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Thesis:
Stordy, PH (Filed: 2012) Undergraduates' Internet Literacies. UNSPECIFIED thesis.

Undergraduates' Internet literacies

Thesis submitted for the degree of Doctor of Philosophy to the Faculty of Social Sciences

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January 2012

Abstract

This study explores information management undergraduates' and their teachers' perceptions of being Internet literate, of Internet literacy and their Internet-related practices, with the aim of identifying implications for information departments' pedagogy and curriculum. In particular, it explores the extent to which popular digital native narratives surrounding students' use of the Internet, coincide with the outcomes of this study.

Following a constructivist qualitative methodology, focus groups and interviews were conducted with a cohort of 24 undergraduates at the beginning and end of their Information Management studies. Interviews were also conducted with the 17 academics who taught these undergraduates. The information collected was analysed using techniques developed from Naturalistic Inquiry and Constructivist Grounded Theory. This enabled the reconstruction of the multiple realities that exist within the school in relation to the study's aims.

Academics perceived that being Internet literate involved the development of a set of competencies, capabilities and qualities that spanned the entire range of Bloom's cognitive and affective taxonomy. They were critical of students' academic-related Internet skills, particularly to find authoritative sources, but aligned themselves with the digital native rhetoric when talking about students' non-academic Internet use. This contrasted with undergraduates, who had an information searching centric perceptions of being Internet literate, both at the beginning and end of their studies, and were highly confident in the areas they associated with being Internet literate, including being able to find Internet sources. Furthermore, students felt they had 'picked-up' their Internet-related skills, as opposed to have been taught them.

This study concludes that undergraduates' Internet literacies, coupled with their perception of their own Internet-related abilities and how they became Internet literate, are potentially at odds with academics' understandings of undergraduates' Internet literacies and their role in facilitating students' Internet literacies. This study suggests that unless this divide is bridged, the effective development of undergraduates' Internet literacies within many information schools and departments may be hindered.

Acknowledgements

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Abbreviations

BIS   Department of Business, Innovation and Skills

DCMS   Department of Culture, Media and Sports

DfEE   Department for Education and Employment

DfES   Department for Education and Skills

ESRC   Economic and Social Research Council

FE   Further Education

HE   Higher Education

HEA   Higher Education Academy

HEI   Higher Education Institution

HEFCE   Higher Education Funding Council for England

ICT   Information Communication Technology

IT   Information Technology

JISC   Joint Information Systems Committee

TEL   Technology Enhanced Learning

UCISA   University and Colleges Information System Association

UCL   University College London

VLE   Virtual Learning Environments

Chapter 1: Introduction

As an undergraduate teacher and coordinator, I frequently observe students who appear highly confident using the Internet, yet this apparent expertise does not always transfer to their performance in learning activities, coursework assignments or other university-related interactions. The undergraduates within my Information School go on to become information professionals, and it is likely their future colleagues and managers will also have high expectations about their Internet-related abilities and experiences. It follows that my school has a responsibility to ensure its graduates are equipped to meet these challenges, not just as students and future employees, but as citizens and individuals. Hence, this research primarily seeks to illuminate an understanding of an area that will specifically benefit my own School's undergraduates and potentially other information schools and departments. My school both educates for and researches information literacy and its academics are also pivotal in developing an understanding of this area. They facilitate activities that develop students' Internet literacies by acting upon their understandings of what it means to be Internet literate. For this reason, their views and understandings are central to this research and any future curriculum intervention that facilitates students' Internet literacies.

This thesis describes a research journey that begins with the initial inspiration for this research and the theoretical framework adopted: the undergraduates I teach, and Sonia Livingstone's conception of Internet literacy (Livingstone, 2008). Having fleshed out the purpose of this research and introduced the constructivist methodology used to achieve its aims, I then describe the research context in sufficient depth to allow the reader to vicariously experience the research undertaken. This research takes place amid increased interest in the digital abilities needed by students to be successful in their studies and various critiques of the 'digital native' narrative evident in popular media and government-related strategies and reports, in which young people are portrayed as having 'natural' aptitudes towards new technologies. These, along with an illustrated framework for positioning the multitude of Internet literacies prevalent in the literature, are presented as a formative backdrop to the research undertaken. Before embarking on a description of research methods employed, I provide an overview of research design issues of relevance to this research, from the relativist, transactional and subjectivist constructivist viewpoint assumed, to the need to adopt a reflexive stance towards

the methods used and information gathered. The research focuses on one cohort of Information Management undergraduates and their teachers. The primary methods used to gather information from these participants included focus groups and interviews. Using methods developed from Grounded Theory, the information collected was analysed to provide rich descriptions of undergraduates' and academics' Internet experiences, and perceptions of and pedagogies for Internet literacy. A model is presented that encapsulates academics' perceptions of Internet literacy and takes centre-stage in the subsequent discussion of potential Internet pedagogical tensions and disparities that exist within my School. A set of proposals are developed to inform further pedagogical and curriculum discussions, aimed at ensuring our undergraduates have the Internet-related abilities and experiences to be successful during their Information Management degree studies, future employment and life-long learning. Finally, the research undertaken is evaluated against the original research aims and questions posed, and constructivist trustworthiness and authenticity criteria.

1.1 Inspiration for the research

As a University Teacher teaching Information Management to undergraduates within a Russell Group university, I work with students who have grown up with increasing levels of Internet access. These students are frequently portrayed in the media and literature as having a natural aptitude towards using new technologies, and the Internet in particular. Their early exposure supposedly endows them with skills that those older cannot emulate. Undoubtedly, the undergraduates today need less tuition in using Internet technologies than they did when I first started my university career back in 2004. For example, I spend less time teaching students how to navigate complex websites and I no longer teach students how to use a basic search engine. I also notice differences in students' relationship with Internet technologies. For example, as I walk around my school and university, the most common application filling the students' computer screens is not MSN Messenger, Google or the library's catalogue, but the social networking application Facebook. It is the first application many students start when they log on and the last one they close when they log off. However, my reflections suggest that overarching terms like Net Generation (Tapscott, 2009), Digital Natives (Prensky, 2001b; Prensky, 2001a; Prensky, 2009) and Millennials (Howe and Strauss, 2000; Oblinger and Oblinger, 2005) fail to capture the nature of the difference and the diversity of behaviour I

observe. The following cases illustrate the variety of behaviour that led me to question the Internet savvy rhetoric:

Case 1: After twenty minutes explaining and demonstrating recommended Google search techniques (see Google, 2011), I asked my first year Information Management undergraduates to find Web pages relevant to their Climate Change search topic. As I wandered around the computer laboratory, I glanced at one student's computer screen and noticed what he was typing into a standard Google search box: *What are the factors that might cause Climate Change?* Undoubtedly, this search would have retrieved some relevant web sites, but would also have excluded many more. Regardless, he had not incorporated the previously mentioned recommendations into his Google searching despite appearing to listen attentively. When I reminded him, he shrugged, quickly deleted some words and continued. I moved away not really convinced he understood. Why had this conscientious and attentive student apparently ignored my recommendations?

Case 2: Three of our more engaged Information Management undergraduates had independently shown an interest in developing a school undergraduate society. All three students are avid uses of Facebook. One was particularly interested in developing and maintaining a Facebook online community, another had already arranged a departmental social event via Facebook and third saw the society as an extension of his Facebook social life. Despite their courses overlapping, they did not know each other. They were given each others' names and I suggested they contact each other before attending a Student Union meeting devoted to setting-up a society. All three attended the meeting, but never spoke to each other. The society never started. Why was it that these three avid users of Facebook not use this communication tool to communicate with each other before attending the meeting?

Case 3: One of my own Information Management first year courses aims to make students more familiar with Web page authoring. Rather than use third party drag-and-drop applications to develop Web pages, a pedagogic decision was made to teach the very basics of HTML, the mark-up language of the Web. Students have repeatedly said that this was one of the most rewarding aspects of their first year and most achieve high grades, including those who have had no previous ICT tuition. However, the situation before 2006 was very different. The HTML laboratories were conducted during the first weeks of their studies and around ten students each year were requesting transfers to other degrees, claiming the HTML

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was too difficult. The laboratories were postponed to later in the semester and now very few students request a transfer[1]. Why was it that students studying a degree related to the use and application of technologies and who are portrayed in the media as being comfortable with new technologies, perceive HTML to be so difficult?

The cases cited above could be interpreted in numerous ways. For example, rather than adopting a didactic approach to the teaching of Google skills, maybe I should have adopted a more reflective approach (Case 1). Maybe the three students who wanted to form a school society had contacted each other via Facebook prior to the meeting, but failed to develop a rapport (Case 2). Maybe the students who wanted to withdraw from the degree because of the HTML had mistakenly thought their entire degree involved hard-core computing (Case 3). However, these are just three of many examples of non-Internet savvy behaviour that my colleagues and I could have cited. Overall, one begins to wonder, what is going on? Why do supposedly Internet savvy students sometimes appear inept at using the Internet, particularly for their studies? What experiences of the Internet are students bringing to their studies? What do students know or need to know to use the Internet for their studies and beyond? What pedagogies might usefully be employed to promote this knowledge? It was tentative questions like these that inspired the research described in this thesis.

1.2 Theoretical framework

The questions resonate with research conducted by Sonia Livingstone and her colleagues (Livingstone, 2003; Livingstone and Bober, 2003; Livingstone and Bober, 2004; Livingstone et al., 2005; Livingstone, 2008)[2]. They investigated children's and young people's Internet-related behaviour, attitudes and abilities, along with the Internet views and practices of their parents. Their conclusions challenged popular proclamations that children and young people are Internet savvy and thus highlighted deficiencies within compulsory education. By positioning their research around behaviours and attitudes within different social contexts, they went beyond a narrow evaluation of children's and young people's Internet skills. Sonia Livingstone

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[1] Undergraduates in our university are only allowed to transfer to another degree within the first three weeks of their studies

[2] For more details, please see Section 4.1

found it useful to conceptualise her young people studies within the theoretical framework of literacy, justifying this as follows:

> *"… the widespread struggle among educators … researchers and policy makers to conceptualize what it is (young) people 'know' or need to know when using the internet is usefully resolved by conceptualizing this knowledge in terms of literacy. This allows us to draw on, and learn from, a long intellectual history of debate over the nature of literacy (from print literacy to audiovisual and media literacies, information literacy, advertising literacy, cyberliteracy, games literacy, critical literacy, and many more) …"*
> (Livingstone, 2008:102)

By conceptualising her Internet-related research in terms of literacy, she has expanded notions of reading, writing and text within the context of the Internet and thus enabled her to *"… weave together ... basic and advanced skills, linking individual skills with social practices and crossing the boundary between formal and informal learning"* (Livingstone, 2008:102). By addressing the tentative questions raised in the previous section, this research continues where these Internet literacy inquiries end. The subjects of this research are older, but to what extent do their Internet literacies differ?

> This research was conceptualised within the broad theoretical framework of literacy, thus enabling undergraduates' academic and social Internet-related practices and abilities[3] to be considered within the context of their studies and life-long learning. In short: undergraduates' Internet literacies.

1.3 Research Aims

The research described in this thesis was conceived as extending pre-university Internet literacy studies into the university sector, in particular the research conducted by Sonia Livingstone and her colleagues. However, as a university teacher I am also interested in the impact my school's Information Management curriculum and pedagogy has on undergraduates' Internet literacies, their views about what it means to be Internet literate, and their views about the Internet literacy-related teaching they have experienced. Hence, this research aims to:

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[3] The term 'abilities' is used in this thesis to encompass all Bloom's cognitive, affective and psychomotor categories (Bloom et al., 1956)

A1-2011[4]: To explore undergraduates' perceptions[5] of being Internet literate, Internet literacy education and their Internet-related practices

In addition to this more scholarly aim, the research has an action orientation, since the outcomes will inform my own teaching and the teaching that takes place in my school. This primarily relates to ensuring undergraduates are successful in their studies, but it is also to equip them with Internet-related abilities that may useful beyond their studies. It follows that this research aims:

A2-2011: To develop pedagogical approaches to enable our undergraduates to become more Internet literate

These will inform School discussions and strategy related to undergraduates' Internet literacies. However, central to any departmental curriculum development is the perspective of those that teach students. Hence, this research also aims:

A3-2011: To explore academics' perceptions of undergraduates' Internet literacies, what it means to be an Internet literate student and their views about Internet literacy education

1.4 Delimitations

Delimitations are restrictions that researchers impose prior to the inception of the study (Creswell, 2003). This research was delimited to a specific group of technologies and research design axioms, and a particular cohort of students and theoretical framework. These delimitations are expanded upon in the following paragraphs.

This research primarily relates to technologies that are dependent on the Internet. It is not about digital technologies, which are a broader set of technologies subsuming Internet technologies[6]. Hence, this research is not about undergraduates' mobile

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[4] The nomenclature used identifies the type of item and, to help the reader understand the emergent aspects to the research design employed, the year the item was created i.e. [abbreviation for the type of item][item number]-[year the item was created]

[5] The term, 'perception' has been used here to mean, "… the way in which something is regarded, understood, or interpreted" (Oxford University Press, 2011)

[6] Please read the Section 1 of the Appendices ('Terminology') for more details about the distinctions.

phone, portable media player or personal digital assistant (PDA) practices. Nor is this research about how students' use applications like Microsoft Word that can effectively work without Internet access. However, this research does focus on undergraduates' and academics' practices related to the World Wide Web technologies like Google running in a Web browser requiring Internet access on demand and the virtual 3D world Second Life requiring continuous Internet access. One corollary of delimiting this research to Internet technologies as opposed to digital technologies is that the terms 'Internet literacy' and 'Internet literacies' are preferred to the terms 'digital literacy' and 'digital literacies'. Whilst the latter terms have been in the educational arena for more than a decade, their use has only recently become more widespread and common (see Section 5.3.2). In addition, these terms refer to a broader set of abilities and practices than would be implied by the use of the terms 'Internet literacy' and 'Internet literacies'.

The aims of this research stress the multiple viewpoints of its participants. This is consistent with a constructivist research design originally proposed by Lincoln and Guba in their seminal book entitled, 'Naturalistic Inquiry' (Lincoln and Guba, 1985). Explicit in this research design are five axioms that distinguish it from other forms of inquiry: *"Realities are multiple, constructed, and holistic"*; *"Knower and known are interactive and inseparable"*; *"Only working hypotheses are possible"*; *"It is impossible to distinguish causes from effects"*; *"Inquiry is value bound"* (Lincoln and Guba, 1985:37). The implications of adopting this research design and axioms are far reaching. These include the choice of qualitative methods in preference to quantitative methods, an emergent design as opposed to one that remains fixed from the beginning of the inquiry, the production of 'theory' that is grounded in and induced from the 'data' collected as opposed to testing some priori theory, and the production of research outcomes that are tentative rather than law-like generalisations. One corollary of the last axiom is that the goal of constructivist inquiry is to allow for transferability of the findings rather than wholesale generalisation of those findings. Hence, whilst this research focused on a particular cohort of Information Management undergraduates that studied at my Information School during 2008 and the academics who taught these undergraduates, the findings could be transferred to other cohorts and other university information departments if sufficient contextual similarities exist. For example, many information management and iSchool (see Section 2.4) university departments would satisfy this proviso.

As stated in Section 1.2, this thesis was conceptualised within the theoretical framework of literacy and primarily draws upon the literature at the intersection of literacy, the Internet and HE. However, I acknowledge that other disciplinary perspectives could have informed this research. For example, the discipline of information behaviour overlaps broader conceptions of information literacy that stress people's information-related (including Internet) practices, as well as their information-seeking abilities (for example, Johnston and Webber, 2003). Defined by Wilson (2000:49) as *"the totality of behavior in relation to sources and channels of information …"*, Bawden and Robinson (2009) claim information behaviour research better accounts for the complexity of people's information-related behaviour. For example, drawing upon his own research, psychology and sociology, Wilson (1997) formulated a general model of information behaviour that extends the core stages of information seeking and retrieval common to many models of information literacy. It includes those factors that influence the formation of a person's information need, an account of why people choose to select of reject certain information sources and the variables that might affect a person's motivation to persist in certain information seeking behaviour. This and other information behaviour models could offer a valuable alternative perspective to that of literacy, but due to time constraints were omitted from this research.

1.5 Constructivist research design

A constructivist research design is appropriate for a study that seeks to illuminate constructed meanings (understandings) within a specific context of social practice, and that also seeks to integrate a participatory, action-orientated dimension into the research process (Lincoln and Guba, 1985). The constructivist approach enables the identification of contextualised meaning from multiple points of view (Green, 2000), with the goal of creating a joint, collaborative reconstruction from the multiple realities that exist (Guba and Lincoln, 1989b). Whilst Lincoln and Guba's (1985) seminal work 'Naturalistic Inquiry' was inspiring and thought provoking, it failed to provide me with sufficient methodological guidance, particularly when analysing the information gathered. Grounded Theory, as originally proposed by Glaser and Strauss (1967), provides such methodological guidance and supports some tenants of constructivist inquiry; for example, ensuring any theory developed is grounded in the research data. However, Grounded Theory has its roots in the positivist research traditions with an objectivist view of knowledge (Charmaz, 2006), whereas constructivism has its roots firmly in the interpretive research traditions. Hence, at an

epistemological level at least, Glaser and Strauss's Grounded Theory (1967) and Lincoln and Guba's (1985) Naturalistic Inquiry are ultimately incompatible. However Charmaz (2006), a student of Glaser and Strauss, proposes a research design that is consistent with the underlying research paradigm of constructivism and the rigorous methods promoted by Grounded Theory: Constructivist Grounded Theory. This methodological approach inspired the methods used in this inquiry, particularly in the analysis and treatment of data, but less so in the data gathering procedures employed.

1.6 Emergent research design

The research described in this thesis was conceived in 2008. Since then, my understanding of research and Internet literacies has evolved; Literature that was relatively recent in 2008 now seems dated; Internet technologies that were innovative in 2008 now seem old hat; my understanding of students' Internet literacies in 2008 feels naïve in 2011. These reflections about the longitudinal implications of research are commensurate with a emergent research design since *"it is inconceivable that enough could be known ahead of time about the many multiple realities to devise the design adequately"* and because the researcher and those being researched *"interact in unpredictable ways to influence the outcome"* of the study (Lincoln and Guba, 1985:41). An emergent research design does not negate the constructivist researchers' responsibilities to plan or become lax at maintaining focus. However, an emergent design does allow constructivist researchers to respond to their own reflections, thoughts about reflexivity and the 'data' collected. Research methods are chosen and configured on the latest tentative 'theories' or 'working hypotheses' (Lincoln and Guba, 1985), but may evolve or become more refined as the research moves forward. This thesis describes the research process that took place and the outcomes of this journey.

The emergent aspects of how the research design became finalised is evident at various points in the thesis. Within its linear and sanitised structure the principal research design iterations and parallel research-related processes are indicated. For clarity and brevity, many of the less significant complexities have been obscured from the reader. However, its evolving nature begins with the original 2008 research aim that directed the first stage of the research undertaken:

A1-2008: To explore undergraduates' and their academics' perceptions of being 'Internet literate'

In hindsight, this aim was narrowly conceived, omitting the broader intentions of the research conducted and any implicit rationale. The previously stated aims A1-2011 and A2-2011 better encapsulate the intention of this research and subsume (as opposed to replace) aim A1-2008.

After reviewing the literature available in 2008, a tentative cognitive-orientated definition of being Internet literate was created:

The capability to capitalise on the various affordances offered by both current and future Internet enabled technologies

This definition guided my initial research design, my initial research questions and the questions asked during the first phase of focus groups and interviews. The initial research questions related to undergraduates were:

RQ1-2008: What are undergraduates' conceptions of the Internet and experiences of Internet-related technologies?

RQ2-2008: To what extent do undergraduates value the Internet and Internet-related technologies?

RQ3-2008: What are undergraduates' perceptions of being Internet literate?

RQ4-2008: To what extent do undergraduates perceive themselves as Internet literate?

RQ5-2008: How do undergraduates perceive they have become Internet literate prior to starting their university studies?

RQ6-2008: How do undergraduates perceive the value of their pre-university teaching?

Secondly, from the perspective of their teachers (academics):

RQ7-2008: To what extent do academics value the Internet and Internet-related technologies?

RQ8-2008: To what extent do academics perceive themselves as Internet literate?

RQ9-2008: What are academics' perceptions of undergraduates' Internet experiences?

RQ10-2008: To what extent do academics perceive their students are, or have to be, Internet literate?

RQ11-2008: What are academics' perceptions of, and pedagogies for, Internet literacy?

RQ12-2008: Whose role do academics feel it is to facilitate Internet literate students?

A corollary of researching these academics' and undergraduates' perceptions of being Internet literate is that hitherto unrecognised parities and disparities in their perceptions and experiences may be exposed. Hence, a further research question was posed:

RQ13-2008: What [dis]parities exist between undergraduate' and academics' perceptions of Internet literacy?

The above research questions stress undergraduates' and academics' perceptions as opposed to overt observations or their Internet behaviour, since it has long been recognised that perceptions have an important affect on human behaviour (James, 1890) and more recent research has emphasised this relationship (Deci and Ryan, 2000). In addition, having previously researched primary and secondary school teacher's perceptions of Internet literacy (unpublished) and having reviewed literature related to formal education and Internet literacy, including Sonia Livingstone's earlier Children Go Online studies, the research questions stress undergraduates' perceptions at the transition from their [mostly] school-based education to their new university studies. Hence, the research proposed in 2008

focused on my school's Level 1[7] undergraduates and their teachers. However in 2010, after conducting a final literature review for this thesis (see Chapters 3, 4 and 5) it became apparent that my previous understanding of Internet literacy had omitted a significant dimension. Hence, in Chapter 5 a broader definition of Internet literacy that encompasses both cognitive and practice dimensions:

> The abilities a person or social group draws upon when interacting with Internet technologies to derive or produce meaning, and the social, learning and work-related practices that these abilities are applied to.

Furthermore, the more recent reviews of the literature revealed popular media and Government Internet-related reports and strategies frequently portraying students as digital natives and their teachers as digital immigrants. This combined with a realisation that this research had the potential to explore undergraduates' Internet literacies towards the end of their studies, led to the development of six more research questions:

> RQ1-2011: To what extent are the Information School's undergraduates demanding, critical and sophisticated users of the Internet technologies, seamlessly integrating them into their lives?
>
> RQ2-2011: To what extent do the Information School's undergraduates demand Internet technologies and pedagogies in their studies?
>
> RQ3-2011: To what extent do the Information School's undergraduates perceive their university studies have developed their Internet literacies?
>
> RQ4-2011: To what extent do the Information School undergraduates' Internet literacies, and perceptions of being Internet literate, evolve through their Information Management studies?
>
> RQ5-2011: To what extent is the digital native-immigrant rhetoric prevalent amongst Information School's academics and undergraduates?
>
> RQ6-2011: To what extent do the findings from pre-university Internet literacy studies coincide with the findings from this research?

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[7] Typically undergraduates' first year of study is Level 1, second year Level 2 and third year Level 3

1.7 Research methods

Whilst constructivist inquiry accommodates all data research methods, the principal data collection method is the research interview (Lincoln and Guba, 1985). Before summarising the research methods I employed in this study, my use of more constructivist terminology needs to be clarified. For example, I have preferred to use the term 'information' than the term 'data' since the latter has positivist, objectivist connotations (Charmaz, 2006) whereas the former implies more than data or facts, and in the case of humans, leads to the *"intelligent acquisition of understanding and wisdom"* (Kaye, 1995) and encompasses *"all of the intangible but real resources we create and use as we interact with the world around us"* (Whitworth, 2009:3)[8]. Furthermore, to avoid more objectivist, positivist connotations of term 'interview', I have followed Levy's (2002) lead and used term 'research conversation'. Levy coined the term to highlight the constructivist nature of the social interactions that took place during her study, and how they resembled a 'real' conversational exchange than a classic research interview.

To achieve the research aims and explore the research questions, a series of focus groups and research conversations was held with a cohort of 24 first year BSc Information Management students near the very beginning and end of their studies, and a separate series of research conversations with the 17 academics who taught them. The information collected was analysed using techniques developed from Charmaz's Constructivist Grounded Theory, which in turn draws upon the ideas of Glaser (1978) and Lincoln and Guba (1985). Participants had opportunities to reflect and comment upon their respective analysis before the two analyses were compared to illuminate any parities and disparities. At various stages in the study, I held extended dialogues with a few colleagues to discuss my tentative findings and conclusions.

1.8 Research rationale

The rationale for conducting this research remains the same as it was in 2008, although subsequent reviews of the literature, my developing understanding of Internet literacies and interactions with both students and academics, have refined

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[8] I tended to use the term 'information' in the context of my own constructivist research and the term 'data' when referring to other research or the research design literature (since this is frequently the term used there)

and further focussed the study. In addition to a genuine desire to understand the Internet literacies of the undergraduates in my school, there were scholarly and other action-orientated rationales for conducting research into undergraduates' Internet-related practices and views. These are expanded upon in the following paragraphs and refined in the following chapters, but in essence relate to deficits in the research that has been conducted into undergraduates' Internet literacies and the need to inform decisions with my school regarding how undergraduates' Internet literacies might be developed.

At a national level, various developments have brought Internet-related literacies to the forefront of the HE agenda. These are elaborated later, but suffice to say that various Government, HEFCE and JISC reports, strategies and reviews have stressed that HE has an important role in developing a labour force that can capitalise on recent technological developments, prioritising digital technologies including the Internet. Within the University, one outcome has been the inclusion of information literacy and ICT skills in its list of graduate attributes. These describe the transferable knowledge, skills and qualities that our students are meant to demonstrate when they graduate. Each University department or school interprets the University's graduate attributes according to their own priorities and disciplinary perspectives. Being an information school, these two graduate attributes are central to our Learning, Teaching and Assessment Strategy, and given that the Internet has arguably transformed what it means to be information literate and is integral to many ICT packages, the promotion of Internet literacies within my school are paramount. Furthermore, the undergraduates in my school are studying Information Management, a discipline perceived by employers as closely related to the Internet technologies[9] and a discipline that has arguably become more relevant in an information society (Webster, 2002). As such, employers expect our undergraduates to be particularly Internet literate and undergraduates might expect Internet literacies to be an aspect of their degree.

Within the University and Information School there is no overall rationale or strategy for the inclusion of Internet literacies per se within the undergraduate experience. What might be identified as Internet literacies are developed within the specific teaching courses that students study and are implicit in my schools' Learning,

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[9] Anecdotal comments made by the department's panel of information-related employers and experts (2008)

Teaching and Assessment Strategy, but no framework exists to ensure continuity and progression between specific courses, and ultimately no overall agreement about what it means to be an Internet literate Information Management graduate. This research will inform School discussions about the Information Management degree and to ensure its curriculum and pedagogy are aligned to students' Internet literacies.

Given the lack of any framework or policy to support undergraduates develop their Internet literacies I looked towards the literature and research. Within the educational-related literature there is an ongoing debate about undergraduates' Internet literacies, what it means to be literate in a digital age and whether younger people are predisposed to being more Internet literate. This is expanded upon in later chapters, but predominantly draws upon anecdotal comments and research into undergraduates' Internet use (for example, Hardy et al., 2009; Smith et al., 2009; Jones and Czerniewicz, 2010) rather than substantive research into undergraduates' Internet literacies: their knowledge, skills, motivations, attitudes and practices. As a consequence, guidance relating to the knowledge and skills that undergraduates need to acquire to be successful in their studies, in future employment or for life-long learning is lacking, as are any suggestions about what pedagogies might be effective in developing their Internet literacies. Conspicuously, the research that has been conducted has tended to exclude those that teach undergraduates, despite their direct involvement in ensuring an Internet-able labour force: the academics in university departments. No research has been conducted about their perceptions of being Internet literate, their understanding of undergraduates' practices and the tensions and harmonies that exist between their perspective and those held by the undergraduates they teach. Furthermore, academics in my school are national and international leaders in information-related research. Their views are of particular relevance to gaining a broader understanding of what it means to be Internet literate, one that extends the action-orientated aims of this research.

It follows that the scholarly rationale for conducting a study of undergraduates' Internet literacies relates to the lack of research in this area and the absence of research that considers the perspective of those that teach undergraduates. In short, there is a scholarly rationale for extending pre-university Internet literacy studies into the university sector. This will inform the broader debate taking place within educational literature related to what it means to be literate in a digital age.

The action-orientated rationale for conducting a study of undergraduates' Internet literacies relates to a need to improve the educational experience of the students I teach and help ensure our undergraduates satisfy national, university and future employer expectations in relation to their Internet literacies.

1.9 Objectives

The original objectives for conducting this research specify the tangible and verifiable research outcomes. They were:

O1-2008: Develop theoretical models and/or typologies that describe and explain the findings, and reflect upon the multiple perspectives held by students, academics and the literature

O2-2008: Identify curriculum and pedagogical implications for my school

O3-2008: Develop frameworks that could be used by my school to develop or evaluate the Internet literacy aspects of the undergraduate curriculum

The objectives were not added to or modified during the process of conducting this research.

1.10 Research purpose

Creswell states that *"the purpose statement is the most important statement in an entire study"* since *"It orients the reader to the central intent of the study, and from it, all other aspects of the research follow"* (Creswell, 2003:87). The purpose statement for this research is thus:

The purpose of this constructivist study is to explore undergraduates' and their teachers' perceptions of Internet literacy, being Internet literate and their Internet-related practices. The term 'Internet literacies' is used throughout this thesis to encapsulate what students know, or need to know, to use the Internet for their studies, life-long learning and beyond. It includes their Internet-related abilities, practices and experiences, and is influenced by those that educate them. The outcomes of this study will inform my school's Learning, Teaching and Assessment Strategy, and contribute to the broader debate around undergraduates' Internet literacies.

Chapter 2: Research context

To contextualise this research and enable the reader to judge the extent to which the research findings transfer to their own situation, it is necessary to position this research within the context of national developments that have brought the educational use of the Internet to the forefront of the HE agenda and also highlight salient features of the University and School in which I teach. The latter will include the strategies that inform learning and teaching, the iSchools network of universities that my school is a member of, the undergraduate degrees offered in my school and the undergraduates that took part in the research. In addition, within a constructivist research design, my own background, my role in teaching Internet literacies and my relationship with those taking part in the research cannot be partitioned from what I am researching (Lincoln and Guba, 1985). Hence, these are also disclosed within this section to facilitate a more reflexive approach towards developing research outcomes. In addition, this section will tease out additional research questions and rationales for conducting the more action-orientated aspects of the research presented in this thesis.

2.1 Higher Education

> *"Only a Digital Britain can unlock the imagination and creativity that will secure for us and our children the highly skilled jobs of the future. Only a Digital Britain will secure the wonders of an information revolution that could transform every part of our lives. Only a Digital Britain will enable us to demonstrate the vision and dynamism that we have to shape the future."*
> (Rt. Hon Gordon Brown, 2009 in BIS & DCMS, 2009:6).

This quote headlines the 'Digital Britain' (BIS & DCMS, 2009) Government strategy to ensure that the UK (England, Wales, Scotland and Northern Ireland) is at the leading edge of the global digital economy. It cites the role of HE in developing a labour force that can capitalise on recent technological developments, prioritising digital technologies including the Internet. Similar motivations are central to various other recent Government and quango strategy reports relating to Internet-enabled computers. Paraphrasing, they all address a perceived ensuing information revolution resulting from living in a digital age. This necessitates that all individuals, education institutions, businesses and organisations reflect upon their current position and promptly take any necessary action, else risk being left behind and vulnerable. Whether society is experiencing a revolution due to advances in digital

technologies or whether the changes are more evolutionary and less determined by the technologies available is beyond the scope of this review, but comprehensively discussed elsewhere (for example, Dutton, 1999; Webster, 2002). Regardless, Government-related strategies and policies have an impact upon HE strategies relating to the use of Internet for learning and teaching (Goodfellow et al., 2008).

The role of HE in achieving the aims stated in the Digital Britain report is articulated via the Government's HE framework entitled 'Higher Ambitions' (BIS, 2009). It stresses how HE in conjunction with external partners can make the UK *"world leaders in the growing market in transnational education based on e-learning"* (BIS, 2009:92). Whilst the emphasis is on 'e-learning', which it stresses is not *"distance learning"*, it also implies the promotion of Internet literate students when it stresses that students should leave HE with *"competent mastery"* of *"communications technologies"* to enable them to access digital *"information and content"* (BIS, 2009:78). JISC, who have joint responsibility with the HEA for taking forward HEFCE's e-learning strategy (JISC, 2006), articulates its digital intentions via three yearly strategy documents informed by consultation and its own studies. Like Higher Ambitions, these documents have tended to stress the economic gains resulting from the appropriate online technologies due to their perceived efficiency and their potential to produce higher satisfaction levels from an increasingly demanding student population (for example, JISC, 2006; JISC, 2009c). Whilst stating that learning and pedagogy should not be determined by technology, JISC still defines *"Effective practice … in a digital age* [as including] *the ability to … involve the use of technology as part of a learning session or programme"* (JISC, 2009a:8). Hence, HE faces pressure from the Government's recent framework for HE and various JISC strategies to increase its use of digital technologies for teaching and learning, particularly in the area of e-learning.

The importance attached to promoting e-learning opportunities and ensuring digitally able graduates is matched by the funding provided to HE to support and maintain such developments. HEFCE's Strategy for e-Learning (2005a) has arguably been the most influential (Goodfellow et al., 2008), being supported by £33 million of block grants (HEFCE, 2005b). Addressing DfES's e-Learning Strategy (2005) and believing the link between technology and enhancement of learning and teaching was well established, HEFCE's Strategy for e-Learning funded investments in e-learning technologies and course development over ten years (HEFCE, 2005). However, it now appears that HEFCE may have overestimated the effects that this

funding would have on the enhancement of learning and teaching. As JISC later stated, *"the relationship between pedagogy and technology is not as simple as it first appears"* (JISC, 2009a:6). As a result of a series of predominantly negative reviews and research relating to the impact of HEFCE block grants on changing HE digitally-related pedagogy (for example, Leitch, 2006; Browne et al., 2008; JISC, 2008) HEFCE published its revised e-learning strategy that moved away from capital investments in learning technologies towards engaging academics in the opportunities digital technologies afford (HEFCE, 2009). In relation to this research, whilst there has been considerable investment in developing the technical infrastructure to support HE students' online learning, university Internet-related pedagogies are perceived to be lagging behind.

Along with the economic rationale driving the e-learning pedagogy of Higher Ambitions is a rationale that those entering HE have qualitative different expectations than their predecessors. It is claimed that a *"digitally self-confident generation of school leavers"* are entering HE who are critical consumers of online learning. As such, they will bring about *"the most powerful force for change over the next decade"* (BIS, 2009:79) and will opt for HE courses that meet their high expectations. JISC has joint responsibility with the HEA for taking forward Government-related digital strategies. It articulates its intentions via three yearly strategy documents informed by consultation and its own studies. As with Higher Ambitions, students have been portrayed as being qualitatively different than those who studied before the 'digital age'. In the latest JISC Strategy (JISC, 2009c) and various JISC-funded studies (for example, Conole et al., 2006; Browne et al., 2010), students are portrayed as being both demanding and sophisticated users of online technologies seamlessly integrating them into their complex lives. However, the 2010-12 JISC Strategy also claims to have not anticipated students' current use of social networking tools to support their learning, having assumed students would migrate to institutionally supported software for all their learning-related needs. One consequence is an increased interest in teaching students how to effectively use digital technologies. JISC has recently funded two digital literacies projects (JISC, 2009d; JISC, 2011c) and have run a series of related workshops as part of its e-Learning Programme (JISC, 2011b). Hence, whilst e-learning still has a high priority within national strategies, there is an increasing interest in facilitating students' digital literacies. Taking the lead of the European Union, JISC's Developing Digital Literacies programme defines digital literacies as *"those capabilities which fit an*

individual for living, learning and working in a digital society" (JISC, 2011a). Whilst the emphasis is on 'digital', the LLiDA and SLiDA projects (JISC, 2009d; JISC, 2011c) use of the term prioritises the Internet.

To summarise, various national reports and strategies have stressed the role of HE in developing a labour force that can capitalise on recent digital and Internet developments. These tend to perceive HE students as confident and increasingly critical and savvy digital and Internet users, prioritising digital infrastructures and institutionally supported e-learning. However, JISC now suggest these previous priorities need to be revised in the light of students' current use of Internet technologies including social networking applications. One consequence is increasing interest in digital literacies, a concept that embraces the Internet. University departments are encouraged to consider the implications of Internet technologies for undergraduates' learning, teaching and assessment.

2.2 University

My university is one of the original 'red brick' universities[10] and a member of the Russell Group of research intensive universities. The majority of its undergraduates are from the UK, but there are also a significant number of international students from a wide range of countries, primarily China and India. Like many of its immediate competitors, it claims to be a top university of its kind, with endorsement from many prestigious university guides and rankings and a portfolio of household names as research partners and clients. My university has a goal to be recognised worldwide for excellence in its research-led teaching and learning. Existing excellence led to HEFCE awarding the University a Centre for Excellence in Teaching and Learning (CETL) for inquiry-based learning (IBL) that initially focussed its initiatives within the University's Social Science Faculty, but later to other Faculties. IBL, in all its various forms and with information literacy at its core, is now embedded within most university departments' pedagogies, including the Information School.

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[10] 'Red brick' is an informal term referring to the six most established universities that were founded in the major industrial English cities in the late 19th century or very early 20th century as civic science and/or engineering colleges

2.3 Information School

My school was founded in 1963 as a postgraduate school of librarianship, but later broadened its research and teaching interests to include other information-related areas and an undergraduate population respectively. It is currently within the University's Social Science Faculty and is considered one of the University's top research departments, as judged by its record in the national Research Assessment Exercise (RAE). Within its subject area, my school is perceived highly both nationally and internationally. For example, my school has consistently ranks near top of several national and international independent university guides, and its academics have obtained numerous best paper and society awards, with many academics on prestigious journal editorial boards in the areas of librarianship, information science, information retrieval, health-informatics and chemo-informatics. Of relevance to this research, my school has a strong reputation as a leader in information literacy research and teaching.

2.4 iSchools network of universities

In 2010, the Information School became the first in the UK to join the iSchools[11] international network of library and information science university departments based mainly in North America. Becoming an iSchool was seen as a natural step for the School whose research and teaching activities had become closely aligned to iSchool ethos. This is described as follows:

> *"The iSchools are interested in the relationship between information, people and technology. This is characterized by a commitment to learning and understanding the role of information in human endeavours. The iSchools take it as given that expertise in all forms of information is required for progress in science, business, education, and culture. This expertise must include understanding of the uses and users of information, as well as information technologies and their applications"*
> (iSchools, 2011)

Although the social and IT skills aspects of Internet literacies arguably sit well within this ethos, other than my own research, Internet literacies research is not represented within the iSchools movement per se. Syracuse University's Department of Information Studies does have a small Center for Digital Literacy investigating *"the impact of information, technology and media literacies on children*

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[11] http://www.ischools.org [Accessed 12 August 2011]

and adults ... in today's technology-intensive society" (Syracuse University, 2011), but projects up to now have focussed on information literacy within schools and digital technologies to teach reading. Hence, there was no potential to draw upon the expertise and support of the iSchools network of universities, although an understanding of the iSchools network does help illuminate my own school's mission and influence the research outcomes.

