to mediate a learning activity. The aim was to explore how the designed experience afforded might help students participate in a reflective discussion about aspects of social history and be used to stimulate practical production activities. This involved a high degree of innovation, adaptation and experimentation during the course of the workshops in an attempt to find how, why, and in what circumstances Revolution might work. Consequently, the workshops were conceived as a series of design experiments rather than a formative evaluation.

The 'design experiment' paradigm, that finds its origins in the work of Brown (1992), is particularly suited to exploratory work with advanced technologies in education contexts in which software development, pedagogical innovation and theory development go hand-in-hand. Cobb *et al.* (2003, p. 10) argue that 'it is through understanding the 'recursive patterns of researchers framing questions, developing goals, implementing interventions, and analysing resultant activity that knowledge is produced'. Recent advocates of design based research (Barab & Squire, 2004; Collective, 2003; Collins *et al.*, 2004; diSessa & Cobb, 2004; Fishman *et al.*, 2004) have argued that, unlike psychological approaches, design experiments respect the messiness of real world contexts in which complex activity systems can't be reduced to dependent and independent variables. Design experiments have been critiqued (Gorard *et al.*, 2004). Squire & Barab (2004) concede that, not like ethnography, there is a danger that 'hands on' engagement leaves the researcher 'awash in immediacies'. However, to combat this tendency they emphasise that 'design-based research strives to generate and advance a particular set of theoretical constructs that transcends the environmental particulars of the contexts in which they were generated, selected, or refined' (p.5). Further, they highlight that, unlike formative evaluations that might be used to test a well formed hypothesis, design-based research may generate new theories that in turn might inform future practice.

The original research design set out to explore: 1) the potential of Revolution as a resource for supporting teaching and learning in the humanities classroom; 2) the feasibility of using Revolution in a classroom context; and 3) how the game could be developed to best suit the needs of teachers and learners. However, the workshops raised a series of issues, themes and suggested directions for further research during the course of the study. The selected findings

presented in Chapter 2 simply highlight those themes relating to the shifting locus of agency for managing learning that connected with emergent themes in both the LAMS study and the study of Oxford University students' use of new media. It is intended to present other themes, more specifically related to the 'educational games' debate in forthcoming publications.

Data collection

Data collection involved the use of multiple qualitative methods. Given the exploratory nature of this work and the amount of time taken to set up each workshop the aim was collect data from multiple sources. Data sources selected later could be analysed and triangulated to identify emergent themes and address more focussed research questions.

Pre and post workshop questionnaire

Participants in each workshop completed questionnaire in two stages. A short section was completed at the start of each workshop that captured basic demographic information and included questions about students' pre-history of video game play. The bulk of the questionnaire was completed at the end of the workshops.

Stimulated response

Stimulated responses were recorded with selected students as they played the game. Responses were prompted with simple questions regarding players on-going in-game activity such as, 'what are you doing now?' or 'why did you do that?' It was only possible to conduct stimulated responses with 3 or 4 students in each workshop. Nevertheless, this method produced a raw source of data directly relating to students on-going experience of the Revolution game world.

Recordings of whole group discussions

Following both the single player game and the multiplayer game, students took part in whole group discussions lead by the teacher about aspects of social history. These were recorded on audio. This data source provided a degree of insight in the concepts and understandings acquired through the experience of virtual role play and how this experience impacted upon a student's capacity to engage in a discussion on a range of social-historical issues. These discussions were captured on audio tape.

Practical productions

The creative work produced by students (including written diary entries and the machinema video diaries) provided a valuable source of data that provided an insight into personal experiences of individuals who played particular characters. This data source also served to illustrate the individual meanings, conceptions and understandings students acquired through the process of playing the Revolution game.

Short interviews with selected students and parents

Selected parents and students from the home school community remained behind after the workshops and took part in slightly longer interviews. This provided an opportunity to gain an insight into how parents devised the home-school curriculum, the extent to which they made use of new media for educational purposes beyond the classroom and individual students' experiences of playing commercially available games in the home. These further suggested the importance of understanding the knowledge and prior experiences that students brought with them to the workshops.

Observation notes

During and following each workshop observation notes were recorded (using a Dictaphone) that provided a general overview of the workshop with reference to specific events. These notes were not pre-structured and they proved invaluable as a means to contextualise other data sources and develop a holistic understanding of the activity. For example, much of the 'horse play' in the final workshop with the high school group was noted using this observational technique.

Ethical considerations

To obtain ethical clearance for the workshops, I was required to complete and pass M.I.T.'s Research Involving Human Subjects ethics course. The research was conducted in line with these guidelines. The real identities of students participating in each workshop were protected and data was stored in a secure location or on password protected computers. The 'combined consent' form signed by parents and students attending the workshops is shown in below. All home schooled students brought signed consent forms with them to the workshops. However, some of the students from the high school group lost the consent forms that had been e-mailed to their teacher in advance. The workshop went ahead as planned under the supervision of their regular history teacher who remained present throughout the workshop. Nevertheless,

the absence of signed informed consent from all students who participated compromised our capacity to use this data in the report. The account provided in Chapter 2 offers general description of the problems encountered during the lesson but suppresses detailed information. Further, the identity of the school, the teacher and all involved has been suppressed. The aim is to provide a truthful account of the problems that occurred without placing any of the participants at risk of harm.

The combined consent form sent to students and their parents is presented below.

Combined Consent Form

Dear Parent/Guardian:

March 2005

My name is Russell Francis; I am an Educational Researcher from Oxford University's Department of Educational Studies. I am currently working as a research assistant on the Education Arcade Project based in the Comparative Media Studies Lab at M.I.T. We are asking for permission for your child to take part in a research study that explores the potential of computer simulations to explore aspects of social history. Students participate on a voluntary basis and can decide to stop at any time without penalty or consequences of any kind. Please read the information below for more details. Then, if you would like your child to participate in the research workshops, please ensure the reply slips are signed, by both you and your child.

What's the purpose of this project? We are interested in learning more about how collaborative role play in a virtual environment might be used to help teach aspects of social history. Educational simulations offer exciting new possibilities that might help pupils to learn about history and other areas of the curriculum.

What will my child be asked to do? Students will participate in activities based on *Revolution*, a game that recreates a virtual simulation of 18th century Colonial Williamsburg and allows pupils to role play a day-in-the-life of a character in a virtual community. The simulation is set at a time, prior to the outbreak of war, when tensions between those loyal to the British crown and the Patriots, who wanted independence for the colony of Virginia, were beginning to grow. Students will participate in a lesson that involves playing a character in the game. They will then be asked to produce a creative response, such as a diary entry or newspaper report, participate in a teacher led discussion about aspects of social history and fill out a questionnaire about their experience of participating in the lesson. Topics that might be covered include political allegiance, dress code, class, trade, taxation, family obligations, slavery, the spread of information and political protest.

All information will remain anonymous. Discussions and presentations may be recorded on audio tape and /or video tape where visual material is used that may prove valuable to the purposes of this study. None of the information collected as part of this study will be released for non-research purposes, and students will never be identified by name. Any quotations,

student work, or other materials presented in publication will be kept anonymous and data will be stored securely and will only be accessible to members of the research team. Selected video clips may be used in presentations at research conferences. If you would like your child to participate but you do not want them to be videotaped, please specify this on the reply slip.