2.5 Learning and teaching strategies

The University's Learning and Teaching Strategy is encapsulated in its list of 'graduate attributes', a list of transferable knowledge, skills and qualities that our students are meant to demonstrate when they graduate. At a national level, various developments have brought students' Internet abilities to the forefront of the HE agenda (see Section 2.1). Within the University, one outcome has been the inclusion of information literacy and ICT skills in its list of graduate attributes.

Each university department or school interprets the University's graduate attributes according to their own priorities and disciplinary perspectives. Being an information school, information literacy and ICT skills are central to our Learning, Teaching and Assessment Strategy, and pedagogies related to promoting Internet abilities are *"absolutely core to what we should be doing"*[12]. Information literacy is embedded in many of the undergraduate modules and at Level 1 information literacy is a module that all undergraduates study. Indeed, my school was influential in ensuring information literacy's high profile in the University's Learning, Teaching and Assessment Strategy and in its ongoing promotion via one of the University's CETLs. The development of IT literacy is also highlighted in my school's Learning, Teaching and Assessment Strategy. Again, recognising that the teaching of IT skills was already embedded in many of its specific courses, the emphasis was on providing more opportunities to integrate IT into learning and teaching activities, particularly the use of Web 2.0, and on implementing electronic submission and module evaluation procedures.

Although strategies for developing information and IT literacy have been developed within my school, these have subsumed a strategy or rationale for the development of Internet literacies. No university or school framework exists to ensure their continuity and progression per se, and ultimately no overall agreement about the

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12 Comment made during an interview with the Head of School in November, 2008

extent that my school needs to develop Internet literate Information Management graduates. Nonetheless, Internet technologies and the development of Internet abilities are an aspect of many modules that undergraduates study. For example, in the module entitled, 'Designing Usable Websites', students analyse, redesign and implement a commercial website.

2.6 The undergraduate degrees

My school offers three full-time undergraduate degrees; a BSc Information Management degree, where students primarily study teaching modules coordinated by within my school, and two dual degrees where students study Information Management in my school, and either Business Management or Accounting and Financial Management within another school. All three degrees have three Levels of study and offer limited opportunities to study teaching modules in other departments and schools. The School's BSc Information Management degree has struggled to meet the University new student quota since its conception, whereas there has traditionally been strong interest in the School's two dual degrees. However, anecdotal evidence suggests that BA dual degree students choose their degree primarily because of Business Management or Accounting and Financial Management component, rather than the Information Management component.

2.7 Information Management

Information Management is not a subject studied at 'A' Level and new students usually have ill-conceived ideas about what they will studying. Unless they know someone who is in an information management-related role, they tend to perceive it as equivalent to ICT or business management. This is maybe not surprising since my school's marketing material focuses on the consequences of good information management and the attributes of an information manager and as opposed to definitions and descriptions of information management. For example, our undergraduate brochure (2009) states:

> *"In an information society, effective information management is vital to economic development. The rapid pace of technological change, the globalisation of markets and turbulent business environments mean that organisations in all sectors are looking for people who can help them develop and manage their information systems ... These people are known as information managers. Information managers command a powerful mix of people skills, systems knowhow and management techniques."*

To compound matters, Information Management is a contested discipline in the sense that no single definition or approach dominates (Oliver, 2010), although most definitions and descriptions of Information Management stress that it is about managing information, not managing information technologies per se. In the context of this thesis, Jennifer Rowley's Framework for Information Management is illuminating since it draws together the organisational and personal aspects of information management, both studied by undergraduates at my school. She defines two broad sub-disciplines of information management: Macroinformatics, concerned with the *"relationship between information and society and its organisations",* and Microinformatics, *"concerned with individuals and their use of information"* (1998:365). The latter parallels Personal Information Management (PIM) which:

> *"… refers to both the practice and the study of the activities a person performs in order to acquire or create, store, organize, maintain, retrieve, use, and distribute the information needed to complete tasks (work-related or not) and fulfill various roles and responsibilities (for example, as parent, employee, friend, or community member)."*
> (Jones, 2007:453)

In a sense we are all information managers, managing information at both formal/structured and informal/unstructured levels (Cronin and Davenport, 1991). Hence, information management as Microinformatics and PIM is of concern to all of us and of particular importance to information management undergraduates who are expected to enter the workplace with developed PIM skills[13].

2.8 Undergraduate curriculum

Within each of the three levels that undergraduates study there are various combinations of core (i.e. compulsory), approved (i.e. optional) and unrestricted (i.e. not necessarily in my school) specific courses or modules. During the core modules, students learn key Information Management concepts and skills. The approved modules allow students to specialise in some area of Information Management. The unrestricted modules allow students to either study further modules in my school or develop skills and understandings not in the Information Management field. To varying extents, Internet skills and understandings are developed or consolidated in all modules that undergraduates study, and either relate to the University's own

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[13] Informal comments made by the School's distinguished Advisory Panel of external information employers and professionals (April, 2009)

Internet tools, for example its own VLE and portal, or Internet-based applications available to anyone with an Internet-enabled device. Opportunities for undergraduates to develop or consolidate their Internet skills and understandings relate either to the content of module taught sessions, their own more administrative use of the Internet, or students' independent study and coursework. The following table illustrates the variation of opportunities available to our undergraduates:

	University-controlled Internet tools	Other Internet-based applications
Opportunities for undergraduates to develop skills and understandings	For example: • *Taught sessions* - students are taught how to design and implement an e-Portfolio via the University's VLE • *Administration* – students are taught how to use the University's online collaboration and networking tool • *Independent study* – via the University's VLE, students learn how to implement an Oracle database via a series of videos and presentations	For example: • *Taught sessions* - students are taught how to effectively use Advanced Google and Google Scholar • *Administration* – students are introduced to social book marking sites • *Independent study* – students sometimes learn multimedia production techniques via proprietor's online tutorials
Opportunities for undergraduates to consolidate skills and understandings	For example: • *Taught sessions* – students are regularly expected to create VLE discussion board postings to capture their group's conclusions • *Administration* – students experience different levels of formality when communicating via the University's e-mail • *Independent study* - students use university's e-Portfolios to present their reflections of learning and supporting evidence	For example: • *Taught sessions* – Students have to find online information to support an class-based activity • *Administration* – Students use their own social networking sites to communicate about group coursework • *Independent study* – students have to FTP their files to a server

Table 2.1 Variation of opportunities for undergraduates to experience the Internet in their studies

More specifically, at Level 1 all students undertake a core teaching module taught by one of the University's academic librarians which include sessions on seeking, evaluating and communicating information found via the University library's online facilities and the Internet more generally. In addition, these same students undertake a series of sessions to develop their understanding of the Internet's infrastructure and are taught how to handcraft websites in XHTML[14] and CSS[15].

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[14] http://www.w3.org/TR/xhtml1/ [Accessed 14 July 2011]

Complementing the information literacy aspects of this module, the BSc Information Management students undertake a module to develop their information literacy and understanding of information literacy theories and practices. To facilitate this, students are immersed in an information rich environment that challenges their information literacy skills. At the time of this research the 3D virtual world Second Life[16] was used and students were required to investigate the information behaviour of its participants. All Level 1 undergraduates also undertake a module that aims to develop their understanding of how communication technologies are used within organisations, with a particular emphasis on their own use of Web 2.0 technologies and how this might relate to organisational use. Beyond Level 1, students are taught about or develop further Internet-based Internet applications. For example, there are optional teaching modules at Level 2 where students are taught how to produce multimedia presentations in Flash[17] that could be made available or embedded in a web page, and taught how to design and implement a usable and accessible using the web authoring tool Dreamweaver[18]. At Level 3 there are optional teaching modules where students are introduced to an Oracle-based business intelligence system to collate and analyse online data[19] and are taught to how to build an online Content Management System (CMS) using PHP[20].

2.9 Research participants

This research primarily focuses on a particular cohort of 24 Level 1 BSc Information Management students who, over the course of their studies and depending on modules selected, spend between 72% and 90% of their time in the Information School. The majority of these students came directly from a UK school having studied GCE Advanced Levels and, although the School does not specify any subjects in its entry requirements, the majority of these undergraduates have studied either Business Studies or ICT. The remaining undergraduates either began their studies in a different University department, studied at a college for a university access qualification, studied for a BTEC qualification, came from the EU having gained an International Baccalaureate qualification or were classified as mature.

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[15] http://www.w3.org/Style/CSS/ [Accessed 14 July 2011]

[16] http://secondlife.com/ [Accessed 14 July 2011]

[17] http://www.adobe.com/products/flash.html [Accessed 14 July 2011]

[18] http://www.adobe.com/products/dreamweaver.html [Accessed 14 July 2011]

[19] http://www.peakindicators.com/index.php/implementation/bi-applications [Accessed 15 July 2011]

[20] http://www.php.net [Accessed 13 July 2011]

The majority of students in this study were male (64%) and classified as 'home' students (92%).

Excluding myself, all 17 academics who took part in this research taught on at least one undergraduate module and were available at the time the research information was gathered. The majority were lecturers (35%), but 29% were professors, 24% were senior lecturers and 6% were either senior university teachers or learning technologists. Academics' research and teaching interests overlapped between the School's defined research areas, but at the time the information was gathered, 24% of academics were part of the Educational Informatics research group, 24% were part of the Information Retrieval research group, 18% were part of the Library and the Information Society research group, 12% were part of the Knowledge and Information Management research group, 12% were part of the Information Systems research group and 12% were part of the Chemoinformatics research group. Of the academics who took part in this research, 35% taught at Level 1 and the majority of academics (53%) would have taught sessions in the Information School's computer laboratory.

2.10 Undergraduates' communication preferences

In the semester after the research cohort began their studies, I conducted a Survey of Communication Technology Use with all the School's Level 1 undergraduates[21]. This was part of a longitudinal inquiry which began with the School's 2007 undergraduate cohort and has been repeated every year to the present day. The 2007 conclusions were published in June 2008 in online journal ITALICS: 'Teaching our grandchildren to suck eggs?: Introducing the study of communication technologies to the 'Digital Generation' (Cox et al., 2008). A slightly modified version of the paper-based survey was administered to the research cohort and a parallel cohort of dual Information Management degree students as part of one of their core modules entitled 'Information and Communication Networks in Organisations'. The survey was conducted as part a series of lectures and seminars about students' communications preferences. Students conduct the survey within a seminar and later discuss the results and its implications with reference to their own learning and the educational-related roles many students may have within an organisation when

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[21] The Information School Level 1 students consist of 55% students studying just Information Management (the research cohort) and 45% dual degree students studying Information Management alongside another subject (see Section 2.6 for further details)

they graduate. Permission was sought from the students to use their anonymous responses in this research. Of the students taking the core module, 84% were present on the day the survey was distributed and all completed the survey. Unfortunately, the survey did not ask which degree the students are taking and hence the research cohort responses cannot be differentiated from the dual Information Management degree students' responses. However, its findings are still of significance to this study since it includes the research cohort. In addition, the dual degree students study up to 50% in my school depending optional modules chosen. The results of the survey were collated by the project's lead investigator and analysed by me. So as to not give disproportionate weight to this parallel quantitative research, the details of the survey and its analysis have not been included in this thesis. However, the following paragraphs summarise some of its findings.

The 2009 Information and Communication Networks in Organisations class consisted of 42% the research cohort and 58% BA dual degree students, with a mean age of 19 years. Just 5 students were over 20 years and the class contained almost identical numbers of male (52%) and female (48%) students. Students claimed to spend a mean time of just over 17 hours on the Internet each week, predominantly on social networking sites like Facebook, but also on video sharing sites like YouTube and the chat services like Instant Messenger. To put this figure in perspective, Office of National Statistics (2006) figures indicate that the UK public spends around 18 hours a week watching the television, videos and DVDs, and listening to radio and music, around the time that the vast majority of the undergraduates claim they now spend on the Internet. Students reported that they hardly ever used other popular Web 2.0 websites like the social book-marking site Del.icio.us or the blog search engine Technorati. Unsurprisingly, their reported use of the Internet corresponded closely with their favourite websites. These included, in order of popularity, Facebook, BBC, Google, YouTube, eBays and sports-related websites. When asked about what they used the Internet for, the most common use by far was to contact friends and family. However, other uses cited included, in decreasing order, gathering news, finding information for their studies, shopping, downloading music and playing games. Relatively few students claimed they added content to websites like Flickr, YouTube, Blogger or Wikipedia, despite most (88%) owning a mobile phone with built-in camera.

The survey asked questions specifically related to their social networking profiles, privacy settings and use. It found that 60% of undergraduates had two or more social networking profiles, although 79% claimed not to use some or all of their other profiles. Of those who did use another profile, they appeared to primarily use it to keep in contact with others on different social networking sites (55%). Few students (7%) used an alternative profile to communicate a 'different part of their personality'. Three quarters of the students restricted access to their social networking profile to just their social networking 'friends' leaving up to one quarter who did not restrict access to their profile. However, the high number of students who restrict their profile seems at odds with 42% of students who claimed they had at least one friend they only knew via some communication tool or device. Additionally, over one third of students claimed to have met someone face-to-face having first met them online. These findings imply that students potentially devote considerable time and energy to maintaining online relationships, and some of these are sufficiently 'real' for over a third of the students to feel comfortable and motivated enough to meet the person face-to-face.

The findings above focused on how the Level 1 undergraduates in my school use the Internet. Whilst they primarily used the Internet to keep in contact friends and social networking sites such as Facebook were the preferred Internet communication tool, three quarters of all students felt that the phone [not Facebook] was the 'most important' way to communicate with parents, students and school friends. Furthermore, mobile phone 'texting' was also considered an important way of communicating for the students in this survey with 71% claiming they sent 5 or more text messages per day. The survey also found potential anomalies with students' use of e-mail, their university e-mail account being official online method for communicating with university staff. All the undergraduates in the survey claimed they had another e-mail account in addition to their University e-mail account, with 69% of students having two or more additional accounts. Given that students do not appear to use e-mail for communicating with parents and hardly use it to communicate with school friends, it seems surprising that students have so many e-mail accounts.

The Survey of Communication Technology Use also asked questions related to their preferred learning style. Most preferred to work alone (76%), by following instructions (79%), but having support available (91%), suggesting that blended or

e-learning approaches might be preferred by the Level 1 undergraduates. The following section elaborates on these findings.

2.11 Undergraduates' learning styles

In addition to the Survey of Communication Technology Use, the same undergraduates conducted two learning style self-assessment questionnaires the following week: The Approaches and Study Skills Inventory for STudents (ASSIST) (Entwistle, 1997) and the Learning style inventory (LSI) (Kolb, 1976). The former claims to establish HE students' self-perceived dominant approach to learning and the latter claims to profile a person's learning style. The main outcomes of tests were discussed with the students during the session, with reference to their own learning and the educational-related roles many students may have within an organisation when they graduate. Permission was sought from the students to use their anonymous responses in this research. Their responses were re-analysed to ensure the resulting categories were accurate. As before, it is not possible to disaggregate the undergraduates in the research cohort from the findings.

Kolb's Learning Style Inventory (LSI) (Kolb, 1976) aims to provide an individual with an understanding of the learning style they have developed to resolve conflicts between two types of cognitive demands: active versus reflective, and concreteness versus abstraction. Kolb (1976) identifies four broad learning styles that an individual has a disposition towards: divergent, accommodative, convergent and assimilative. The majority of students assessed themselves as having an Accommodative (35%) or Assimilative (35%) learning style. Those with an Accommodative learning style like *"… like doing things, carrying out plans and getting involved in new experiences … [and solving] problems in an intuitive, trial-and-error manner"* and those with an Assimilative learning style are *"more concerned with ideas and abstract concepts than with people and think it more important that ideas be logically sound than practical"* (Coffield et al., 2004:61).

The ASSIST questionnaire (Entwistle, 1997) was designed to enable HE students to discover and understand their approach to studying. It comprised of three sets of questions related to their perception of learning, their approaches to studying, and their preferences for different types of course organisation and teaching. Students ranked 24 statements on a Likert scale according to their relative agreement or

disagreement. These results were converted by students[22] into three values representing the student's approach to learning: Surface, Strategic or Deep, with highest score representing their dominant approach and the second highest score represented their secondary approach to learning. 87% of students gave answers which corresponded with a Strategic approach where students supposedly *"combine deep and surface approaches in order to achieve the best possible marks"* and where students are *"adept at organising their study time and methods, attend carefully to cues given by teachers as to what type of work gains good grades or what questions will come up in examinations"* (Coffield et al., 2004:93). However, when the other two learning style scores are including in the analysis, a more nuanced understanding emerged with almost two thirds of all the undergraduates surveyed giving answers that correspond with a Strategic-Deep approach. That is, almost two thirds of all the undergraduates surveyed gave answers which corresponded with a Strategic approach in the first place and a Deep approach in the second place. Hence, whilst these students primarily adopt a Strategic approach to learning, they also have a disposition towards the Deep approach where students have a *"sophisticated conception of learning and a rich understanding of the nature of knowledge and evidence"* (Coffield et al., 2004:93)

2.12 My role

Shulamit Reinharz suggests that academic researchers bring many 'selves' to an inquiry, categorises these as *"researched-based selves, brought selves (the selves that historically, socially, and personally create our standpoints), and situated created selves"* (1997, in Lincoln and Guba, 2000:183). The former is expanded upon in the Research Design chapter in terms of justifying the research strategy adopted. The latter, has already been inferred in the rationale for this research. The following paragraphs expand upon the '*selves*' I bring to this inquiry.

At the time the research was conducted, I had been teaching in the School five years having previously spent three years as a software engineer producing two popular educational programs[23] and fifteen years as a secondary, middle and

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[22] I repeated the analysis to ensure the accuracy of the students' conclusions

[23] BlackCat Designer TAG (2011a). *BlackCat Designer* [Online]. TAG.
http://www.taglearning.com/taglearning/blackcat-designer.html [Accessed 29 March 2011] and
BlackCat Supertools TAG (2011b). *BlackCat Supertools* [Online]. TAG.
http://www.taglearning.com/taglearning/blackcat-supertools.html [Accessed 29 March 2011]

primary school teacher. Amongst my many roles at the time, I was the BSc Information Management Admissions Tutor and recruited all the Level 1 undergraduates, who are the main subject of this research, onto their degree. I also had overall responsibility for the BSc programme and two core information management related Level 1 modules. In addition, I taught and conducted coursework assessments on two other Level 1 modules. Hence, my involvement with the first year experience was (and still is) considerable, although my involvement at Levels 2 and 3 was restricted to teaching database design and Oracle at Level 2. Originally employed to teach the information technology aspects of school's programmes, my involvement in the School's teaching still has an ICT-bias. For example, at the time this research was conducted, I taught more than most academics in the School's computer laboratory. Consequently, I was well-placed to observe students' interaction with computer and Internet technologies. I was also nominated as the School's Teaching and Learning Advocate, providing a natural platform to discuss with curriculum and pedagogic issues with academic staff within my school.

As a University Teacher and module coordinator my role in the development and consolidation of undergraduates' Internet-related skills and understandings is captured in the table below. Unless otherwise specified, all opportunities relate to my Level 1 teaching and module coordination.

	University-controlled Internet tools	Other Internet-based applications
Opportunities for undergraduates to develop skills and understandings	• ***Taught sessions*** – I teach students how to design and implement an e-Portfolio and online journal, and how to use access online journals and databases. • ***Administration*** – Incidentally, I encourage students to reflect upon their e-mail etiquette. • ***Independent study*** – I coordinate a series of online tutorials that teach Level 2 students how to implement an Oracle database. I also introduce the students to using plagiarism detection tool Turnitin via the University's VLE.	• ***Taught sessions*** – I teach students basic Web authoring using XHTML and CSS, more advanced search engine techniques and about the Internet and WWW's infrastructure. • ***Administration*** – N/A • ***Independent study*** – N/A
Opportunities for undergraduates to consolidate skills and understandings	• ***Taught sessions*** – One of my sessions is conducted using a VLE chat room and whiteboard. • ***Administration*** – During ongoing group work, I encourage students to maintain an non-assessed audit trail of their activities using a discussion board; I also encourage students to maintain an online Personal Development Portfolio (PDP); All my lecture notes and coursework notes need to accessed via the University's VLE; I model exemplary VLE design and appropriate e-mail etiquette in my interactions with all students; • ***Independent study*** – I coordinate assessments that requires students to keep an online journal and e-portfolios of their learning reflections	• ***Taught sessions*** – I encourage students to find online information to support their views and practice their Web authoring skills via class assignments; • ***Administration*** – I encourage students to use Facebook to contact other group work members • ***Independent study*** – I coordinate assessment where students are expected to find a variety of relevant online sources of information for a particular purpose.

Table 2.2 My role in relation to the teaching of Internet skills and understandings

2.13 Implication

The previous sections described the national, local and disciplinary context for the research conducted. It raises additional research questions that are commensurate with the original and current aims of this research, and the research undertaken in 2008. The exploration of these and the original research questions will inform the School's discussions relating to the Information Management degrees and to ensure its curriculum and pedagogy are aligned to our undergraduates' Internet literacies.

The first relates to the assumptions implicit in the post-2008 national reports and strategies cited above. These tend to caricature undergraduates as confident, demanding, critical and sophisticated users of the Internet technologies. This

research will provide evidence to substantiate or revoke these assumptions, and thus explore the following question:

RQ1-2011: To what extent are the Information School's undergraduates demanding, critical and sophisticated users of the Internet technologies, seamlessly integrating them into their lives?

In addition, the post-2008 national reports and strategies tended to make assumptions about undergraduates' desire for Internet technologies and pedagogies in their university studies. Whilst exploring this assumption was not explicitly part of the research design, the research conducted will give a tentative insight into the following question:

RQ2-2011: To what extent do the Information School's undergraduates demand Internet technologies and pedagogies in their studies?

Secondly, the descriptions above infer that the undergraduates that took part in this research have had many opportunities to develop their Internet literacies within a school that has increasingly aligned itself with the iSchools' technological ethos. Hence, in addition to those questions posed in 2008, this research will explore:

RQ3-2011: To what extent do the Information School's undergraduates perceive their university studies have developed their Internet literacies?

RQ4-2011: To what extent do the Information School undergraduates' Internet literacies, and perceptions of being Internet literate, evolve through their Information Management studies?

The stress here is on undergraduates' perceptions as opposed to overt assessments of undergraduates' Internet literacies. The rationale is not only pragmatic[24], but also because these students will become my school's marketing voice when they enter the workplace and an understanding of how they perceive their studies is as relevant as their Internet abilities.

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[24] Undergraduates' Internet literacies were not assessed (per se) during this study making any comparison less meaningful

Chapter 3: Questioning the Internet savvy rhetoric

Chapter 2 concluded that various national reports and strategies tended portray students as confident and increasingly critical and savvy digital and Internet users. However, this view is increasingly questioned by more recent and more student-centred research. This chapter presents these views and concludes that, if the Internet savvy rhetoric is prevalent amongst undergraduates and academics in my school, it may have implications for any Internet-related teaching.

3.1 Digital native rhetoric

Today's supposedly Internet savvy students have variously been characterised by the media, Government and business as digital natives (Prensky, 2001b), the net generation (Oblinger and Oblinger, 2005; Tapscott, 2009), millennials (Howe and Strauss, 2000; Oblinger and Oblinger, 2005), generation Y (Weiler, 2005), the Google generation (Rowlands et al., 2008; UCL, 2008) and more recently the i-generation (Rosen, 2010). Whilst the terms are frequently used interchangeably, each term has its own emphasis (Jones and Czerniewicz, 2010). For example, Prensky emphasises the unique qualities of digital natives when he describes them as *"students today [that] are all 'native speakers' of the digital language of computers, video games and the Internet"* (Prensky, 2001a:1), whilst UCL characterises the unique experiences of the Google generation *"born after 1993, that is growing up in a world dominated by the internet"* (UCL, 2008:7). Paraphrasing, these terms describe students who interact with various digital texts in ways that are said to be far removed from the conventional demands of HE, seamlessly integrating digital technologies into their everyday lives, being equally comfortable interacting online as face-to-face and preferring the screen to paper (Naughton, 2006; Goodfellow et al., 2008; Lea, 2009; Jones, 2010; Kennedy et al., 2010). To varying extents, some have suggested that these characteristics are not just students' preferences, but have become innate. For example, Prensky (2001b) claims that young people's brains are now *"physically different"* due to their ongoing exposure *"twitch-speed, multitasking, random-access, graphics-first, active, connected, fun, fantasy, quick-payoff world of their video games, MTV, and Internet"*. He claims that digital natives reflect less, have shorter attention spans and are generally bored by their educational experiences that fail to accommodate their learning style. Others have suggested that students are so adept at using digital

technologies that they struggle with, or even reject, traditional academic activities, such as writing and referencing, leading to increased plagiarism (Davies et al., 2006).

According to Lea, there are two implications of the digital native paradigm for HE; firstly, that students' *"engagement in digital technologies in their personal worlds may impair students' ability to engage in serious academic study"* and secondly, that there is pressure on HE to align its teaching and learning with what they see as the students' digital worlds (Lea, 2009:2). Both imply a fear of alienating a generation of learners. The latter is seen by Prensky (2001a) and Tapscott (2009) as the solution to the former; formal education should become more like the informal digital worlds our students inhabit, including the use of more computer games and Web 2.0. Implications like this are discounted by Bennett and Maton (2010) and others on the grounds that it implies a misunderstanding of formal education whilst at the same time *"valorising the proclaimed attributes of the tech-savvy student"* (Bennett and Maton, 2010:325).

3.2 Digital native critiques

More recently, studies have questioned the validity and utility of digital native rhetoric claiming that recent empirical evidence does not fully support the underlying assumptions. Kennedy for example, claims that the digital native paradigm is *"largely derived from anecdotal accounts or based on untested assumptions"* (Kennedy et al., 2010:332). Whilst not retracting his claims, Prensky, who is usually attributed with coining and popularising the term 'digital native', has begun to distance himself from its usefulness (Prensky, 2009). Overall, four overlapping critiques are apparent in the literature.

The first relates to the assumption that students are avid users of a diverse range of modern technologies. This has been questioned by Conole et al. (2006), Cox et al (2008), Kennedy et al (2008; 2010), Bennett and Maton (2010), and Jones and Czerniewicz (2010) amongst others. For example, it has been shown in the US (Lenhart et al., 2007; Smith et al., 2009) and UK (Cox et al., 2008; Hardy et al., 2009; Jones et al., 2010) studies that students use a much narrower range of applications (predominantly, social networking) than the digital native rhetoric might suggest, rarely using Web 2.0 applications for content creation (for example, podcasting, blogs, wikis and social bookmarking).

The second critique of the digital native paradigm relates to the assumption that digital natives welcome and even demand technology in their studies. This has been the premise of several UK quango strategies (for example, JISC, 2006; JISC, 2009c). However, recent studies have shown that students do not always welcome technologies in their learning settings (Ipsos MORI, 2007; Lohnes and Kinzer, 2007; Selwyn, 2007; Hardy et al., 2009; Smith et al., 2009). JISC's own commissioned MORI survey of student expectations found that prospective students *"imagine and like the idea of the traditional, Socratic, or "chalk and talk" methods with face to face learning"* (Ipsos MORI, 2007:26; Smith et al., 2009) and Lohnes and Kinzer's (2007) study found that students' use of laptops in class can be seen as antisocial by other students.

The third critique of the digital native discourse relates to the assumption that students are confident and competent with modern technologies. This was the view promoted by the extensive 2006 JISC study into students' experiences of technologies finding, for example, that students used technologies to satisfy their information needs in *"sophisticated ways … finding and synthesising information and integrating across multiple sources of data"* (Conole et al., 2006:5). However, this finding contrasts with a more recent UCL study into the Google Generation (UCL, 2008) and previous Ofcom research (Ofcom, 2006) which concluded that although students were confident in their own Internet searching abilities, they relied upon basic search tools and possessed few critical and analytical skills to assess the information found.

The fourth critique of the digital native discourse relates to the assumption that digital natives are a homogenous group. However, recent studies have found significant variations amongst students, even of similar ages. For example, Jones et al (2010) found a complex picture amongst first year UK undergraduates. Rather than a homogeneous group of undergraduates, they found small minorities of students displaying alternative characteristics of Internet use. For example, one small minority was found to make very little use of the Internet whereas another slightly larger minority made extensive use of new Internet technologies. In several undergraduate studies, age was found to be linked to the type of Internet use, but not in the simplistic way the digital native rhetoric would suggest (Jones and Ramanau, 2009b; Jones and Ramanau, 2009a; Hosein et al., 2010; Jones et al., 2010; Ramanau et al., 2010). For example, Hosein et al (2010) found that older undergraduates were less likely to use Web 2.0 and social networking sites and

more likely to be using their Internet access for the purposes related to their degree. Other studies have shown that other factors, such socio-economic status, cultural or ethnic background, gender and discipline studied, may be discriminating factors in how undergraduates use the Internet (Bennett et al., 2008; Kennedy et al., 2010). In Australia, Kennedy found that *"When one moves beyond entrenched technologies and tools (e.g. computers, mobile phones, email), the patterns of access to, use of and preference for a range of other technologies show considerable variation"* (Kennedy et al., 2008:117) and in Scotland, Hardy found that *"There is still a small minority of students who are not confident with technology, or have no access to the internet or do not recognise the value of technology for studying their particular subject"* (Hardy et al., 2009:4).

3.3 New digital divide

If young people's exposure to digital technologies has enabled them to develop a natural aptitude and high skill levels in relation to the Internet, by implication those that are older cannot be natives of the Internet and a new generational digital divide has opened up (Prensky, 2001b; Prensky, 2001a; Lankshear and Knobel, 2003; Madden et al., 2008; Bennett and Maton, 2010). The term digital divide was originally coined to capture policy makers' concerns about ensuring equality of access to ICTs, but the term now encompasses multiple new meanings (BECTA, 2001; Gurstein, 2003). Generational digital divides cast students as digital natives, and lecturers, teachers and parents as digital immigrants. Prensky describes the latter as speaking "*outdated language (that of the pre-digital age),* [and] *are struggling to teach a population that speaks an entirely new language"* (Prensky, 2001a:2). Disliking the connotations of these terms, Lankshear and Knobel (2003) initially referred to insiders (aka digital natives) and outsiders (aka digital immigrants), later describing them as *"physical-industrial mindsets"* and *"cyberspatial-postindustrial mindsets"* (Lankshear and Knobel, 2007). They describe outsiders as having not grown up with the Internet as an intrinsic part of their lives and consequently transfer real world attitudes into new Internet spaces. For example, they view the Internet's economics in traditional supply and demand terms, and have concerns about issues of copyright, access and security. In contrast, insiders have grown up with Internet as an intrinsic part of their lives and have the experience and resources to capitalise on its affordances. Various consequences of this native-immigrant or insider-outsider divide are proposed. Prensky stated that this digital divide is the *"single biggest problem facing education today"* (Prensky,

2001a:2) since teaching is far less effective and students become disaffected since their learning style is not being accommodated by their digitally immigrant lecturers and teachers. Others too view this generational digital divide as one of the main challenges of contemporary education (Todd, 1998; Tyner, 1998; Richards, 2000; Kellner, 2002; Lankshear and Knobel, 2003). Paraphrasing, there is an urgent need to overcome what they see as a disconnection between students' experiences, subjectivities and interests rooted in the new multimedia cyber-culture, and those found in formal education.

3.4 Conclusion

This research was undertaken against a backdrop of largely unsubstantiated claims about the Internet abilities of undergraduates who have grownup since the Internet gained popularity. In contrast, those who teach undergraduates are typically from a generation born before the Internet gained popularity and frequently portrayed as less comfortable using digital technologies and the Internet. More recently, several studies have questioned the dichotomous views of this generational digital divide, claiming it is too simplistic and a more nuanced understanding is required. This research was partly undertaken because I sensed a disparity between the Internet savvy being presented and my own experiences as a University Teacher. This purpose is captured in objective O3-2008. However, the above discussion raises additional issues: the presence or absence of digital native-immigrant rhetoric amongst academics may impact upon how academics educate for Internet literacy. Arguably, an academic who perceives undergraduates to be inherently more Internet literate, may make certain unsubstantiated assumptions about their Internet abilities. Conversely, it could be argued that the presence digital immigrant rhetoric amongst undergraduates may impact their willingness to accept tuition from those they perceive as less able than them. Hence, an additional question that this research addresses is:

RQ5-2011: To what extent is the digital native-immigrant rhetoric prevalent amongst Information School's academics and undergraduates?

Chapter 4: Internet-related practices and abilities

The purpose of this chapter is to position this research as an extension of Internet-related studies pre-university education and to justify the practices and abilities associated with the Internet deserve particular attention.

4.1 Pre-university Internet studies

Most undergraduates begin their university studies having already engaged with the Internet at home, school and/or college. The nature and level of this engagement is described in various UK-based studies that differ in duration, scope and focus (for example, Buckingham, 2002; Harrison et al., 2002; Irvine and Williams, 2002; Somekh, 2002; Loveless, 2003; Madden et al., 2003; McFarlane and Roche, 2003; Livingstone et al., 2005). Having an understanding of undergraduates' pre-university Internet experiences and abilities is relevant to research that aims to inform educational and pedagogic discussions and strategy regarding undergraduates' Internet literacies. However, the diversity of research undertaken means no clear picture of undergraduates' pre-university experiences emerges. Notwithstanding, the research cited above does tend to converge in several areas. For example, it is frequently claimed that parents and teachers overestimate young people's Internet expertise. In addition and despite parental aspirations that their children's Internet access is of educational benefit, young people are often found to be using the Internet for more everyday purposes, like contacting peers and accessing popular culture. It is also claimed that these online interactions tend to happen less by e-mail or Internet chat-rooms, as supposed by their parents and teachers, but by Instant Messaging and SMS[25], and that these interactions are supported a largely local, as opposed to global, network of friends who they also contact by other means (face-to-face, over the phone). The studies also suggest that young people have different communication needs from adults and, rather than seeing face-to-face communication as automatically superior, young people evaluate the different forms of communication available to them according to distinct communicative needs. That is, these studies found that Internet technologies were perceived by young people

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[25] Social networking online applications like Facebook were not in existence when the UK Children Go Online studies took place, but the mismatch between parental and teacher perceptions and what young people said and did is still relevant

as just one of several communication technologies and, if they disappeared tomorrow, they would not be greatly missed.

The UK Children Go Online studies conducted by Sonia Livingstone and her colleagues at the LSE (London School of Economics and Political Science) are particularly significant in their contribution to an understanding of undergraduates' pre-university education due to scale and consequential impact on pre-university education. As stated in the Introduction, the aims of Sonia Livingstone and her colleagues' studies coincide with the aims of the research presented in this thesis. In addition, the young people who were aged 11 to 13 years at the time of the UK Children Go Online study (April 2003 and April 2005) would be around the age of the undergraduates that took part in the research that this thesis describes. The aims and subsequent impact of the UK Children Go Online studies revolve around the online risks that young people expose themselves to, particularly how young people develop online expertise that both increases their online opportunities but also increases their online risks. However, the research also made significant contributions to pre-university students' Internet literacies that is maybe not so well publicised, but are relevant to the research described in this thesis.

The UK Children Go Online studies were based on a national face-to-face survey of 1,511 young people aged between 9 and 19 years, together with a survey administered to 906 of their parents, and a series of focus groups and observations of young people's use of the Internet. Of its findings, three areas are of particular relevance to the research described in this thesis: young people's confidence using the Internet, their online searching behaviour and the educational support the perceived they had received.

The UK Children Go Online survey found that over half young people who used the Internet consider that they are average in terms of their Internet skills and around one third considered they were advanced. More specifically, when young people were asked about the particular Internet skills they were thinking about when making claims to their confidence[26] levels, nearly 90% of young people cited finding online information. However, when the issue of confidence was pursued during follow-up

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[26] The UK Children Go Online reports use the terms 'self-efficacy' and 'confidence' interchangeably. Bandura, A. (1997). *Self-Efficacy: The Exercise of Control.* New York: Freeman. notes that *"the construct of self-efficacy differs from the colloquial term 'confidence'. Confidence is a nondescript term that refers to strength of belief but does not necessarily specify what the certainty is about"*.

interviews, "*a more nuanced picture emerged, with children and young people admitting to a range of difficulties in using the internet*" (Livingstone et al., 2005:8). A parallel parental survey found that parents perceived their Internet skills were even higher than sons and daughters were claiming. In addition the number of Internet skills claimed by young people rose with their age with the exception of the 18 to 19 year old age group who claimed fewer skills than the 16 to 17 year old age group. The UK Children Go Online report did not speculate as to why students who were potentially about to start their university studies should feel they have less advanced and fewer online skills than they did two years earlier. As the number of skills claimed strongly correlated with students' claimed online confidence levels, it could be implied that those young people who are about to start university are less confident in their online skills than they were when they completed their GCSEs.

The UK Children Go Online survey found that search engines were the most-visited websites. Nearly three quarters of the young people surveyed claimed to *"usually"* find the information they needed, whereas only a fifth claimed to *"always"* find the information they needed. After finding the information they feel they need, nearly 40% claim to compare information across several sites to ensure it is reliable, although just 19% claimed to check when a site was last updated. However, the UK Children Go Online team were concerned that almost 40% of young people trusted *"most"* the information found on the Internet and only 10% were *"sceptical about much of the information online"*. Those that claimed to be more sceptical of information found online also tended to feel they had been taught the online searching skills. More generally, 70% of all young people claim they had received one or more formal lessons on about how to use the Internet, although only 23% reported that they have received *"a lot"* of formal lessons. However, when these figures are broke down by age group, over a quarter of all 12 to 15 year olds and over a half of all 18 to 19 year olds claimed never to have received any formal instruction about using the Internet.

4.2 New Internet-related practices

Underlying discussions of digital natives and new digital divides is a body of evidence and opinion that claims that the digital technologies, the Internet in particular, have fundamentally transformed aspects of students' lives. Beetham et al's review of the literature related to learning in the Digital Age concluded that *"digital technologies and networks are transforming what it means to work, think,*

communicate and learn" (Beetham et al., 2009:8). These changes can broadly be categorised into three broad, overlapping areas: 'new ethos stuff', new consequences and new pedagogical implications. These are elaborated upon in the next three paragraphs.

The first area of change relates to what Lankshear and Knobel (2007) call *"new ethos stuff"* of the Internet. For example, many view the linking and layering of texts (hypertext) and media (hypermedia) as novel, calling for new forms of meaning-making (Fillmore, 1995; Burbules, 1998; Sorapure et al., 1998; Gilster, 1999; Landow, 2006); Kress (2010) claims that, as the presentation of information moves from paper to screen, various new forms (multimodal) of 'reading the world' are possible; and finally, Gillen and Barton argue that digital technologies are becoming so ubiquitous that distinctions previously made between consumer and producers of information, between programmers and users of applications, and between readers and writers *"blur or dissolve in a process of convergence"* (Gillen and Barton, 2010:5).

Secondly, the Internet has brought about hitherto novel consequences. For example, Lankes (2008) proposes that judgements about the credibility of online information sources have shifted from judgements about their authority, to judgements about their reliability, with previously discouraged academic practices, such as citing Wikipedia in coursework, becoming more acceptable; Bruns and Humphreys (2005) argue that online collaborative production is now common place, with practices such as commenting, reviewing, re-purposing, re-tweeting and media meshing; Jewitt (2007) envisages a clash between learners with experience of free, always available, opinion-led, collaboratively produced content and the academic knowledge practices of originality, authority and attention to method; and lastly, citing the JISC Emerge community, Beetham et al (2009) claim that new user skills are required as technology moves from containing organisational-created content to personal and social content, from being institutionally provided to being ubiquitous and from being applications-based to being a set of services.

Finally, the third area of change has pedagogic implications. For example, Buckingham (2007) proposes that education is moving to a post-modern curriculum due to the extensive use of multimedia; Greenhow and Robelia (2009) declare new and exciting social constructivist learning opportunities exist within Web 2.0 as users communicate and collaborate, building online connections and communities; and

lastly Siemens (2004) suggests that popular learning theories (namely behaviorism, cognitivism, and constructivism) do not account for how individuals or organisations learn, putting forward a new learning theory for the digital age ('connectivism') where internalised learning is replaced by the development of networks of trusted people, content and tools, and knowledge principally resides on the Internet.

In contrast to the above claims and views, other commentators have been more reserved when describing the impact the Internet and recent digital technologies on people's lives. For example, Webster critiques conceptions[27] of the information society claiming that *"many writers operate with underdeveloped definitions of their subject"* (Webster, 2002:8). As such, claims that there have been significant qualitative changes in society due to quantitative changes in the use of technologies need to be viewed with scepticism. Some commentators have questioned the euphoric rhetoric surrounding the democratic potential of the Web (for example, Turow and Lokman, 2008) and others have questioned the technical-deterministic rhetoric that assumes technological change automatically brings about economic, social and cultural change (Wyatt et al., 2000). Others have questioned claims that the hyperlinked nature of the Web affords a new way of reading and meaning making (Fillmore, 1995; Burbules, 1998; Sorapure et al., 1998; Gilster, 1999; Landow, 2006), with the new critical skills being required to understand *"… how the author's text is accessed, by whom and to what end, and also how the meaning of an author's text changes colour when it is contextualised through juxtapositional linking"* (Fillmore, 1995), claiming that hyperlinks are neither new nor innovative and offer little more than footnotes (for example, Lee, 1999 in Bawden, 2001).

4.3 Undergraduates' use of the Internet

Underpinning much of the literature cited above, is a body of substantive evidence that suggests the Internet figures greatly in young people's social and academic lives, but the relationship and its influence is more complex than some commentators has envisaged. This section focuses on studies that examine undergraduates' use of the Internet.

There are no statistics related to Internet-enabled computer ownership by undergraduates studying in the UK, but the ECAR Study of Undergraduate Students

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[27] The term 'conception' is used in this thesis to mean, "the way in which something is perceived or regarded" (Oxford University Press, 2011) in the literature.

and Information Technology (Smith et al., 2009) found that 98% of USA undergraduates owned a computer and, from 2004 to 2009 the proportion of those computers that were desktop decreased from 71% to 44% whereas the proportion of those computers that were laptops increased from 65% to 88%. In addition, 52% of Level 1 students' computers were one year old or less. Within the UK in 2007, the Office of National Statistics (2009) found 70% of UK households owned a computer and 82% of all 16-24 year olds access the Internet everyday. In recent years, the Office of National Statistics (2010) has shifted its focus from computer ownership to Internet access reporting that 75% of all 16 to 24 year olds regularly engage in social networking type activities including posting messages to social networking sites, chat sites or blogs and 50 per cent of this age group upload self created content. The ECAR study (Smith et al., 2009) also found high social networking site usage patterns amongst USA undergraduates with over 90% of students using Facebook, MySpace, Bebo, LinkedIn etc. everyday.

These statistics fail to illuminate how undergraduates use technologies in their social and academic lives. An ESRC study (Lea, 2009) attempted to address this omission by focussing specifically on how undergraduates construct their digital texts. It confirmed that undergraduates used a range of technologies in their social lives but found little evidence that these were used for academic-related work. When they did use social networking sites it was more often for *"affective, supportive work around completing assignments, rather than focused curriculum-based discussions"* (Lea, 2009:16). It appeared that undergraduates *"create explicit demarcations between personal and curricular spheres of activity and practice"* (Lea, 2009:17). Jones and Lea (2008) postulate this resistance to blurring social and academic activities is at odds with many university strategies to bring the two spheres together.

Other UK studies (Beetham et al., 2009; Hardy et al., 2009) have discovered a diverse range of undergraduate approaches and attitudes to experiences of technology. However, overall students' self-efficacy in relation to their technological skills and Internet searching skills remains high (UCL, 2008; Beetham et al., 2009; Hardy et al., 2009) despite studies indicating that undergraduates' information searching and critical skills are weak (UCL, 2008; Beetham et al., 2009; Hardy et al., 2009), they use only the most basic functionality of any technology they are using (Beetham et al., 2009; Hardy et al., 2009), not recognising the potential that their technologies afford (Hardy et al., 2009) and struggling to apply any capabilities to other contexts (Beetham et al., 2009). In relation to Internet searching, 80% of USA

undergraduates were *"very confident in their ability to search the Internet effectively and efficiently"* (Smith et al., 2009:55) and also assessed their ability to evaluate the reliability and creditability of online information as high (Smith et al., 2009). This finding contrasts with Australian research (Edwards and Bruce, 2006) that found wide variation in the undergraduates ways of searching and learning to search for information. Hence, research indicates that whilst undergraduates are confident with their technical and Internet searching abilities, they are not necessarily skilful. Furthermore, they have be found to be highly influenced by academics' technological and information-related practices (Beetham et al., 2009; Lea, 2009). For example, undergraduates were found to be primarily guided by what they thought their tutor would be looking for in their assignment and their tutors' Powerpoint slides (Lea, 2009). This is despite other findings that indicate that undergraduates do not rate their tutors' technological skills (Hardy et al., 2009; Smith et al., 2009) or indeed feel their tutors have sufficient skills (Beetham et al., 2009).

4.4 Facebook

Whilst 'Google UK' (www.google.co.uk) continues to be the most visited website by UK students, the second most popular UK website is 'Facebook' (www.facebook.com) (Goad, 2009). One Russell Group university study claims that Facebook has become enmeshed into the daily lives and social interactions of most undergraduates (Selwyn, 2007). Studies in both the US and UK found that Facebook is primarily used by college and university students for maintaining and intensifying relationships with people they already have pre-established relationships with offline (Bumgarner, 2007; Ellison et al., 2007; Selwyn, 2007; Pempek et al., 2009). Typically, these are other students in nearby dormitories or on the same course. Many of these relationships are found to be with old school friends (Ellison et al., 2007; Pempek et al., 2009). Facebook interactions have even been observed between undergraduates situated in the same house, library or computer laboratory (Selwyn, 2007). Rarely are Facebook relationships with people the students did not previously know offline (Bumgarner, 2007; Pempek et al., 2009).

The most common student activity within Facebook appears to be making posting on friends' walls (Bumgarner, 2007; Lankshear and Knobel, 2007; Pempek et al., 2009) although one US study (Pempek et al., 2009) study found that many students spent more time observing content on Facebook rather than actually posting

content, and Lankshear and Knoble (2007) found this to be just one part of a seamless, multimodal exchange involving other social applications. Bumgarner (2007) described much of the content of the wall posting as *"gossip"* and Selwyn (2007) notes that *"little to do with issues of intellectual endeavour or collaborative learning per se"* being more about more mundane matters like making social arrangements. As Facebook is configured around institutional e-mail addresses, making social arrangements with other local students is arguably easier and, as Bumgarner (2007) states, "*Gossip is more interesting when it involves people one knows*".

Various other motivations have been identified for why students devote around 30 minutes everyday to Facebook (Pempek et al., 2009). These include voyeurism, exhibitionism and harvesting of Facebook friends (Bumgarner, 2007), although one study found that students had doubts about other students who had an overabundance of Facebook friends (Tong et al., 2008). In two studies (Joinson, 2008; Pempek et al., 2009) Facebook was used by students to create and express their identities, although Bumgarner's (2007) study found this an infrequent motivation. This study found that students use Facebook as the sole source of friends' contact information.

4.5 Conclusion

This chapter began citing the conclusions of various studies into pre-university students' use of the Internet. The number of undergraduates involved in this research is relatively small compared to those studies where the aim was to produce findings that could be generalised to the entire population of UK undergraduates. However, as stated earlier, the outcomes of this study may have broader applicability if the reader can see sufficient similarity between its context and their own situation. Regardless, the pre-university studies cited above are relevant to this research since many of the students who took part in this research have only just left school. It follows that one additional question that this research addresses is:

RQ6-2011: To what extent do the findings from pre-university Internet literacy studies coincide with the findings from this research?

This chapter has also demonstrated that the Internet has afforded a variety of novel practices requiring essentially new abilities. Notwithstanding those who adopt a

more reserved position when describing the impact of the Internet, I believe that these new affordances and abilities are profound and deserve particular attention within HE. Research suggests that undergraduates are responding to these new Internet technologies in unpredictable ways, particularly regarding how they use the Internet for their studies. I believe there is merit in framing these discussions around newer conceptions of literacy, namely Internet literacies.

Chapter 5: Internet literacies

The purpose of this chapter is to contextualise this research within the educational literature related to literacy. It concludes with the definition of Internet literacies that underpinned the latter stages of this research.

5.1 Development of literacy within the educational discourse

Sonia Livingstone found it useful to conceptualise her young people Internet-related studies within more recent conceptualisations of literacy. These tend to extend literacy as reading and writing text, to include the *"the skills and competencies of those on the receiving end of the products of the ICT industries"* (Gillen and Barton, 2010:4). According to Lonsdale and McCurry (2004) they need to be understood historically and *"against a background of profound economic, social, political, economic and cultural change".* The following paragraphs identify significant milestones in the development of literacy within the educational-related literature.

The earliest conceptions of literacy focused on people's ability to decode and encode text (Gurak, 2001). The term 'literacy' was coined towards the end of the 19th century to express achievement and possession of what was increasingly seen as a necessary skill (Williams, 1983). At this time the existence or absence of a marriage register signature was frequently used during research to indicate literacy levels (Mace, 2001). From the mid 20th century this conception was replaced by one where being literate implied a higher level of cognitive ability and scholars made judgements about the superiority of one culture above another (Gurak, 2001). For example, it followed that those living in Western cultures surrounded by the printed word saw themselves as superior to other cultures that communicated their history and cultural knowledge orally (Cook-Gumperz, 1986; Gurak, 2001). Arguably, this view of literacy is still popular today with reading and writing print being valued more than other forms of communication (Gurak, 2001; Lankshear and Knobel, 2003). However, it was it was not until the 1970s that the term 'literacy' became prominent in educational discourse. Lankshear & Knobel (2003) cite three reasons for this shift. The first relates to the 'discovery' of widespread illiteracy amongst adults in emerging post-industrial societies (Behrens, 1994). Schools were seen to be failing to ensure that all learners became literate. One consequence was a suite of government initiatives that led to literacy quickly becoming a considerable industry, as public and private interests produced a diverse range of literacy-related products

and services for different educational groups (Lankshear and Knobel, 2003). The second relates to the rise in prominence of Paulo Freire's (1970) work. He believed that schools deliberately perpetuated a constrained conception of literacy in order to maintain social inequalities (Tyner, 1998). Paulo Freire stressed that the conceptions that are valued are those propagated by schooling and the literacy practices that students bring to the classroom have little value. The third reason relates to the increasing popularity of a socio-cultural perspective within studies of language in the social sciences. Whereas the traditional view of literacy had been largely psychological or cognitive and *"a set of abilities or skills residing inside people's heads"* (Gee, 2008:2), unrelated to the text being decoded, literacy was seen as more of a sociological concept, culturally relative (Cook-Gumperz, 1986; Gee, 1991; Crowther et al., 2001; Rodríguez Illera, 2004), and a new 'bottom line' in education.

Hence, literacy conceptions have expanded from encoding and decoding printed text to considering reading (or writing) as a meaning-making activity and that different texts require different backgrounds and skills if they are to be read meaningfully. Lankshear and Knobel (2007) suggest that texts can be read in different ways dependent upon people's experiences of practices in which these texts occur. To stress the plurality of literacy, some scholars prefer using the term 'literacies'.

5.2 Literacy to Literacies

The 1980s witnessed increasing use of the term 'literacies' (Lankshear and Knobel, 2003). Two overlapping motivations are apparent in the literature. The first, is a consequence of more socio-cultural approaches towards literacy where notions of a single, all-embracing, powerful literacy that applied to all social practices and cultural groups became increasingly untenable (Wagner, 2004). Street (1984), who is credited with coining and popularising the term 'literacies' (Wagner, 2004), found evidence of multiple literacies existing within single communities. Gee (1991) extended the idea stating that an individual experiences different literacies depending on the social practice, culture or subculture they were encountering. The second motivation relates to a feeling that the term 'literacy' has *"monolithic"* connotations (Tyner, 1998) and does not capture the breadth of literacy abilities involved in making meaning from the multitude of subjects, genres, medias and contexts that individuals encounters, particularly negotiating the Internet (Unsworth,

2001; Lankshear and Knobel, 2003). At another level, Street (1996) argues that printed texts have always been multi-modal in the sense that they contain different font faces, scripts, font sizes, layouts and now images. Hence, literacy has always involved more than encoding and decoding skills to make meaning of printed texts. To emphasise the multitude of literacy abilities both old and new, scholars and educationalists began to fracture literacy into chronologically and/or conceptually new literacies. For example, various subject literacies were coined that essentially meant competence or proficiency in some associated subject area (Lankshear and Knobel, 2003). Hence, being maths literate or environmentally literate meant that a person knew how to operate the language of the subject well enough to make sense of it. Other subject literacies had more literal associations with language per se. Lankshear and Knobel (2003) cite conceptions of media literacy where students are expected to critically read the media, and consequently recognise potentially hidden meaning, purpose and bias.

The two motivations cited above are particularly evident in the literature around conceptions of multiliteracies and more recently, digital literacies (Tyner, 1998; Unsworth, 2001; Lankshear and Knobel, 2003). The term 'multiliteracies' was popularised and coined by the self-titled New London Group (Cazden et al., 1996) of eminent literacy scholars (Rodríguez Illera, 2004). They envisaged a curriculum composed multiple literacies including media literacy and information literacy, with IT as the binding force. In common with many new literacies, conceptions of critical literacy (for example, Gee, 1993; Luke, 1995) were pivotal, described as the *"ability to critique a system and its relations to other systems on the basis of the workings of power, politics, ideology, and values"* (Cazden et al., 1996). Critical thinking is central to many conceptions of digital literacies (Lonsdale and McCurry, 2004; Gillen and Barton, 2010), although these tend to critique individuals' literacy practices as opposed to identify the literacy abilities involved. For example, Jones and Lea's (2008) recent study of undergraduates' digital literacies focussed on their *"textual practices in the construction of knowledge in digital environments"* as opposed to *"foregrounding technological applications and their associated affordances"* (Jones and Lea, 2008:207). Gillen and Barton's review concluded that digital literacies represent "...*the constantly changing practices through which people make traceable meanings using digital technologies*" (Gillen and Barton, 2010:9). Underlying these conceptions is an understanding that reading and writing on the screen is a different experience from traditional reading or writing due to the greater complexity and

richness of media types. According to Rodríguez Illera, failure to appreciate viewpoint gives the impression that digital literacies are about acquiring skills and techniques, and perception that digital literacies are not new, simply an *"adaptation of a generic literacy to the practical context introduced by computer and information technologies … and of reducing the digital revolution to a set of technical applications"* (Rodríguez Illera, 2004:48).

Lankshear and Knobel (2000; 2003; 2006; 2007) have questioned the newness of some so-called 'new literacies'. Firstly, they may once have been new, but have now *"… been incorporated into mainstream everyday social practice to the point where they are invisible, taken for granted, and lived out as 'normal'"* (Lankshear and Knobel, 2006:1). Secondly, some new literacies *"simply replicate longstanding literacy practices"* (Lankshear and Knobel, 2007:7) but using modern technologies. They cite how common software bundled into many PCs enables users to easily rip music from CDs, splice different songs together, add as background music to a video and upload the final product to the Internet for others to experience. Whilst this practice is chronologically new, it replicates practices that have existed for many years, albeit limited to organisations with bulky equipment and expensive reproduction systems. Lankshear and Knobel described such practices as peripheral cases of new literacies since they only involve new technical stuff and no new ethos stuff. Paradigm cases of new literacies have both new technical stuff and new ethos stuff. New ethos stuff mobilises *"very different values and priorities and sensibilities than the literacies we are familiar with"* (Lankshear and Knobel, 2007:7), tending to be more "*participatory", "collaborative"* and *"distributed"* than conventional literacies and also less *"published", "individuated", "author-centric"* and *"expert-dominated".* It is also the arena of insiders (Lankshear and Knobel, 2003), encapsulated in Web 2.0, where new literacy practices turn *"the consumption of popular culture into active production"* (Lankshear and Knobel, 2007:13).

Many of the new practice-based conceptions of literacy have theoretical and methodological underpinnings in New Literacy Studies, a term coined by Gee (1990) and popularised by Street (1996) and Barton (2000). Central is Gee's view of literacy: *"mastery (or, fluent performance) of a secondary Discourse"* (Gee, 1996 in Lankshear and Knobel, 2007:3), the *"secondary Discourse"* being all those discourses individuals are involved with outside early family life, and infers that being literate includes being able to handle the various human and non-human elements (Lankshear and Knobel, 2007:3). New Literacy Studies is informed by

applied critical linguistics and social anthropology, and examines "*the nature of different participants' expectations, interpretations and understanding in any textual encounter*" (Jones and Lea, 2008:13). In doing so, it highlights that "*reading and writing can only be understood in the context of social, cultural, political, economic, historical practices which they are a part*" (Lankshear and Knobel, 2007:1) and the meaning attributed to any text cannot be separated from its associated "*values and gestures, context and meaning, actions and objects, talk and interaction, tools and spaces*" (Lankshear and Knobel, 2003:8). More specifically, literacy is conceived as a social practice where some conceptions of literacy are more powerful and imposed on other cultures or classes (Street, 2003). Crowther, Hamilton and Tett's (2001) describe many conceptions of literacy as being powerful because they are "*deeply and inescapably bound up with producing, reproducing and maintaining unequal arrangements of power*". For them, the prevailing technical treatment of literacy is deliberately misleading and needs to be challenged. From the perspective of new literacies, Lankshear and Knobel (2003) have criticised New Literacy Studies as referring only to new ways of looking at literacy rather than studies into new forms of literacy, and more recently, Gee has pointed out his use of "*the term 'New Literacies Studies' is probably unfortunate, since anything that once was 'new' is soon 'old'*" (Gee, 2008:2).

There have been various attempts to classify or differentiate the many conceptions of literacy (for example, McClure, 1994; Spitzer et al., 1998; Bawden, 2001; Savolainen, 2002; Lonsdale and McCurry, 2004) but Street's framework (1984) has arguably been the most influential (Lonsdale and McCurry, 2004) in the field of New Literacy Studies. He distinguishes between autonomous and ideological models of literacy that Gee (2008) points out are not mutually exclusive, with proponents of the latter sometimes acknowledging the former. An autonomous model views literacy as a cognitive ability, independent of the context it operates in and more amenable to quantitative-type assessments. This model views literacy "*principally as an individualistic, internal matter*" (Andrews, 2007:129), and is a view typically promoted by governments and psychologists (Lankshear and Knobel, 2003; Barton, 2007) and one that has tended to dominate literacy research (Jones and Lea, 2008). Writing for the Australian Department of Education, Science and Technology, Lonsdale and McCurry (2004) identify the common attributes of this perspective: it is perceived as related to an individual's intellectual abilities and can be measured via psychological tests; illiteracy is viewed as a deficit in an individual's ability for which

they are largely responsible; literacy is perceived as independent of its context and primarily about print based texts; the underlying purpose of literacy education is political and about instilling acceptance of the dominant ideologies to enhance economic productivity. In contrast, Street's (1984) ideological model of literacy views literacy as a social practice that cannot be detached from its context which both creates and perpetuates it. This view is more amenable to qualitative research methods being encapsulated in New Literacy Studies. Lonsdale and McCurry (2004) identified the common attributes of this perspective: Literacy is viewed as a social responsibility; there is not just one literacy, but multiple learner-centred literacies that involve a diverse range of skills and understandings, for example digital literacies; critical thinking skills are frequently paramount in this conception; the extent of an individual's literacy can only be assessed by intensive observation; the social context of literacy practices is paramount; outcomes less vocational and more holistic, being related to empowerment and building communities.

5.3 Literacies related to the Internet

This section develops a framework to enable conceptions of literacy to be positioned relative to their 'newness' and the extent to which they lie on a social-skills continuum. Webber (2008) noted four different perspectives when exploring the question *"what is information literacy?"* It could be answered by citing a definition or description, by referring to a model or framework that outlines areas of skills and knowledge to be developed, by stating the desired attributes of someone considered literate or with reference to the person's own area of expertise, and how they experience and conceive it. All four perspectives are considered in this section which reviews the diversity of conceptions of literacy that relate directly or indirectly to the Internet.

The conceptions of literacy considered in this section foreground being literate in the so-called Digital Age. These conceptions are designated by over-arching terms such as e-literacy (for example, Martin, 2003), cyber-literacy (for example, Gurak, 2001), Web literacy (for example, Sorapure et al., 1998; Reinhardt and Isbell, 2002) and digital literacy (for example, Gilster, 1999). Other conceptions of literacy conceived before the Digital Age are being reconsidered and reformulated. For example, ALA's (2000) conception of information literacy. As noted by both Bawden (2001) and Tyner (1998), although individuals and organisations use identical terms to label 'their' conception of literacy, they can differ markedly in emphasis and scope. For

example, Hofstetter's (2005) conception of Internet literacy relates to the technical skills needed to negotiate and be productive on the Internet, whereas Livingstone's (2005) conception of Internet literacy relates to how young people use these technical skills. That is, Hofstetter (2005) views Internet literacy as a cognitive ability, being more skills-based and adopting what Street (1984) terms an autonomous model of literacy, whereas Livingstone (2005) views Internet literacy more as a social practice, adopting what Street's (1984) terms an ideological model of literacy.

There have been few attempts to analyse the proliferation of literacies used by individuals and organisations, but none delimited to literacies related to the Internet. However, Bawden (2001) did review popular literacies related to information literacy and digital literacy after conducting a literature search of Library and Information Science Abstracts (LISA) and the database Social Scisearch (from 1980 to 1999). He distinguished between *"skilled-based literacies"* (including various conceptions of computer literacy, library literacy and media literacy), *"information literacy"* per se (including conceptions by Zurkowski, Doyle and the American Library Association) and *"digital literacies"* (including various conceptions of digital literacy, network literacy, Internet literacy, multimedia literacy, hyper-literacy and e-literacy). Since I began reviewing this area in 2004, the profile of literacies in LISA has changed and the meanings attached to each conception has evolved. For example, in 2005 the term 'Internet literacy' was primarily used by Hofstetter (2005) and Yahoo (2002). In August 2011, a Google Scholar search of the term 'Internet literacy' reveals 34 unique uses in the first 100 hits and a LISA (all years) search reveals 25 unique conceptions in the journals articles returned. Hence, a more recent review of literacies was conducted. This specifically focused on those conceptions of literacy related directly or indirectly to the Internet. Furthermore, a framework was developed that enabled the various conceptions to be compared and contrasted needs.

Two models of literacy were found useful when comparing the various conceptions of literacy that relate to the Internet. Firstly, Street's (1984) distinction between autonomous and ideological conceptions of literacy (see Section 5.2), where the latter tends to view literacy as a social practice and the former tends to view literacy as a cognitive ability. Secondly Lankshear and Knobel's (2007) distinction between conventional, peripheral and paradigm literacies (see Section 5.2). Lankshear and Knobel describe those literacies that are not 'new' as 'conventional' literacies, but do

not elaborate. For the purpose of developing a framework to compare different Internet literacies, conventional literacies include those literacies that may have been reconsidered or reformulated in the light of new technologies, but could still apply to practices that involve either no or 'old' technologies. In addition, Lankshear and Knobel do not specify what distinguishes old technical or ethos stuff from new technical or ethos stuff, implying it is a matter of personal judgement. For the purpose of developing a framework, a conception of literacy that is nonsensical without the existence of the Internet was considered to be about new technical stuff. New ethos stuff was more difficult to define and even more difficult to implement. However, if the practices associated with the literacy did not exist before the Internet, even in alternative forms, then the conception of literacy was considered to be about new ethos stuff.

Taken together, Street's (1984) autonomous and ideological conceptions of literacy, and Lankshear and Knobel's (2007) conventional, peripheral and paradigm cases of literacy, produce six permutations or perspectives of literacy:

	Conventional literacies *Pre-1997*	New literacies *(Post-1997)*	
		Peripheral cases *Just new 'technical stuff'*	**Paradigm cases** *New 'technical stuff' and new 'ethos stuff'*
Autonomous literacies *Literacy as a cognitive ability*	**Autonomous – Conventional perspective**	**Autonomous – Peripheral perspective**	**Autonomous – Paradigm perspective**
Ideological literacies *Literacy as a social practice*	**Ideological – Conventional perspective**	**Ideological – Peripheral perspective**	**Ideological – Paradigm perspective**

Table 5.1 Internet literacies grid

The decision to categorise a particular conception of literacy was based on an analysis of the associated literature the caveat that the framework's six categories are not necessarily distinct or entirely mutually exclusive. The boundaries between categories are better considered blurred and overlapping. In addition, authors do not always express their conceptions of literacy as explicit definitions. Sometimes it was necessary to imply an understanding from more general narratives, standards, models and/or frameworks. In this spirit then, the framework is used in the following sections to illustrate variation between some prominent perspectives on Internet literacies.

5.3.1 Autonomous–Conventional perspective

	Conventional literacies *Pre-2000*	New literacies *(Post-2000)*	
		Peripheral cases *Just new 'technical stuff'*	**Paradigm cases** *New 'technical stuff' and new 'ethos stuff'*
Autonomous literacies *Literacy as a cognitive ability*	**Autonomous – Conventional perspective**		
Ideological literacies *Literacy as a social practice*			

The proponents of this perspective view literacy as a cognitive activity (Street, 1984). This perspective is not necessarily concerned with new technical stuff or new ethos stuff (Lankshear and Knobel, 2007). This perspective typically represents those literacies that were conceived before the 1990s, but have subsequently been reconceived or have received greater interest due to the ubiquitous nature of the Internet and the explosion in accessible information (Lankshear and Knobel, 2003).

Within HE at least, information literacy is one of the most discussed conceptions of literacy (Bawden, 2001) due in part to the interest of librarians (Barry, 1997). Coined by Zurkowski in 1974 (Webber and Johnston, 2000), with its roots in information science and bibliographic/library instruction (Johnston and Webber, 2003) and developed from broader conceptions of library literacy (Bruce, 1997; Bawden, 2001), discussions have frequently focussed on information literacy's relationship with the skills agenda, in particular IT or computing skills (Bawden, 2001). Although its roots can be traced back before personal computers, more widespread interest in information literacy did not occur until after the appearance the WWW and as a reaction to the perceived increase in the *"heterogeneity and complexity of information, information resources and information structures"* (Ŝpiranec and Zorica, 2009:141).

Hepworth (2000) argues that there have been two main approaches to information literacy that parallel Street's (1984) autonomous and ideological models of literacy. The first relates to this perspective being concerned with the identification of discrete skills and attitudes that can be learnt and measured. Hepworth (2000) states that this has been the most common approach to information literacy being primarily concerned with cognitive abilities. The second approach, typified by Bruce's (1997) Seven Faces of Information Literacy model, is concerned with how individuals experience and make sense of their world (see Ideological–Conventional

perspective). Of the five models of information literacy and information literacy standards that Bruce (2004) highlighted as having a significant impact within education, four relate to Hepworth's (2000) first approach (the fifth being her own Seven Faces of Information Literacy model):

- Eisenberg and Berkowitz's (2003) Big6 information skills
- Doyles' (1992) attributes of an information literate person
- ALA and AECT's (1998) Information literacy standards for student learning
- The ACRL's (2000) Information literacy competency standards for higher education

The Big6 (Eisenberg and Berkowitz, 2003) information literacy model has gained popularity in US schools and some HEIs (Bruce, 2004). It divides information problem solving into six discrete stages (Task Definition, Information Seeking Strategies, Location and Access, Use of Information, Synthesis and Evaluation) and numerous sub-stages. Although Johnston & Webber (2003) describe it as a *"rather mechanistic approach to information literacy"* that encourages a *"recipe approach to information literacy"*, others feel the approach has advantages in the context of training (McClure, 1994). Doyle's (1992) model used Delphi research techniques to facilitate discussion between a wide-ranging group of US business, government and education information experts. She concluded that information literacy is *"the ability to access, evaluate, and use information from a variety of sources"* (Doyle, 1992:2) and that an information literate person possesses ten cognitive attributes:

- *Recognises the need for information;*
- *Recognises that accurate and complete information is the basis for intelligent decision making;*
- *Identifies potential sources of information;*
- *Develops successful search strategies;*
- *Accesses sources of information, including computer-based and other technologies;*
- *Evaluates information;*
- *Organises information for practical application;*
- *Integrates new information into an existing body of knowledge, and;*
- *Uses information in critical thinking and problem solving*

(Doyle, 1992:2)

Both standards identified by Bruce (2004) were devised through consultation between information professionals and educators. The Information Literacy Standards for Student Learning (ALA and AECT, 1998) is aimed at US schools and

of less relevance to this thesis. The ALA Information Literacy Competency Standards for Higher Education arguably contains the most quoted definition of information literacy (Spitzer et al., 1998; Webber and Johnston, 2000), defining it as a set of abilities that individuals require to *"recognize when information is needed and have the ability to locate, evaluate, and use effectively the needed information"* (ALA, 2000:2). Their standards were conceived as a response to *"rapid technological change and proliferating information resources"* (ALA, 2000:2) in contemporary society where *"unfiltered formats"* raise questions about the *"authenticity, validity, and reliability"* (ALA, 2000:2) of information found. The ALA standards have influenced many information literacy frameworks and models. Their emphasis on competencies is apparent in most (Spitzer et al., 1998; Webber and Johnston, 2000), including the SCONUL Seven Pillars model of information literacy popular in UK HE (Boon et al., 2007). Like the ALA standards (ALA, 2000:2), this model was motivated by concerns about undergraduates having to increasingly consider areas of provenance, accuracy, ownership, copyright and the reliability of material obtained via the Internet and the increased potential for plagiarism (SCONUL, 2007). SCONUL's latest three dimensional model conceives information literacy as encompassing most other key literacies including digital literacy, stating that *"Information literate people will demonstrate an awareness of how they gather, use, manage, synthesise and create information and data in an ethical manner and will have the information skills to do so effectively"* (SCONUL Working Group on Information Literacy, 2011). Whilst the Internet is not mentioned per se, it is implied in the model's supporting documentation which consistently places digital sources alongside with print sources, as part of the *"Information Literacy Landscape"*:
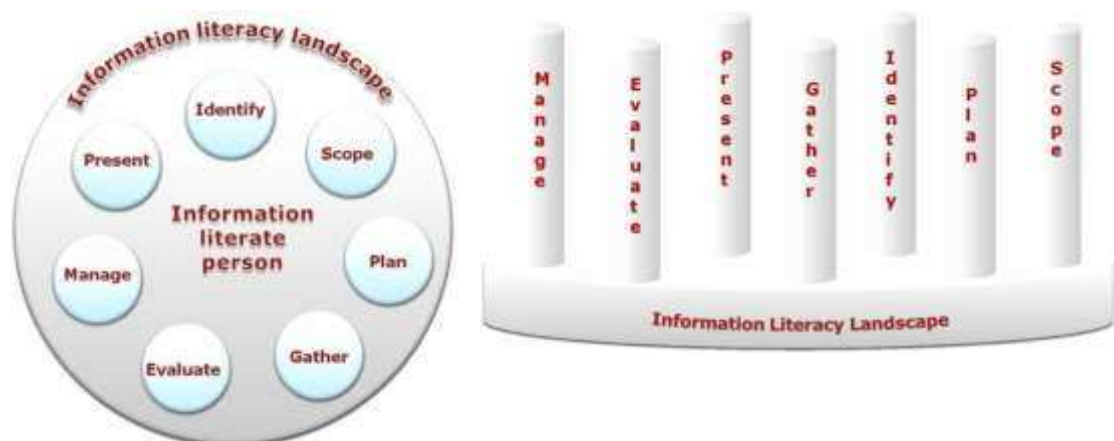
Figure 5.1 SCONUL Seven Pillars Model for Information Literacy (SCONUL, 2011)

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The SCONUL model is not without criticism from those working in the Library and Information field. For example, Walton and Hepworth's (2011) study produced evidence of first year undergraduates attaining the higher SCONUL pillar levels, whereas the model states that people move from novice to expert through their learning life[28]. In addition, Walton and Hepworth have also criticised the model's assumption that being able to recognise an information gap occurs in the initial stages of satisfying an information need. They found that most students in their study only recognised an information gap when reflecting upon their information searching experiences.

5.3.2 Autonomous-Peripheral perspective

	Conventional literacies *Pre-2000*	New literacies *(Post-2000)*	
		Peripheral cases *Just new 'technical stuff'*	Paradigm cases *New 'technical stuff' and new 'ethos stuff'*
Autonomous literacies *Literacy as a cognitive ability*		**Autonomous – Peripheral perspective**	
Ideological literacies *Literacy as a social practice*			

The proponents of this perspective view literacy as a cognitive ability (Street, 1984) and one that is concerned with new technical stuff (Lankshear and Knobel, 2007). Two literacies are considered in this section: digital literacy and media literacy.

The 1980s witnessed the fracturing of literacy into component literacies (Lankshear and Knobel, 2003) and the origins of Internet literacies and qualification structures that attempted to encapsulate the skills and competencies required by the ICT industry to satisfy the need for a technical literate workforce (Gillen and Barton, 2010). With the Internet firmly established in the economy and increasingly in education, concepts of 'digital literacy' were introduced that focussed on the 'softer' skills and competencies required to cope with the products of the ICT industries (Gillen and Barton, 2010). Gilster (1999) arguably popularised the term 'digital literacy' (Bawden, 2001) with his book of the same name. Gilster (1999) conceived digital literacy as an extension of the traditional concept of literacy and *"… the ability to understand and use information in multiple formats from a wide range of sources*

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[28] The latest model does also state that individuals can move down a pillar if they do not keep-up with changes in the information literacy landscape

when it is presented via computers" (Gilster, 1999:1). Whilst this definition stresses the potential breadth of his conception of digital literacy (not just the Internet), most of his book is firmly centred on the issues around the increased use of the Internet, the consequences for literacy education and the additional competencies required: *"The most essential of these is the ability to make informed judgements about what you find on-line"* (Gilster, 1999:1). Digital literacy has also been an ongoing inclusion theme of the European Commission's (2000; 2004; 2007; 2010) vision of an e-Europe and i2010 where digital literacy is defined as *"the confident and critical use of ICT for work, leisure, learning and communication"* (European Commission, 2007) using the term 'ICT' as a synonym for a 'computer' rather than some broader conception (for example, Andrews et al., 2002). However, more recently the European Commission has shifted its attention from a technical competencies conception of digital literacy, to media literacy as a critical literacy defining it as *"the ability to understand and critically evaluate different aspects and content of the media"* (EurActiv, 2010). Emphasising the digital aspects of media literacy, 'digital media literacy' is the term used in the Digital Britain report (BIS & DCMS, 2009) in its instruction to Ofcom to assess its current responsibilities in *"equipping everyone to benefit from Digital Britain"* (BIS & DCMS, 2009:235). Ofcom's (2009) response was three tiered: firstly to ensure all citizens have access to digital technologies, including broadband; secondly to ensure citizens acquire and develop digital life skills; finally, to be digitally media literate. They define the latter as *"the ability to use, understand and create digital media and communications"* (Ofcom, 2009:5) and imply that those that are digitally media literate have the highest level digital life skills, describing them as digital media *"creators"* and *"pioneers"* who might be *"online entrepreneurs"* or *"social media experts"* (Ofcom, 2009:18). Ofcom draws parallels between media literacy, information literacy and digital literacy claiming they contain *"related visions of the technical and critical thinking skills"* (Ofcom, 2009:4). Bawden (2001) has also stated that media literacy, information literacy and digital literacy are frequently used interchangeably.

5.3.3 Autonomous–Paradigm perspective

	Conventional literacies *Pre-2000*	New literacies *(Post-2000)*	
		Peripheral cases *Just new 'technical stuff'*	**Paradigm cases** *New 'technical stuff' and new 'ethos stuff'*
Autonomous literacies *Literacy as a cognitive ability*			**Autonomous – Paradigm perspective**
Ideological literacies *Literacy as a social practice*			

The proponents of this perspective view literacy as a cognitive ability (Street, 1984), one that is primarily concerned with new technical stuff and one that proponents claim contains new ethos stuff (Lankshear and Knobel, 2007). This section considers Prensky's claim that programming literacy is the new literacy of the 21st Century.

Prensky's describes programming literacy as the

> *"... the ability to make digital technology do whatever, within the possible one wants it to do - to bend digital technology to one's needs, purposes, and will, just as in the present we bend words and images. Some call this skill human-machine interaction; some call it procedural literacy. Others just call it programming."*
> (Prensky, 2008).

This broad conception of programming includes any procedural interactions with digital technologies, from editing the HTML that makes up a web page to programming in a low-level Web programming language like PHP. For Prensky, being able to program will increasingly differentiate those that simply consume pre-packaged applications from those that use programming to increase the affordances offered by digital technologies, including Internet-based applications. Whereas previously, computer programming had been restricted to an elite of *"nerds"*, Prensky (2008) claims that recent technologies enable any user to easily program a digital device. It is this new potential that makes programming essentially a new literacy. It requires abilities that were hitherto beyond the scope of the general population. Without explicitly referring to his conception of the digital native-immigrant divide (Prensky, 2001b; Prensky, 2001a), he envisages a literate and elite younger generation supporting those who have failed to recognise or utilise the power of programming.