What will students get out of this experience? We believe that working with this software will help students acquire a deeper understanding of the complexities of the historical period studied and introduce them to an engaging and enjoyable way of learning with the support of interactive media. They may also find the experience of visiting MIT and / or being part of an innovative educational research project interesting and rewarding.

If you have any questions about the research, you can call me at 617-233-7285 or e-mail me at russellf@mit.edu. Please keep a second copy of this letter for your future reference. You can also call the Chairman of the Committee on the Use of Humans as Experimental Subjects at M.I.T. at 1-617-253 6787 if you feel your child is treated unfairly in any way.

Russell James Francis, BA, MA, MSc, MSc.

Visiting Scholar Comparative Media Studies, MIT

Building, N14-213 Tel: 167 452 2233

Revolution: learning through interactive role play in a virtual environment.

Dear Student,

My name is Russell Francis. I work at M.I.T on a research project called Revolution. We are asking you to take part in a workshop because we are trying to learn more about the potential of interactive games and simulations to help young people learn about history. If you would like to participate you will need to sign this form to show that you have agreed to take part in this study. Before doing so, please read the information below for more details.

What will you be asked to do? You will participate in activities based on Revolution, a simulation that re-creates a virtual simulation of 18th century Colonial Williamsburg. You will role play a day-in-the-life of a character in a game based on colonial Williamsburg. You will be asked to produce a creative response, such as a diary entry or newspaper report, based on your experience of playing the game and then participate in a discussion about what you have learnt about history. You will also be asked to fill out a questionnaire. The questionnaires do not ask any sensitive questions and will only be used to gauge the effectiveness of the software as a teaching tool. Answers will not be graded. This is not a test.

Will the lesson be recorded for research purposes? Discussions and presentations may be recorded on audio tape and /or video tape where visual material is used that may prove

valuable to the purposes of this study. This will only be seen by members of the research team.

Are there any risks? There are no risks associated with this study over and above those involved in taking part in a normal classroom lesson. We believe that working with this software will help students like you acquire a deeper understanding of history and discover new and enjoyable ways to learn with the support of interactive media.

What should I do now? Please talk this over with your parents or guardians before you decide whether or not to participate. We also require your parents' permission for you to take part in this study. However, even if your parents say "yes" you can still decide not to do this. Remember, being in this study is up to you and no one will be upset if you don't want to participate or if you change your mind later and want to stop.

You can ask any questions that you have about the study now. If you have a question you can call me on 167 452 2233. Signing your name at the bottom means that you agree to be in this study. Ticking the box above the signature means that you assent to being recorded on video tape.

Sincerely,

Russell James Francis, BA, MA, MSc, MSc.

Visiting Scholar Comparative Media Studies, MIT

Building, N14-213 Tel: 167 452 2233

✂-----

Consent to Participate in Study.

In order to take part in the Revolution project we required the signature of both the parent / guardian and student participating in the workshop.

Parental Consent:

I give permission for my child to participate in this study.

Important: Please tick box if you assent to the use of video recordings in which your child can be identified for research purposes []

(Print Parent's Name)

(Parent's Signature) (Date)

Student Assent:

I have read this and understand that my participation is voluntary and that I can withdraw at any time.

Important: Please tick box if you assent to the use of video recordings in which you can be identified for research purposes []

(Print Student's Name)

(Student's Signature) (Date)

Please return this slip to your teacher who will forward it to us.

Dissemination of findings

The work generated considerable interests and several conference presentations were made during the course of the project (Francis, 2005c, 2005d) that discussed the Revolution concept, the development of a games based pedagogy, the making of Machinema video diaries and students' experience of interactive role play within a virtual environment. In the year following, further presentations were given that developed these insights with the aid of conceptual tools and resources from the socio-cultural tradition (Francis, 2005b, 2006a, 2006c). These presentations started to foreground the importance of cultural context, learner identity and the expectations that students bring with them to Revolution workshops.

Relevant Links

Colonial Williamsberg: <http://www.history.org/noflash.cfm>

Summary Report on Education Arcade Website:

<http://www.educationarcade.org/revolution/testing>

Student Video Diaries: <http://www.educationarcade.org/node/94>

Appendix 4: Pre-interview questionnaire

The following questionnaire was completed by students participating in the study. Note, the questionnaire evolved during the early interviews as suggested in Table A11.1.

Thank you for taking part in this study. You have the right to withdraw at any time. You may refrain from answering any questions you like. Further, any publications that use the data you provide will be published with names anonymised.

1. Demographic information

Name:	Date of Birth:
Qualification working towards:	Discipline:
Year of study:	Nationality:

2. About your access and use of digital technologies

2.1 Do you own? *(Please tick all that apply)*

A desktop computer	[]
A laptop computer	[]
A palm top computer or personal digital assistant (PDA)	[]
A mobile phone	[]
A digital camera	[]

2.2 What kind of internet access do you have?

(Please tick all that apply)

No access	[]
Access through university computers	[]
Modem access from home	[]
Broadband access from home	[]

2.3 How many hours a day, on average, would you estimate you spend working at a computer? *Please tick the most appropriate category*

Less than one hour	[]
1-3 hours	[]
3-6 hours	[]
6 -8 hours	[]
More than 8 hours	[]

2.4. Please approximate the percentage of the time you spend interacting with digital technologies in the following locations. *Estimate percentage*

Home	%
Library	%
Computer Room	%
Office or workplace (if applicable)	%

2.5 Given the time you spend interacting with a computer, please estimate the time you spend engaging with activities:

Directly to your studies relating:	%
To personal hobbies and interests. (i.e. social arrangements, games and hobbies)	%

3. Which of the following strategies / tools have you used to perform the following tasks?

Please use the following codes to indicate how frequently you use the follow tools or strategies.

0: never use 1: Sometimes use 2: often use 3: frequently use 4 Always use

Accessing information	Borrow books from libraries	[]
	Photocopying journal articles	[]
	Download and print web-based journals	[]
	Browse web pages for information.	[]
	Purchase book from bookshops.	[]
	Purchase books online	[]
	Other (<i>please specify</i>)	
Searching for books and articles.	Ask librarian.	[]
	Ask friends and peers	[]
	Examine bibliographies of publications	[]
	Search using key words on OLIS.	[]
	Search using bibliographic search tools (e.g. Endnote)	[]
	Search using Amazon.co.uk	[]
	Find references from special interest websites	[]
	Other (<i>please specify</i>)	