5.3.4 Ideological–Conventional perspective

	Conventional literacies *Pre-2000*	New literacies *(Post-2000)*	
		Peripheral cases *Just new 'technical stuff'*	**Paradigm cases** *New 'technical stuff' and new 'ethos stuff'*
Autonomous literacies *Literacy as a cognitive ability*			
Ideological literacies *Literacy as a social practice*	**Ideological – Conventional perspective**		

The proponents of this perspective view literacy as a social practice (Street, 1984), but not one that is necessarily concerned with new technical stuff or contains any underlying new ethos stuff (Lankshear and Knobel, 2007). This section considers the New London Group's (Cazden et al., 1996) conception of multiliteracies. Bruce's (1997) conception of information literacy (mentioned later) would also be embraced by this perspective.

The New London Group's conception of multiliteracies (Cazden et al., 1996) is widely cited within the educational literature relating to Internet-related literacies and has been influential in changing conceptions of literacy within pre-university education (Lankshear and Knobel, 2003; Rodríguez Illera, 2004). The Group stress two fundamental changes in society that the concept of multiliteracies responds to: Firstly, the recognition that there are fundamental differences in the way people now use technologies and secondly the diversity of culture and language within an increasingly global community (Leu et al., 2004). Their conception of multiliteracies comprising four components that each highlight a particular social-cultural dimension. These were summarised by Cope and Kalantzis (2000) as Situated Practice, where users draw upon their experiences, Overt Instruction which recognises that teaching ultimately involves communicating others' 'thinking and understanding' frameworks, Critical Framing which recognises the unequal power relationships within any communication, and Transformed Practice where the products of students' efforts might influence their own social futures. Together, they form the rationale for the Group's notion of Design that requires students to consider a richer understanding of semiotics than traditional authoring (Gillen and Barton, 2010). Within the New London group's Design framework, being literate is seen as involving a set of literacies that emerge *"as individuals from different cultural contexts encounter one another within different communication technologies"* (Leu

et al., 2004:1587). Internet-related literacies are just one of many literacies that individuals need to develop in today's society including multimedia and workplace literacies.

5.3.5 Ideological–Peripheral perspective

| | Conventional literacies
Pre-2000 | New literacies
(Post-2000) | |
		Peripheral cases *Just new 'technical stuff'*	Paradigm cases *New 'technical stuff' and new 'ethos stuff'*
Autonomous literacies *Literacy as a cognitive ability*			
Ideological literacies *Literacy as a social practice*		**Ideological – Peripheral perspective**	

The proponents of this perspective tend to view literacy as a social practice (Street, 1984), one that is primarily concerned with new technical stuff (Lankshear and Knobel, 2007). This section focuses on Livingstone's conception of Internet literacy.

Towards the end of the early 20th century, it was rare for the term 'Internet literacy' to be used formally, with most uses being confined to informal interactions (Bawden, 2001). When it did appear in the literature and elsewhere, it referred to finding, evaluating and publishing information on the Web (for example, Yahoo! Inc, 2002; Hofstetter, 2005). More recently, the term has become more widespread and increasingly conceptions have emphasised students' Internet-related social practices, primarily in an attempt to better identify students' Internet-related needs. Livingstone (2003; 2003; 2005) is one of the main proponents of this approach, influenced by her research into adults' media literacy (Livingstone and Thumim, 2003) and then students' (9 to 19 years) Internet behaviour (Livingstone et al., 2005). As stated earlier, this led her to question the rhetoric surrounding students' supposedly high levels of Internet-related abilities, particularly their ability to evaluate Internet sources. In 2008 she returned to some of the students surveyed, all of whom were then approaching university age. She found that whilst their Internet use had evolved, their Internet-related abilities had not (Livingstone, 2008). Whilst UK Children Go Online's headlines have focused on the pre-university students' skills, the studies also considered students' Internet-related social practices more generally. In addition to the technical and skills-based dimension to Internet literacy already implied, Livingstone proposes two other dimensions. Firstly, she identifies a situational dimension to Internet literacy where students' practices

and skills must be understood in terms of the particular activity, the technology being used, the interface's design and how institutions shape the interactions taking place. That is, being Internet literate cannot be understood as a neutral technical skill. Secondly, she identifies a context-independent dimension to Internet literacy, where certain Internet competencies become valued or are disapproved. In contrast to some other forms of literacy, Internet literacies have tended to emphasize the critical aspects of print literacy due to the dominance of text on the Web. Overall she concludes:

> *"young people's internet literacy does not yet match the headline image of the intrepid pioneer, not because young people lack imagination or initiative, but because the institutions that manage their internet access and use are constraining or unsupportive"* (Livingstone, 2008:110)

Examples of institutional constraints include the emphasis media companies place on violating copyright infringement from illegal music downloading and how educational institutions are increasingly instigating plagiarism procedures (Livingstone, 2008).

5.3.6 Ideological–Paradigm perspective

	Conventional literacies *Pre-2000*	New literacies *(Post-2000)*	
		Peripheral cases *Just new 'technical stuff'*	Paradigm cases *New 'technical stuff' and new 'ethos stuff'*
Autonomous literacies *Literacy as a cognitive ability*			
Ideological literacies *Literacy as a social practice*			Ideological – Paradigm perspective

The proponents of this perspective view literacy as a social practice (Street, 1984), and one that is concerned with both new technical stuff and new ethos stuff (Lankshear and Knobel, 2007). It might also be referred to as a 'socio-technical' perspective as first described by Trist and Bamforth (1951). In this section two conceptions of Information Literacy 2.0 are considered.

Within this perspective, various conceptions of digital literacies have already been presented, highlighting their relation to new digital technologies and studies of users' practices. More recently, Scandinavian scholars have critiqued popular conception's of information literacy claiming they neglect how individuals interact with information, technologies and other people (Tuominen et al., 2005). They argue librarians and

information specialists have tended to narrowly conceive information literacy as a practical, strategic and user-centric concept, with the consequence that most related texts consist of lists of information skills required to be literate in a modern information-intensive society. They propose that information literacy should be reconceived as a 'socio-technical practice' and hence take into account the *"complex system of social relationships, socio-technical configurations, and work organisation"* (Tuominen et al., 2005:331) present in most information encounters. That is, previous conceptions of information literacy that focused on individuals' abilities to find and evaluate so-called 'authoritative texts', and which tended abstract information literacy skills in the name of life-long learning, need to be reconfigured. Based on Gee's (2003) work on video games and literacy, Tuominen, Savolainen and Talja re-conceptualise information literacy as a socio-technical practice that entails:

> *"… an understanding that people are information literate in a given domain if they can recognize and evaluate (read) and produce (write) knowledge claims in that domain and if they have the ability to assess the knowledge produced in the domain"*
> (Tuominen et al., 2005:340)

This approach sees this new information literacy movement as primarily about *"enabling groups and communities to cultivate existing information strategies and about supporting them in their interactions with information technologies"* (Tuominen et al., 2005:341). Information technologies are perceived as being far from being neutral in terms of enabling communications.

Ŝpiranec and Zorica (2009) and Tuominen (2007) have applied the ideas present in Tuominen, Savolainen and Talja (2005) paper to Web 2.0 technologies. These they claim have afforded new ways in which individuals interact with information. Users have moved from being passive recipients of information to being information producers, creators and co-creators. For Ŝpiranec and Zorica (2009) entirely new types of information resources, information seeking behaviour and user expectations have emerged. As information and knowledge are increasingly socially produced and distributed, social relationships become the most effective method of access. For Tuominen (2007) Web 2.0 technologies have caused an *"erosion of the information context"* where users find it increasingly difficult to determine the authority of what they read. Both claim that new literacies are needed to deal with these changes and propose that classical information literacy with its emphasis on

acquiring abilities to ethically seek, use and create information, needs to evolve to encompass Web 2.0 technologies.

Tuominen (2007) proposes that information literacy should be entirely re-conceptualised as 'information literacy 2.0' where individuals, groups and organisations judge the trustworthiness of sources using 'new' information literacy skills and with the support of 'socio-technical filtering systems'. These are described as being 'positive' or 'post-filtering' (for example, the combination of social bookmarks sites, wikis and recommendation/voting systems) and 'negative' or 'pre-filtering' (for example, the combination of lists of parodies and spoof sites, lists of counterfeit and phishing sites). Tuominen (2007) states that the *"basic goal of these systems is to recreate or reconstruct the social context of information"* that has been eroded by many Web 2.0 technologies. Tuominen (2007) envisages information literacy 2.0 is about both effectively using these social filtering systems and being collectively involved in their development using Web 2.0 techniques like reviewing, commentating, tagging or rating. This philosophy has parallels with Lankes (2008) proposal that users are increasingly judging the trustworthiness of a source in terms of reliability rather than authority. However, unlike Lankes (2008), Tuominen (2007) does not ultimately extend his trust to specific Web 2.0 sites. For example, Lankes (2008) claims that Wikipedia and other group editing is at least trustworthy as traditional encyclopaedias.

Ŝpiranec and Zorica (2009) also propose that information literacy be expanded to include the information spaces that have brought about Web 2.0. By retaining the tenets of information literacy, they expand the concept to include 'information literacy 2.0' which they claim resolves the anomalies in previous conceptions. That is, current conceptions of information literacy reflect a *"strong dependence on a print-based culture which is incongruent with the transient and hybrid nature of digital environments"* (Ŝpiranec and Zorica, 2009:151) and there is a need to move away from this inherently objectivist view of information seeking, to one that recognises the participative and multi-modal nature of Web 2.0, and is more constructivist. Fundamental to their approach is the claim that classical conceptions of information literacy view information seeking as a neutral process, unaffected by the external contexts of the information being sought. They propose:

> *"interpreting information literacy as a socio-technical practice which takes
> into consideration new complex systems of social relationships, new*

socio-technical configurations and organizations that constitute today's reality [and] *makes necessary new kinds of competencies"*
(Ŝpiranec and Zorica, 2009:144)

In contrast to the conception that information literacy 2.0 is about using Web 2.0 for information literacy training and activities, Ŝpiranec and Zorica (2009) conceptualise information literacy 2.0 as taking into account the social, ideological and physical contexts and environments in which information and technical artefacts are used. They also reject the idea that information literacy 2.0 is solely concerned with Web 2.0, preferring to perceive a *"continuum of information artefacts, be they oral, digital, printed, collective in nature"* (Ŝpiranec and Zorica, 2009:146).

5.4 Conclusion

This section has demonstrated that there are wide variations in conceptions of literacy that relate to the Internet, particularly in terms of the extent to which they are primarily concerned with new technologies, the extent to which they are essentially about new ways of thinking about literacy, and the extent to which they highlight cognitive abilities as opposed to social practices. This leads to the following definition of the term 'Internet literacies':

> The abilities a person or social group draws upon when interacting with Internet technologies to derive or produce meaning, and the social, learning and work-related practices that these abilities are applied to.

This definition captures the complementary nature of literacy as a cognitive ability and a social practice (Street, 1984), and depending on the practice being considered, may be thought of as a paradigm or peripheral case of new literacies (Lankshear and Knobel, 2007). Unlike many conceptions of digital literacies (for example, Gillen and Barton, 2010), it does not solely focus on leaving some digital trace, since some Internet-related activities, for example searching online to satisfy some information need, leave no digital trace. However, this definition does share much with Jones and Lea's (2008) conception of digital literacies, albeit restricted to Internet technologies. In addition, this definition stresses a socio-technological perspective in that Internet literacies can relate to, or be a property of, an individual or a social group.

Chapter 6: Learning designs for Internet literacies

The more action-orientated aspects of this research relate to the abilities our undergraduates draw upon when interacting with Internet technologies as part of their Information Management studies, life-long learning and future employment, and the support we provide to facilitate this. Despite the vast literature related to HE and e-learning, little guidance exists to support university departments developing their students' Internet-related literacies. This view is supported by Goodfellow (2011). This chapter explores the literature that does exist, highlighting those conclusions considered particularly relevant. This chapter begins with Bloom's Taxonomy, a meta-schema for classifying educational objectives, and shows how it has been developed for digital technologies.

6.1 Bloom's Taxonomy

Bloom's Taxonomy of Educational Objectives (Bloom et al., 1956) has arguably had a profound impact on course design and assessment (Seddon, 1978). It attempts to categorise the statements made by teachers when capturing course objectives and the corresponding test items that assess them. As such, it forms the basis of a meta-language for educators to compare and analyse curricula. These were divided into three broad domains: 'cognitive', 'affective' and 'psychomotor'. The cognitive domain has developed by Bloom and his team. Krathwohl, one of Bloom's team members, went on to write about the affective domain (Krathwohl et al., 1964; Krathwohl, 1973) although not so extensively. Little has been written about the psychomotor domain (Boyle, 2007). For the cognitive domain, Bloom determined six major categories:

> *1.00 Knowledge - the ability to recall specific facts, key terms, and basic principles*
> *2.00 Comprehension - the ability to state ideas in one's own terms, and to interpret and extrapolate a set of data*
> *3.00 Application - the ability to apply principles in novel situations*
> *4.00 Analysis - the ability to identify assumptions, spot logical errors and to distinguish facts from values*
> *5.00 Synthesis - the ability to combine extant elements into new forms and patterns, i.e., creativity*
> *6.00 Evaluation - the ability to judge by internal and external criteria*
> (Bloom et al., 1956:18)

Where appropriate, 'Ability' included what Bloom described as *"Arts and skills"* or *"modes of operation and generalised techniques for dealing with problems",* that is

"Arts or skills + knowledge = abilities" (Bloom et al., 1956:38). In this way, the categories could be applied to various subjects. With the exception of the Application category, each major category was broken into numerous subcategories. The six major categories form a hierarchy with the behaviours found in one category building on the behaviours found in the previous category. Bloom states that whilst he and his co-workers had no problems assigning educational objectives and associated test items to the major categories, they were not satisfied with the subcategories (Bloom et al., 1956). Indeed, subsequent studies have come to differing conclusions regarding the extent to which the categories can be reliably assigned to objectives and test items (Seddon, 1978). In addition, subsequent studies have also found no evidence of a cumulative hierarchy relationship between the major categories (Seddon, 1978). More recently, Anderson and Krathwohl (2001) has developed what he called *'Bloom's revised taxonomy'*. It aims to resolve some of the issues associated with the original taxonomy that presented the major categories as a hierarchy and contained various other Knowledge subcategory anomalies. However, the principle issue addressed regarded the conflation of subject matter with description. That is, Anderson and Krathwohl (2001) differentiated the 'noun phrase' found in many learning objectives (calling it the 'Knowledge dimension') from the 'verb phrase' (calling it the 'Cognitive dimension'). As the revised model now contains two dimensions, Anderson and Krathwohl (2001) depicted it as a two dimensional table with a 'Cognitive Process' dimension along the horizontal axis and the 'Knowledge Dimension' along the vertical axis:
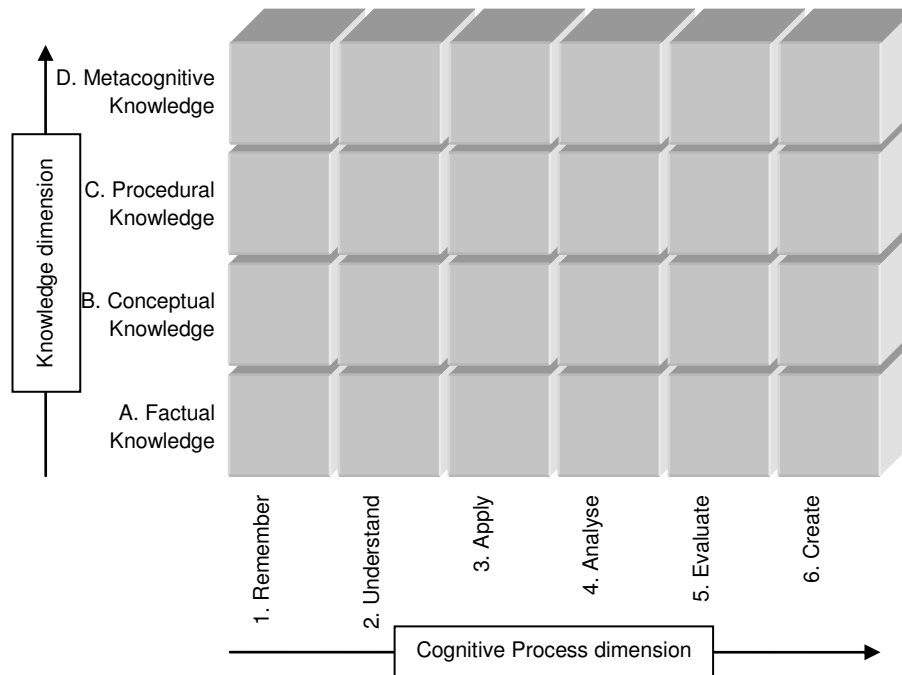
Figure 6.1 Bloom's revised taxonomy (Anderson and Krathwohl, 2001)

The revised model also added a 'Meta-cognitive' subcategory, defining it as *"knowledge about cognition in general as well as awareness of knowledge about one's own cognition"* (Krathwohl, 2002:214) and renamed the major categories. The idea of a hierarchy remains in the revised model, but *"has been relaxed to allow categories to overlap one another"* (Krathwohl, 2002:215).

The affective dimension of Bloom's original taxonomy ('Taxonomy of the Affective Domain') has received less attention in Higher Education due to its perceived irrelevance and the lack of tools to evaluate it (Wilks, 2005; Boyle, 2007). Oxford Dictionaries (Grathwohl, 2010) describes affective as *"relating to moods, feelings, and attitudes"* but Krathwohl et al (1964; 1973) use of the term was more restrictive, referring to the extent to which a person *"acts consistently with any new value"* (Krathwohl et al., 1964; 1973). Like the cognitive domain, there is a weak notion of a hierarchy from 'Receiving', 'Responding', 'Valuing', 'Organisation' to 'Characterisation by Value'. Krathwohl et al (1964) illustrated the affective domain as shown in Figure 3.

Level	Definition	Example
Receiving	*"Student is aware of or attending to something in the environment"*	*"Student would listen to a lecture or presentation about a structural model related to human behaviour. Teacher is the stimulus"*
Responding	*"Students show some new behaviours as a result of their experience. They gain satisfaction from participation"*	*"The student would answer questions about the model or might rewrite lecture notes the next day. The student wants to be involved in activities"*
Valuing	*"Students show some definite involvement or commitment, valuing what they are involved in"*	*"The student has to use judgement to make a choice, and on acceptance of a value, may seek to sway others to their chosen value"*
Organisation	*"Students integrate a new value into their general set of values, attitude or beliefs, giving it some ranking within their overall set of values"*	*"This is the level at which a student begins to make long-range commitments to organising his or her instruction and assessment"*
Characterisation by Value	*"Acting consistently with any new value"*	*"At this highest level, students have internalised and organised values into a system and can now apply these values as a philosophy of life to a broader range of situations"*

Table 6.1 Taxonomy of the Affective Domain (adapted from Krathwohl et al, 1964 by Boyle, 2007)

Within what might be called the 'grey literature' there is frequent reference to Churches (2008) 'Bloom's Digital Taxonomy' (see Figure 6.2). Originally developed to analyse school educational objectives, it has now gained some popularity in the HE context. It applies Bloom's Revised Taxonomy to digital technologies by mapping gerunds frequently associated with digital activities to the cognitive process dimension of Bloom's Revised Taxonomy. It deviates slightly from Bloom's terminology, using the verb form of each major category (for example, "Create" becomes "Creating") and recommending that the cognitive process categories overlap. No rationale or substantive evidence for Bloom's Digital Taxonomy is stated, but nonetheless the need to classify digital-related activities according to their dominant cognitive process level has attracted the attention of educationalists from a wide range of different backgrounds. For example, El-Ghalayini and El-Khalili (2011) use Bloom's Digital Taxonomy to create their own model for designing and evaluating blended learning HE courses.

Bloom's Digital Taxonomy

Key Terms

Creating — Verbs →
designing, constructing, planning, producing, inventing, devising making, programming, filming, animating, Blogging, Video blogging, mixing, remixing, wiki-ing, publishing, videocasting, podcasting, directing/producing

Evaluating — Verbs →
Checking, hypothesising, critiquing, Experimenting, judging, testing Detecting, Monitoring, (Blog/vlog) commenting, reviewing, posting, moderating, collaborating, networking, refactoring, (Alpha & beta)testing,

Analysing — Verbs →
Comparing, organising, deconstructing Attributing, outlining, finding, structuring, integrating, Mashing, linking, tagging, validating reverse-engineering, cracking

Applying — Verbs →
Implementing, carrying out, using, executing, running, loading, playing, operating, hacking, uploading, sharing, editing

Understanding — Verbs →
Interpreting, Summarising, inferring, paraphrasing, classifying, comparing, explaining, exemplifying, Advanced searches, boolean searches, blog journaling, twittring, catergorising, commenting, annotating, subscribing

Remembering — Verbs →
Recognising, listing, describing, identifying, retrieving, naming, locating, finding, Bullet pointing, highlighting, bookmarking, social networking, Social bookmarking, favouriting/local bookmarking, Searching, googling,

Figure 6.2 Bloom's Digital Taxonomy (Churches, 2008)

6.2 Blended learning

The need to support students with the Internet aspects of their studies is reinforced by JISC who state:

> *"Technology does not in itself bring about successful learning. Learners in the main still depend on their tutors, mentors or facilitators to guide their use of technology for educational purposes. Even 'net generation' learners may need direction and support in identifying the most effective and appropriate strategies for using technology in learning"*
> (JISC, 2009b:17)

With regards to the Internet-related aspects of students' studies, various terms are used interchangeably. For example, the term 'e-Learning' is widely used to refer to learning taking place via some online technology and the term 'blended learning' is frequently used to encapsulate a combination of face-to-face learning and e-learning. More recently, JISC (2009b) have promoted the term 'technology-enhanced learning' (TEL) since it *"emphasises how technology adds value to learning by enabling"*. With regards to blended learning, the HEA (Sharpe et al., 2006) found three approaches occurring in HE. Typically, students experienced two or three of these approaches. The most common approach was the provision of online material related to a course via the University's approved VLE to supplement or augment more traditional learning taking place. The second approach to blended learning was students using their own digital technologies to support their learning. At the time, the HEA were aware of little substantive research in this area. The least common approach to blended learning was the use *"of transformative course level practices underpinned by radical course designs"* where technologies replaced other modes of teaching and learning. Within my school, our undergraduates predominantly experience the first two approaches, although there are a few examples of the third approach (see Table 2.1). Hence, one outcome of this research is to explore effective ways of supporting the Internet aspects of all three approaches to students' blended learning. Beetham (2008, in JISC, 2009b) suggests that the success of any curriculum intervention is more likely since the design of blended learning involves making *"explicit many aspects of their practice that would emerge ad-hoc in a live learning and teaching environment"*. That is, academics might be more receptive to embedding Internet literacies in undergraduates' studies when planning for blended learning.

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6.3 Learning literacies in a digital age

One of the most comprehensive reviews of the literature relating to teaching Internet-related literacies was conducted by Beetham et al (2009) entitled, Learning Literacies in a Digital Age (LLiDA). As with most of the literature in this area, it was more concerned with institutional policies and practices that support and develop students' Internet-related uses of technology for learning as opposed to developing digital literacies per se. It found that, whilst some areas of HE frequently offer consistently good support, they are *"still operating in relative isolation from one another, and – in many cases – from staff in departments too."* LLiDA went on to say:

> *"Students' digital and learning literacies are not often enough being assessed and supported as they engage in academic tasks. It is also not often acknowledged that students have many sources of support, including family, friends, social networks and online resources, but that they need help to integrate these into effective personal practices."*
> (Beetham et al., 2009:4)

One of the traditional sources of support for students has been university librarians who typically promote SCONUL's information literacy framework (see Section 5.3.1). However, LLiDA point out that *"where librarians have championed the digital aspects of information literacy, this is regarded as having 'solved' the problem of the digital in learning"*. They identified three modes of promoting literacies in the digital age. Firstly, HEIs offer institution-wide programmes that are usually portfolio-based requiring students to review and reflect upon their Internet-related abilities. Secondly, departments offer non-assessed skills modules delivered alongside normal teaching, typically by central services staff. Thirdly, but less commonly, Internet literacy teaching was fully embedded within the degree curriculum with explicit learning outcomes and associated assessments. LLiDA identified many pitfalls with the second approach with students failing to recognise the value of non-compulsory elements of the learning experience and became demotivated. They found the third more effective in promoting students' Internet literacies.

6.4 Academics' pedagogies for information literacy

Academics views about the role of Internet literacies within the undergraduate experience has not been studied per se. However, Webber et al's (2005) phenomenographic study of UK academics' conceptions of, and pedagogy for,

information literacy is illuminating since the pedagogic approach to the teaching of information literacy parallels that of supporting HE students' Internet-related literacies (Beetham et al., 2009). Within the disciplines of Marketing and English the teaching of information literacy was seen as *"Someone else's job"*, *"Upgrading students' information toolbox"*, *"Facilitating access to a variety of resources"*, *"Showing students how and when to use information skills"*, *"Helping students understand how information literacy is critical to them, for marketing and life"*, *"An add-on or side-effect of teaching the subject"*, *"Introducing the students to sources of information"* and finally *"Engaging with students to show them the value of information and information literacy"*. Despite the value some academics in the study place on information literacy per se, most focused on information searching skills. Additionally, Webber et al found academics' approaches to the teaching of information literacy was linked to their conception of information literacy. For example, if an academic conceived information literacy in terms of finding information, it is unlikely they would consider teaching students higher order skills.

In Australia Bruce (1997) also investigated academics' pedagogies for the teaching of information literacy. She found three pedagogic approaches of which the first two, 'Behaviourist' and 'Constructivist' are based on an Autonomous-Conventional perspective of information literacy, being about developing students' abilities and characteristics, whether they be prescribed or discovered during problem-based learning (Webber and Johnston, 2000). Bruce also identified a third approach which she calls 'Relational'. This treats information literacy as a phenomenon and describes information literacy in terms of the ways in which it is socially experienced. By understanding how others conceive information literacy, she claims information users can begin to develop their own conceptions and skills with respect to their own circumstances and needs. Using phenomenographic methods, Bruce identified seven different ways in which academics experience information literacy and as such enable *"information literacy as a catalyst for educational change"* (Bruce, 2008). These seven ways of experiencing or 'faces' of information literacy include those that perceive information literacy as: using information technology to retrieve and communicate information; finding information within information sources; performing some information process; controlling information; building-up a new personal knowledge base; creating new insights from knowledge; wisely using information to benefit others. This relational approach to conceiving information

literacy also influenced how I drew together my analysis academic's perceptions of be Internet literate.

6.5 Pedagogies for Internet-related literacies

Substantive research related to effective pedagogies for teaching Internet-related literacies is almost non-existent. However, again taking the lead from information literacy research, Walton and Hepworth (2011) compared three blended learning pedagogies for the teaching of online information evaluation skills. The outcomes of their research have implications for the teaching of Internet literacies. They formed three groups of first year undergraduates and taught each one using a different pedagogic approach. The first pedagogy involved using just face-to-face workshops and access to recommended online sources, the second group additionally were encouraged to use interactive online quizzes and the third group additionally were encouraged to participate in online social networking learning (OSNL) activities. The OSNL pedagogy employed involved the production of materials for others to view as they engaged in various dialogues about evaluating online sources. The rationale being, *"students can give a far more considered reply online than in the immediacy of a face-to-face conversation"* and this is a *"pre-requisite in fostering effective online learning"*. The pedagogy employed with the third group was found to be the most effective, with students appearing more focussed on the task, more engaged with higher-level cognitive processes, and demonstrating better information literacy evaluation skills.

The rationale for Walton and Hepworth's use of OSNL with the third group of undergraduates was based on the premise that effective teaching and learning only takes place through some goal-centred activity, such as problem-based learning (Mason, 2004) involving learning by doing (Kolb, 1984) and the construction of meaning via conversation and ongoing negotiation between learners (Laurillard, 1993). That is, their use of OSNL involved both a situative perspective of learning, where learning is viewed as a social practice, and a constructive perspective (social focus) of learning, where *"learners actively construct new ideas through collaborative activities and/or dialogue learning"* (see Table 6.2 below). The learning design for Walton and Hepworth's first group was primarily based on an associative perspective, where *"learners gain skills by building progressively complex actions from component skills"*, whereas their learning design for the second group was more of a constructive perspective (individual focus), where *"interactive*

environments for knowledge-building" are created. The JISC framework for comparing and contrasting learning designs and pedagogies was also found useful in this research and is reproduced below:

Perspective	Assumptions	Associated pedagogy
Associative perspective	Learning as acquiring competence Learners acquire knowledge by building associations between different concepts. Learners gain skills by building progressively complex actions from component skills.	Focus on competences Routines of organised activity Progressive difficulty Clear goals and feedback Individualised pathways matched to the individual's prior performance
Constructive perspective (individual focus)	Learning as achieving understanding Learners actively construct new ideas by building and testing hypotheses.	Interactive environments for knowledge-building Activities that encourage experimentation and discovery of principles Support for reflection and evaluation
Constructive perspective (social focus)	Learning as achieving understanding Learners actively construct new ideas through collaborative activities and/or dialogue.	Interactive environments for knowledge-building Activities that encourage collaboration and shared expression of ideas Support for reflection, peer review and evaluation
Situative perspective	Learning as social practice Learners develop their identities through participation in specific communities of practice.	Participation in social practices of enquiry and learning Support for development of learning skills Dialogue to facilitate the development of learning relationships

Table 6.2 JISC framework for comparing and contrasting learning designs and pedagogies (JISC, 2009b:11)

6.6 Conclusion

Walton and Hepworth's research does not mention if undergraduates' understandings and skills were formally or informally assessed prior to the interventions taking place. As with many educational interventions, students' prior understandings and skills are assumed. Educationalists like John Dewey (1859–1952), Jean Piaget (1896–1980), Lev Vygotsky (1896–1934) and Jerome Bruner (1915 -) have all stressed that learning is incremental, and learners' previous understandings and experiences need to be understood for effective teaching and learning to take place. This rationale supports the action-orientated aspects of this research.

The academics who teach undergraduates in my school have their own understandings about the Internet abilities that should be incorporated in an Information Management degree and their own pedagogies for facilitating undergraduates' Internet abilities. At various levels, these understandings and

perceptions inform their decisions about what Internet abilities and technologies to include in their teaching modules, and their approach to teaching Internet abilities. This chapter has emphasised the importance of exploring these areas and, when making recommendations to the School about effective interventions for promoting undergraduates' Internet literacies (research objective: O2-2008), consider the conclusions of the LLiDA report (Beetham et al., 2009) related to embedding learning interventions within the students' degree studies as opposed to being 'bolted-on', the importance that Boon et al (2007) attach to understanding academics' perceptions and pedagogies for Internet literacies, Bruce's (1997) premise that students' literacies are more effectively developed by developing their understanding of what it means to be literate, Kolb's (1984) experiential framework that highlights the importance of learning by doing, and Laurillard's (1993) conversational framework that places emphasis on dialogue, reflection and feedback. Furthermore, the outcomes of this research need to resonate with academics' perceptions of students' Internet literacies and of their understandings of being Internet literate to ensure meaningful reflections of their current practice and any substantive changes in Internet-related learning and teaching strategy.

Finally, the models developed to design and evaluate course objectives (Bloom's Revised Taxonomy, Bloom's Taxonomy of the Affective Domain and Bloom's Digital Taxonomy) could be adapted to compare and contrast academics' objectives for Internet literacy (RQ11-2008). In addition, this adapted model could be used to design and evaluate the cognitive and affective dimensions of any Internet literacy curriculum intervention (research objective: O3-2008).

Chapter 7: Research Design

As stated in the introduction, the research design adopted in this inquiry was primarily influenced by Guba and Lincoln's (1985) conception of Naturalistic Inquiry, which they later acknowledged was a form of Constructivism (Guba and Lincoln, 1998), and to a lesser extent Charmaz's (2006) constructivist conception of Grounded Theory. These are expanded upon in the next sections with reference to Crotty's (1998) four research design elements. Decisions that were taken that influenced the research design are woven into the narrative.

7.1 Crotty's research design elements

Crotty claims that the terminology used in research literature is confusing with epistemologies, theoretical perspectives, methodologies and methods *"thrown together in grab-bag style as if they were all comparable terms"* (Crotty, 1998:3). Crotty suggests these terms represent distinct hierarchical levels of decision making within the research design process. Paraphrasing, a researcher initially adopts a particular stance towards the nature of knowledge (for example, objectivism or subjectivism). This stance or epistemology will underlie the entire research process and governs the particular theoretical perspective selected (for example, postpositivism or interpretivism). The theoretical perspective will be implicit in research questions and dictate the researcher's choice of methodology (for example, grounded theory or ethnography). Finally, this methodology or plan of action will in turn inform the choice of research methods employed (for example, questionnaires or interviews). Crotty (1998) recognises that he omits ontology from the research process but conflates it with epistemology claiming the two are mutually dependent and difficult to distinguish conceptually when discussing research issues: "*to talk about the construction of meaning* [epistemology] *is to talk of the construction of a meaningful reality* [ontology]" (Crotty, 1998:10). Creswell (2003), who bases his research process framework on Crotty's (1998) four research design elements, implies that these four decision making elements lead to a research approach which tends to be more quantitative, qualitative or mixed, primarily dependent on the researcher's initial stance towards the nature of knowledge.

7.2 Epistemology

Epistemology is about *"how we know what we know"* (Crotty, 1998:8) or *"the nature of the relationship between the knower or would-be knower and what can be known"* (Guba and Lincoln, 1998:201). Epistemology is concerned with providing a philosophical grounding for deciding what kinds of knowledge are possible and how we ensure it is adequate and legitimate (Maynard, 1994). It is related to ontology, *"the study of being"* (Crotty, 1998:10) or *"The nature of reality"* (Lincoln and Guba, 1985:37). Crotty (1998) notes that an ontological stance implies a particular epistemological stance and vice versa. He highlights the complementary nature of the terms when he cites the ontological notion of realism, which postulates that realities exist outside of the mind, and its complement objectivism, an epistemological notion asserting that meaning exists in objects independent of any consciousness; if one stance is adopted, so its complement.

Guba and Lincoln (1998) state that constructivist research is relativist, transactional and subjectivist. Adopting a relativist stance means *"there is no objective truth to be known"* (Hugly and Sayward, 1987:278) and emphasises the diversity of interpretations that can be applied to the world. Transactional means that truth arises from interactions between elements of some rhetorical situation (Berlin, 1987), and is the product these interactions and the individuals' thoughts (*'constructed realities'*). Subjectivist research positions the world, including the psychological world of research participants, as unknowable and the role of the researcher is to construct an impression of the world as they see it (Ratner, 2008). It follows that conventional distinctions between epistemological and ontological viewpoints disappear in constructivist research as the *"investigator and the object of investigation are … interactively linked so that the 'findings' are literally created as the investigation proceeds"* (Lincoln and Guba, 1985:207). The epistemological and ontological stance adopted in constructivist research thus differs from a more realist ontology and objectivist epistemology underlying popular conceptions of *'Grounded Theory'* (for example, Glaser and Strauss, 1967; Strauss and Corbin, 1998), where the investigator's role is to discover the truth that lies within the object of investigation, with reality existing independently of any consciousness (Crotty, 1998; Charmaz, 2006). Data are assumed to be objective facts that already exist in the world, and the role of the researcher is to discover these data and determine the theories they imply (Charmaz, 2006). However, Charmaz's (2006) Grounded Theory

research design is consistent with a constructivist epistemology and ontology by *"placing priority on the phenomena of study and seeing both data and analysis as created from shared experiences and relationships with participants and other sources"* (Charmaz, 2006:330) claiming that a more objectivist approach diminishes *"the power of a constructivist approach by treating experience as separate, fragmented and atomistic"* (Charmaz, 2006:331).

For research that claims to be relativist, transactional and subjectivist, the above analysis has several implications: Firstly, social research produces *"multiple constructed realities that can be studied holistically; inquiry into these multiple realities will inevitably diverge (each inquiry raises more questions than it answers)"* (Lincoln and Guba, 1985:37). Secondly, 'humans' should be the primary data collection instrument (Lincoln and Guba, 1985) since it is difficult to envisage non-human instruments that could interact with participants in a way that would reveal their multiple constructed realities. Thirdly, as *"the knower and the known are inseparable"* (Lincoln and Guba, 1985:37) the research participants should be a *"natural setting"* (for example, the context related to the study) since their *"realities are wholes that cannot be understood in isolation from their contexts"* (Lincoln and Guba, 1985:39). Fourthly, as *"every act of observation influences what is seen"* (Lincoln and Guba, 1985:39), the researcher has to be the primary data-gathering instrument to fully understand, respond and describe the complex interactions taking place. Fifthly, as each research participant has their own point of view, the focus of research is on the identification of contextualised meaning of these multiple points of view (Green, 2000) with the goal of creating a joint, collaborative reconstruction from the multiple realities that exist (Guba and Lincoln, 1989b). This implies that the research participants have a co-producer role in the research process and have a role in negotiating outcomes.

7.2.1 Implications for this research

For this research I was the sole investigator ('human instrument') who interacted with all participants. I was thus more able to realise, and holistic study, all students' and academics' constructed realities. As one of the undergraduates' teachers and a colleague of all the academics, it seemed appropriate to conduct the research information collection within my school where most teaching takes place and where all but one academic[29] has their office. The subsequent analysis of information

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[29] Academic 01 had an office in one of the University's libraries

collected formed a tentative reconstruction from the multiple realities that existed at the time the information was collected. Not withstanding the temporal and contextual nature of the information collected, this was presented to participants for comment with the aim that some dialogue might ensue, and the collaborative reconstruction of the multiple realities revealed by my original analysis might evolve in the light of new insights and clarification of views expressed.

7.3 Research theoretical perspective

Crotty defines the theoretical perspective of his research design framework as *"The philosophical stance informing the methodology"* (Crotty, 1998:3) and claims there are potentially many theoretical research perspectives that result from particular epistemological and ontological stances. For example, the theoretical perspectives positivism and post-positivism both have underlying objectivist epistemology, and both could lead to a variety of methodologies including experimental research, survey research and some designs of Grounded Theory.

Charmaz asserts that her constructivist conception of Grounded Theory is *"squarely in the interpretive tradition"* (Charmaz, 2006:330). Schwandt (1994) claimed that constructivism more generally was synonymous with an interpretivist approach. The interpretist approach is frequently attributed to Max Weber and his concept of 'verstehen' meaning *"understanding something in its context"* (Holloway, 1997:2). He opposed the application of the positivist approach to the social sciences since people's actions are not related to the general laws of nature, being highly complex and dependent on their habits, emotions, beliefs and rationales. Hence, unlike the scientific experiment in positivist research, a person may respond in a number of ways to a particular stimulus since people's actions as context-bound and dependent on time, location and the minds of those involved (Holloway, 1997). In other words, *"People create and associate their own subjective and intersubjective meanings as they interact with the world around them"* and thus interpretive research *"attempt*[s] *to understand phenomena through accessing the meanings participants assign to them"* (Orlikowski and Baroudi, 1991:5), although ultimately the researcher cannot replicate the experiences of their research participants (Charmaz, 2006) or be divorced from the phenomenon they are studying (Holloway, 1997). Weber claims that all social research is inherently biased, and complete neutrality and objectivity are impossible to achieve since the values of the researcher and the participants are always present (Holloway, 1997).

For research that claims to be interpretivist, the above analysis has two main implications:

7.3.1 Reflexivity

Holloway (1997) and Charmaz (2006) claim that interpretive research needs to be reflexive. The interpretive position posits knowledge as a social and cultural construction and hence the researcher needs to take account of how their assumptions and views have impacted on the research process and products in order to interpret the complexities of the multiple realities involved. According to Levy, this is *"not in order to suspend subjectivity, but to use the researcher's personal interpretive framework consciously as the basis for developing new understandings"* (Levy, 2003:94). Reflexive practice aligns with Naturalistic Inquiry (Lincoln and Guba, 1985) in that it addresses the hermeneutics of research practice (Levy, 2003). Ultimately, *"… being reflexive in doing research is part of being honest and ethically mature in research practice"* and as such requires researchers to *"stop being 'shamans' of objectivity"* (Ruby, 1980:154) and assuming value-free positions of neutrality. Ruby describes this approach as *"an obscene and dishonest position"* (Ruby, 1980:154).

When undertaking reflective practice, issue of power frequently come to the forefront. Aléx and Hammarström (2008) refer to Foucault's studies which highlight issues of power related to the dominant discourses that permeate society and in particular the importance of uncovering discourses in everyday practices. They cite the research interview where both the interviewer and the interviewee will act in certain ways according to their perception of each others' power. This might result in the interviewer highlighting certain aspects of the interview, whilst repressing others. Issues relating to age, education, gender, ethnicity, theoretical position and so on may also influence the dynamics of the interview. Feminist qualitative researchers in particular stress the importance of being conscious of power hierarchies within interview situations and *"Despite the best intentions, the interview situation may be experienced as, and may in fact be, a form of abuse. Practising reflexivity can be one way to minimize such experiences in interview situations"* (Aléx and Hammarström, 2008:170). However, reflexivity should be practiced by the researcher during all stages of the research process and at all levels. Alvesson and Sköldberg indicate four levels of reflexivity that might be critiqued:

Aspect / level	Focus
Interaction with empirical material	Accounts in interviews, observations of situations and other empirical materials
Interpretation	Underlying meanings
Critical interpretation	Ideology, power, social reproduction
Reflection on text production and language use	Own text, claims to authority, selectivity of the voices represented in the text

Table 7.1 Levels of reflexivity (Alvesson and Sköldberg, 2009:273)

Hence a reflexive researcher would attempt to explicitly identify viewpoints held that may affect the researcher's interpretations at the micro level of the research narrative and empirical material collected, and also at the macro level of the underlying interpretations. This would include the reflexive researcher stating what has been emphasised, downplayed and missed out in the research. The main tool used by reflexive researchers is the research diary, where the researcher reflects upon on different aspects of doing the research and their role within the construction of research knowledge (Blaxter et al., 2001).

7.3.2 Evaluation

As the products of an interpretist inquiry are provisional and context-specific, positivist research evaluation criteria like internal validity, reliability, generalizability (external validity) and objectivity, do not carry the same connotations (Angen, 2000). Angen (Lincoln and Guba, 1985; 2000) identifies two broad approaches that have been adopted by interpretivist researchers to evaluate the merit of their research: a subtle form of realism and a complete reconfiguration of the positivist evaluation criteria.

7.3.2.1 Subtle Realism

This approach involves the development of a parallel set of interpretative evaluative criteria to that used to evaluate positivist research (for example, American Evaluation Association, 2005) and is a subtle form of realism (Hammersley, 1995). This makes explicit, or sometimes it is left implicit, the reformulation of positivist evaluation criteria for interpretative research. For example, Hammersley (1995) redefines validity as confidence and also suggests researchers consider the

plausibility, relevance and importance of their research. Similarly, Lincoln and Guba (1985) define a set of trustworthiness criteria consisting of credibility, transferability, dependability and confirmability, paralleling more positivist notions of internal validity, external validity, reliability and objectivity respectively. Specific procedures are frequently suggested aimed at increasing the validity of interpretative research have been criticised as harking back to realist and positivist roots (Angen, 2000). For example, member checking, returning analysis to participants for confirmation of accuracy, has been criticised for assuming a fixed truth (Sandelowski, 1993), reflexivity has been criticised as creating an illusion of objectivity (Smith, 1994), triangulation, the use of multiple methods, investigators or sources, has faced similar criticisms to member checking (Silverman, 2001) and peer review has been criticised for downplaying the central involvement of the principle researcher (Morse, 1994).

A central tenet of both interpretivist and positivist Grounded Theory is that the research must have credibility, and to achieve this, the researcher must have intimate familiarity with the setting and topic. This was conceived by Lincoln and Guba (1985) as 'prolonged engagement', where a researcher invests sufficient time to become *"orientated to the situation"*, open to the multiple influences and someone who is trusted, and 'persistent observation', where the researcher focuses in detail on those characteristics and elements that are relevant to the inquiry. However, Lincoln and Guba (1981) warn of 'going native', where researchers who spend considerable time in the field lose their *"detached wonder"* (Lincoln and Guba, 1985). There is no guarantee that this will not happen in this research, although Lincoln and Guba (1985) do mention that being aware is a *"great step toward prevention"*. In addition to credibility, Charmaz (2006) stresses that the resonance and usefulness of some research also depends upon the originality of its outcomes. For Charmaz, a researcher should be addressing questions like *"Has your research achieved intimate familiarity with the setting or topic?"* (credibility), *"What is the social and theoretical significance of this work?"* (originality), *"Have you revealed both luminal and unstable taken-for-granted meanings?"* (resonance) and *"Can your analysis spark further research in other substantive areas?"* (usefulness).

7.3.2.2 Complete reconfiguration

This approach is a complete reconfiguration of the positivist evaluation criteria for interpretative research. It *"views interpretative knowledge claims and truth as*

negotiable features" (Angen, 2000:386) and the *"trustworthiness or goodness of a piece of research* [as] *a continuous process occurring within a community of researchers"* (Angen, 2000:387). Hence, rather than focussing on the outcome of the interpretivist inquiry, it tends to focus on the inquiry process itself (Schwandt, 1997). As Smith points out, *"The task for interpretivists is to elaborate what lies beyond epistemology and beyond the idea that there are special, abstract criteria for judging the quality of research"* (Smith, 1993:150), especially because *"interpretivist[s] see criteria not as abstract standards, but as an open-ended, evolving list of traits that characterize what we think research should do and be like"* (Smith, 1993:153). Emphasising that inquiry evaluation is a continuous process, Angen (2000) uses the term 'validation' as opposed to 'validity' and categorises these reconfigured approaches as ethical validation and substantive validation.

Since defining their trustworthiness criteria, Lincoln and Guba have repositioned their approach to validation. From one which was a subtle form of realism, they have reconfigured it to one that empowers participants, claiming this better captures "*the quality of a constructivist approach"* (Guba and Lincoln, 1989a). They propose four types of validation that should be pursued. Firstly, the research should consider Ontological Authenticity of the research conducted so that *"over time, everyone* [including the researcher] *formulates more informed and sophisticated constructions and becomes aware of the content and meaning of competing constructions"*. Secondly, the research should have Educative Authenticity and all participants should become more understanding and tolerant of each other's perceptions. Thirdly, the research conducted should have Catalytic Authenticity and sufficiently motivate participants that they want to act. Finally, feeling motivated enough to act lacks Tactical Authenticity if the participants are not empowered to act.

7.3.3 Implications for this research

During the process of conducting this research, I aspired to keeping a research diary which included reflections about from the information collection phases, my role in the process and tentative underlying meanings induced. In addition, I aspired to keep reflective notes during the subsequent information analysis phases about possible assumptions I was making. By reflecting upon recent interactions and the information analysis just conducted, the aim was to capture thoughts that might otherwise be forgotten. These included more micro-level reflections about the power relationship between me and the students, and me and my superiors. In addition,

more macro-level reflections tended to take place as the thesis was being written-up, for example how my choice of information collection 'tools' affected the outcomes. Where appropriate, these reflexive reflections are indicated in the thesis narrative.

This thesis will be read by those who come from both positivist and interpretative traditions. Hence, to convince readers of the value, trustworthiness and authenticity of this research, Guba and Lincoln's (1989a) authenticity criteria, Lincoln and Guba (1985) trustworthiness criteria and Charmaz (2006) criteria for Constructivist Grounded Theory studies have been applied, whilst still maintaining some notion of an interpretivist theoretical perspective when considering the latter two criteria. For example, triangulation was not used in this study to judge the reliability of the research undertaken, but to support the credibility and dependability of the research undertaken (see Section 7.5.5). That is, in terms of the outcomes of this research, I will consider the credibility, transferability, dependability, confirmability, credibility, originality, resonance and usefulness, and focusing on the inquiry process itself, I will consider its ontological, educative, catalytic and tactical authenticity.

7.4 Methodology

Methodology is the *"strategy, plan of action, process or design"* lying behind the choice and use of particular research methods (Crotty, 1998:3). Many different methodologies may have the same underlying theoretical perspective and each methodology may be implemented using different combinations of research methods. More so, some methodologies may be conceived by different investigators as originating from different theoretical perspectives. For example Grounded Theory, classified as a methodology by Crotty (1998) alongside experimental research, ethnography and action research, is viewed from both interpretive and positivist theoretical perspectives (Charmaz, 2006).

Charmaz (2006) Constructivist Grounded Theory and Lincoln and Guba's (1985) constructivist Naturalistic Inquiry can be considered as methodologies (Crotty, 1998). The aim of constructivist inquiry is to interpret research participants' meanings, which are themselves interpretations, and produce a 'substantive theory' (Charmaz, 2006) or 'working hypotheses' (Lincoln and Guba, 1985). However, as constructivist inquiry is interpretative, any theorising done is dependent upon the researcher's views and cannot stand outside of them (Charmaz, 2006). Hence, any

substantive theories or working hypotheses developed should 'emerge' in the sense that they are induced or 'grounded' on data generated during the research process (Lincoln and Guba, 1985; Cohen et al., 2001; Charmaz, 2006). They should allow *"for indeterminacy rather than seeking causality"* and give *"priority to showing patterns and connections rather than linear reasoning"* (Charmaz, 2006:126). Guba and Lincoln refer to this *"replacement concept for causality"* as "mutual simultaneous shaping" where it is impossible to distinguish causes from effects as *"everything influences everything else, in the here and now"* (Lincoln and Guba, 1985:151). Within any rhetorical situation, many factors interact to simultaneously produce an outcome that affects all parties. Hence, within the research context, both the researcher and the research participants' views and understandings are shaped as the data collection proceeds.

For constructivist research, the above analysis has several implications. Firstly, the substantive theories or working hypotheses that are developed are ideographic. That is, they apply to particular cases rather than represent law-like generalisations, since the interpretations made and theorising achieved will be specific to the context and researcher (Lincoln and Guba, 1985; Charmaz, 2006). Secondly, research design is emergent (see Introduction). Thirdly, as research participants and the researcher are in a state of *"mutual simultaneous shaping"*, the researcher the outcome of data collection recognises the complex interactions that have taken place and temporal nature of any findings. Fourthly, Guba and Lincoln argue for the legitimate use of intuitive or tacit knowledge at all stages of the research process since *"the nuances of the multiple realities can be appreciated only in this way; because much of the interaction between investigator and respondent or object occurs at this level; and because tacit knowledge mirrors more fairly and accurately the value patterns of the investigator"* (Lincoln and Guba, 1985:40).

The above epistemological, theoretical and methodological implications are central to the methodological procedures adopted by Guba and Lincoln (1985) and Charmaz (2006). The following two sections summarise their procedures and the final third sections highlights the similarity and differences between methodologies:

7.4.1 Naturalistic Inquiry

Guba and Lincoln (1985) propose that Naturalistic Inquiry should be conducted in a natural setting by the researcher, since the research context is integral to any meanings induced. The researcher builds upon their tacit knowledge using researcher-centred methods such as interviews, observations and document analysis in an iterative cycle of four elements: purposeful sampling, inductive analysis, grounded theory development and emergent design next-step decision making. The first three elements have much in common with the methodological approach espoused by Glaser and Strauss's conception of Grounded Theory (1967), although Glaser (2004) disputes the two methodologies coincide. The iterations continue until no new data emerges and the theory stabilizes. Time or research constraints may also curtail the research. Throughout, the researcher should engage in member checking and ensure minority views are fairly represented. To enable others to construe the applicability of the research to their context, a case study report is developed. Finally, the trustworthiness of the research is critically reviewed by a panel of local respondents in the study having been continually conducted by the researcher throughout the study.

7.4.2 Constructivist Grounded Theory

The methodological procedures of Charmaz's (2006) Constructivist Grounded Theory are primarily based on Glaser and Strauss's (1967) Grounded Theory. The iterative procedure begins with the selection the most appropriate data-gathering method for producing rich, social contextual and situational data. More typically, intensive interviewing, and the use of elicited and extant texts are employed. The data collected is then 'coded' (see Section 7.5.3). Ideas or hunches that become apparent during this process are noted in the form of memos. Theoretical sampling is used to obtain further selective data to refine and fill out major codes or categories emerging from the data. The iterations continue until theoretical saturation, when no more properties of the category appear during data collection. Throughout this process the researcher used constant comparison (Section 7.5.6) and memo writing techniques. The former helps ensure data is not forced into codes, codes into categories and categories into concepts, and the latter enables data to be compared at increasingly higher levels of theory and also to direct further data gathering. Finally, the researcher conducts a literature review and evaluates upon the research process and products.

7.4.3 Comparison between methodologies

The methodological procedures adopted by Guba and Lincoln (1985) and Charmaz (2006) show much similarity. Both recommend the use of researcher-centred research methods, both view data collection as a series of similar iterative cycles, both emphasise that theories should be grounded in the data, and both promote purposeful sampling and constant comparison techniques. At a procedural level, differences in emphasis are apparent in the timing of the literature review and the use of established Grounded Theory techniques. The timing of the literature review within an inquiry is a tension frequently discussed in the qualitative literature (Heath and Cowley, 2004). Glaser (1978) describes the proper pacing of reading the literature so as *"not to contaminate one's effort to generate concepts from data with preconceived concepts that may not really fit, work or be relevant"* (Glaser, 1978:31). In contrast Strauss and Corbin (1998) consider the use of the literature early in the research process to stimulate theoretical sensitivity and generate hypotheses. The extent to which Grounded Theory data analysis methods are utilised within the two methodologies differs. Guba and Lincoln (1985) suggest that the constant comparison technique should be the primary Grounded Theory technique, whereas Charmaz (2006) advocates the selective use of the full range of Grounded Theory techniques (for example, Glaser and Strauss, 1967; Glaser, 1978).

Beyond procedural differences, Glaser has made extensive criticisms of Charmaz's (2006) conception of Grounded Theory (see Glaser, 2002) and Guba and Lincoln's (1985) Naturalistic Inquiry (see Glaser, 2004) claiming they corrupt and unnecessarily remodel Grounded Theory. Many of his criticisms are at a paradigmatic level and highlight epistemological and theoretical differences, rather than methodological differences. According to Guba and Lincoln, paradigms are a systematic set of beliefs and methods that *"represent a distillation of what we think about the world (but cannot prove)"* (Lincoln and Guba, 1985:15) . Hence, Guba and Lincoln (1985) would view any paradigmatic differences as incommensurable. In addition, Glaser (2002) concedes that many differences between his and Charmaz's (2006) approaches to Grounded Theory maybe due in part to their different use of the interview research method. Charmaz's (2006) research background has necessitated the use of prolonged, in-depth interviews involving *"active listening"* (Egan, 1998) whereas Glaser (2002) described much Grounded Theory interviewing as *"passive listening"*.

7.4.4 Implications for this research

The following sections and chapter will provide the specific methodological details of the research conducted, but suffice to say that this inquiry adopted researcher-centred methods which were entirely qualitative and in which I collected all the information from participants primarily via prolonged, in-depth interviews involving active, as opposed to passive, listening. However, data collected by a colleague in a parallel collaborative quantitative project and my own teaching were also included in the analysis as a form of triangulation. The information collected from undergraduates was in four iterative cycles (Level 1 focus groups, Level 1 research conversations, member checking and finally Level 3 research conversations) and from academics in two cycles (research conversations and member checking). The subsequent information analysis techniques used were those promoted by Charmaz (2006) and these helped ensure any tentative hypotheses were grounded in the information collected. The techniques employed included constant comparison and hermeneutic-dialectic as described by Guba and Lincoln (1985; 1989; 1990; 2001). As stated in the Introduction, this research was delimited to a particular cohort of undergraduates and those academics who taught undergraduates when the undergraduate research conversations and focus groups took place. Hence, this research adopted more of a convenience, as opposed to purpose or theoretical, sampling strategy. This was partly due to wanting to ensure all participants' views and understandings were represented in this research and the need to collect information from undergraduates soon after they had begun their studies. More theoretical sampling techniques would have necessitated considerable information analysis prior to the purposeful selection of subsequent participants. Finally, the literature associated with this research was consulted throughout the study. Due to working on other research studies and preparing for my own teaching, no attempt was made to avoid reading the literature associated with this research. Indeed the study itself was partly inspired by my reading of Livingstone's Children Go Online studies. However, a more focussed review of the literature took place during the months before the Level 3 research conversations took place. Hence, the study's conclusions were mostly formed after the final review of the literature.

7.5 Methods

Crotty defines research 'methods' as *"the techniques or procedures used to gather or analyse data related to some research question or hypothesis"* (Crotty, 1998:3). There are many potential research methods that might be adopted in a particular methodology, although some may be more appropriate than others in adhering to the methodology's underlying theoretical perspective. For example, the experimental research method is unlikely to have a role in constructivist research, although the use of quantitative research methods per se may have a role in constructivist research. Rodwell (1998) emphasises that whilst it is not possible to hold both positivist and interpretive assumptions about inquiry, it is possible to conduct both qualitative and/or quantitative research, whilst still adhering to the epistemological positions of each theoretical perspective. However she then notes that whilst this might be possible, certain issues will need to be addressed. For example, issues relating to single (positivist inquiry) versus multiple (interpretative inquiry) realities, the relationship between the researcher and the participants (as a neutral observer in positivist inquiry and as someone who jointly constructs meaning in interpretive inquiry) and the generation of nomothetic (law-based) versus ideographic (symbols-based) knowledge.

The following sections summarise the key issues related to the research methods relevant to Naturalistic Inquiry (Lincoln and Guba, 1985) and Constructivist Grounded Theory (Charmaz, 2006).

7.5.1 Interviewing

The most common qualitative data collection method is probably the interview (Mason, 2002) and the one highlighted by Guba and Lincoln (1985) and Charmaz (2006). Charmaz (2006) states that intensive qualitative interviewing fits Grounded Theory methods particularly well since both are potentially open-ended yet directed, shaped yet emergent and paced yet unrestricted. Mason (2002) identifies three types of qualitative interviews (in-depth or intensive, semi-structured and loosely structured or unstructured) each typically involving an *"interactional exchange of dialogue"*, having a relatively informal style, being *"thematic, topic-centred, biographical or narrative"* and operating from the premise that, as knowledge is situated and contextual, the purpose of the interview *"is to ensure that the relevant contexts are brought to into focus so that situated knowledge can be produced"*

(Mason, 2002:62). Mishler (1986) claims that most research interviewing is conducted with a restricted conception of the interview process, and both Mason (2002) and Charmaz (2006) claim that many qualitative researchers inappropriately choose interviewing as a primary data collection method. Mason (2002) cites nine reasons why a researcher might select qualitative interviewing as a primary data collection method. These include their ontological position, for example they are interested in participants' perceptions and their epistemological position for example researcher-participant dialogue is the only meaningful method for generating data. However, Mason (2002), Charmaz (2006) and Silverman (2000) all warn of the epistemological implications of the latter approach. Essentially, interviews do not reproduce realities. Qualitative interviews are typically reliant on participant's capacities to verbalise, interact, conceptualise and remember (Mason, 2002). In addition, participants' 'stories' provide accounts from particular points of view to serve a particular purpose, including tacit conversational rules, professional expectations about what 'should' be said and exercising subtle power relationships (Charmaz, 2006).

7.5.2 Focus Groups

Focus groups are a popular, but relatively recent, technique for gathering qualitative research data (Morgan, 1996). Williams and Katz define them as a *"small gathering of individuals who have a common interest or characteristic, assembled by a moderator, who uses the group and its interactions as a way to gain information about a particular issue"* (Williams and Katz, 2001). Although sometimes chosen because they save time compared to one-to-one interviews (Reed, 1997), with Agar and MacDonald (1995) describing them as the 'fast food' form of qualitative research, their primary advantage is to explicitly use the group's interactions to produce data (Barbour and Kitzinger, 1998) and their ability to facilitate individual responses in response to the contributions of other group participants (Morgan, 1996; Glitz, 1998). Morgan (1996) elaborates on the latter claiming that focus groups can be more than the sum of individual interviews because participants feel the need to explain themselves and query each other and Doyle claims they have potential "*accelerate the natural social processes by which individuals compare opinions with each other*" (Doyle, 2004a). This in turn leads to additional data related to the extent of consensus and diversity. A further benefit is that focus groups also provide the opportunity for the researcher to ask questions related to the group's previous responses. For example, asking them to compare their previously stated

experiences and views, rather than inferring these after the focus group (Morgan, 1996). However, the potential for interaction amongst the focus group members is also one of the problematic areas of conducting focus group research data collection. In contrast with Morgan's (1996) studies, Agar and MacDonald (1995) found that focus groups reduced the burden on participants to explain themselves and the researcher's interactions had a tendency to disrupt group interactions rather than facilitate them. In addition, Reed (1997) highlighted issues related to the additional complexity of coding the focus group discussions (for example, associating comments to individuals), the additional complexity of the data analysis (for example, focus group participant's views tended to change as the discussions progresses) and coping with formal and informal power relationships (for example one of Reed's focus groups became little more than a one-to-interview as one participant dominated the discussions). Reed concludes that focus groups may appear to be a *"quick and easy shortcut … but we would argue that like all shortcuts, this approach provides a restricted view of the terrain being travelled"* (Reed, 1997:770).

7.5.3 Qualitative coding

Typically in qualitative research, once the data has been collected, transcribed and read through, the transcripts are then coded (Creswell, 2003). Essentially, coding involves breaking the transcript texts into 'chunks' and reassembling these 'chunks' in a meaningful way. The precise method for breaking and assembling these 'chunks' is dependent upon the qualitative research strategy employed (Creswell, 2003). Lincoln and Guba (1985) Naturalistic Inquiry stops short of giving detailed coding instructions, suggesting researchers ground their theories in the data by employing hermeneutic-dialectic (see Section 7.5.4) and constant comparison techniques (see Section 7.5.6). However, the data analysis techniques espoused by Grounded Theory provides more detailed guidance.

Glaser and Strauss (2006) note the existence of two dominant qualitative coding approaches. The first approach is more 'deductive' and involves converting data to some quantifiable form ('codes') to test a priori hypothesis. The second approach is more 'inductive' and involves coding the data first to generate a posteriori hypothesis. They promote a third approach for Grounded Theory that combines the *"explicit coding procedures of the first approach and the style of theory development of the second"* as a series of iterative steps until (Glaser and Strauss, 2006:102).

This involves initially free or open coding the transcripts. That is, 'chunks' of text (words, phrases, incidents or lines of text, depending on the research being conducted) are assigned a code (a shorthand label) that constitutes what the researcher understands it means or represents. Initial codes are tentative and stick closely to the data rather than representing some pre-existing concepts. Constant comparison techniques (Section 7.5.6) are used to ensure any repeated codes 'fit' the data. Inevitably, initial coding produces numerous codes that need to be synthesised. The second 'focused' coding phase involves using the most significant or frequent initial codes to recode the transcripts (Charmaz, 2006). Constant comparison techniques are used again to ensure the codes assigned are grounded in the data. Codes that do not 'fit' the data are modified or omitted. The focused codes begin to crystallise meanings and actions in the data. Codes may be gathered together to form categories or subcategories. The third and final coding phase involves the creation of theoretical codes that bring together the substantive focus categories into tentative hypotheses and eventually an overall theory. To support theoretical coding Glaser (1978) proposes a series of coding families that include the 'Six C's': Causes, Contexts, Contingencies, Consequences, Covariances and Conditions. These coding families are prompts for the researcher *"to tell an analytic story that has coherence …* [and] *move your analytic story in a theoretical direction"* (Charmaz, 2006:63).

Strauss and Corbin (1990) propose another type of coding that overlaps and replaces many aspects of the focused and theoretical coding phases. 'Axial' coding enables the data to be brought back together after initial open coding to form the basis of a theory. Axial coding entails specifying the properties and dimensions of a category, and its relationship to other categories, to form *"a dense texture of relationships around the 'axis' of a category"* (Straus, 1987:64). Strauss and Corbin apply a set of technical terms and techniques to make the relationships between categories visible to the researcher. In one organising scheme they specify that the research considers (amongst others) the conditions, actions/interactions and consequences of categories formed. Although Charmaz does not dismiss this coding phase, she warns that *"at best, axial coding helps clarify and to extend the analytic power of your emerging ideas"* and *"At worse, it casts a technological overlay on the data – and perhaps your final analysis"* (Charmaz, 2006:63).

7.5.4 Hermeneutic-dialectic techniques

Guba and Lincoln (1985; 1989; 1990; 2001) place 'hermeneutic-dialectics' at the heart of constructivist inquiry. They summarise this as the *"… process by which constructions entertained by the several involved individuals and groups (stakeholders) are first uncovered and plumbed for meaning* [hermeneutics] *and then confronted, compared, and contrasted in encounter situations* [dialectics]*"* (Guba and Lincoln, 2001). Guba describes this process in more detail:

> *"The constructivist proceeds in ways that aim to identify the variety of constructions that exist and bring them into as much consensus as possible. This process has two aspects: hermeneutics and dialectics. The hermeneutic aspect consists in depicting individual constructions as accurately as possible, while the dialectic aspect consists of comparing and contrasting these existing individual (including the inquirer's) constructions so that each respondent must confront the constructions of others and come to terms with them. The hermeneutic/dialectic methodology aims to produce as informed and sophisticated a construction (or more likely, constructions) as possible".*
> (Guba, 1990:26)

Hermeneutics is categorised by Crotty (1998) as a theoretical research perspective, as an *"ancient discipline"* by Reason and Rowan (1981) and a methodology by Lincoln and Guba (1998), although in Naturalistic Inquiry, Lincoln and Guba (1985) treat this as one of several research methods that supports their research design. The most important principles of hermeneutics is the *'hermeneutic circle'* (Reason and Rowan, 1981) where in order to understand the whole, one has to understand the constituent parts, but to understand the constituent parts, one has to understand the whole. In contrast, dialectics is *"the study of internal contradictions"* (Kvale, 1996:55) and is a process that opposes hermeneutics in the sense that hermeneutics is attempting to converge meanings and dialectics is attempting to expose contradictions in meanings formed (Kvale, 1996). Hence, Lincoln and Guba's conception of hermeneutic-dialectics and their constructivist methodology, is both iterative and recursive.

7.5.5 Triangulation

Seeking to corroborate one source and method with another, or enhance the quality of the data through some form of "*triangulation*" of methods (Mason, 2002) is a technique of research to which many subscribe, but few practice (Cohen et al., 2001). The former motive in qualitative inquiry has been seen as a fallible path to validity since it implies a 'true fix' on reality and has "*analytical limitations*"

(Silverman, 2000). Triangulation also implies that "*there is one, objective and knowable social reality*" (Mason, 2002). Hence, the use of triangulation techniques for the purposes of validating the findings has been seen as philosophically problematic, but critics of this technique do not dispute its validity for augmenting findings (Silverman, 2000; Mason, 2002). This view is compatible with Lincoln and Guba's Naturalistic Inquiry (1985) methodology that underpins this research.

7.5.6 Constant Comparison

The constant comparison technique is a generic data analysis technique common to many research designs including Lincoln and Guba's Naturalistic Inquiry (1985) and Glaser and Strauss's Grounded Theory (2006). Variations include 'Negative Case Analysis' (Lincoln and Guba, 1985) or 'Deviant-Case Analysis' (Silverman, 2000). It is a systematic procedure for ensuring the theories or working hypotheses developed are grounded in all the data collected. The technique essentially involves starting:

> "… with a small batch of data. A provisional analytic scheme is generated. The scheme is then compared to other data, and modifications made in the scheme as necessary. The provisional analytic scheme is constantly confronted by 'negative' or 'discrepant' cases until the researcher has derived a small set of recursive rules that incorporate all the data in the analysis".
> (Mehan, 1979)

'Negative Case Analysis' (Lincoln and Guba, 1985) or 'Deviant-Case Analysis' (Silverman, 2000) are thus particular constant comparison techniques where the researcher actively seeks negative or deviant cases in order to refine the working hypothesis being developed. Through the process of constant comparison, gaps in the data analysis may emerge requiring the purposeful selection of participants that may provide illuminating examples to reinforce or amend any theory being developed. This is labelled as 'theoretical sampling' by Glaser and Strauss (1967; 2006) and 'purposeful sampling' by Lincoln and Guba (1985).

7.5.7 Use of quantitative data

Chapter 1 has already referred to three sets of quantitative data gathered at the same time this research was conducted using the Survey of Communication Technology Use (Cox et al., 2008), a Learning Style Inventory (Kolb, 1976) and a Approaches and Study Skills Inventory for Students (ASSIST) questionnaire (Entwistle, 1997). The issues raised by Rodwell (see above) related to the use of

quantitative data in constructivist research need to be addressed. The results from the survey, inventory and questionnaire give the impression of a single 'true' reality with nomothetic conclusions (for example, students prefer website X), whereas more qualitative techniques produce more complex interpretations, consisting of multiple viewpoints, even amongst the same individuals (for example, students may have many different favourite' websites depending on the context, their mood, the purpose, who was asking, and so on). Lincoln and Guba (1985) state that use of quantitative data within constructivist inquiry is commensurate providing the researcher acknowledges the epistemological underpinnings that the quantitative data used:

> "It is not crucial that naturalistic inquiry be carried out using qualitative methods exclusively or at all (although mounting a naturalistic inquiry by purely quantitative means stretches the imagination) ... but the inquirer who does not adopt, however provisionally, the axioms of the naturalistic paradigm cannot be said to be doing naturalistic inquiry"
> (Lincoln and Guba, 1985:250).

Furthermore, from a positivist viewpoint issues have been raised about the use of Kolb's Learning Style Inventory and Entwistle's ASSIST. Both have been criticised for their unreliability, although Entwistle's ASSIST fares better at indicating a HE student's core learning approaches (Coffield et al., 2004). Coffield also notes that Entwistle's ASSIST has been criticised for its unquestioned preference for the deep approach, whereas strategic and even surface approaches may be effective in some contexts. Moreover, the tests are frequently used to identify students' learning styles and approaches yet both were originally intended to support students' metacognition reflections and supporting activities. It follows that, within this research the results of both tests have been treated tentatively.

7.6 Implications for this research

The primary information collection method used in this research was inspired by Charmaz's (2006) conception of an intensive, open-ended, semi-structured qualitative interview. As emphasised by Mason (2002), Charmaz (2006) and Silverman (2000), researchers sometimes mistakenly use research interviews as a way of reproducing 'realities', whereas they can only give an insight into participants' recollections and perceptions of experiences and understandings. Hence, the research interview or research conversation aligns well with a study that aims to explore undergraduates' and academics' perceptions.

Research conversations were chosen since they are the only meaningful method of gleaning people's perceptions of some abstract concept (Charmaz, 2006). Whilst the reflexive stance adopted towards this research will not negate issues relating to the use of research conversations for collecting information, it will help ensure the issues are more transparent to the reader and an integral part of the analysis. A further form of research conversation was used just before the undergraduates began their formal studies in my school. To capture undergraduates' views and understandings in the couple of days before they began their studies, I held focus groups with all but two undergraduates in the research cohort. This was primarily for pragmatic reasons, but also because the interactions between focus group participants might act as a catalyst for exploring the diversity of potential views and understandings held (Doyle, 2004a).

The information analysis techniques employed in this study were primarily based on those described by Charmaz (2006) who was influenced by the techniques proposed by Glaser and Strauss (1967; 1978). However, Glaser's (1978) coding families were not used since a previous study into school teachers' perceptions of being Internet literate found them cumbersome. However, this study endeavours to adhere to the principles of constant comparison (including negative or deviant-case analysis) and hermeneutic-dialectics that are at the heart of Naturalistic Inquiry and Grounded Theory. In addition, a form of triangulation was employed primarily to augment the study's findings as opposed to validate them. Comparisons were made between the information collected from research conversations, focus groups and parallel Survey of Communication Technology Use, ASSIST and LSI surveys. Any consensus identified was subject to delimitations as highlighted in a constructivist methodology (Lincoln and Guba, 1985). Conversely, any disagreements that were identified were the source of discussion and additional insights, not potential invalidity.

Chapter 8: Applying the constructivist research design

This research was inspired by Guba and Lincoln's (1985) conception of Naturalistic Inquiry and Charmaz's (2006) constructivist conception of Grounded Theory. The rationale for the various research design decisions was indicated in the previous chapter. This chapter describes the research conducted in more detail and indicates any variance from the overall research strategy. On this basis, this chapter describes a four phase research design to gather and analyse information related to undergraduates, and a two phase research design to gather and analyse information related to academics. In addition, this chapter provides details of the ethical procedures followed, the parallel collaborative research study and additional information collected from my teaching.

8.1 Ethics

My school implements the University's research ethics review procedure which applies to all research carried out by staff or students involving 'human participants'. This consists of completing an ethics application form and, for research which is classified as 'low risk', participant consent forms and information sheets (see Appendices). In addition to administrative details, the application form briefly summarised the study's aims, objectives and methodology, and then identified any *"potential for physical and/or psychological harm/distress to participants"*. I said that the participants in this research would suffer no physical harm, but recognised that the research conversations and focus groups had the potential for 'psychological harm'. Hence I stressed that *"the aim of the interviews and focus groups* [was] *to listen to participants without judgement or assessment"*. I also recognised the potential for students' comments to influence my views of their academic abilities. Hence it was necessary to emphasise on the application form and participant information sheets that any comments made would not affect their academic grades. In addition, I recognised that focus group participants might disclose to third parties what was said during the focus groups. Hence, it was also necessary to state on the application form and participant information sheets that *"participants will be asked to respect the confidentiality of all comments made by others"*. The ethics application form also required various other statements to be made regarding the confidentiality of any data collected, how the data would not identify individuals and how any

associated documents and audio files would be stored in a secure place. All documentation was reviewed by the research student's supervisor and two academics not related to the research. This was approved on 17th August 2008.

Since conducting the research, other ethical issues arose that were not anticipated when the ethics application form was submitted. These primarily relate to the anonymity of the participants. Firstly, the use of codes to hide the identity of individuals was deemed insufficient. It became apparent that the text that described the analysis of the information collected could indirectly identify individuals. For example, by a process of elimination, an individual could be identified or, when directly quoting what participant said, they might indirectly refer to an individual or group. This necessitated either removing some direct quotes or deliberately making the surrounding narrative more abstract. Secondly, Dr. Andrew Cox wanted to be identified in any documentation related to the outcomes of this study. To accommodate his wishes and to maintain consistency in presentation, he agreed that I could simply identify him here as Academic 03.

8.2 Academics

In line with the research design, research conversations were considered the most effective method to explore the research questions related to the academics in my school. A three phase research design was originally proposed. The first phase consisted of research conversations with all academics that taught undergraduates and, for pragmatic reasons, were available between September and November 2008. These research conversations were intended to provide a diversity of views and understandings that would be pursued in a second phase of research conversations with specific academics, whose views and understandings needed further exploration. A final third member checking phase was also proposed. In total 17 of 19 potential academics were involved in this research, the remaining two being on study leave. All research conversations took place in the academic's own office, although the research conversation with Academic 06 took place at the academic's home due to their time constraints. After, reassuring each academic about confidentiality and anonymity, and asking them to sign an ethical consent form, the following statement was read out:

I am researching academics' and students' perceptions of what it means to be literate in the so called Digital Age. During this interview I am interested in your experiences, perception and pedagogies for being, what might be termed, 'Internet literate'. By Internet, I actually mean computer applications (maybe on a PC, but could be on a mobile phone or PDA) that access other computer applications (usually on a server), frequently in different parts of the world, via networks using a agreed protocol (TCP-IP)

This was followed by questions adapted from the following list. That is, the list represents a set of potential prompts as opposed to survey interview or semi-structured interview schedule. As with the student focus groups and research conversations, the prompts consisted of a principal question followed by a subsidiary question (see Doyle, 2004b). It was reiterated throughout the research conversation that the primary focus of this research was undergraduates within my school.

Principal question	Subsidiary question	Main research question addressed in 2008
1. If the Internet disappeared tomorrow, would you miss it? What would you miss?	To what extent do you feel you will be using the Internet in the future?	RQ7-2008
2. How might you describe someone who is 'Internet literate'?	Would you describe an 'Internet literate' student differently? What would be your perception of an Internet literate university? How would you describe a good or effective Internet user … someone who was Internet literate? What skills or understandings do you think people need be Internet literate?	RQ11-2008
3. Describe a task where you feel you are being 'Internet literate'?	What do you feel is the most difficult aspect of using the Internet or its related technologies?	RQ8-2008
4. How 'Internet literate' would you consider yourself? Please explain?	Do you feel you now have all the Internet skills and understanding you need?	RQ8-2008
5. What do you think students use the Internet, and its related technologies, for?	How might students' use of the Internet differ than your own?	RQ9-2008
6. How 'Internet literate' do you feel our students need to be?	What level of Internet skills and understanding do students need to successfully accomplish your module's learning outcomes?	RQ10-2008
7. Whose role do you feel it is to facilitate Internet literate students? Why?	What do you feel is your role in facilitating Internet literate students? What do you feel is your contribution to facilitating Internet literate students?	RQ11-2008 RQ12-2008
8. Please tell me about anything that we have not covered during the interview and that you feel might be relevant to this research?		

Table 8.1 Academics' research conversation prompts

During the research conversations with academics, the term *'Internet literate'* was used in a utilitarian way, like everyday uses of the terms 'computer literate', 'number literate' and 'financially literate' to mean someone who has a nominal level of computing, arithmetic and financial skills respectively. However, as information literacy is a key concept within my school, the terms 'Internet literate' and 'Internet literacy' have the potential to mean much more than a 'nominal level of Internet skills'. As more academic research conversations were conducted, the conversations became increasingly less focused on the original list of questions to the point where I only asked the first question and directed the remainder of the

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conversation at saturating the conceptual categories being developed. The latter first phase research conversations produced little new information to add richness to the core categories developed. Hence, the second research conversation phase was felt less necessary and, given the limited time available, was suspended.