Making notes	Make notes with pen and paper.	[]
	Highlighting / underlining relevant quotations as you read.	[]
	Writing notes in margins of books and articles.	[]
	Making notes with word processor.	[]
	Mind mapping / concept mapping on paper	[]
	Mind mapping / concept mapping using digital tool.	[]
	Other (please specify)	
Planning	Plan by hand using pen and paper in linear format.	[]
written work	Make an essay plan using a word processor	[]
	Make a paper-based mind map.	[]
	Use digital mind mapping software.	[]
	Other (please specify)	[]
Editing	Read through one screen and make appropriate changes	[]
	Print out and comment in margins	[]
	Ask peer to read and comment	[]
	Use digital editing tools (i.e. <i>Trackchanges</i>)	[]
	other (please specify)	
Proofing	Proof read article on screen.	[]
	Print and read article on paper.	[]
	Ask peer to proof read work	[]
	Pay for professional proof reader	[]
	Use digital spell checking tools.	[]

	Use digital grammar checking tools.	[]
	Other (please specify)	
Analyzing qualitative data	Highlighting relevant quotations	[]
	Highlighting using different colours.	[]
	Post it notes to code print-based articles	[]
	Cut and paste selected data into themed sections	[]
	Use of digital analysis tool (e.g. Atlas)	[]
	Other (please specify)	[]
Presenting	Prepare talk without use of visual aids	[]
	Prepare talk and accompanying transparencies	[]
	Prepare print handouts.	[]
	Prepare power-point slides	[]
	Other (<i>please specify</i>)	[]
Organising workload / schedule.	Make do lists on paper.	[]
	Keep a traditional diary	[]
	Use a wall planner	[]
	Use a digital organiser on your computer.	[]
	Use a portable digital organiser.	[]
	Other (<i>please specify</i>)	

4. How often do you engage in these activities?

Please use the following codes to indicate how frequently you engage in the following activities.

<i>0: never</i>	<i>1: sometimes</i>	<i>2: often</i>	<i>3: frequently</i>	<i>4: everyday</i>
Playing video games				[]
Downloading / sharing music				[]
E-bay trading				[]
Chat using instant relay text				[]
Sharing digital photographs				[]
 Making music				[]
Marking graphic art				[]
Making games				[]
Programming				[]
Shopping				[]
 Banking				[]
Other (please Specify)				[]

5. About the strategies you use to communicate with tutors, colleagues and friends

5.1 About your membership of online communities

Do you subscribe to any newsgroups?	Yes / No
-------------------------------------	----------

Do you subscribe to any listservs?

Yes / No

Do you subscribe to any RSS feeds?

Yes / No

5.2 How many e-mail accounts do you have?

[]

5.3 Please list any newsgroups / listservs or RSS feeds that you subscribe to.

5.4 Do you access a Virtual Learning Environment (e.g. *Weblearn*, *Blackboard* , *Web CT*) to support a particular course of study?

Yes / No

If yes, please briefly indicate the purpose of this VLE

5.5 Are you a member of any online groups that support a hobby or particular interest?

Yes / No

If yes, please briefly explain the function and purpose of this group in the box

5.6 Do you read or make use of any blogs or wikis on a regular basis? Yes / No

If yes please cite which blogs or wikis you make use of in the box

5.7 Which of the following tools / strategies do you use to communicate with tutors, friends and peers?

Please tick all that apply

Face to face	Formal meetings with supervisor	[]
	Informal meetings with supervisor or experts in your field	[]
	Structured face-to-face discussion with seminar group	[]
	Informal face-to-face discussion with peers	[]
Telephone	Telephone conversations with tutor	[]
	Telephone conversations with course mates	[]
	Telephone conversation with those working in your field in other institutions	[]

E-mail	E-mail communication with tutor	[]
	E-mail communication with course mates	[]
	E-mail communication with those working in your field in other institutions	[]
Instant relay chat	Instant relay chat with tutor	[]
	Instant relay chat with colleagues or peers	[]
	Instant relay chat with people working in your field in other institutions	[]
Online (a synchronous discussion)	Through online discussion forums	[]
	Through online newsgroups	[]
	Through a VLE (e.g. WebLearn or Web CT)	[]

5.8 Regarding the frequency with which you send and receive messages via different communication tools

0: *Never* 1: *Once a week* 2: *Once a day* 3: *Multiple times a day* 4: *Multiple times an hour*

How often do you check your e-mail? []

How often do you send / receive text messages on your mobile phone? []

How frequently do you send & receive messages via an Instant Messenger System? []

How frequently do you contribute to an online discussion board? []

How frequently do you visit a website? []

How frequently do you access a dedicated VLE that supports your course? []

How frequently do you receive postings from newsgroups or listservs or RSS feeds that you have subscribed to? []

How frequently do you visit or post to a blog or wiki? []

5.9 What percentage of your online communications relate to: *(please estimate)*

Work and study %

Play and socialising %

6. In your opinion have digital communication tools: (i.e. e-mail, instant messaging systems)

6.1 Improved your ability to communicate with tutors and colleagues regarding aspects of your work? **Yes / No**

6.2 Improved the quality of communications with tutors and colleagues? **Yes / No**

6.3 Decreased the amount of time you spend in face-to-face discussion and on the phone? **Yes / No**

6.4 Allowed a higher quality of discussion than is possible face-to-face? **Yes / No**

6.5 Allow a higher quality of discussion that is possible on the telephone? **Yes / No**

6.6 Tended to distract you from your work? **Yes / No**

6.7 Lead to confusion and misunderstandings? **Yes / No**

6.8 Make you more inclined to contact someone in a position of authority? **Yes / No**

7. About the digital tools you use to assist with aspects of your work?

7.1 Which five software applications do you find yourself using most frequently during the course of your daily routine?

Please list in order of priority:

1:

2:

3:

4:

5:

7.2 Which software applications have you found most useful for assisting with aspects of your work?

Please list in order of priority

1:

2:

3:

7.3 In general do you think the software tools cited above have:

Please circle the most appropriate response

Improved the quality the work you are able to produce? **Yes / No**

Enabled you to perform tasks that you could not accomplish alone? **Yes / No**

Improved you speed with which you can perform a task? **Yes / No**

Increased the amount of time that you engage with study related activities? **Yes / No**

Increased your motivation to work and study? **Yes / No**

Helped you acquire new skills? **Yes / No**

Resulted in a loss of a skill that you previously had? **Yes / No**

7.4 Do you find a significant contrast between the grades you receive for course work when you can use the digital tools compared to the grades received for essays written in timed examinations?

Please circle the appropriate response

Yes / No

7.5 Do you think you would be able to produce work of comparable standard if you were denied the use of the digital tools you have mentioned above?

Please circle the appropriate response

Yes / No

7.6 Have you recently started using a digital tool to help you with aspects of your work?

Yes / No

If yes, please describe briefly in the box provided

7.7 Have you started using a digital tool to help you with aspects of your work and subsequently decided not to use it?

Yes / No

If yes, please briefly describe in the box provided

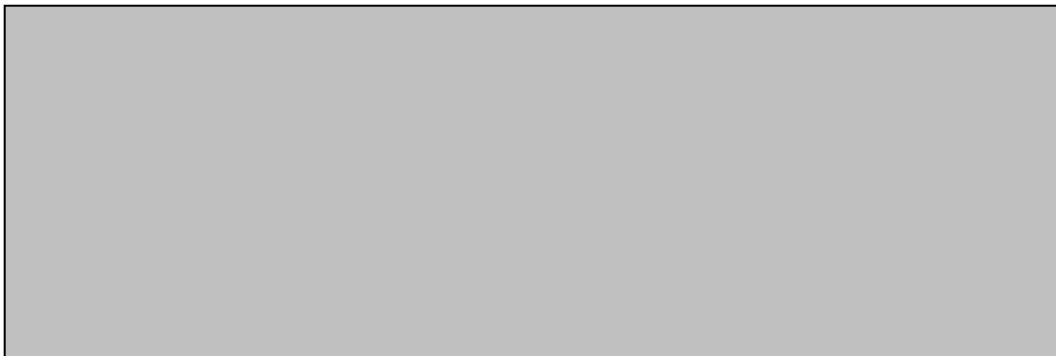
7.8 Have you experienced a hard drive failure in the last year?