All research conversations with academics were digitally sound recorded, transcribed shortly afterwards and analysed three times with the logistical support of NVivo9 software. The Appendices shows a screenshot of one analysis. Each analysis focussed on different aspects of the academics research conversations: content, for example, different ways in which academics conceived the Internet; processes, for example, different ways in which academics grappled with notions of literacy; and definitions, for example, how their Internet literacy-related definitions related to Bloom's Taxonomy. As with the student coding, I used hermeneutic-dialectic (Section 7.5.4) techniques to analyse the information gathered, and undertook systematic constant comparison (Section 7.5.6). In addition, theoretical memo writing was undertaken throughout the analysis, with the final memos forming the academics analysis and discussion chapters of this thesis. Finally, the academics involved were e-mailed a copy of the analysis on 7th July 2010:

Dear X,

Back in November 2008 you kindly agreed to be interviewed for my PhD research. After two years and several writing iterations I have finally drafted the associated analysis chapter (see attached). Please would you look through to ensure I have not misrepresented your views? I will endeavour to correct any errors or misunderstandings.

Please note that you are interviewee X.

Thank you

Peter

As with the student member check phase, only four academics replied (Academics 08, 14, 16 and 18) saying that I had adequately represented their views. Academic 13 chose to place the transcript in my office tray, commenting on some typographical errors. There were no opportunities to enter into a dialogue. Again, the

delay of around 20 months between conducting the research conversations may have been a contributing factor.

8.3 Undergraduates

Guba and Lincoln (1989b) propose a two phase research design consisting of information gathering that is more exploratory and about exploring "*What's going on here?*", followed by a second phase where the various views and perspectives identified during the first phase are explored in more depth, "*confronted, compared, and contrasted*" (Guba and Lincoln, 2001). Whilst my previous interactions with students provided a sound basis for an in-depth investigation of their academic-related Internet literacies, my understanding of students' non-academic Internet literacies was scant. Hence, Guba and Lincoln's (1989b) two phase research design was initially adopted along with a third, member checking phase. In addition, after further consideration of the research context in 2011 (see RQ4-2011) a fourth phase was introduced to explore the extent to which undergraduates' views and understandings had evolved since the initial two phases.

8.3.1 Exploratory phase

As aspects of the research purpose and aims relate to the transition between the students' previous education and their new university degree, the Level 1 undergraduate information collection began soon after the students had begun their degree studies (September and October 2008). Arguably, their recollections of their previous education would be 'fresher' and the impact of their current university education would less affect their views and understandings. Given the exploratory nature of this phase of the research, and the need to conduct information collection within a short time span, focus groups were chosen as opposed to one-to-one research conversations or other information gathering methods (for example, observation). Arguably, focus groups would provide more diverse views (see Morgan, 1996; Barbour and Kitzinger, 1998; Glitz, 1998) and be a more effective method at this exploratory phase of the research.

All 24 undergraduates were invited to take part in one of four focus groups. It was emphasised that attendance was entirely voluntary and independent from their degree studies. Regardless, 20 students took part in one of four focus groups. The objective was to produce a provisional list of questions or prompts for use in the second phase. The number of students attending each focus group ranged from 3 to

7. After introducing the purpose of the focus group, giving reassurances about confidentiality and anonymity, and signing ethical consent forms, four key areas were explored. My role during the focus groups was to facilitate a research conversation by asking relevant and empathetic questions that encouraged the students to express their views and understandings in relation to the project's research questions (see Barbour and Kitzinger, 1998). A list of focus group prompts was used during each focus group based on the research questions and the Survey of Technology Use conducted with the previous cohort of undergraduates (Cox et al., 2008). The prompts follow Doyle's (2004b) recommendation that there should be a principal question followed by a subsidiary question. The subsidiary questions were only used when I felt the group had not thoroughly explored their views. The focus groups were digitally sound recorded and transcribed shortly afterwards. The following table contains the principal and subsidiary focus group questions and the research questions each principal question addresses. Where possible, the principal and subsidiary questions were adapted and woven into the focus group conversations as opposed to being asked in a survey-like manner.

Principal question asked	Subsidiary questions	Main research questions addressed
1. Your current use of the Internet		
If the Internet disappeared tomorrow, would you miss it?	What would you miss and why? To what extent do you feel you will be using the Internet in the future?	RQ1-2008 RQ2-2008
What do you use the Internet, and its related technologies, for?	How often do you use the Internet? How do you access the Internet? Where do you access the Internet?	RQ1-2008 RQ2-2008
2. Gaining Internet skills and understanding		
Describe a task where you demonstrated a high level of Internet skills and understandings?	What do you feel is the most difficult aspect of using the Internet or its related technologies?	RQ1-2008 RQ3-2008
How do you feel you acquired your Internet skills and understanding?	Were there any Internet learning experiences that you now feel are particularly note-worthy? What Internet teaching or training did you receive?	RQ3-2008 RQ5-2008
How would you rate the Internet teaching or training you received at school or college? Please explain.	How do you feel your school or college Internet education compares with your out of school or college learning?	RQ5-2008 RQ6-2008
3. Your views about what makes a good or effective Internet user		
How would you describe a good or effective Internet user?	What skills or understandings do you think people need be effective Internet users?	RQ3-2008
4. Your view of your own Internet abilities		
How would you rate your own Internet skills and understanding?	Do you feel you now have all the Internet skills and understanding you need?	RQ3-2008
AOB		
Please tell me about anything that we have not covered during the interview and that you feel might be relevant to this research?		

Table 8.2 Focus group prompts

One of the main purposes of the focus groups was to explore students' understanding of being Internet literate at the very beginning of their studies. Unlike the information gathering conducted with academics where it was assumed they had an understanding of the terms 'literacy' and 'information literacy', no equivalent assumption was made about undergraduates' understandings of these terms. Hence, to explore students' perceptions of being Internet literate it was necessary to

ask indirect questions related to how they had gained their Internet skills and understandings, what makes a good or effective Internet user and their view of their own Internet-related abilities. It was anticipated that from the answers to these questions, students' perceptions of being Internet literate could be inferred.

The transcripts from the four focus groups were analysed using Grounded Theory techniques and the logistical (as opposed to conceptual) support of NVivo9 software[30]. I endeavoured to use constant comparison (Section 7.5.6) and hermeneutic-dialectic (Section 7.5.4) techniques at all stages to ensure the codes developed were grounded in the information gathered. Coding was done at a theme-by-theme level necessitating coding either phrases or sentences. After several iterations of open and focused coding, a set of tentative codes were produced consisting of 9 principal categories (for example, 'conceptions of Internet', 'origins of Internet skills', 'perception of being Internet literate') which were divided into 2 to 5 sub-categories (for example, the affective category was divided into 'confident in own Internet abilities', 'lack of motivation to learn more', 'social pressure to use Internet'), which were in turn divided into further sub-categories. Whilst this first attempt produced valuable content categories, I felt that the categories failed to entirely capture undergraduates' underlying motivations and feelings, and ultimately failed to entirely produce categories relevant to the research aims. According to Charmaz, *"adopting gerunds fosters theoretical sensitivity because these words nudge us out of static topics and into enacted processes"* (Charmaz, 2006). Hence, after the first attempt at coding, the focus group transcripts were reanalysed using gerunds revealing valuable new insights previously obscured by predominantly using categories composed of predominantly nouns and adjectives. These included: 'sufficing'; 'devaluing previous ICT education'; and 'distinguishing between parents' and students' ICT comfort levels' (see Table 8.3).

8.3.2 First developmental phase

During the second phase of student-related information gathering, all 24 BSc Information Management students were invited to one-to-one meeting[31] related to the focus group just conducted. With the exception of one student who failed to respond to numerous e-mail requests, 23 meetings took place between April and May 2009. Research conversations were felt to be the most effective method of

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30 NVivo9 software homepage: http://www.qsrinternational.com/products nvivo.aspx

31 This was done via e-mail, but all related e-mails have been deleted

eliciting the diversity of students' views and ensuring students felt comfortable being critical of the views of the other students. The latter was felt important since, during the previous focus groups, students tended only to support each others' statements rather than be critical. It was as if the students wanted to maintain group harmony. After reassuring the students about confidentiality and anonymity of the information gathered, and signing ethical consent forms, I read out a statement based on one of the focus group principal coding categories, followed by questions that prompted the student to judge the extent they felt the statement applied to them. The following table contains the statements read out, the question prompts, the research question addressed and the principal focus group coding category that the statement was derived from. As with the focus groups, the questions asked were adapted according to what had been said previously, and woven into the conversations as opposed to being asked in a survey-like manner.

Statement	Prompt	Main research questions addressed	Principal focus group coding category
1. During the previous focus groups, several students said that using the Internet was natural or implied it was almost instinctive.	To what extent do you feel using the Internet is natural or instinctive? Why do you feel this?	RQ3-2008	'Naturally using and acquiring Internet skills'
2. Several students gave the impression that they were confident using the Internet and its applications.	To what extent do you feel confident using the Internet? Why do you feel this?	RQ3-2008 RQ4-2008	'Being confident in own Internet skills and understandings'
3. Regarding the using the Internet and its applications, several students gave the impression that they learnt as much as they needed to.	To what extent would you agree? Why?	RQ2-2008 RQ3-2008 RQ4-2008	'Sufficing (satisficing)'
4. During the focus groups, some students viewed their previous ICT education favourably, whilst others viewed it unfavourably.	What is your view? Can you cite any evidence?	RQ5-2008 RQ6-2008	'[De]valuing previous ICT education'
5. Several students spoke about "picking-up" their Internet skills (maybe by trail and error, advice from others, online tutorials etc.)	To what extent have you 'picked-up' your Internet skills? Why do you feel this? What does 'pick-up' mean to you?	RQ3-2008 RQ6-2008	'Picking it up (ICT skills)'

Table 8.3 Undergraduate research conversation prompts (Continued next page)

6. When faced with a problem using the Internet or its applications, some students seemed to greatly value the opinion of others.	To what extent would you seek and trust someone's opinions?	RQ5-2008 RQ6-2008	'Trusting the views of others'
7. During the previous focus groups several students had strong views about what was good Internet practice and almost looked down upon those that had other views.	To what extent do you feel your views are right?	RQ3-2008 RQ4-2008	'Doing the right thing'
8. During the previous focus groups some students pointed out that their parents were not as skilful as them at using the Internet.	To what extent do you feel a person's age and their ability to use ICT are related? Why do you feel this?	RQ3-2008	'Distinguishing between parents' and students' ICT comfort levels'
9. During the previous focus groups several students said they depended on the Internet "for everything".	To what extent do you depend upon the Internet? Why do you feel this?	RQ1-2008 RQ2-2008	'Depending upon the Internet'
10. During the previous focus groups, several students felt pressure to use the Internet. For example, use 'Facebook' because everyone else was using it.	To what extent do you feel pressurised to use the Internet and its applications? Why do you feel this?	RQ1-2008 RQ2-2008	'Feeling pressurised (or not) to conform'
11. During the previous focus groups it became apparent that some students were very selective about what they used the Internet for.	To what extent are you selective about what you use the Internet for?	RQ1-2008 RQ2-2008	'Discerning use of Internet'
Please tell me about anything that we have not covered during the interview and that you feel might be relevant to this research?			

Table 8.3 Undergraduate research conversation prompts (Continued)

To elicit a further understanding of their perceptions, additional tailored questions were woven into the conversations at appropriate moments. For example, after exploring whether one a student felt confident using the Internet, the student was then asked *"what makes you confident and someone else not confident?"* This technique seemed to draw out a more vivid response than the more direct focus group-type questioning, although students may have felt more comfortable answering questions one-to-one.

As before, the meetings were digitally sound recorded, transcribed shortly afterwards and analysed with the logistical support of NVivo9 software. The Appendices shows a screenshot of one analysis. Unlike the first phase, where there was an urgency to complete the focus group analysis promptly, the use of the

constant comparison and hermeneutic-dialectic techniques was more systematic and thorough. In total 292 categories and sub-categories were produced. In addition, I undertook increasingly more theoretical memo writing throughout the analysis, with the final memos informing the student analysis and the discussion chapter of this thesis.

8.3.3 Member checking phase

The aim of the third phase was to enter into a dialogue with each undergraduate relating to how I had represented them in this thesis. The following e-mail was sent on 15th November 2010 to each undergraduate in the research cohort:

Dear X,

Back in September 2008 you kindly took part in a focus group about being Internet literate. In the May of the following year you also took part in a one-to-one interview. Amongst many other things, I have been analysing the focus group and interview transcripts. I have just completed the first draft of the associated thesis chapter (see attached). Please would you have a look and let me know if I have misrepresented you? I will endeavour to correct any errors or misunderstandings.

Please note that you took part in Focus Group X and are student X.

Thank you

Peter Stordy

Unfortunately, only Student D and Student H replied simply saying that I had adequately represented their views. There were no opportunities to enter into a dialogue. The delay of around 18 months between phases 2 and 3 may have been a contributing factor. Students might have been more inclined to respond had the analysis been presented to them soon afterwards. In addition the undergraduates may have felt pressure to complete coursework due around that time.

8.3.4 Second developmental phase

The original research design was meant to be a snapshot of Level 1 undergraduate Internet literacies at the school-university transition. However, as this research increasingly focused on the pedagogic and curriculum implications of undergraduates' Internet literacies, research question RQ4-2011 was added to

explore the impact of the current Information Management curriculum on undergraduates' Internet literacies. The rationale of introducing RQ4-2011 was related to increasing the impact of this research. In addition, the final review of the literature revealed no previous research had been conducted in this area. If this research was meant to inform School discussions relating to the development of undergraduates' Internet literacies, having some understanding of how the current curriculum influences undergraduates' Internet literacies would be at least informative, if not crucial. If the current Information Management curriculum transforms undergraduates' Internet literacies in a direction that my school's academics view as positive, the need for curriculum and pedagogic change is reduced. However, if the current Information Management curriculum has little impact on undergraduates' Internet literacies, the argument for curriculum and pedagogic change is stronger. Hence, the introduction of RQ4-2011 adds a longitudinal dimension to the research.

To ensure most aspects of the undergraduates' studies that could have an impact on their Internet literacies where considered, this phase in the research was conducted in the last few weeks of their studies. The following e-mail was sent on 4th May 2011:

Dear X,

Do you remember helping me with my Internet literacies research at the beginning of your BSc Information Management studies? Now you are about to finish, please could I interview you again? I would really appreciate your help and you might even enjoy it! Please go to: http://www.doodle.com/kferuwf4k8hvfxp4 and select the time that's convenient for you.

Many, many thanks

Peter

Of the original 2008 Level 1 cohort, 20 students remained at Level 3. Of these, 12 agreed to take part in the fourth phase and 11 research conversations took place in my office[32]. In hindsight, the month of May was not the best time to conduct the research conversations since all Level 3 students were submitting coursework and

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[32] One student agreed to take part, but failed to attend the meeting

completing their dissertations. Regardless, the students who did take part in research conversations appeared relaxed and pleased to be involved in the research again. There was even much nostalgic rumination of their first few weeks in my school. After reminding students about confidentiality and anonymity of the information gathered, and signing ethical consent forms, the research conversations were structured around statements that summarised the analysis of 2008 research conversations followed by a prompt relating to the extent they felt the statement was now true. The following table summarises this structure and, in addition to RQ4-2011, other research questions addressed:

Statement relating to the 2008 analysis	Prompt	Main research questions addressed[33]
1. Students described those that were better at using the Internet as being more efficient. That is, they got things done quicker.	Now that you are completing your studies, to what extent do you feel this is now true?	RQ3-2008 RQ1-2011 RQ4-2011
2. Most students tended to view the Internet as a vast information resource or a collection of Web pages.	Now you are completing your studies, how do you now view the Internet?	RQ2-2008
3. Students felt that there was a set of basic skills and understandings necessary to use the Internet, and with these basics, you could then teach yourself everything else.	Now you are completing your studies, to what extent do you feel this is now true?	RQ3-2008 RQ5-2008 RQ3-2011
4. Most students felt they had acquired their Internet-related knowledge by teaching themselves when needs arose. Only a few students felt they had been taught Internet-related knowledge at school or college.	Now you are completing your studies, to what extent do you feel the University has helped you acquire more Internet-related knowledge?	RQ5-2008 RQ6-2008 RQ3-2011 RQ4-2011
5. Many students gave the impression that you could do almost anything on the Internet, particularly in terms of satisfying their information needs using Google.	Now you are completing your studies, how do you feel now?	RQ1-2008 RQ2-2008 RQ2-2011 RQ4-2011

Table 8.4 Level 3 Undergraduate research conversation prompts (Continued on next page)

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33 RQ6-2011 is indirectly addressed in all questions asked

6. Whilst most students gave the impression that they were highly confident using the Internet, there were several students who not so confident.	Now you are completing your studies, how confident are you about your Internet-related skills and understandings?	RQ4-2008 RQ4-2011
7. In addition to appearing confident, many students gave the impression that the Internet was fully integrated into their daily lives.	Now you are completing your studies, to what extent is the Internet now integrated into your life?	RQ1-2008 RQ4-2008 RQ1-2011
8. Despite students' confidence with the Internet and claiming it was fully integrated into their lives their use of the Internet was restricted to a few applications or web sites.	Now you are completing your studies, to what extent do you feel you utilise the Internet's potential?	RQ1-2008 RQ2-2008 RQ4-2008 RQ1-2011
9. All students claimed there was a gap between the way they used the Internet and the older generation. Whilst, most felt they learnt quicker and were more experienced, there were some students who felt the older generation was better.	Now you are completing your studies, what do you feel about the Internet-related skills and understandings of your lecturers?	RQ3-2008 RQ13-2008 RQ2-2011 RQ5-2011
10. There was an overwhelming impression that Facebook figured highly in many students' lives with a few describing it as an addiction.	Now you are completing your studies, to what extent do you feel this is now true?	RQ1-2008 RQ2-2008
Prompt		**Main research questions addressed**
11. Whilst the previous statements refer to the views of all or most students, the following statements refer to the views of just one or a few students. They all refer to what it is to be 'Internet literate' … 'good at using the Internet'. I am particularly interested in any other areas that you feel are important in describing someone who is 'Internet literate'. Please feel free to comment any of the statements I read out. a) Being able to protect your online identity (e.g. "you have got to be ... Facebook literate ... if you don't want everything about you being exposed ... how to block people ... how to put people in lists ... protecting your ... identity") b) Have the knowledge to identify an online virus and the skills to deal with it (e.g. "the ability to spot a virus and cure it")		RQ3-2008 RQ2-2011 RQ4-2011

Table 8.4 Level 3 Undergraduate research conversation prompts (Continued next page)

c) Know about computer shortcuts (e.g. "press Alt and F4 to quickly close")	
d) Effectively using online technical knowledge (e.g. "set up a filter to stop like Spam coming in the in-box")	
e) Able to solve any Internet problems encountered (e.g. "I feel … I could overcome … problems and I … feel I would be able to resolve them")	
f) Using a wider range of Facebook's features (e.g. "I'm not really Facebook literate, I don't send blogs or start anything on Facebook. I have joined a few communities on Facebook")	
g) Have an understanding of the Internet's infrastructure (e.g. "knowing what the Internet is, and like how it is formed and how it's like all connected")	
h) Having an understanding about how web pages are constructed (e.g. "I know how to use HTML")	
i) Know how to use a browser (e.g. "What the different parts of the screen mean, like the bar at the bottom, the status bar at the bottom and the URL bar")	
j) Being able to identify key words or phrases in an online search (e.g. "what to search for, what words and phrases to use")	
k) Knowing the best online information sources (e.g. "know where to get the information from, rather than just Googling everything")	
l) Knowing the best search engine tool to find information (e.g. "use standard tools such as advanced searches and scholar searches")	
m) Being able to evaluate the information found from an online search (e.g. "figure out which information is good or not, which information is the thing you are looking ... which results to rely on, and which not")	
n) Use Boolean expressions in a search	
o) Know about alternative online productivity software	

Table 8.4 Level 3 Undergraduate research conversation prompts (Continued)

8.3.5 Issues related to the researcher-student relationship

As previously stated, the motivation for this study was a genuine desire to understand undergraduates' Internet literacies and improve teaching within my school. However, the choice of study was also motivated the need to ensure sufficient research participants. Back in 2004 I began researching school teachers' perceptions of being Internet literate, but due to difficulties finding sufficient participants to be interviewed, the research was abandoned. With only three years of part-time study left, it was paramount that the revised research would have an almost guaranteed source of participants. Hence, the undergraduates in my school were chosen for all the reasons stated, but also because I felt they might be more

likely take part. In hindsight, this decision related to my relative position of power. My role affords me influence over what they study, their grades achieved and ultimately, their final degree classification. I also have power to indirectly increase the financial burden of their studies by forcing them to resubmit inadequate coursework and incur a university imposed resubmission charge. My position also affords me power beyond their studies when they require a reference for a job. Hence, underlying this research are issues related to my power over students and the extent this influenced the dynamics of the research conversations, what students said or did not say, their level of openness, and what counted as legitimate conversation. Despite efforts to facilitate research conversations that were relaxed and welcomed any views being expressed, issues related to power delimits this research. Other than using a third party or becoming a covert student, in effect the approach adopted by Selwyn (2007) where he became a Facebook 'friend' of students and observed their interactions at a distance, power issues related to the researcher-student relationship cannot be avoided, since they are implicit all relationships. However, by being open to these issues, by citing students' comments where possible, by writing ongoing reflective comments and by sharing research outcomes with colleagues, this study attempts to make transparent the process that led to the research outcomes and their credibility. Furthermore, acknowledgement of the reflexivity that exists in the researcher-student relationship may lead to further insights when analysing the information collected.

Chapter 9: Analysis - research conversations with academics

This chapter presents the main findings from the research conversations held with academics. Its aim is to explore academics' general feelings towards the Internet, what they feel it means to be an Internet literate student and their perceptions of undergraduates' Internet literacies (research aim: A3-2011). This chapter proposes two models to encapsulate the multiple perspectives held academics (research objective: O1-2008). In doing so, this chapter addresses research questions RQ7-2008 to RQ13-2008 and research question RQ5-2011. More specifically:

Section	Research questions addressed
9.1 Academics' Internet literacies	RQ7-2008 RQ8-2008
9.2 Issues related to analysing the research conversations	RQ11-2008
9.3 Internet literacy triangle	RQ11-2008
9.4 Perspectives and facets of Internet literacies	RQ11-2008
9.5 Responsibility for developing Internet literacies	RQ12-2008
9.6 Underlying understandings	RQ11-2008
9.7 Academics' understandings of undergraduates' Internet-related abilities and practices	RQ9-2008 RQ10-2008 RQ5-2011

Table 8.5 Research questions addressed in Chapter 9

The chapter's first two sections explore academics' general feelings towards the Internet. Academics' claim that the Internet has had a profound impact upon their work and their social lives, but have mixed feelings regarding whether these changes were welcome, being particularly concerned with the amount of time spent communicating via e-mail and how the Internet has brought work into their homes. In addition, many academics claimed to be confident using the Internet to find academic content, but many felt less confident with their technical Internet-related abilities and their abilities to engage with Web 2.0 technologies. The main part of this chapter is devoted to presenting the various perspectives, facets and levels, academics use to describe an Internet literate student. A two dimensional triangular model is proposed to encapsulate academics' overlapping perspectives and multiple

facets. The facets of being Internet literate were identified and classified as one of three perspectives, representing the three apexes of a triangle: Internet literacies as competencies, Internet literacies as capabilities and Internet literacies as qualities. In addition, a further model is proposed to describe the various cognitive and affective levels that academics use to articulate their perspectives and facets. Based on Bloom's Taxonomy, a three dimensional cuboid is put forward containing cognitive process, knowledge and affective dimensions. The application of this model to academics' statements relating to being Internet literate is illustrated and concludes that all academics' views could be represented by one of the 72 permutations of this model. The remainder of the chapter is devoted to: describing the variation of responsibility identified by academics for developing students' Internet literacies; academics' underlying understandings of literacy and Internet literacy, including how several academics link Internet literacy education to being Internet literate, and the view that being literate is either about achieving a level of proficiency or about becoming progressively more able; the relationship between literacies, in particular the inclusive or exclusive relationship between Internet literacy and information literacy; and finally academics' understandings of undergraduates' Internet-related abilities and practices. The latter concludes that academics confess to a weak understanding of undergraduates' Internet practices, but felt confident to speak about their skills and understandings. Academics were almost unanimous in their concern with students' poor academic-related Internet skills, particularly being able to locate information, yet also perceived students, and generally all those younger, to have qualities and skills they do not possess.

9.1 Academics' Internet literacies

The majority of all research conversations with academics related to their perception of undergraduates' Internet literacies and their views about being Internet literate. However, each research conversation explored the extent to which do they valued the Internet and Internet-related technologies (RQ7-2008), their experiences of being Internet literate and the extent to which they perceive themselves as Internet literate (RQ8-2008).

9.1.1 Impact of the Internet

All research conversations began awkwardly with me reassuring participants that I would respect their confidentiality and anonymity, but needed to sound record the meeting. However, the first question quickly helped develop rapport: *"If the Internet*

disappeared tomorrow, would you miss it?" This question also gave an insight into the impact of the Internet on academics' lives. Most academics gave the impression that much of their work depended on the Internet. Academic 01 could not think of *"any work at the moment that is not in some way affected by the Internet"* and Academic 13 claimed to spend *"a non-trivial percentage of the day … in front of a computer screen, making use of its facilities"*. Many more claimed that the Internet was integral to their lives or *"pervasive"* (Academic 02 and 05). For example, academics claimed, *"I don't think I could live without it"* (Academic 09), *"I would desperately miss it … be devastated ... be helpless without it almost"* (Academic 10) and *"it's absolutely transformed everything that we do, both professionally and you know at home and I think there is no way that we could go back now"* (Academic 17). There was also a feeling that the Internet enabled some academics to feel *"connected with the world"* (Academic 02), with some academics claiming it raised their world-wide professional profiles. For example, Academic 16 received many invitations to speak at conferences *"because people have got to know my information literacy blog"*. However, many academics also felt the Internet was a 'mixed blessing' or a 'necessary evil'. For example, whilst appreciating that the Internet enabled Academic 10 to access *"thousands of people across the world … doing some leading edge work"* the academic felt the need to be *"increasingly … connected to sources"* for fearing of missing important research developments. Some were concerned at about the home-work balance with Academic 10 noticing *"a lack of adherence to the 8 hour working day now … [getting] … messages from colleagues … anytime of day or night"*. Academic 16 is an avid user of the Internet and active in many Web 2.0 type environments. Nevertheless, this academic begrudged the amount of time spent in front of a computer doing online tasks, particularly e-mail. Most academics referred to the time they spent communicating by e-mail and some were scornful. For example, Academic 13 said

> *"I would imagine that any practicing academic, unless they have a policy of just ignoring e-mail, must spend at least … an hour a day, probably more, dealing with e-mail and a large fraction of the e-mail that is sent, makes little or no effect on the recipient"*

There were also academics that had more maverick Internet use and others that harked back to a time before the Internet. For example, after reading the first question, Academic 04 claimed to be *"not bothered"* if the Internet disappeared

tomorrow, using it only *"for buying books from abroad"*,[34] and Academic 01, an avid Internet user at work but who deliberately has no Internet access at home, would be *"glad to get rid of it"* and *"go back to doing it the old fashioned way"* and *"with an element of relief"*. There was also a sense that some academics felt not in control of how the Internet had impacted upon their lives. For example, Academic 01 described how the Internet *"changes your life without knowing it"* and Academic 02 described how e-mail had inadvertently become a *"procrastination tool"*.

9.1.2 Internet-related confidence

The research conversations also explored the extent to which they felt Internet literate. Not surprising in a university information school, academics generally felt confident in their abilities to find academic information online, particularly compared to the students they taught. Academics from the more 'technical' disciplines came across as more confident, expressing weakness only in their engagement of Web 2.0 technologies. Academics from less 'technical' disciplines tended not to be so confident, claiming technical weaknesses and/or noting they do not engage with Web 2.0 technologies. Being able to finding information online, being knowledgeable about the technological aspects of the Internet, and engaging with Web 2.0 technologies, were the three areas academics referred to when talking about their Internet-related confidence.

All academics claimed or implied that they were skilful at finding academic information online, although some felt their others might be better at finding information for social or everyday purposes. For example, Academic 05 implies that the differences might be generational (this theme is explored later):

> *"My use of the Internet is perhaps in the specialist areas … such as locating academic text. I am better at it than they* [students] *are, but in terms of sort of using it for socially, for checking out, buying on eBay, checking out cars before they buy them across the country, for communicating with friends on Facebook and so on and so on, it's probably integrated more into their* [students'] *life on a social level"*.

Academic 17 criticised students' abilities to find coursework-related material online, but when comparing his non-academic searching abilities to that of his wife's claimed *"I am not the world's best searcher because my wife is a better searcher than I am …* [despite] *using it for an equivalent length of time"*. Some academics

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[34] Interviewee 04 was unsure if e-mail was *"part of the Internet"*

came across as confident in all aspects of Internet searching, frequently relating their expertise to their technical abilities. For example, Academic 07 said, *"… a lot of the Internet is database driven, uses scripting databases, and because that is my teaching area, that knowledge, ability area, I know roughly how that works. I would say* [my confidence is] *9 out of 10 ... I know how the search engine works so I know what it is looking for. Whereas most people wouldn't"*.

In contrast to academics' confidence finding academic-related material online, many academics from disciplines that might be described as less 'technical', expressed concerns about their online technical confidence. For example, Academic 14 felt *"a real legacy of lack of confidence with technology"* and *"slightly daunted* [rather] *than … go straight in, which I see in students"*, Academic 10 wanted *"to write mash-ups … create knowledge Google maps … and all the sort of fancy technical stuff"* to feel Internet literate, and Academic 03 wanted to *"create a website that connects to a database"* to feel Internet literate. Comments like these were made by those academics that others might describe as highly technical. That is, it appears that academics' confidence levels relate to their academic discipline and not their Internet abilities.

Most academics claimed not to be confident using Web 2.0 tools and environments. For example, Academic 08 claimed to be reasonable confident using the Internet, also felt someone who was more Internet literate *"would be more aware of* [and] *would be bigger users of the kind of the cutting edge of things like blogs and Wikis"*. When academics expressed a weakness in this area, it was frequently combined with strong negative feelings about the use of Web 2.0 technologies. For example, Academic 01, who described their Internet literacy level as *"89%"*, was resolute in saying *"I don't engage with blogs, I don't engage with a lot of Web 2, because I think some of it is trivial, I back out of things that I don't know about"* and Academic 13, who adamant about having "*no desire to become more Internet literate, use Facebook, blog and so on"*. Others expressed less strong feelings about their dislike of Web 2.0 technologies. For example, Academic 06 described someone who was a *"discretional user"* of the Internet: *"those who can see a purpose and utility in using a certain application on a computer … do it, but they don't care about all the other things that are possible, because they don't see any personal interest … you can call me a discretional user"*. There were also a few academics who wanted to engage with Web 2.0 technologies, but affective reasons preventing them from doing so. For example, Academic 14 felt potentially *"exposed"* using Web 2.0

applications since *"the style and the genre of writing required wouldn't come so easily",* having received a more formal English language education.

9.2 Issues related to analysing the research conversations

Academics' understandings of being Internet literate, pedagogies for Internet literacy and students' Internet literacies are not mutually exclusive (RQ9-2008, RQ10-2008 and RQ11-2008). For example, when academics spoke of students' Internet literate behaviour they often implied some aspect of their own understanding of what it means to be Internet literate. In the following quote the academic talks about his experiences of students' e-mail behaviour and how the academic sometimes feels it is inappropriate:

> *"... they are quite happy to interact with us via e-mails although they do seem to be, they do seem to have a different set of cultural norms you know, it's like Hi X, just checking in about so and so which to my mind not, I don't care, but that's not really the way I think you should talk to a professor, I don't care but I could see some people who might find that a little weird"*
> (Academic 17)

The strong implication here is that the academic feels that students should be more sensitive when e-mailing and be more empathetic to the e-mail recipient. This was not apparent in any explicit statements the interviewer made about being Internet literate. It follows that, during my analysis statements like this were interpreted as implying their understanding of Internet literacy. However, during most research conversations academics did attempt to explicitly define their understanding and did so with varying degrees of abstractness, with some academics making highly contextualised statements dealing with what one academic described as the *"nitty gritty level"* (Academic 16) whilst others defined being Internet literate in more generic and abstract terms. When academics stated their definitions of being Internet literate, they were attempting to express their understanding at that moment during the research conversation. Some academics appeared to already have well-formed definitions that they may have adapted from elsewhere. For example, one academic used her understanding of information literacy education to express her understanding of Internet literacy when the academic said *"within teaching information literacy, a key thing is …* [etc.]*… So similarly I would see with Internet literacy"* (Academic 16). Other academics appeared to be thinking about this area for the first time, for example when one academic said, *"it's not that these* [ideas] *are*

terribly well thought out, I am actually thinking as we speak, so feel free to come back and probe" (Academic 10).

The analysis of the academic research conversations was slightly complicated due to academics occasionally referring to other literacies, namely information literacy and occasionally digital literacy, during their responses to questions specifically about Internet literacy. Sometimes this was clearly to convey their understanding of being Internet literate, for example when one academic described Internet literacy as overlapping with information literacy like *"two Venn diagram circles that intersect in quite a big way"* (Academic 08). At other times it was not immediately clear whether the use of the term 'information literacy' was inadvertent or purposeful. This issue was highlighted when one academic appears to forget the context of the previous question: *"I think it's so easy the Internet now ... so were you saying ... I felt Internet literate or information literate?"* (Academic 06) and during another research conversation when the academic appears to inadvertently confuse or conflate the terms 'Internet literate' and 'information literate':

> *"... I am sort of guessing she is not particularly <u>Internet literate</u>, because I would have expected someone like that to be able to search and find up-to-date information around that essay, so by <u>information literate</u> students, when they first arrive, I am thinking they would need to be able to familiar with the range of sources of academic information, be able to access that and make some sort of sense of it."*
> (Academic 10)

Charmaz (2006:69) warns about the dangers of *"coding out of context"* and during the analysis of the research conversations I attempted to use the surrounding dialogue to determine whether their use of the term 'information literate' was, for the purposes of this analysis, synonymous with 'Internet literate' or whether they were specifically referring to 'information literacy' per se. The former approach is acceptable since the research conversations with academics and students were not directly concerned with their understanding of the terms 'Internet literacies' or 'Internet literacy', but their understanding of an area loosely defined as the intersection of education, Internet teaching and literacy. As the overall context of the research conversations were Internet literacies, any unqualified use of the term 'information literacy' could be taken as an insight into their understanding of being Internet literate. However, there was dialogue where it was not possible to determine whether the academic was specifically talking about information literacy

or had inadvertently used the term clearly in the context of Internet literacy. In these few cases, the dialogue was omitted from the analysis.

There was one further issue that initially complicated the analysis. One academic was not comfortable with the term 'literacy' in the context of this research. For this academic the term was *"borrowed"* from *"real literacy"* and then *"redefined ... the concept of literacy implies reading ... reading something that already exists ... that implies a viewer and an audience passive"* and does not imply the converse, an active audience putting information back on the Internet (Academic 03). The academic preferred to use a concept *"from computing"* called a "*Power User*" where users both *"create information as well understand a little bit of how you put information on the web, the infrastructure that lies behind the Web"*. The academic goes on to say that a *"Power User"* is someone who uses the Internet *"for almost every task in some way"*. The remainder of the research conversation focussed on the academic's concept of a 'Power User' as opposed to someone who was 'Internet literate'. As stated earlier, the research conversations with academics and students were not directly concerned with their understanding of the term 'Internet literacy', this was not problematic and did not hinder progress towards the aims of this research.

## 9.3 Internet literacy triangle

At the intersection of the literature related to education, Internet teaching and literacy are various conceptions of new literacies focusing on being literate in the so-called Digital Age or Information Society. The primary purpose of the academic research conversations was to elicit academics' understandings of this area or more succinctly, what are their perceptions of Internet literacy (RQ11-2008). With the exception of just one academic (see above) no academic questioned the use of the terms 'Internet literacy' or 'Internet literate'. Academics appeared to be comfortable using the terms, even though it is not in common usage. It seems that academics either deduced a meaning from their understanding of the terms 'literacy', 'literate' and 'Internet' or they inferred a meaning from other literacies they knew: the terms information literacy, computer literacy and digital literacy were mentioned during the research conversations.

Academics had varied and diverse understandings of Internet literacy. However, three student-centred perspectives emerged from the research conversations.