Yes / No

If yes, please briefly describe the impact it had on your studies



7.9 Are you aware of any applications that you think might help you with aspects of your study that you do not use? If so please tell us about that tool and explain why you think it might help?



8. Do you have any hobbies or interests that require the use of digital tools?

Please tell us about them in the box provided

A large, empty gray rectangular box intended for the respondent to provide details about their hobbies or interests that require digital tools.

Thank you for taking the time to complete this questionnaire.

Appendix 5: Interview prompt sheet

As suggested in Chapter 4, the aim was to follow the learner and allow respondents to lead the interviews. Nevertheless, a series of interview prompt sheets were prepared and updated throughout the study. Here questions are grouped under subheadings. This representation amalgamates multiple prompt sheets that evolved throughout the study. No single interview followed a set order, hence the absence of a structured numbering system. The questions are grouped to suggest the range of issues covered in interview.

About students' background, priorities, values and aspirations

Can you tell me a little about your family and background and explain how you came to study at Oxford? What have been your main hobbies and interests over the years? Why have these interested you? Why do you choose to study X? What kinds of career are you considering? Why? How does that career reflect your personality? What do you value most? Career, family, friends, travel, money? Where you live? Why?

About students' enculturation into computer use

Where did you first encounter computers? When did you first start using computers? What did you use them for? How have computers impacted upon your everyday life? Have you ever played games? What kind of games did you play? Do you have any hobbies or interests that involve the use of computer software? When did you first start using the Internet? What for? How has your use of the Internet changed over the years?

General questions used in conjunction with pre-interview questionnaire

Are there any software tools you are dependent upon for your work? Which tools do you use most frequently? What do you use them for? How did you find out about these tools? When and why did you start to use them?

Which tools do you find most helpful when working? Are there any tools or resources that have fundamentally changed the way you work? What websites do you visit most frequently? What for? Are there any tools you would like to use but do not have access to? Why can't you use these tools? Are there any tools you started to use and subsequently discontinued to use?

Designing a personalised mediascape

Where do you choose to work most of the time? Are there any other locations you like to work in? Do you work in different locations for different reasons?

How do you design your desktop environment (desk top layout, favourites, links, RSS feeds, shortcuts etc.)? Why do you design it in this way? Do you use multiple desktops / profiles or operating systems for different purposes?

Emergent themes

Emergent theme: learning to a specific tool

How did you learn to use this tool? Did you consult the manual? Did you rehearse the use of this tool using mock-ups or dry runs? Is it like other tools you have used? Do you understand its full functionality? Does this matter?

Emergent theme: self-imposition of enabling constraints

Why don't you use the full functionality of this tool? What functions don't you use? Why? Are there any functions that you consider detrimental to the activity? Why have you restricted the use of the tool? What purpose does that serve?

Emergent theme: working with quasi intelligent agents and bots

How did you find out about this bot? Why did you start using it? How does the use of this agent assist you? How would you have performed this activity before you discovered this tool? Does this bot enhance your performance? How? Do you think you are losing skills that you previously had? What does it free you up to do? How has it changed the way you go about an activity?

Emergent theme: delegation vs. dependency

What does this tool free you up to do that you previously were required to do manually? Do you feel that you have become dependent on this tool? Could you perform without it? What skills do you think this tool has required you to develop? Why? What skills do you think you may have lost as a result of using this tool? Why? Could you perform this task without the use of this tool?

Emergent theme: Multi-tool tasking.

What applications do you typically have open when working at a computer? Do you need to use multiple tools in combination when working at a computer? Can you give an example? Why is it important to use these tools in combination? What problems do you encounter?

Why might you switch from one tool to another?

Emergent theme: goals

Why do you use this tool? What are you trying to achieve? Do you have a clear idea of what you are trying to achieve? What alternatives did you consider? What are the relative merits of the strategy you have adopted? What are the drawbacks of the tool / strategy you have adopted?

Emergent theme: working with others through new media

Have you recruited the assistance of any online collaborators to help you with aspects of your work? Who? Why? Have you ever helped others with aspects of their work? How did you collaborate? What purpose did this serve? Would you have been able to find the same kind of assistance off-line?

Have you subscribed to any newsgroups, RSS feeds, discussion forums or listservs? Which ones? Why? Could you get access to this sort of information off-line? What have you learnt from viewing the content of listservs / discussion forums?

Have you ever contributed to a discussion board?

If yes: how often do you contribute? What is your motivation for doing so?

If no: why not? What has prevented you? Would you like to?

Have you ever started a listserv or a thread in a discussion forum? Why? What purpose did this serve? Was it successful? How did it help you? What problems did it cause?

Emergent theme: Leveraging the intelligence of massively participatory knowledge sharing communities

Why do you use [affinity space]? How does it help you? Why is it useful? What kind of things did you find out? How does it compare to other sources of information? How do you rate the contributions of others? Have you ever contributed yourself? What have you learnt from participating in this space?

Emergent theme: Learner Agency

Do you find you get distracted when working at a computer? Do you think you are able to remain focussed and on tasks when working at a computer? Why do you think this might be? Has the tool forced you to change the way you work? Does it suit the way you work? Do you feel in control? Is there any way that you think the tool determines the way you are working? In a manner that might be counterproductive? In what ways do you think the tool might be preventing you from achieving your goals?

Appendix 6: Sample interview transcript

The following interview extract suggests the kinds of responses elicited by question posed in interview.

Ishani's prehistory of computer use

Recorded prior to stimulated response and selectively summarised and transcribed

Ishani had used computers at school to word process. Her dad was 'really into computers' so they had one at home. He had offered to buy her a computer and she thought that it would be helpful but claimed that 'she wasn't too bothered about it'. She wanted one because she had memories of the problems not having her own computer at school created. 'You had to stay back and get special permission' when you needed to use them to do your work. She used computer aided design packages to do design work and got a basic training in ICT classes. She recalls writing stories on computers and things like that.

'I use it mainly for word processing, and there's always someone using it somewhere in the house, checking e-mails or my sister will be on *E-bay* (buying cheap designed bags) or my younger brother is upstairs on the *Playstation*.'

[About her sister]

'She doesn't check e-mail that much, she's not as sad as me'.

She'd ask her brother to teach her how to play a game a couple of times but after five minutes she found herself 'dying of boredom'.

'They definitely use the computer more than me for recreation and things, on an average evening when I use to work, when I was at home, I'd come in, sit down in front of the television and go and cook and read a bit whereas they would be on the computer. My brother also chats, like MSNing on the computer for hours, yeah he could get on it a 4 or 5 O'clock and be at it till midnight'.

Her father had bought a computer but she felt the kids had overtaken them in computer literacy.

Miss Lullaby discussing the problems associated with working closely with a distributed community of critical friends

Recorded in interview following simulated response session and transcribed in full

RF So how do you feel when you get a request to read, you know, say a 5000 word essay?

ML Yes, I feel kind of honoured and privileged because I understand that this person thinks that you're looking at and they trust your opinion.

RF Have you learnt through the process of editing other people's work?

ML Yeh, I think I do.

RF What kind of things do you learn?

ML I learn about different styles of writing, of academic work. I think that you can become very accustomed to doing things in a particular way. And so it's good for me to see work in progress, and see what that progress is like and how someone is choosing to structure their paper. It's interesting to look at the logic behind papers sometimes; I'll look at things that are like very tight logically. And that's something that I always try to do when I'm writing. I'll try to see the way in which they've built their paper, the structure.

RF So you're constantly exposed to different styles of writing, different ways of structuring, different kind of academic approaches and you find this...

ML Very helpful.

RF Do you think your own style has developed and matured as a result?

ML Yes it has, but I think that the one negative of all of that is that, you can look at somebody's work so often that you can begin to write like them, so you can lose your own sense of self. I did it with someone for three years through college and we edited each other's work all the time. And so sometimes I'd end up phrasing the things the way he would knowing full well that this wasn't my intention but I'd seen his work so often that ..

Sue Ellen's resistance to adopting Endnote

Recorded following stimulated response and transcribed in full

SE. Here's an account of my basic exploration of *Endnote*. I basically double clicked, look at it, read the basic instructions about how to use it and then I thought fuck it, I'll just compile the bibliography on my own!

RF So there wasn't a tangible enough advantage to be gained?

SE No. Because the time it would take me to learn how to use it and then format and... you still have to punch all the information into *Endnote* ...

RF Did you know you can connect to data bases and stuff?

SE Yes, but that sounds complicated as well, plus the style that they want you to use is slightly off from the ones I need to use... and it's kind of off by parenthesis and stuff like that so that would mean I need to go in there and tidy it all up and I think I might as well just do it myself.

[SE suggests that she might go on to use it if she went onto further study but had reservations. She had completed a 175 page dissertation for her undergraduate degree and hadn't used it then so saw no immediate advantage to be gained]

RF So there's no tangible need for it. Why do you entertain the idea in the first place?

SE Because everyone seemed to be using it. And I talked to my advisor and she agreed its more trouble than it was worth. It's just not for me and sometimes I just don't trust a computer programme to do the things that I know I can do for myself. I don't want to trust my own personal formatting to something like *Endnote*.

RF So you don't have confidence in the program?

SE Yes, so as much as I use all these tools, I don't have complete confidence in them. And maybe that's why on my own personal computer I only use it for loose social / leisure type things. And I'll leave vigorous stuff to the university computer that has more backups and stuff. Even like spell check and thesaurus and things like that I rely on but not so much. I'll do it on my own.

Appendix 7: Sample stimulated responses

The following extracts suggest the type of responses produced by stimulated response sessions recorded whilst students were sitting at their computers discussing their on-screen practices.

Recorded whilst students were demonstrated tools whilst sitting at their computers in their study rooms

Ardash demonstrating use of an RSS feed reader

A So I've just acquired it after a conversation with a participant at the TED conference. And I'm still adjusting the RSS feeds that I use and wondering if I like it and, as you can see, I'm experimenting as well. I'm trying to work out whether I like to read the *NY Times* here or whether I'd prefer to stick with the website. I'm finding that I actually like the website better. For example - these are the editorials, I don't pick my articles based on title, I tend to pick them based on author, so I have to go through everyone and then read (this is David Brooks) before you find him, so visually it's not as easy for me, so I will probably eliminate this pretty soon. I just prefer with the NY times not do it this way.

[Demonstrating the RSS feed reader]

A So this is the same info you get through the website but this is just feeding you individual articles in a format that's uniform. The main difference with RSS feeds is that you have everything bullet pointed by title and you don't have to deal with the variability of websites that change formats on you.

RF. So this just kind of systemises it?

A Systemises, uniformises it and it enables searching ... so I go in and write Bin Laden and it will give me news stories relating to Bin Laden. That's a cool feature.

RF I see, so it's a way of re-organising the information in a way that makes it more ... you can find what you are interested in quickly and across publications as well.

A Yes that search! I've never seen anywhere else where I can do it that well. *Google* search will give you too much. There's *Google News* but even that will give you too much junk.

RF So this enables you to select which feeds will come into your folder and then cross search.

A Yes... within those sources that you find reputable.

[switching to *New York Times* web site]

RF What does that mean? Most e-mailed articles.

A It means that when someone clicks this button and e-mails, it is particularly insightful for their purposes. It will get a grade and if you get enough grades it will end up coming up on this list. And it even goes up to 10 or so. So this is kind of like *Google*, the most e-mailed. These are articles other people have e-mailed to their friends because they think they are significant. It's a kind of filtering mechanism. It enables you to quickly identify what other people, who you don't know, find significant and interesting.

Yes, so I've become familiar with these people [pointing] so here's a guy, Thomas Friedman who wrote the world is flat and big economic globalisation guy. I'll definitely read that article because I like the way he writes. David Pogue is a technology guy and he writes a lot of the newest technology stuff that comes out. And then I don't know these but if the topic is right, I'll read it.

RF OK. So that's the *NY times*, but you also have links there to *C Span*, *LA Times*, *Guardian Unlimited*, *Al Jazeera*, *Google News* - so I'm really struggling to know how you find time to read all these different news articles in a day. I mean I just don't do that.

A It's like, it's like e-mail time. Do we really know how much time we spent on the e-mail? Sure. I don't feel like it's time. That's the way reading has become and I love it.

Clinton discusses how pop-up adverts usurp his agency

RF Why do you use *Safari* instead of *Explorer*?

C Because of *Safari*'s ability to block stop up adverts and pop-up crap. It's unbelievable you can turn off the feature and go to a website and things start popping up ...

[Clinton turns off the pop-up block on his browser]

look at this ... look at all these things popping up every where ... look ... look at all this .. [Laughter] it drives me insane! So what I do is I put on this pop-up blocker and I never get a pop up. And no other browsers can do it as well as this can.

Q So why is it so important to stop these pop-ups, does it take away control?

A It's not only, it's a sort of an invasion. When something comes onto your computer screen that you didn't ask for ... you are used to manipulating this machine to give you precisely what you want. I went to this website because I wanted to see today's news headlines. I didn't want to see an advert for what ever ... tropical beaches. If I want to go to tropical beaches I'll seek that out and I'll find that. I'm not going to be influenced by these images of... especially if it's unsolicited.

Q So it sort of distracts you... prevents you from focussing your mind on what you want it to be focussed on?