These are encapsulated by the terms 'Internet literacy as competencies', 'Internet literacy as capabilities' and 'Internet literacy as qualities'. The term 'Internet literacy as competencies' is used here to represent those skills and understandings needed by an individual to fulfil their current Internet needs. For example, one competence might be to use the University's database portal to search for an academic journal. The competencies learnt tend to be very specific and localised, whereas the term 'Internet literacy as capabilities' is used here to represent those abilities that enable an individual to extract the essence of learnt experiences and effectively apply them to hitherto unknown Internet situations. These online capabilities endow the individual with the abilities to apply learnt competencies to new online situations. For example, one capability might be the ability to effectively deploy a range of online strategies to find journal articles. 'Internet literacy as qualities' refers to aspects of an individual's character that endows them to appropriately apply their competencies and capabilities. The product of these competencies, capabilities and qualities is an Internet literate student. These three perspectives were articulated in differing ways and to different extents by all academics the Information School. The following diagram represents one way of conceiving these three perspectives:

Competencies

Internet literacy

Qualities   Capabilities
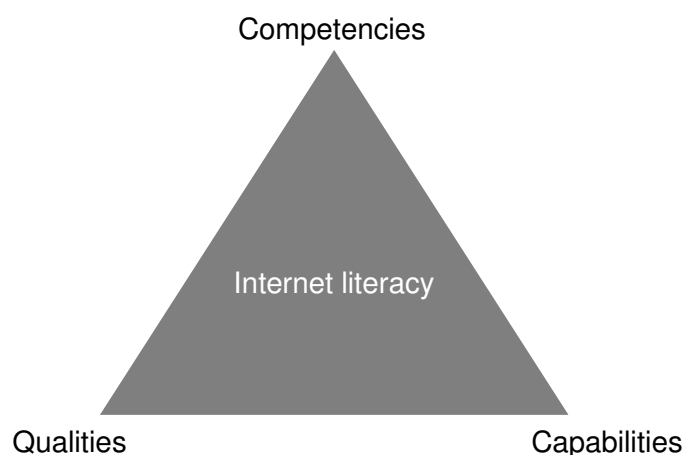
During some research conversations, academics tended to focus their discussion on just one of the three perspectives; competencies, capabilities or qualities. Pictorially, their understanding of being Internet literate lies towards one of three corners of the Internet literacy triangle:
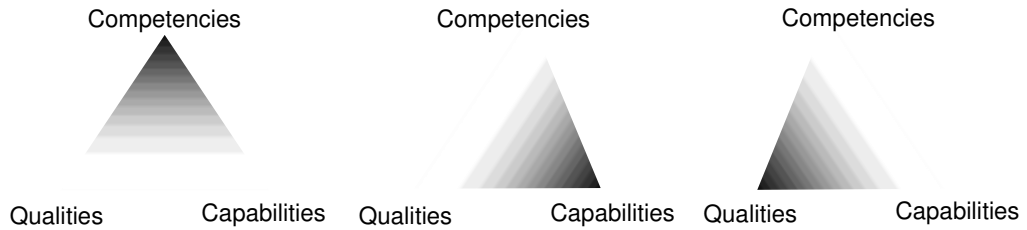
More commonly, academics tended to focus on two of the three perspectives; qualities and competencies, qualities and capabilities or competencies and capabilities, with their dialogue fluctuating between the two perspectives. Pictorially, their understanding of being Internet literate lies along one of the three edges of the Internet literacy triangle:
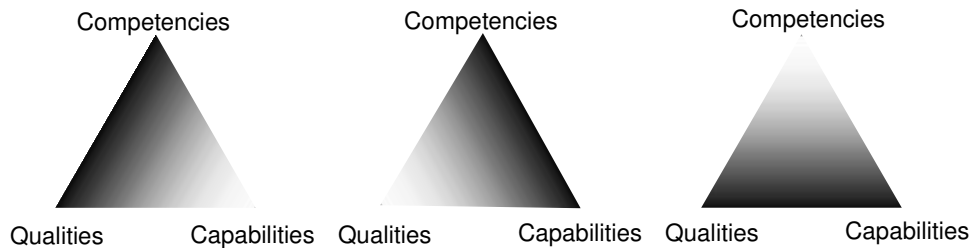
A few academics stressed all three perspectives at different times during the research conversation. Pictorially, their understanding of Internet literacy would lie somewhere within the Internet literacy triangle:
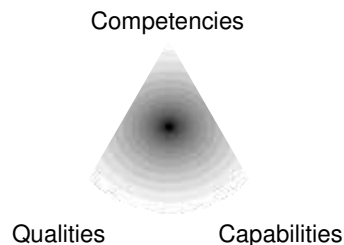
During the research conversations academics would sometimes explicitly define, describe or imply various facets of these three perspectives of being Internet literate: 'Internet literacies as competences' comprised of communication, technology, seeking online information, evaluating online information, creating online information, disseminating online information, ethics and security facets; 'Internet literacies as capabilities' comprised of citizenship, employability and exploitation facets; and 'Internet literacies as qualities' comprised of motivation, open-mind and empathy facets. Hence, the model could also be depicted as follows:
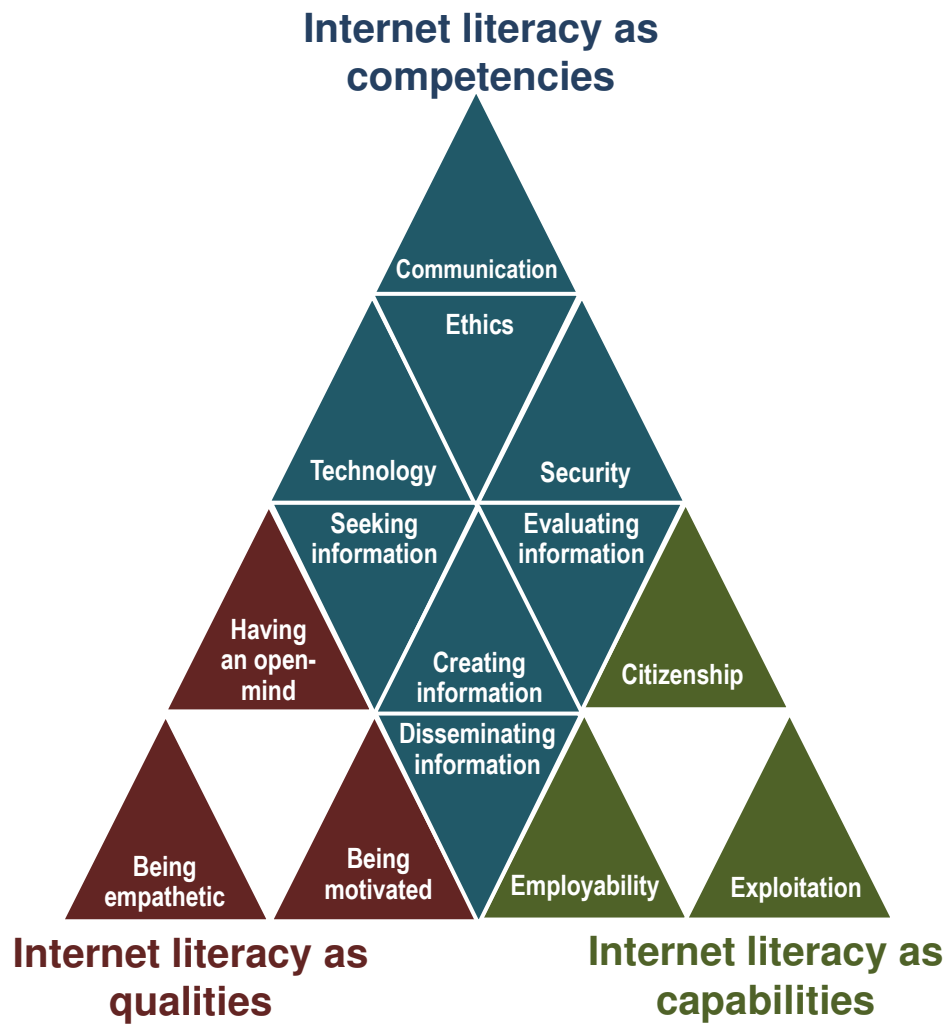
Figure 9.1 Academics' perspectives and facets of an Internet literate student

9.4 Perspectives and facets of Internet literacies

The following three sections elaborate on the perspectives and facets of Internet literacy apparent during the research conversations with academics.

9.4.1 Internet literacies as competencies

During the research conversations academics spoke about being Internet literacy in terms of acquiring competencies. That is, the skills, understandings and knowledge needed to fulfil students' current online needs. As academics belong to a school with information at the heart of its teaching and learning, it is maybe not surprising that competencies associated with students' current academic information-related needs (Information sub-facet), particularly in the context of students' online searching and evaluation skills, but also in the context of creating and communicating information.

Communication and technical competencies were also stressed by academics as being a facet of Internet literacy. To a lesser extent, academics spoke of security and ethical competencies.

9.4.1.1 Information-related facets

Information skills, understandings and knowledge figured in all academics' descriptions and definitions of Internet literacy and of being Internet literate. It was frequently expressed as a person's ability to contribute to what might be called an 'information cycle' where information is first sought, then read, evaluated for authority, synthesised or repackaged and then disseminated for others to utilise. This information cycle was explicit during one research conversation when the academic said being Internet literate was *"... about getting information on the net … checking the authority … extracting the information … about disseminating that information back out … to other people"* (Academic 11) and during another research conversation when the academic said that *"... nowadays being literate on the Internet means being not only literate at finding information, but process information, synthesising information, or even producing information"* (Academic 09). At other times academics spoke of specific aspects of this cycle.

9.4.1.1.1 Seeking online information

The initial stages of the information cycle dominated many research conversations. Most academics described being Internet literate in terms of a student's skills to seek information and the underlying knowledge and understandings required. This was frequently in the context of a student's ability to use a generic search engine: *"carry out a search at some level on a standard search engine"* (Academic 13), or more specifically the Google search engine or one of its variations like *"Google Scholar"* (e.g. Academic 02) or *"Google Advanced"* (Academic 01). To effectively seek information some interviewers felt students first needed to know about the *"unclassified"* (Academic 01) nature of information on the Web and many more spoke of how students needed to understand how search engines work (e.g. Academics 07, 05 and 17), particularly the mechanics of refining a search e.g. *"they have to limit their search by subject classifiers"* (Academic 01) or *"restrict the domain so you search only for a certain language"* (Academic 06). However, other information seeking contexts were apparent during research conversations. For example academics spoke about how students needed to be able to *"browse"* websites (Academic 07), identify *"what a web page is saying"* (Academic 07), use

"on-line catalogue search tools" (Academic 15), use *"database search tools"* (Academic 10), contact a *"human being at the end of an e-mail, or chat line"* to obtain information (Academic 10) and finding *"information on good web pages, and bad web pages"* (Academic 12). The specified purpose of this information seeking varied between academics. For example, to *"access"* (e.g. Academic 08), *"find"* (e.g. Academic 15), *"search"* (e.g. Academic 03), *"extract"* (only Academic 08), *"harness"* (only Academic 10) or *"locate"* (only Academic 11) *"information"* (e.g. Academic 07), *"journals"* (e.g. Academic 06), *"resources"* (e.g. Academic 11), *"grey literature"* (only Academic 06) or *"references"* (only Academic 09).

Some academics postulated why seeking online information was difficult. Firstly, it was perceived to be because of the *"nature of information"* on the Internet (Academic 15), knowing *"what questions are answerable through the Internet"* (Academic 05) and understanding *"the complexity of it"* (Academic 01). As one academic stated, *"you have got to know, you have got to know what you are looking at. What you are looking for"* (Academic 07). Secondly, there was one academic that postulated that it is not that students cannot search for academic information, but that they take *"a lot of time to be familiar with jargons and concepts and know which key words to use to search"* (Academic 04). For this academic, Internet literacy education does not necessarily mean more Internet skills, just greater familiarity with the area being searched. Thirdly, another academic postulated that much everyday searching is relatively straight forward since modern search engines like Google attempt to predict people's searching needs (Academic 08). The academic went on to say that this gives students the impression that *"searching is easy. And, for the obvious stuff searching is actually very easy"*, but when students apply their *"self taught skills"* to search *"more unusual, less trod searching areas"* they will find it much harder and this is the challenge for Internet literacy.

For two academics, seeking information appeared to be the most significant aspect of being Internet literate. One devoted almost the entire research conversation stressing the importance of being able to seek information online. For this academic, the most important aspect was to reduce the number of search engine results: *"to the point where you can start with 3.8 million hits on a simple Google for 'global warming' and you can end up looking at 441 ... because, quantity is of no value to you, it's only quality"* (Academic 01). This academic's *"goal"* for Internet literacy was *"to make finding information on the Internet as easy as going to the fridge and opening a can of coke ... so that you don't think about it"*. The other academic also

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considered searching for information online as *"a big Internet thing, searching is probably what 90% of people do, 90% of the time"* (Academic 07). This academic described someone who was particularly Internet literate as being able to *"go straight for what they are looking for"*, not just in terms of using a search engine, but reading a web page and browsing for information.

9.4.1.1.2 Evaluating information found online

Academics attached much importance to the skills involved in evaluating information found online. This was variously described as treating the information found online *"with sufficient scepticism"* (Academic 17), evaluating the information found for *"authority"* (e.g. Academic 08) and *"reliability"* (e.g. Academic 11). Most academics were critical of students' abilities to do this. As one academic stated *"at least half of the students ..."* [when] *they find the source on the Internet, they use it without even realising who has written it ...* [or] *if that is any authoritativeness at all"* (Academic 06) and another stated that students *"don't even know what the difference between Internet resources and digital journals ... they can't distinguish"* (Academic 04). However, academics differed in the emphasis that they placed on students knowing authority sources as opposed to determining the authority of the resource, particularly in relation to the information need. Representing the former, one academic felt that students should first be considering books: *"... make them think Internet resources is okay, compared with the book, but it's not"* (Academic 04) and another academic feeling that students should be *"aware of trusted sources, not everything on the Internet is reliable, don't just quote Wikipedia"* (Academic 11). Whereas, representing the latter one academic was critical of adopting too simplistic an approach to judging the authority of a source and felt students should be considering *"what authority means"* and *"not simply look to the so called academic quality sites, but* [other] *information is useful as long as I approach it with caution"* (Academic 10).

9.4.1.1.3 Creating online information

During the research conversations academics felt that being Internet literate included the skills, understanding and knowledge to create online information. This tended to focus on textual forms of information, and for one academic involved a particular form of online writing skill not promoted in HE. For this academic, being Internet literate was about incorporating what students have learnt into their online writing, but *"concisely to fit the limited screen size"* (Academic 01). This type of

writing differed from journalistic type writing that is not *"limited to 220 words"*. Some academics mentioned non-textual forms of information including images, sound and video. For one academic, this was particularly significant since on the Internet there is increasingly *"a kind of convergence of media and computing"* and a more *"rounded set of skills"* is now required to be successful (Academic 03). This included *"being able to create kind of pleasing imagery or powerful videos that combine sound and visuals"*. Media type skills were also mentioned by another academic who said that in her module students both create and use video and use Photoshop to create special image effects (Academic 02).

<u>9.4.1.1.4 Disseminating information online</u>

Some academics stressed that being Internet literate included the skills, understandings and knowledge to disseminate information, primarily by designing and building websites but also by building social networking sites (Academic 02) or being able to *"present a profile"* (Academic 17) on a social networking site. One academic spoke of being able to disseminate *"information back out, as well to other people"* (Academic 08) and another about being able to *"put information on the web"* (Academic 03). Staff spoke of being able to *"design and produce"* (e.g. Academic 07) a *"searchable"* (e.g. Academic 08) or *"Googleable"* (Academic 06) website that was *"useable"* (e.g. Academic 12) and *"accessible"* (e.g. Academic 10). By being able to design a *"Googleable"* web site, this academic implied that it was one that had the potential to appear high-up the Google rankings by the careful selection and placement on the web site of key words (Academic 06). Whilst not difficult, this academic felt that students struggled to apply the associated knowledge. The mechanism for building web sites was not indicated by academics, although one academic did say that highly Internet literate students could *"write mash-ups"* to create websites and described *"creating Web pages in Dreamweaver was being very Internety"* (Academic 10). The academic later went on to imply that some knowledge of CSS and HTML would be useful.

9.4.1.2 Communicating facet

A few academics referred to particular knowledge and skills that are required to effectively communicate online as opposed to creating and disseminating information online. For one academic *"communicating ... is a great part of the Internet nowadays"* and includes *"your netiquette, your smilies and all your acronyms"* (Academic 09). For this academic online communication knowledge and

skills are not necessarily transferable between environments, particular *"an environment like Second Life or Facebook"* where *"you face a totally different type of communication that is neither synchronous or asynchronous"*. Two academics were struck by students' inability to choose the most appropriate communication tool. One felt that this *"doesn't need a lot of thought"*, yet students still use their mobile phones for group coursework as if they were organising their personal lives instead of choosing a *"more official record"* like *"a bulletin board or e-mails … even just sending an e-mail is better than sending a text message"* (Academic 06). For the other academic the skills and understandings involved in the discerning choice of communication tool should be promoted throughout students' studies. They should be taught that there exists a *"kind of ecosystem of communication applications"* where students use their knowledge how *"instant messaging is good for this, and e-mail is good for this, and video conferencing is good for this"* to reconsider their current, almost habitual communication tool choices (Academic 17).

9.4.1.3 Technical sub-facet

For many academics, being Internet literate included a technical facet. This was stated in more general terms like *"Internet literacy is all about using diverse applications"* (Academic 10) and being *"able to use the relevant technologies"* (Academic 15), or more specifically current academic needs like being able to *"find their way around the University's computer systems"* (Academic 15), *"access learning and teaching resources"* (Academic 11) and *"set of basic skills that were necessary for the individuals to be successful in their e-learning experience"* (Academic 09) with another academic feeling that simply enabling students to *"access remotely whatever they need ... promotes in itself ... Internet literacy"* (Academic 02). The former, more generic technical skills, were primarily in the context of creating and disseminating online content, and either specific and related to Web 2.0 like *"being able to set up a Wiki"* (Academic 14), *"open space stuff with importing RSS feeds and blogs ..."* (Academic 01) and *"creating a Pageflakes page"* (Academic 16) or more specific, including programming like creating *"a website that connects to a database live"* (Academic 03), *"sorting out firewalls"* (Academic 01), *"knowing about the underlying [Internet] infrastructure"* (Academic 11), *"Web-based programming languages"* (Academic 07) and *"serious sort of programming and sort of mash-ups"* (Academic 10). At times, the online technologies mentioned seem to rely on very limited Internet access like when one academic spoke about being able to *"... use most productivity applications, like Word, PowerPoint"*, yet later mentioned

technologies that can only be accessed via an Internet-enabled computer like *"your bookmarks in Delicious … or … shared documents like Google Docs"* (Academic 17). One academic drew attention to this distinction, classifying those technologies that are *"sort of Internet dependent and driven"* like Second Life and those that are a *"specialised aspect of Internet literacy"* like *"Dreamweaver is one, FTPing is another"* (Academic 10). The latter, more specific academic technical skills mentioned by academics, included being able to access to the University's online resources including the library catalogue (Academic 15) and virtual learning environments like 'MOLE' (Academic 15 and academic 11) and WIMBA (Academic 12).

9.4.1.4 Security facet

Several academics felt that an understanding of Internet security issues was necessary to avoid unnecessarily being exposed to online risks. For one academic, having this understanding is *"probably the biggest difference between someone who is Internet literate and someone who isn't"* (Academic 07). The risks cited included those related to the safe use of passwords (e.g. Academic 07), responding to spoof requests for personal or financial information (e.g. Academic 15), accidentally downloading bugs or viruses (e.g. Academic 09) and placing personal information on insecure social networking sites (e.g. Academic 17). Academics said that students needed to *"understand"* (e.g. Academic 15) or be *"aware"* (e.g. Academic 04) of the associated security issues, with one academic describing these as *"defensive skills"* (Academic 09). Unlike some other academics who implied that users were blissfully unaware of their lack of understanding, continuing regardless, one academic indicated that users were sometimes *"scared"* of using the Internet fearing they have *"breached some security ... given away information about their computer [or] downloaded some bug"* (Academic 07).

9.4.1.5 Ethical facet

Several academics felt that a facet of being Internet literate was being aware of the social and legal ethical issues surrounding online activities. For three academics the issues surrounding the copyright of material on the Internet and the associated ethical issues with plagiarising web content is an important aspect of being Internet literate with one academic stressing *"Internet literacy is not just being a practical kind of IT type of skill … I think there is a little bit more to it than that … like … knowing about ethics, knowing about copyright"* (Academic 11) and another

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stressing that students need to be eventually *"taught that it is wrong"* to blindly copy online images and web page text (Academic 08). Other academics stressed other aspects including *"breaches of data protection … freedom of speech, the bullying, cyber bullying things"* (Academic 04), feeling that students needed to be more aware of the privacy issues surrounding their current use of Facebook, how information relating to them *"it's not going to go away"* and how any inappropriate information may adversely affect their future careers (Academic 17).

9.4.2 Internet literacies as capabilities

In addition to listing the competencies that illustrated someone who was Internet literate, academics also spoke about the purpose of being Internet literate. Implicit in their statements was a view of Internet literacy as capabilities, where being Internet literate involves being able to draw out the essence of learnt online experiences and effectively apply them to future online situations. This capabilities perspective of being Internet literate was apparent when academics spoke about being Internet literate for future employment or citizenship, when academics spoke about being able to exploit the affordances of Internet technologies and when applying the competencies learnt through Information Management to make effective use of Internet technologies.

Central to the 'Internet literacy as capabilities' perspective is a person's capability to transfer learnt experiences to new situations and hence empowering individuals *"to be confident within a rapidly changing environment"* (Academic 05). For Academic 13 this principle was at the heart of Higher Education, representing *"difference between knowledge and learning, knowledge and training"* and wished *"that the Government would recognise that education and training aren't the same thing"*. This academic stressed that *"you are not teaching them specifically how to do a search on Yahoo, you are teaching them about the principle of something so that they can use that knowledge in different circumstances"*, for example they *"... wouldn't be too fazed when stuck in front of a, a previously unknown e-mail system ..."*. Academic 10 described this as *"the old learn how to learn"* and about having the capabilities to *"develop skills in using new technologies as independent beings"* in how they use new technologies and how they establish the criteria to judge the authority of an online resource. Some academics felt that students were already beginning their studies with capabilities in this area. Academic 08 described how *"trivial"* it was for students to learn a new university computer system and how

students had already acquired sufficiently high capabilities that *"you just get them to use an on-line coursework submission system, they just use it, they don't even blink, you know it's a trivial for them to use something like that"*. However, not all academics felt so positive about students Internet capabilities. Academic 14 felt that students generally have a *"broad based fluency and self confidence"* with Internet technologies, *"but actually in terms of their awareness of how to use those tools to support their learning activities specifically, is quite low"*. This academic postulated that students lack the *"capability"* to structure information effectively for an online task and that this capability is primarily acquired through the discipline of information management.

Academics stressed three facets of Internet literacy that could broadly be described as relating to employability, citizenship and being able to exploit the Internet's affordances. These are described in more detail in the following sections:

9.4.2.1 Employability facet

Several academics spoke of building upon students' online competencies for the purpose of future employment. For example, one academic felt that students are *"bored by what we teach to a certain extent, maybe perceive it to be old fashioned or focussing too much on deep theories which they find difficult to link to their own experience"* (Academic 03). However, this academic felt that students were *"very adept"* at using the Internet for social purposes and that these skills and the associated enthusiasm could be built upon by saying "*that these skills might be useful within organisations"*. Others too, saw potential to link students' studies with future employment. One academic felt that students should be able to draw upon the competencies gained through their Web design studies to be *"critical"* of their employer's website and be able to *"give feedback to other people about how to improve theirs"* (Academic 17). This academic also said that it was also being able to draw upon their understandings of *"what [communication] tools do, what they might be good for … and how you might use them"* to select or advise future colleagues about the most effective communication tool for the purpose intended. In a similar way, another academic felt that students should be able to draw upon their Web *"technical expertise"* to cope with potential workplace scenarios where they might be required to commission *"a website, you would like it to be accessible … based on CSS, having some sort of glimmerings of how to talk to Web designers, the ability to create you know simple websites oneself in case you haven't got*

access to funds" (Academic 10). Some academics felt that being Internet literate might also mean that students were more employable since they would have the competencies to build a Web home page to advertise their skills. One said that there is a *"kind of an assumption that everybody in the world would have a home page"* and if you were not a *"big"* Facebook user or Delicious user, you are *"missing out on something"* since you could not be found online (Academic 08).

9.4.2.2 Citizenship facet

Academics spoke about the capability to transfer online competencies to new situations in the context of citizenship. For one academic it was one of the facets of Internet literacy that also included technical, communication and pedagogic (Academic 10). For other academics, being Internet literate was about *"those basic skills that allow you ... to be successful at basic level in a particular society"* (Academic 09) and part of ensuring people *"exercise their rights as citizens to interact with government"* (Academic 16). This was increasingly necessary as *"as the Government tries to cut costs and sort of tries to put everything on the web"* and hence people need to be able to negotiate on-line forms and interact with government websites. Overall, this academic felt that citizenship is *"big ... something to do with the whole curriculum really ... it's broader than simply being Internet literate"* but included it.

9.4.2.3 Exploitation facet

Many academics felt that part of being Internet literate was the extent to which someone, not just used the Internet, but fully engaged and exploited its various affordances. Engagement was expressed in terms of the range of applications an individual was involved with. For example, one academic described Internet literacy as being *"all about using diverse applications"* (Academic 10). Particular emphasis was placed on the use of RSS feeds by some academics (Academics 12, 06, 01 and 10) and engagement with *"social networking sites"* (e.g. Academic 15). This included *"using Second Life"* (e.g. Academic 02), *"using Facebook"* (e.g. Academic 13), *"contributing to Wikis ... and blogs"* (Academic 01) and *"putting photos on Flicker or uploading videos on Youtube or editing an article on Wikipedia ... doing your bookmarks in Delicious"* (Academic 08). However many academics implied that it was not just the range of applications, put the intensity of this engagement that made someone Internet literate: they would use the Internet *"all the time"* and *"regularly"* (Academic 11), *"probably spend 24 hours a day on the Internet"*

(Academic 07), *"constantly update it ... constantly post a message"* (Academic 02) and *"use it for almost every task in some way"* (Academic 03). In addition to the range and intensity of an individual's online engagement, some academics implied that the highest levels of Internet literacy are achieved when individuals engaged in collaborative online practices. For example, several individuals using GoogleDocs to develop a conference presentation (Academic 08) or using various Internet technologies (FTP, Dreamweaver and e-mail) to collaboratively develop a website (Academic 10).

Many academics emphasised that being Internet literate was more engagement, stressing the extent to which an individual exploited the Internet's affordances. This view was articulated by Academic 10 who said being Internet literate was not just about having *"generalised access to lots of things out there"*, but also *"being able to dive in and exploit fully, particular technologies and approaches and systems that happen to be particularly dependent on the Internet"*. Others stressed it in terms of being able to *"... utilise* [the Internet] *in order to find out what they require … what questions are answerable through the Internet and what services … are available"* (Academic 05), *"… having an understanding of what Internet technology can offer"* (Academic 15) and those *"set of basic skills that are necessary, for you to be able to explore, exploit and enjoy the Internet"* (Academic 12). Most academics spoke about the Internet as if it was a collection of tools and information sources, but Academic 16 felt it was important to distinguish between online environments like Second Life from tools like e-mail, stating that being Internet literate was about being *"... able to use the various affordances of the different tools and environments ... that are on the Internet to their best advantage"*.

9.4.3 Internet literacies as qualities

In addition to the online competencies and capabilities cited by academics, some spoke of particular qualities that students should possess. These qualities were personal in the sense that they might be an aspect of a student's character, their attitudes towards learning, how they chose to apply their Internet-related competencies and capabilities, and being empathetic towards the people students are communicating with.

9.4.3.1 Motivational facet

The extent to which someone is Internet literate was perceived by some academics as being related to an individual's level of motivation. This was described as the extent to which a student persevered when faced with an online problem and the extent to which a student was proactive and up-to-date with new technologies. An example of the former was one academic's frustration with the attitude of undergraduates. The academic perceived them as having a *"kind of intellectual arrogance"* that means *"they don't put the necessary effort to understand how they can exploit"* the Internet and how *"they just stop and say oh it's not there"* rather than trying *"to find other ways to arrive at the same goal"* (Academic 06). For this academic an important aspect of being Internet literate is being able to persevere, a quality that is not required for many Internet interactions. Whilst not criticising students' lack of motivation to persevere, another academic also felt that students' level of Internet literacy was directly related to their *"commitment"* and *"interest"* to *"push"* the technology to see what it can do (Academic 12). Other academics felt that being Internet literate was about being more proactive in terms of keeping up-to-date with new online technologies. One academic spoke about students having *"a very proactive stance in relation to new technologies"* and *"level of awareness ... about changing Internet trends"* (Academic 14) and another felt that this proactive stance might be about being:

> *"very active in building their own sites ... if they build their own sites or they have got lots of stuff on Facebook ... someone that would have their Second Life ... so it is more about actively doing, creating yes, rather than accessing or searching, or posting"*
> (Academic 02)

For two academics, being up-to-date was about *"keeping up with whatever the latest technologies are providing"* (Academic 08) and *the ability to be updating yourself in terms of what is coming on-line, what's is available ..."* (Academic 10).

9.4.3.2 Open-mind facet

Some academics felt that students sometimes failed to do well in their studies because they were not sufficiently open-minded, unreceptive to new ideas and unrealistic about the limits of their online knowledge. For one academic, two thirds of the students display this trait (Academic 06). They need to have the *"humility of recognising that [they] don't know"* and *"unless you are in that frame of mind receptive, and being able to criticise yourself"* learning will not be as effective. The

second spoke about how it was a *"sort of fight"* to get students to critically reflect upon and question their *"well honed [Internet-related] strategies"* (Academic 17). The academic felt his role was to provide students with the *"… conceptual framework to be critical ... to understand the limitations of their knowledge about things that they are already doing in the information space"* so that students can criticise their own organisation's websites, reflect upon their choice of communication tools and treat search engine results with sufficient scepticism to want to improve their searching strategy.

9.4.3.3 Empathetic facet

Some academics implied that being Internet literate was related to being empathetic and knowing when it was appropriate to be informal during online communications. Several academics felt that students lacked these qualities, particularly during e-mail communications. Academic 17 claimed that students *"seem to have a different set of cultural norms"* when it comes to communicating with academics and being Internet literate includes writing *"a good e-mail that doesn't annoy people … to use e-mail in a responsible way"*. This academic felt that this was *"sort of art"* and *"kind of e-mail literacy"* that involved being able to judge whether the e-mail is really necessary and choosing the most effective subject line. Similarly, academic 03 felt that students should be more sensitive when using e-mail. The academic spoke about how students should be more aware of who they are communicating with and how their poor spelling, lack of paragraphs and the tendency to only use lower-case might be perceived, particularly by someone *"higher in the hierarchy"*. Overall, the academic felt students do not know when *"the informality should stop"* and that if they *"don't grasp that you've got to do things professionally, they will just get totally killed by people"*. Conversely, another academic felt that a level of informality was necessary to successfully and efficiently express oneself within the *"genre of blogging"* (Academic 14). It involves a *"style of self expression"* that differs from the style of academic writing valued in Higher Education being *"more journalistic, more informal writing"*. For this academic, this type of writing was more difficult than writing formally because the academic could not *"just sit down and dash things off … just having 20 minutes to sort of quickly blog my thoughts or something isn't enough"*. The academic would want to be *"thinking deeply"* about what to write and feeling the need to *"polish it"*.

9.4.4 External perspective

One academic who specialised in learning technologies, spoke about being Internet literate as if it was external to the individual and largely out of their control. This academic felt that Internet literacy was a property of the environment that the individual operates in, rather than something related to the individual: *"I would say without a doubt how usable resources are, is a key component"* of being Internet literate and how *"having a bad search engine, or very poor usability on pages that contain the information"* might *"obstruct their literacy"* (Academic 12). This perspective has been included here since it was presented as a distinct perception of Internet literacy during the research conversations. However, it was excluded from the Internet literacy triangle since this model represents academics' student-centred perceptions of Internet literacy (see delimitation in Section 8.3).

9.5 Cognitive and affective dimensions to being Internet literate

To varying degrees, when academics described or defined being Internet literate they implied different types of mental processes were involved. They used words like 'knowing', 'understanding', 'designing', 'evaluating' and 'discriminating'. They also used words and phrases that implied that these mental processes could be internalised like, 'having awareness', 'familiarity' and 'really adjusted'. The meta-language created by Bloom's Revised Taxonomy (Anderson and Krathwohl, 2001) and Krathwohl's (1964) Affective Model for categorising educational objectives (see Section 6.1) provide two useful ways of categorising the diversity of statements made by academics when describing being Internet literate.

9.5.1 Applying Bloom's Revised Taxonomy

Anderson and Krathwohl (2001) model (see Figure 6.1) was successfully applied to many statements made by academics relating to their perception of being Internet literate (see following table). For those statements that could not easily be classified, the following strategies were adopted:

- Examine the context of the statement
- Acknowledge that its exact location could not be determined without further consultation with the academic and select a range of locations
- Conclude that the statement referred to a range of locations within the model

Knowledge dimension	1. Remember	2. Understand	3. Apply	4. Analyse	5. Evaluate	6. Create
D. Metacognitive Knowledge		*"... understand the limitations of their knowledge about things that they are already doing in the information space"* (Academic 17)	*"... it's the old learn how to learn I guess, be able to access the new things ... as independent beings if you like"* (Academic 10)	*"... exploring their own understanding of themselves as* [Internet] *literate people"* (Academic 16)	*"we should be inviting them to reflect critically on their own, on the concept of digital literacy"* (Academic 14)	
C. Procedural Knowledge	*"I see literacies, those that set of basic skills that are necessary, for you to be able to explore, exploit and enjoy the Internet"* (Academic 09)	*"being Internet literate means that you can access the Internet and find your way around, that sort of thing"* (Academic 15)	*"... taking internet literacy ... using some tools like Turnitin to help you plagiarise less"* (Academic 16)	*"Internet literacy is "about getting information on the net, it's all about the checking the authority ... extracting ... disseminating"* (Academic 08)	*"there are several different tools that you can choose from, so there also has to be perhaps an element of selection"* (Academic 11)	*"... causing them to rethink how they are using a lot of these tools already ..."* (Academic 17)
B. Conceptual Knowledge	*"Internet literacy involves some sort of knowledge of the technology, knowledge about how to work computer applications"* (Academic 08)	*"... they need to be able to understand what a link is, they need to understand what downloading a file is"* (Academic 09)	*"I see literacy as the ability to acquire and take in information and use it, in some effective way"* (Academic 10)	*"... know what the difference between you know Internet resources and the digital journal"* (Academic 04)	*"... being able to judge the quality of the source"* (Academic 06)	*"... it would be rather nice to be able to do that sort of Internet type things myself, so it's creation as well as using information"* (Academic 10)
A. Factual Knowledge	*"... they would learn more about the Internet and it's uses and applications after doing the course, than they would beforehand"* (Academic 11)	... *"they have to understand things like domains and the fact ... that different information will have a different reliability"* (Academic 01)	*"... can see in the sort of URL as to whether this is a secure site"* (Academic 15)			*"... noting there was a mistake with that page and e-mailing the person who was responsible for that"* (Academic 03)

Knowledge dimension

Cognitive Process dimension

Table 9.1: Academics' perceptions of being Internet literacy mapped on to Bloom's Revised Taxonomy

Krathwohl's (1964) 'Taxonomy of the Affective Domain' begins to capture another dimension to academics statements related to their perceptions of being Internet literate. However, it focuses on the extent to which students internalise 'values', whereas during interviews with academics focussed on the extent to which students' Internet experiences were internalised. For the model to be useful and meaningful, it was necessary to refocus the definitions, merge three categories into one and rename the remaining two categories. Hence, 'Responding', 'Valuing' and 'Organising' merged to become 'Value', 'Receiving' was renamed 'Receptive' and 'Characterisation by Value' was renamed 'Internalise' (see figure X):

Level	Definition
i. Receptive	Receptive to learn from their own Internet experiences or from others
ii. Value	Sufficiently value what they have been taught or experience, that it positively affects their Internet-related behaviour
iii. Internalise	Consistently apply their internalised Internet experiences and learning to everyday situations in an almost reflex manner

Table 9.2 Krathwohl's (1964) Revised taxonomy for the Affective Domain

In contrast to the Cognitive Process and Knowledge dimensions, the 'Internalise' category subsumes the 'Affect' category which in turn subsumes the 'Receptive' category. That is, if someone is able to consistently apply their internalised Internet experiences and learning to every day situations, they must have demonstrated that it has affected their Internet-related behaviour in specific contexts, and for this to happen they must have been receptive to being taught or to learn from their Internet-related experiences.

9.5.2 Cognitive-Affective Model

There is no evidence in the literature of the 'Bloom's Revised Taxonomy' (Anderson and Krathwohl, 2001) and the 'Taxonomy of the Affective Domain' (Krathwohl et al., 1964) being combined into a single model. However, during the research conversations with academics there were occasions when individual statements could usefully be positioned within each model. When taking into account context, more statements could be located within both models. Hence, by combining the cognitive and knowledge dimensions of Bloom's Revised Taxonomy with the affective dimension of the Taxonomy of the Affective Domain a three dimensional model is produced. If higher and lower levels are indicated by darker and lighter shades respectively, the following model is produced:
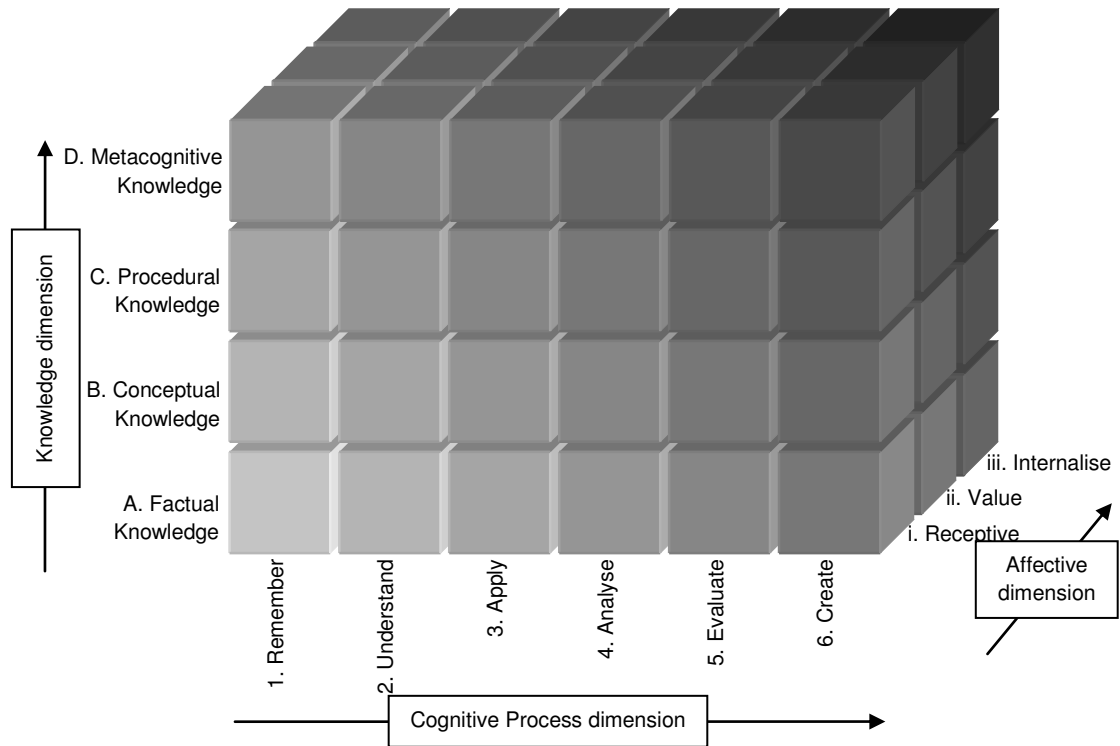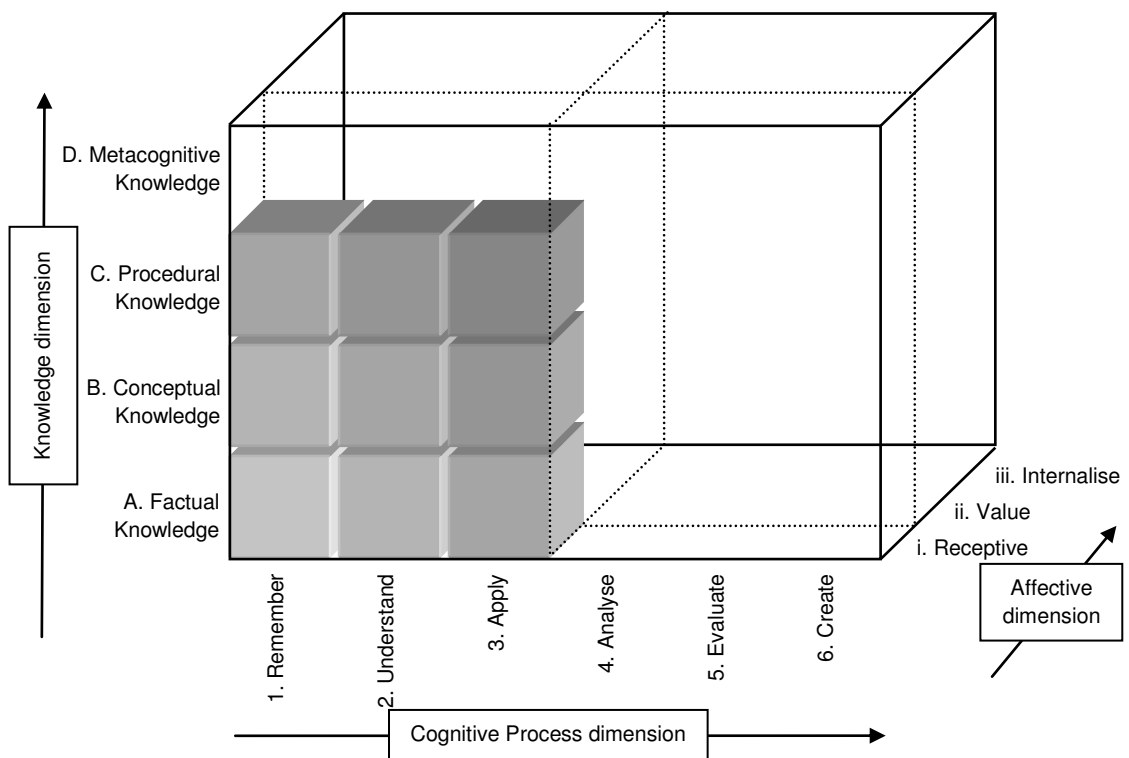
Figure 9.2 Cognitive-Affective model

Within this Cognitive-Affective Model are 4 X 6 X 3 = 72 cells that could potentially be used to represent the various cognitive and affective aspects to academics understandings about being Internet literate.