A And I think... the other reason... I perceive that these pop-up windows are utilising the resources of my computer. That they are taking away from the technical work that I want to do.

Q That's interesting, so you feel they're parasitical on your own interests.

Sue Ellen demonstrates her use of the Friendster social software tool

[SE argues that the whole point of *Friendster* is to try and amalgamate as many friends as you can]

SE Erm, when you first get onto it you make a profile and you read other peoples' profiles and see their pictures. You can also post a message on the message board to most of your friends and that's quite convenient. For instance, if I change my e-mail address or my mailing address I can post it on there and it reaches all those people.

RF Why use it instead of e-mail or chat?

SE Well I can contact them all immediately and I don't have to write out all their e-mail addresses. I just put something in the field and it goes out to everyone. And it allows ... it puts me out there on *Friendster* and allows for people who I've known since high school or college, who are on *Friendster*, to search for me. So we can find each other and re-establish contact... so it's good for people who have lost contact with each other to find each other.

RF But you both have to be on *Friendster*?

SE Well, yes they have to be on *Friendster*, but I mean there are some sites like *Friendster* that you have to actually be invited to be a member of. So there are some that are more like elitist friendship groups.

[SE suggests that the company profits through advertising rather than imposing charges. She demonstrates the profiling system and compares it to a dating site arguing that people do indeed use it for a dating. She stresses that men have contacted her in this way. However, she also suggests that it's more subtle than a dating agency noting that she can encourage advances simply by stating that her status is single. She then shows me a picture of a high school friend whom she had lost touch with three years previously. Her friend had subsequently found her through *Friendster*. She had traced her by using the 'friends in common' functions. SE demonstrates her testimonials illustrating what she and a male friend had written about each other.]

So this is what J. wrote about me.

"SE. is fabulous, she is smart, beautiful, knows how to party like a rock star, she does a ferocious version of I will survive on the mike. Who else could convince several Oxford Profs. to ride a mechanical bull. That's real Texas charm baby."

And this is what I wrote about him.

"J. is my all American beef cake, here in the land of simpering pansies. I mean really, every girl needs one and J's a stud, no doubt, but he's also kind, caring, funny and he's an out of this world grinding instructor. He's like a Frat Boy sounding the raging STDs and fabrap. He knows how to party and he knows how to do statistics. No seriously, I have much love for J. and this picture doesn't really do him justice. I'm a certified blonde bombshell and truth be told J's 6'2" Jockish presence still makes me slightly tingly... snack him if you think you've got the chops... he's the goods."

Do you think that you are more likely to stay in contact with these people post Oxford, as a result of being on here?

[SE suggests the tool enables her to maintain relationships in a low quality way.]

SE. 'I think it's good because I'm getting to the point in my life where I'm going to start forging a career and it's good to have these kind of networks going, just for network building. Say one of my friends is working for a really amazing company and is doing something he really love s and he knows of a vacancy then people can easily hear about it... so it's good for

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that as well .. it's not just building up friendships. I use to spent a lot of time on here, I was obsessed with accumulating friends from my past and stuff, now I don't do that quite as much but it's good. For example, if someone writes you a message or a new testimonial or something and wants to be in contact *Friendster* automatically sends you their current e-mail address.'

[SE suggests that most of the people in her network will be in positions of power and influences at some stage and thus suggest that *Friendster* is a tool that might potentially enhance her career.]

Appendix 8: Sample e-mails received from participants

The following extracts suggest the kinds of insights gained through e-mail correspondence with participants who became heavily involved in the study. The two extracts shown also suggest that these students had become more mindful of their relationships with their media environments as a result. Arguably they had started to use conceptual tools I had introduced into conversations to reflect upon and describe their own practice.

Jim's discovery of the personalisation function on Google

Sent 6th June 2006

Hey Russ, I discovered last night that *Google* has a function that allows you to personalise your own homepage with links to various sources. On the one hand, this allows you to personalise your mediascape and gives you greater agency. On the other hand, they offer you a bunch of content - which Google claims it is not responsible for offering (i.e. it implies it didn't even select those sources) and the stuff on offer is mostly crap (though the BBC and NYT are there, but many critics would call that crap too). So I'm not sure it answers Bourdieu's point, but it could be handy for keeping track of stuff!

Long live Google!!!

Jim

Ardash discovers how to read books online for free

Hey

I'm writing to let you guys in on a trick I figured out. Since it's quite difficult to get recent academic books in India, I had to find alternative means. *Amazon* has just begun a new feature for searching keywords inside books. Especially for better selling books, they offer this service. It basically allows you to find all the instances of a word you chose and lets you see that page and two pages subsequent. If you, therefore, pick the keyword 'Introduction' you can read the first three pages. Then, you pick a word on that third page and you can read the next two pages and so on. By using this trick (that I don't think they thought about), I've almost completed two chapters of a recently published book! If not for reading the whole thing, it's a great way to get a feel for some major authors and books before you go buy them.

To have access to this service, I believe you need to have bought something from *Amazon* previously or just sign-up. And then, find the book you're interested in and under the title, if the service is available, it will say 'search inside.' Try it out!

Appendix 9: Sample memos

The samples presented in this appendix suggest how data recorded in stimulated responses and interviews was gradually transformed into descriptive and more theoretical memos. These samples also suggest how empirical data was conceptualised with the aid of theoretical constructs pillaged from the literature. Most of the key ideas presented in the findings chapters started as a memo. The first memo presented suggests how Timothy's newly discovered projective identity mediated his motivation to finish his thesis.

Memo connecting Timothy's motivation to finish his thesis.

It is important to note that Timothy's overall strategy toward completing his DPhil. thesis had changed dramatically in his final year. At the start of the course he had spent considerable time reading around the subject, meeting others interested in the field and discussing his experiments with friends. However, he had grown increasingly frustrated with the isolation and degree of specialisation required to the point where he felt he had become completely alienated. However, partly as a result of his friendships with others following the fast-track medical course he decided that he wanted to retrain as a medical doctor. That year, in addition to writing up his DPhil. thesis, Timothy had completed an 'A' level chemistry course and applied to four medical schools. After an anxious wait he had been given a conditional offer. Acceptance depended on him gaining an 'A' grade and completing his DPhil. before the start of the course in September. As a result, Timothy had lost much of his intellectual curiosity for his DPhil. The overriding concern was to produce a thesis that was acceptable in the time he had remaining. Ironically, this seemed to provide a powerful motivation and focus to complete the thesis. Tim commented:

I've never worked so hard in my life and that's only because I found what I wanted to do. Until now I've never known what I wanted to do. But now I've had a realisation in my life that medicine is it and I will do anything to get there. And that's it, I've found a path and that's my motivation really. The biggest problem I've always had in life is knowing what I want to do. And whilst you don't know there's all sorts of things you can do and all sorts of ways you can and I'm worried, worried about getting to thirty and not having an income I mean that's disgusting!

A response he gave when asked to explain why medicine was so important for him provides some interesting insights into the relationship between motivation and identity.

Abstract memo on hybrid cognitive ecologies

This abstract memo draws on multiple observations and constitutes an early attempt to conceptualise the *anxiety of choice* confronting students working in new media ecologies.

Today, many people make use of organisation software like *Microsoft Outlook*. However, many people also still make use of paper-based diaries, wall planners and to-do lists scribbled down on bits of paper. Likewise when making notes or writing. Learners invariably refer to both paper-based resources (books and articles) and digitised resources (PDFs and webpages). Problems or contradictions within the activity system performing the task invariably result as a consequence of these hybrid ecologies. For example, when a student comes to write an essay they might find they have notes on paper, notes written on the back of articles, notes in paper notebooks or any number of digital documents. Given that paper-based materials are less accessible (filed away in a folder) than digital documents, student may find themselves becoming overly dependent on the digital notes. Conversely, digital notes filed away in a virtual folder on a hard drive may get misfiled, accidentally deleted or simply forgotten about due to the relative invisibility and insubstantial physical presence compared to the paper-based counter parts. As a consequence learners frequently pose questions to themselves, do I make notes on paper or a word processor? Do I use a paper-based diary or a digital organiser? Do I photocopy a journal article that I can then scribble all over or do I download an electronic copy (in PDF format) and make notes on a separate word document? In short, the hybrid paper-digital ecologies confront the learner with an *anxiety of choice*. The learner must choose and invariably choose alone.

Appendix 10: Matrices used during data analysis

All data collected by interview and stimulated response sessions was loaded as a primary document into a 'hermeneutic unit' on the Atlas ti qualitative data analysis package. In this way data could be easily searched and coded. The analysis process started by coding raw interview transcripts and stimulated responses as shown in Figure A11.1

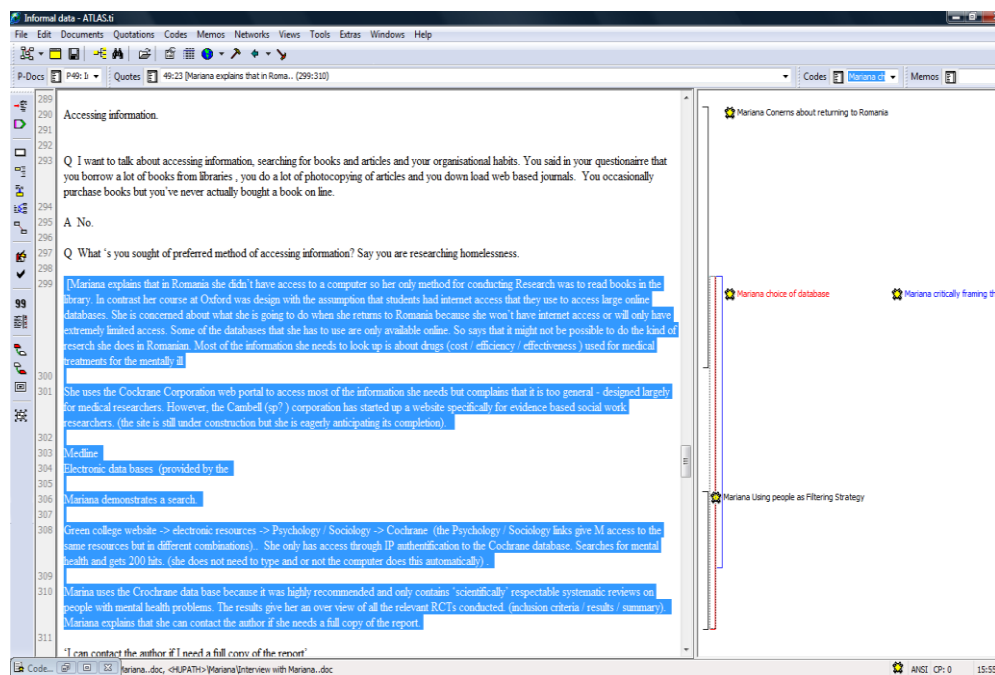


Figure A11.1 Screen Shot from Atlas ti. Showing coding of raw transcript.

Initially, an open coding procedure was used. Codes were then grouped into code families. This facilitated hypothesis generation and initial memo writing. However, it also produced a profusion of codes.

At this later stage, it proved more helpful to re-code larger chunks of data as specific tool-mediated practices (used by particular individuals) that related to goals or wider object-orientated learning activities that involved multiple tool-mediated actions. As a result, one could search and identify dozens of digitally mediated practices associated with each of the case study subjects using *Atlas*. Matrices were used to conceptual particular learning activities mediated by digital tools and resources using activity theoretical concepts as category headings as shown in A11.1.

Table A11.1 Matrix conceptualising tool mediated actions using activity theoretical categories

Subject	Goal / object	Tools / Mediators	Rules	Community	Division of labour
Miss Lullaby	Producing an MSc Dissertation.	Computer MS Word CHAT E-mail Track Changes Course Mates Friends from home	Find specialist and non specialist for critical friend. Reciprocation between critical friends	Course Mates Supervisor Friends from home.	Task distributed between subject/ track changes / course mates / online critical friend
Sue Ellen	Eliminating Americanised spellings from essay.	Word Spell Check	Don't allow one to become dependent on digital tools for a task that could be done manually.	Supervisor / Course Mates	Task distributed between subject and MS Spell
Anastasia	Correct application of ANOVA test in SPSS for windows.	Web Browser SPSS for Windows Online Tutorial's on ANOVA Course Mates Book		Course Mates Others Using computer Room Supervisor Producers of statistically websites Editor of book	Task distributed between subject, author of book, author of interactive tutorials, intelligence designed into SPPSS

The matrix shown in Table A11.1 draws attention to the object / tools / community / rules and division of labour involved in each learning activity. In many respects, the use of matrixes of this type shifted attention away from the technology and facilitated a deeper understanding of the ways digital tools were appropriated by individuals to mediate particular goal directed tasks. This matrix was developed at an early stage. The distinction between the object and goal of an activity / action is not clear.

In many cases multiple tools and tool-mediated actions were involved. The matrix shown in Table A11.2 illustrates how multiple actions might relate to the wide object-motive of a learning activity and draws to the consequences or outcomes.

**Table A11.2 Matrix used for conceptualising digitally mediated learning activities involving
the use of multiple tools**

Subject.	Object-Motive (of learning activity and specific operations)	Tools/ Mediators (employed for specific operation)	Outcomes (resulting from use of digital mediators)
Ardash	Learning Activity Conducting a comprehensive literature search and review. Action I. Systematic literature searching. Action II Following citations. Action III Getting hold of articles.	OLIS Endnote Online Journals ‘Search Procedure Sheet’. Advanced Search tools Hyperlinked Citations. Amazon book Recommendation System. Google Scholar TDNet Harvard Library Services E-mail (authors)	Increased confidence in comprehensiveness of search Little sense of intellectual terrain. Danger of getting stuck in ‘citation cartel’ Developed sense of the ‘intellectual terrain’ of multiple disciplines. Faster and cheaper way to get hold of articles. More time for reading. More articles to read. Help developed rapport with established academics in the field.
Timothy	Learning Activity Producing a DPhil. thesis before commencement of medical course. Action 1 Analysing brain image data Action II Preparing images for inclusion in dissertation. Action III	Word , Excel, Image Folders, Web Sites, MRI-Cro Talarac-Coordinator. Corel Draw. Multiple Desktop Tool Desktop icons	Participation in the practice of contemporary clinical psychiatry. Possible to detect activation points and produce statistical breakdowns. Enhanced capacity to

	Designing a virtual environment to support the analysis of brain images.	(strategically positioned)	work with dozen's to tools and resources Avoids disorientation Increases productivity.
	Action IV Seeking assistance from distributed affinity group.	MRI Crow E-mail listserv	
	Action V Providing assistance to novice user of MRI-CRO affinity group	E-mail composer.	Possible to continue work without seeking face-face help from specialist. Developing knowledge of application.
	Action VI Seeking help with Visual Basic Script.	Visual Basic Editor. Upload Scripting Support Web Site.	Feelings of pride in growing understanding. Possible to continue without seeking face-face help from specialists. Possibility of sharing script with others.

Matrixes of this type were used chiefly to facilitate the writing of descriptive vignettes.

In the final stage, to facilitate cross-case analysis and report writing, matrixes were devised that focussed attention of one of the meta-level categories used to organise the findings chapters. For example, the following matrix was used to search for examples of digitally mediated practice that illustrate how students are learning with others through new media. This eventually became the basis of chapter 7. The matrix shown in Table A11.3 is designed to draw attention to the authentic learning need that must pre-exists a student's attempt to use new media to leverage the distributed expertise accessible through CMC tools.

Table A11.3 Learning with others through new media / leveraging distributed expertise

Subject	Need	Action	Tools	goal / object-motive /s
Anastasia		Correspondence with former tutor. Additional help / support / advice	E-mail	Support / help / advice
ZeroGBoy	Confirmation / discuss career options.	E-mail with Mother / Tutor Experts in field (collaborative relationships)	E-mail	
Timothy	Responded to request for help from individual Why? because he could	E-mail		Wanted to give back, felt it was good.
Ishani	Little need – very well organised course	? No need. Dependent on life world community	Web Learn.	
Edina	Critical feedback / editorial advice Socialising / Emotional support / Friendship / emotional support	mediated discussion / supervision. (via Track Changes) CHAT / Away messages	In-depth discussion of track changes E-mail / Track changes Writing to people in positions of authority Instant Relay Chat to monitor friends and gossip I-tunes	Receive critical feedback Monitoring friends Friendship / finding a partner / socialising / gossip
Miss Lullaby	Supervisor away / need for critical feedback and advice	Online community for critical friends	Instant Relay Chat / E-mail and Track Changes On how her supervisor avoids contact Rating critical friends Reciprocity Seeking advice from those at top of field	-> improving quality of work. Passing exam Building confidence.

These matrixes facilitated cross-case analysis and the search for practices that related to the meta-level category in question. From this matrix primary, secondary and negative case examples. In some cases vignettes had already been written that could be used to illustrate the practice. In other cases, the use of the matrix inspired the development of a vignette to illustrate the main concept.

It is important to stress that matrixes were not used in a rigid or mechanical manner. They were often modified with an additional or substitute headings in order to draw attention to a particular characteristic of the practice. For example, the matrix shown in Figure A11.5 was designed to draw attention to students' participation in online affinity spaces. The column headed 'mode of participation' was added to draw attention to each student's mode of participation. This then became the basis of the typology presented in 8.6.

The samples shown suggest a variety of ways matrixes were used to structure and guide the analysis of data. They became powerful tools that facilitated data reduction and visualisation and thereby helped to conceptualise the rich and messy data set produced at a more abstract level of analysis. However, much of the final analysis was conducted during the writing process when insights produced by the matrices, insights produced by through the process of writing vignettes and memos were synthesised with the theoretical concepts introduced from the literature. In this respect, these matrices functioned as addition conceptual tools that were used if and when required.

Table A11.4 Matrix used to identify student's mode of participation in online affinity spaces

Subject	Goal / motive	Affinity Space	Tool	Mode of participation
ZeroGBoy	Find a job gain work experience and advance career.	Jobs.ac.uk	Subscribed to listserv that publishes current jobs available	Intent / passive
	Personal interest / lifestyle / identity formation	Roller Coaster affinity Group	Web site / Listserv / Photo-board Newsletter	Active participant
Ishani	To organise placements / maintain up-to-date with developments / access resources Selected preferences for crew	Weblearn for Medical Students	VLE Listserv Survey Tools Links to resources Calendar Timetable	Active participant (directly related to need)
Jacqueline	Therapy / escape from routine of dissertation writing	E-bay (is this an affinity space?) allows people with shared interests to exchange goods	E-bay web site	Active participant
Clinton		Democrats abroad affinity space	Web Site Listserv Discussion forums RSS Feeds	Active Participant
Tim	Technical Support with MRI Crow Brain image software	MRI Crow affinity space	Listserv Website (that allows upload of code / VB scripts) and comment box	Intent lurking Minimal participation

Appendix 11: Summary of data collection for *The Agency of the Learner in the Networked University*

Table A11.1 Summary of data collection

Pseudonym	Case study started	Question-airre	Stimulated Response	Interview	Follow up interviews	e-mail	Virtual Ethno-graphy
Edina	8/04	Pilot	1-2h	2-3 h	Extensive	Yes	No
Karen	8/04	Pilot	>1h	1h	None	No	Yes
Peter	8/04	Developed	>1h	1-2h	Minimal	No	No
Sue Ellen	9/04	Developed	1-2 h	1-2h	Minimal		
Clinton	6/05	Developed	2 h	2-3h	Extensive	No	Yes
Miss Lullaby	6/05	Developed	1-2 h	3-4h	Extensive	No	No
Anastasia	7/05	Developed	1- h	1h	Extensive	No	Yes
Ishani	7/05	Final	>1h	1h	None	no	No
Jacob	8/05	Final	1-2h	2h	Extensive	Yes	Yes
Daisy D.	8/ 05	Final	>1h	2h	Minimal	Yes	Yes
Timothy	8 /05	Final	2-3h	2-3h	Extensive	Yes	Yes
Katrina	9/ 05	Final	>1h	2-3h	Average	no	Yes
ZeroGBoy	9/ 05	Final	1-2h	1-2 h	Extensive	Yes	Yes
Jim	9 /05	Final	1-2h	2-3h	Extensive	Yes	Yes
Ardash	10/ 05	Final	1-2h	2-3h	Extensive	Yes	Yes
Jacqueline	2/ 06	Final	30mins	1-2h	Average	Yes	No

The table shown indicates the relative depth of each ethnographic case study by indicating the month started, the version of the questionnaire taken by the subject, the approximate length of the stimulated response session (in hours), the approximate length of interviews recorded (in hours) and the degree to which conversations and follow up interviews continued following the initial case study. Many of these were not recorded. However, they provided valuable insights and assisted with the process of progressive focussing. An estimate of the depth of these follow-up interviews is indicated relative to the group using the three labels (none, © Russell Francis 2007

minimal and extensive). Further, the table indicates whether follow-up involved the exchange of e-mail and / or retrospective virtual ethnography.