The Cognitive-Affective Model was tentatively used to capture each academic's perception of being Internet literate. As mentioned above, many of the statements made by academics either could not be located precisely within the Cognitive-Affective Model or spanned several categories within one or more dimensions. In these cases, a range of cells was used to represent their understanding of being Internet literate. Following this procedure, there was tentative evidence that academics made statements that relate to all 72 cells within the model (research question: RQ11-2008). However, there was also tentative evidence that some academics may stress certain aspects of the model whilst other aspects might be absent. To illustrate the different emphasis used by some academics, the model is applied to three statements made by different academics. These statements were chosen because they encapsulated the academics' overall understanding of what it means to be Internet literate. However, the model does not necessarily depict the academic's overall perception of being Internet literate: other statements might have revealed further categories and, had I probed deeper, they may have revealed higher, or indeed lower, categories.

> *"So, things like knowing about social networking sites, knowing about ethics, knowing about copyright, so for example Digital Multimedia one of the things we talk about quite a lot is copyright issues ... is it okay just to cut and paste stuff from the Web, is it ok just to download images and oh no it's not, so you know it's important for students to be aware of that."*

The model below depicts the various cognitive, knowledge and affective dimensions evident in the above extract from the research conversation with Academic 11. Academic 11 talks about *"knowing"* about *"social networking sites"*, *"ethics"* and *"copyright"*. On the cognitive process dimension, this is indicative of remembering (Remember, 1) or possibly understanding (2. Understand) this knowledge. Academic 11 also talks about applying knowledge to cutting and pasting from the Web and downloading images. Hence, there is evidence of a third cognitive process category, applying (3. Apply). The knowledge areas spoken about are difficult to determine from this statement alone. However, it might be facts (A. Factual), concepts (B. Conceptual) or procedures (C. Procedural), but unlikely metacognition (D. Metacognitive). In the final part of the extract, Academic 11 refers being *"aware"* of these areas as opposed to valuing the knowledge sufficiently to internalise it. Hence the first affective category Receptive (i) seems to better capture this dimension.

Cognitive-Affective Model Example 2

> *"I still think overall use of Facebook ... dominated by conventions of use, fashion, social pressure, there's not that much free appropriation by individuals ... they're not as much in control as they should be. That's the critical part ... there's also I suppose that's the truly literate person someone who's really adjusted to the Internet would, what would they do? They'd be able to view what they saw critically so they're not bamboozled by the imagery because powered into their minds by the Internet so they understand how it works so they can create content. They're active in appropriating the things they want and also they turn it off. So they're not addicted, they're in control, they're critical."*

In the above extract Academic 03 says that *"truly literate person"* is *"really adjusted to the Internet"*, *"not bamboozled by the imagery"* and *"they're not addicted, they're in control"*. This implies that their behaviour is fully internalised (iii. Internalising). Central to Academic 03's understanding is that an Internet person *"understands how it works"* (2. Understand), *"active in appropriating the things"* (3. Apply), are *"critical"* (4. Analyse and 5. Evaluate) and *"can create content"* (6. Create). Implicit in this extract are all four knowledge categories.
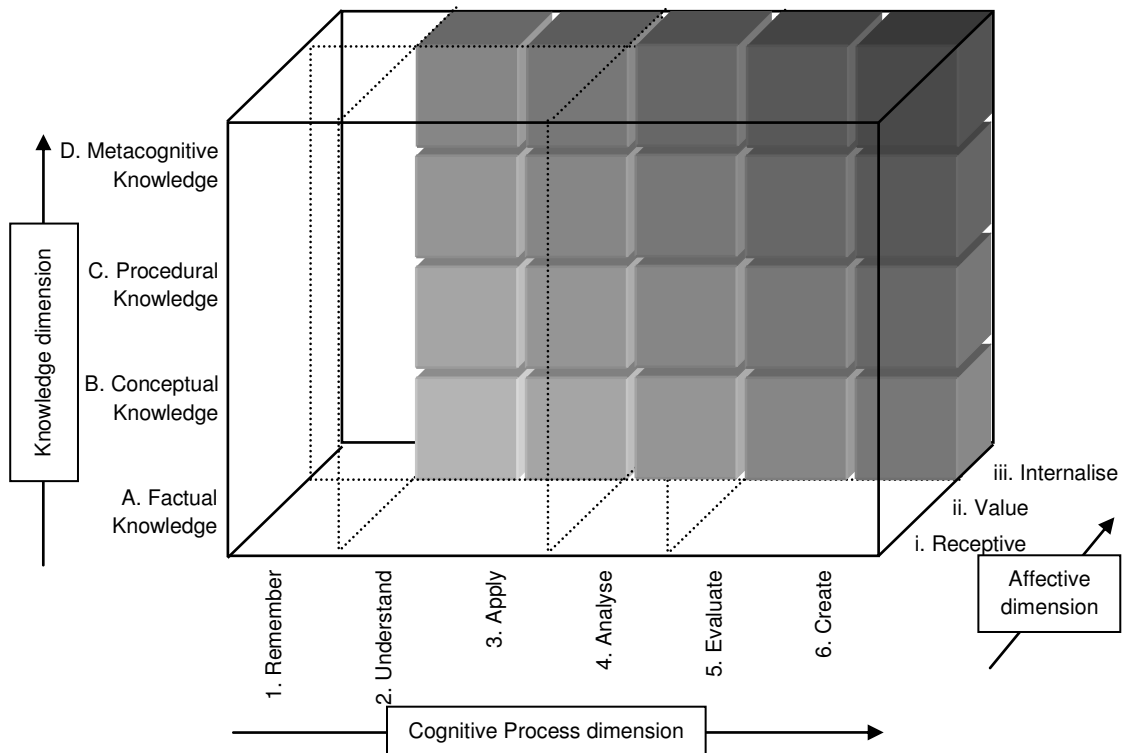
Cognitive-Affective Model Example 3

> [Being Internet literate] *is ... the capability of not only using but exploiting the information that is available on the Internet at every level. And that includes for example being able to judge the quality of the source, this is another thing about our students I am sure that they there is probably in all modules we say this, you use the Internet that's fine, be sure that you know what is the source and the source is reliable and so on, I am sure that if you ask at least half of the students probably more than that, they find the source on the Internet and they use it without even realising who has written that, if that is any authoritativeness at all.*

In the above extract, Academic 06 states that being Internet literate is *"the capability of not only using but exploiting the information that is available on the Internet at every level"*. The words *"capability"* and *"exploiting"* imply more than remembering or understanding information found and imply the application of that information found (3. Apply). The phrase *"information available on the Internet at every level"* could include all knowledge categories (A. Factual, B. Conceptual, C. Procedural and D. Metacognitive). In the remaining two sentences, Academic 06 talks about how students do not sufficiently value what they have been taught to affect their indiscriminate use of information sources. This implies that students' should sufficiently value what they have been taught that it at least affects their Internet-related behaviour (ii Affect).
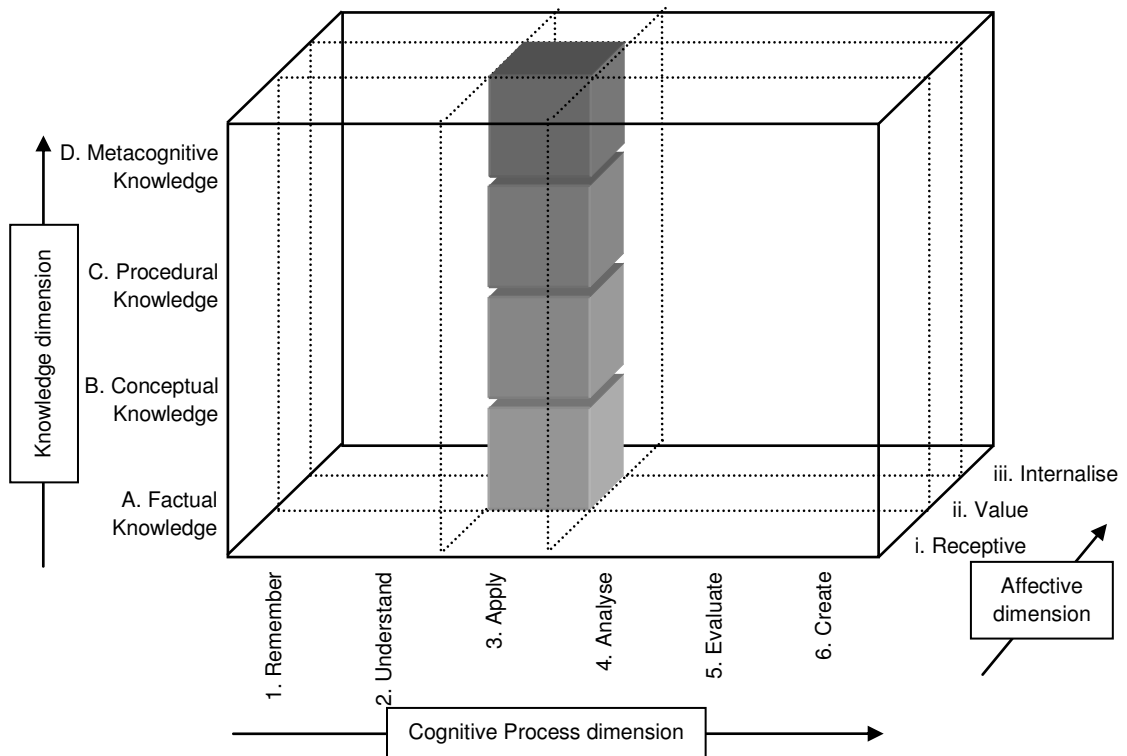
9.6 Responsibility for developing Internet literate students

A spectrum of attitudes existed when academics spoke about whose responsibility it was to develop students' Internet literacies (RQ12-2008). At one end there were those who viewed it as someone else's responsibility. These academics felt it was important that students were educated to become Internet literate, but it was someone else's responsibility to actually teach (or to have taught) students to be Internet literate. At the other end of the spectrum there were those that felt it was their responsibility. These academics felt personally committed to facilitating more Internet literate students.

Illustrating the devolving responsibility end of the Internet literacy education spectrum, two approaches were expressed. There were those that felt that *"those who have the expertise should be doing the teaching"* (Academic 13), suggesting the creation of a dedicated, non-credited module where Internet skills should be developed. A second approach was expressed by two academics, who do not teach Level 1 students. They felt that the teaching of Internet skills was so fundamental that students should be Internet literate *"before they arrive"* (Academic 04) or at least *"schools would start preparing them"* (Academic 09). Nonetheless, they felt students would *"adapt"* during their first year of their degree. A second approach was the creation of a dedicated, non-credited module where Internet skills are developed (Academic 08). At the other end of the Internet literacy education spectrum were felt it was their responsibility to develop students' Internet literacies. However, this was expressed in two ways. Firstly, Internet literacy education was everyone's responsibility and not just Internet literacy, but all the *"literacies students that the students are going to need"* (Academic 16). For these academics, Internet literacy education is a continuous process and that you *"can't just do it in one task and say it's done"* (Academic 16). Most saw scope for incorporating Internet skills teaching into most credited modules. However, one academic was concerned that this approach might boil *"down to being able to use the Internet effectively to search for academic work"* whereas in *"the world of work … searching for academic stuff is not really that relevant"* and copying other people's ideas is much more common (Academic 03). A second approach was adopted by Academic 01 who primarily conceived of Internet literacy as online searching and felt all Internet literacy teaching should not be devolved to anyone who was not a practitioner:

> *"*[Teaching about Internet literacy is] *Nothing to do with you, it's what I do …
> Because you are not practitioners, you are academics. You think about it
> and you maybe talk about it, and you maybe comment about it but you don't
> get out there and talk to kids about it"* (Academic 01)

9.7 Perceptions of Internet literacy

As stated above, the term 'Internet literacy' was originally chosen because it encapsulate my research interests and not because it is in common usage within my school or more widely. When using this term, or when responding to my use of the term, academics expressed views related their underlying understanding of Internet literacy, of being literate, and how various literacies relate to each other (RQ11-2008). These are expanded in the following three sections.

9.7.1 Internet literacy education

When describing their understanding of being Internet literate, academics would sometimes give broader insights into their understanding Internet literacy and Internet literacy education. Literacy education was seen by some academics as *"part of higher level stuff"* (Academic 16) and, in relation to Internet literacy education, frequently included development of certain qualities (see above). A few academics framed their perception of Internet literacy in terms of developing students' abilities to critically reflect on their own Internet-related behaviour and/or their understanding of Internet literacy. To support students, Academic 17 said my school should provide students with a *"conceptual framework to be critical"* to ensure they were aware that much of what they are doing on the Internet is *"quite facile"* and that *"there is actually considerably more to it than that"*. Conversely, Academic 16 felt that Internet literacy involved students critically reflecting upon their Internet-related behaviour in relation to the students' own evolving understandings of Internet literacy and not a framework already provided. Underlying many approaches to educating for Internet literacy were concerns that students were sometimes over-confident with their online skills. For example, Academic 14 stated whilst students often appeared comfortable with technologies, *"it might lull them into a sense that they are actually more skilled than they are"* and consequently:

> *"... we should be problematising the very concept of digital literacy or Internet literacy with students. I think we should be inviting them to reflect critically on their own, on the concept of digital literacy, and on their own level of nature of, digital literacy."*

The implication here is that encouraging students to critically reflect upon their *"concept"* of Internet literacy enables them to become more Internet literate. The academic goes on to say that the product of this critical reflection is one of many *"generic capabilities that we hope that students will be developing"*. Other academics

also framed their conception of Internet literacy education in terms of encouraging students to critically reflect upon their concept of Internet literacy. For example, Academic 16 draws directly on research conducted supporting students becoming more information literate when stating that students "*should be exploring their understanding*" of Internet literacy, "*what it means to them and to develop their own understanding of themselves*" as Internet literate people. Again, the implication here is that encouraging students to understand themselves as Internet literate people enables them to become more Internet literate.

9.7.2 Internet literacy levels

Some academics implied that being literate was about attaining some threshold level or level of proficiency. This was expressed in a variety of ways including: *"They would at least have the ability to carry out ..."* (Academic 13), *"must be able to use"* (Academic 11), *"ought to know about"* (Academic 05), *"they have got the basic skills"* (Academic 15), *"They also haven't got the basic"* (Academic 03), *"set of basic skills that are necessary"* (Academic 09), *"At least they need to know"* (Academic 04) and *"sort of social skills 101"* (Academic 16). Other academics implied various levels or stages of literacy as opposed to a binary literate or illiterate. One academic implied just three levels: illiterate, minimal and highly literate (Academic 06) and whereas another conceived of an *"infinite gradation"* of levels that could be described like the *"seven grades of skill in those TFPL[35]"* (Academic 03) *Skills Toolkit*. Others described being literate as being on a *"continuum"* (e.g. Academic 08) although at some point a person moves from being illiterate to literate. Some academics began to quantify these levels or grades of Internet literacy. For example, one academic described his own level of Internet literacy as *"62%"* (Academic 10) and another spelled out an extensive range of marks and associated criteria that a student would exhibit (Academic 01). For example, someone who has *"gone from 39% to 40%"* would be using Google Advanced search rather than *"simple Google searches"*.

For some academics, achieving a minimum level of literacy was considered relatively trivial. For example, Academic 06 who perceived being Internet literate largely in terms of finding information, said that *"it's very rarely you have to use your brain to be able to find what you are looking for"*. Academic 07, who expressed being Internet literate on a

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[35] TFPL Ltd. is an information and librarianship recruitment and training company who devised a "Skills Toolkit" in 2005 consisting of various levels (see http://www.tfpl.com/skills development/skills competencies.cfm)

0 to 10 scale, noted that there was not *"a great big difference between 0 and 10 in all honesty you know"*. Another academic claimed that most people can achieve basic levels of Internet literacy but higher literacy levels are relative to the *"services"* utilised (Academic 05). Regarding the 'basic levels' of Internet literacy, Academic 05 claimed *"I can't think of anybody in my family, apart from my father who isn't Internet literate"*.

9.7.3 Internet literacy's relationship with information literacy

During the research conversations many academics compared Internet literacy to other literacies including computer literacy (Academic 15), digital literacy (Academic 16) and Web literacy (Academic 11). However, within a school that promotes information literacy, it is maybe not surprising that the most common comparison was between information literacy and Internet literacy. Many academics implied, and several explicitly stated, that Internet literacy and information literacy were complementary. In the following extract, Academic 16's research interest in information behaviour and information literacy is used to frame conceptions of both literacies and the relationship between them:

> *"I would imagine they, I think they are complementary and over-lapping, but I would see the information literacy being an understanding the nature of the information content, the meaning as being, meaning of the content flowing through some of these tools is fundamental. Whereas in Internet literacy I think, understanding more about the tools themselves, and obviously that can't be divorced from what you are trying to do with the tools but it seems to me in Internet literacy … the focus is on the tools, and in, and to understand the tools you need to understand what you are doing with them and why"*

For others, Internet literacy was seen as enabling information literacy. For example, someone's information literacy would be *"lacking"* if they were not Internet literate since they would not *"be going to the Web to get more up-to-date information"* (Academic 10). Conversely, other academics implied that someone's Internet literacy would reduced if they were not information literate since someone who was information literate would *"consider other sources of information that are not digital at all"* (Academic 06). Academic 10 pondered whether there might now be an *"inverse relationship"* between Internet literacy and information literacy, the former promoting a *"superficial multi-processing of information at a fairly procedural level"* and the latter being more critical and *"thinking more slowly about information"*. The complementary relationship between Internet literacy and information literacy was conceived by some academics as two overlapping sets, one representing information literacy and the other representing Internet literacy: the non-overlapping information literacy part *"including*

physical media, and going to libraries" (Academic 08), and the *"ethics of information"* and *"the cultural value of information"* (Academic 16); the non-overlapping Internet literate bit including the *"ability to use these various sort of network tools like e-mail or web browsers"* (Academic 08) and being more amenable to *"diagnostic testing"* of *"baseline technical competence"* (Academic 16). However, those academics that tended to perceive being Internet literate in terms of finding information, implied that Internet literacy was a subset of information literacy, as opposed to two overlapping sets. For example, Academic 01 said someone who was information literate was *"more able"* than someone who was Internet literate since they could refine an online search that starts with *"3.8 million hits on a simple Google for global warming and you can end up looking at 441"* (Academic 01).

9.8 Academics' understandings of undergraduates' Internet-related abilities and practices

A key aspect of the research conversations with academics was to explore their understandings of undergraduates' Internet-related abilities and practices (RQ9-2008).

9.8.1 Undergraduates' informal and academic uses of the Internet

Many academics referred to students' abilities to use the Internet for everyday purposes and their lack of abilities to satisfy their more academic information needs. This disparity was typified when Academic 03 referred to students' *"adept"* behaviour when using the Internet for their own *"social purposes"* like *"finding out the cheapest download of a bit of music, they would beat you every time"* and contrasted this with their generally *"inept"* behaviour when using the Internet for *"more serious uses"* of the Internet like applying for jobs, communicating with academics online and searching for information.

9.8.2 Undergraduates' searching abilities

Academics were generally critical of undergraduates' abilities to search for academic-related information online. It was described as *"Very superficial"* (Academic 06), *"not very developed"* (Academic 09). Feelings ranged from frustration (*"they don't seem to actually be able to search very effectively and we're still failing to teach them much"* - academic 03) and surprise (*"I am very struck by all the students, they don't have a very, they are not great at searching for information, they are not very good at striving to find as much as they possibly can"* - academic 08) to occasionally acceptance (*"he's obviously really struggling with just basically search skills … He came to me in the second year with problems and still had it in the third year. I can't really fix that"* - academic 03) and sympathy (*"overseas students [find it] extra difficult … they have a language barrier … they have not enough adequate language or vocabulary to search the term"* – academic 04). Other academics were slightly disparaging, referring to how students *"rather crudely … tapping in something on Google"* (Academic 02) and how students' *"perception of finding information is* [only] *using Google"* (Academic 13). However, two academics both speculated that students are bringing their well-honed searching strategies to the University setting and failing. For one, these strategies have previously fulfilled their searching needs because of the vast amounts of money used to ensure the search engine Google fulfils most everyday searching demands, however there is *"a danger of people coming crashing down and discovering that searching can*

be quite hard" when they start looking *"for topics that are less well trod"* and *"the kinds of tasks that we set them"* (Academic 08). However, not all academics felt so negative about students' abilities to search for information. One academic felt that being an information school our students are able to search *"a lot more effectively than maybe they do in other departments"* that do not have this underlying ethos (Academic 12) and another admitted that despite his reservations about students' abilities to search for academic information, *"they tend to write really, really good dissertations … somehow they pull it all together by the third year"* (Academic 03).

9.8.3 Uncertainty about undergraduates' informal Internet practices

Whilst academics held views about students' everyday and academic Internet literacies, there was much uncertainty about what students actually used the Internet for. Phrases like *"they probably …"*, *"they might know …"*, *"they may do …"* and *"I guess …"* were common. One academic's comment characterised many academics thoughts: *"don't know that much about what they do, I suspect they use the Internet very differently from me"* (Academic 08). Uses suggested include online shopping (Academic 15), gaming (Academic 02), Second Life (Academic 02), downloading music (Academic 07), *"are looking at, undesirables"* (Academic 07), instant messaging (Academic 08) and even undertaking paid work (Academic 16). Most commonly, academics suggested that students use the Internet for socialising, particularly via social networking sites like Facebook. Students' Internet literacies within Facebook drew some criticism with one academic stating that *"they're not as much in control as they should be"* (Academic 03) and another feeling that students think *"a lecturer of any kind is automatically forbidden from accessing"* Facebook (Academic 17).

9.8.4 Generational Internet divides

Academics sometimes implied that students' relationship with the Internet was fundamentally different than their own, and that these differences might be generational. For example, one academic described students as *"natives"* comfortable interacting online, unlike herself who preferred *"a lot of text, hard copy and paper"* (Academic 02) and another caricatured the Internet for students *"… as the natural way to go for things … they are living in the Internet in a way that you know we wouldn't … that is that generation"* (Academic 17). The idea that differences in Internet behaviour might be due to differences in exposure to the Internet was sometime evident. For example, one academic defended students' abilities, particularly when searching for information, *"Because those kids grow up with Internet nowadays so, they are probably*

very good, probably better than [member of information retrieval academics] *for example, probably better than me"* (Academic 04). Others cautioned against making sweeping generational statements about students' Internet abilities since *"even if the students are the same age it doesn't mean that we are of the same generation in terms of Internet"* since students have *"different experiences with the Internet and they have acquired different levels of literacy"* (Academic 09). However, even the academics who stated a more cautionary note conceded that there might be generational differences between undergraduates' uses of the Internet and their own. For example, Academic 16 who had just cautioned against making sweeping generalisations about students' use of the Internet, then stated that the Internet was sufficiently integrated into students' lives that *"they probably for flirting, they are probably using it for breaking up with their boyfriends".* Others made comparisons between the amounts of time undergraduates and academics spend on e-mail (Academic 08) and social networking sites (Academic 11).

9.9 Issues related to the terminology used

The research conversation questions were predominantly framed around the term, 'Internet literate' and, whilst there was much variation in academics' responses, many comments coincided with conceptions of information literacy promoted in my school. Had the research conversation questions omitted the term 'literate', the responses might have been different. It is possible that the term delimited academics responses and the conversations were, initially at least, overly influenced by their conceptions of information literacy. Ironically, the rationale for including the term 'Internet literate' in the research conversations questions was to give academic opportunities to respond the full range of cognitive and affective descriptors. For example, I could have asked questions like, 'What skills and knowledge do students need to use the Internet?' However, a question like this might have delimited potential responses to just skills and knowledge, whereas the question, 'How might you describe someone who is Internet literate?' was meant to elicit a rich set of responses. In hindsight, other questions could have been asked that might not have delimited academics' responses and not been dependent of their understandings of the terms 'information literate'. For example, 'If you were planning a module to prepare students to use the Internet, what might it contain?' To conclude, I feel the use of the term 'Internet literate' may have directed academics' responses towards the beginning of the research conversations. However, with the exception of Academic 01 who maintained an information literacy centric stance through-out the conversation, I feel the remaining academics eventually

expressed their current understandings of what it means to be Internet literate in the remainder of the conversation.

Chapter 10: Undergraduate information analysis

The aim of this chapter is to explore undergraduates' perceptions of being Internet literate, Internet literacy education and their Internet-related practices (research aim: A1-2011) and develop theoretical models and/or typologies that describe and explain the findings (research objective: O1-2008). The analysis of the information collected is presented in two main parts. The first part presents the analysis of the Level 1 focus groups and research conversations. These have been combined since they were linked methodologically (the tentative analysis of the focus groups informed the questions asked during the undergraduate research conversations), they both explore the same research questions (RQ1-2008 to RQ6-2008 and RQ13-2008), and they were both conducted within a relatively short time of each other. The second part presents the analysis of the Level 3 research conversations. These took place around 31 months after the Level 1 focus groups, and were based on the analysis conducted during 2010. In addition, the research conversations addressed additional research questions (RQ1-2011 to RQ5-2011). Hence, the analysis of the Level 3 research conversations is presented separately, although comparisons are made with the Level 1 analysis to address RQ4-2011.

10.1 Level 1 focus groups and research conversations

This section analyses the focus groups and research conversations held with the Level 1 students. The following table links the sub-sections to the main research questions addressed. Whilst the Level 1 focus groups and research conversations were conducted to address RQ1-2008 to RQ6-2008 and RQ13-2008, the analysis took place around 18 months later, when research questions RQ1-2011 to RQ6-2011 were evolving. Hence, this section also addresses these research questions.

Sub-section	Main Research questions addressed
Becoming Internet literate	RQ5-2008, RQ6-2008, RQ2-2011
Perceptions of the Internet	RQ2-2008
Confidence	RQ4-2008
Internet use	RQ1-2008, RQ2-2008, RQ1-2011
Generational differences	RQ5-2011
Facebook	RQ1-2008, RQ2-2008, RQ1-2011
Perceptions of being Internet literate	RQ3-2008

This section begins with an analysis of how students felt they have acquired their Internet-related skills and understandings, concluding that most students felt they taught themselves when needs arose as opposed to feeling they have been previously

taught. Implicit in the statements made by students was a view of the Internet as a vast information resource or a collection of Web pages. During the next section, these and other views are explored including how students tend to be almost idealistic in terms of the affordances they felt the Internet might offer and its capability to satisfy their information needs. The latter tended to centralise around students' ease at finding information using search engine Google. During the focus groups and interviews most students expressed a high level self-efficacy regarding their Internet-related abilities, particularly when satisfying their own information-related needs. These attitudes are explored during the next section along with the views of a not so confident and less-vocal minority. In addition to appearing confident, students gave the impression that the Internet was fully integrated into their daily lives. This is explored in the next section, along with the observation that the range of Internet-related technologies used by students appeared narrow. The next section highlights the many statements made by students relating to their perception of generational differences. Paraphrasing their views, because students are younger they learn quicker, and because they have *"grown up"* with the Internet, they must be more experienced than the older generation who tend to be more cautious and less likely to play. Of the few Internet-related technologies cited by students, it was Facebook that dominated. To represent the considerable dialogue related to Facebook, a separate section has been included. Students devote considerable energy to maintaining their Facebook presence, describing how distracting they felt it was, some even describing Facebook as an addiction. Social pressure appears to be the main reason for this perceived excessive use and also the initial reason for starting to use it. Many students gave the impression that Facebook satisfied various social and digital needs in one convenient location. The final section focuses on students' implicit understanding of Internet literacy. Students perceived a minimum set of basic skills and understandings necessary to use the Internet. With these basics students felt you could then teach yourself to become Internet literate. Students also described those that were more Internet literate as being more efficient and successful at using the computer and Internet to achieve online tasks.

10.1.1 Becoming Internet literate

During both the focus groups and follow-up one-to-one research conversations students were asked about how they acquired their Internet-related skills and understandings. A few students seemed surprised that they could not recollect: *"it just developed, it's weird ... I don't know how I learnt it"* (Student A) whereas some others

felt it was instinctive: *"you do it involuntary kind of ... you just instinctively get it"* (Student W) or something natural: *"it's just natural, just naturally sort of, almost teach yourself"* (Focus Group C). The feeling that students had taught themselves was evident in many of the research conversations. Few students attributed their Internet-related understanding and skills to specific individuals or formal education. Most students felt they had learnt by picking it up: *"you just pick up what you need to know"* (Focus Group C); experimenting: *"try it anyway and see what happens"* (Student G); using trial and error: *"random clicking on the thing, maybe help, maybe help pages"* (Student F); playing (Focus Group C) or more purposeful techniques: *"of get down to it yourself and figure out your best way of doing it for yourself"* (Student M). When probed further, students did refer to other potential sources of Internet-related learning, particularly the schools and colleges they had attended. However, these references were frequently not positive and sometimes even disparaging: *"they didn't teach much that I can remember"* (Student A). Students referred being taught about *"what's in a PC"* not *"how to use a PC"* (Focus Group C), *"don't copy, just about plagiarism"* not *"how to actually use the information"* (Student U) and *"just ... go onto this site"* not *"what to kind of do on the Internet as a whole"* (Focus Group A). However, some students were more complementary about their formal education saying that it had them the *"basics"* (Student C), it was *"good"* (Focus Group A) or it was *"useful"* (Focus Group D) and one student who had previously studied 'A' level ICT stating, *"My skills were developed quite a bit … so it's like we learn a whole lot more about the Internet, how to search better, using advanced searched, just websites and stuff like that. I think I am quite advanced on the Internet"* (Focus Group C). Underlying these conversations was what might be described as a satisficing attitude towards online learning. Many students appeared reasonably content with their level of Internet skills for the purposes that they used the Internet for and would only learn new skills when required. As one candid Focus Group B member said, *"There is no need for what I want on the Internet to be any better"* and another Focus Group C member said *"I don't, so much push myself on it a lot, I don't play about a lot anymore"*.

10.1.2 Perceptions of the Internet

The research conversations and focus groups did not explore students' understandings of the term Internet per se, but sufficient was said to indicate that they might hold Web and information centric conceptions that are at odds with the broader definitions referred to in the literature. For example, one student described the Internet solely in terms of what can be accessed *"as soon as you click on Internet Explorer"* (Student N).

For others *"the Internet is a giant resource centre"* (Student W) and the Internet was *"websites, that supply information for like coursework or just general things, holidays or, looking for products to buy"* (Student H). These Web and information centric conceptions of the term Internet were also prevalent in much of their general discussion about the Internet.

The students interviewed also tended to hold idealistic conceptions of the Internet in terms of what can be achieved (for example, student B said *"The only things I probably don't use the Internet for is I don't think I can even name one to be honest"*), the extent of resources on the Internet (for example, student M said *"it's just got everything the Internet to be honest, if I need something I just go on line"*), the efficiency of using the Internet (for example, student V said *"It would be probably be easier to use the Internet for everything"*), the quality of information and communication technologies found (for example, student J said *"the best source to find your information or to interact with other people"*), its ability to satisfy information needs (for example, student H said *"I usually find what I want"*) and the extent to which information resources are becoming Web-based (for example student G said *"Everything has become Internet-based … you can search for anything"*). Only a few students held less idealised conceptions of the Internet: one student appeared to be aware of the scope of the Internet, whilst also recognising that information could be obtained elsewhere:

> *"I think you could get, 90% of stuff that you needed off the Internet, be it shopping, be it resources. I mean there obviously is no substitute for going into the library and having a physical copy of a book but even then, you can get, you can get quite a lot of the text on-line, and I wouldn't say, do I go to it for everything"*
> (Student I)

... and another student said that the Internet was *"the first point where people will go to look for information"* but they then might look *"elsewhere afterwards if they can't find what they are looking for"* (Student H).

For most students interviewed, searching for information and using Google were almost synonymous. For example, one student said *"even I can't solve the problem, I can Google it, how can I solve it and the answer appears"* (Student O). All students appeared to recognise that Google was a tool to search the Web as opposed to actually containing the information, although one student may have held this view saying *"you think of anything on the Internet you think Google"* (Student D). Most students gave the impression that they did not struggle to find information using Google

with one saying *"I go straight to Google and then I would search for exactly what I want"* (Student B) and that finding information was almost mechanistic:

> *"I think it's like very natural. Say you go on the Internet and if you want to find information, it's really easy, you just type in the Google box, and you find your information"*
> (Student U)

Only one student, maybe recalling recent Information Management studies, explicitly stated that Google had limitations: *"you can't find everything on Google, especially when we are looking for research papers"* (Student R).

10.1.3 Self-efficacy

After conducting the focus groups, the overwhelming impression was that students were highly confident with their Internet-related abilities, particularly to satisfy their own information-related needs. This impression was reinforced after conducting the one-to-one research conversations, although also revealed a minority of students who did not expose their lack of confidence during the focus groups.

Many students maintained high self-efficacy levels during the research conversations and focus groups. For example, one student in Focus Group C felt their Internet-related abilities were high because the student had *"never seen anyone who I have thought wow, you know what I mean, they can do this and they can do that, and I have no idea how you do it"* and another was almost condescending of those that are *"suspicious of absolutely everything"* on the Internet and felt it was *"a joke"* to be asked by the University's Web-based virtual learning environment if the student wanted to run Java, concluding that *"you are just having to cater for the different levels of ability on the Internet"* (Student I). This student did not appear to understand that disabling Java running in a browser is a standard security measure. Only a few of the University's Web-based virtual learning environment's tools would not work if Java is disabled.

Students sometimes justified their high self-efficacy levels in terms of being able to overcome problems faced (for example, student L said *"I feel as though I could overcome tasks if they did cause problems and I would feel as though I would be able to resolve them"*), the ease in which they could learn to operate new software (for example, student D said *"I can quite generally pick the gist of the programme up without too much effort depending on how complex it is obviously"*) and how *"comfortable"* they are at getting *"on with things"* (Student H). However, more commonly students would state that using the Internet was *"natural"* with one student

saying, *"I do most things on the Internet, so nothing nowadays I do by pen and paper ... it's becoming first nature to me"* (Student G) or they no longer needed any conscious effort to use the Internet, for example you *"don't have to really sort of think about what you are doing ... sort of flow with it really ... you just do it without even thinking about it really"* (Student D). Being able to use the Internet in a *"natural"* way may have had a variety of meanings, although only a few were stated. For several students it was about efficiently navigating websites (for example, student K said that someone who was Internet literate *"would just be able to fluently flick around pages and they would be able to find something quite easily"*). For some students it included being able to scan a Web page to quickly identify key points. For example, one student said, *"when I am on a computer I click past things without actually looking at the entire page because you sort of know what is coming"* (Student D). For other students it was about knowing where to look on an online application to perform some task. For example, one student said *"if I wanted to block someone from Facebook, at first I would go to settings because I would assume it would be under that ... from just <u>experience</u> of using"* that type of application (Student I). "*Experience*" was used by several students to qualify when it became *"natural"* to use the Internet. For example a few students stated that it was natural only after a certain age with one student stating *"probably 13, 14 it just becomes completely natural"* (Student A) or *"it's not natural as in something you are born with, it's natural in the sense that once you have got the basic kind of components to get onto the Internet"* (Student I). Experience was also used to justify why some students felt they confident using the Internet. For example one student said *"I feel pretty confident yes. I mean, I have used it for a long time now"* (Student E) and *"I use the Internet every day so I feel pretty confident with it"* (Student S).

Students' high self-efficacy levels were particularly evident when they spoke of their online searching skills. Several students pronounced that they could find the answer to any question via the Internet. For example, one student said *"if you ask me any question, you want me to answer it through browsing, I could answer the question"* (Student R) and another felt their confidence searching for information was not special and applied to anyone in their generation, concluding that *"I don't know anyone that can't use it, or hasn't been able to find what they want on it"* (Student B). Some students explained why they found it easy searching for information with one student citing years of experience *"being bored and trawling through websites or finding useful links"* (Student W) meant the student had memorised *"good"* Internet sites that could

recommend to others and another student intuitively knew *"what words or phrases to use"* when *"wanting to look something up on the Internet"* (Student H).

Whilst many students gave the impression that they were confident or even highly confident using the Internet, there were several students who expressed lower self-efficacy levels with respect to online situations. For example one student said, *"I think in the areas that I do tend to participate in I feel very confident ... it just depends on my own personal strengths, places where I normally spend a bit of time"* (Student Q). Others felt they lacked knowledge of particular areas. For example, one student who had a *"good knowledge of the Internet"* also did not *"know that much about the sites in general like how to make them"* (Student E) and a Focus Group A member spoke about being *"fairly good"* on the Internet but *"viruses and things I am not particularly brilliant with"*. One semester into their degree, there was also an indication that some students felt their studies were challenging their online confidence: *"as we are going through university we will find that there are things that we ... are not so sure, that is when you are not as"* confident, although one student felt studies had given the student more confidence and cited how *"people"* now say *"how did you find that information* [so] *quickly?"* (Student U).

Amongst the largely confident online cohort were a minority of students who during the one-to-one research conversations felt able to express their lack of confidence using the Internet. One of these students said *"sometimes I am ashamed that I don't know some of the things"* related to the Internet, *"there are so many things I still don't know about"* and *"very often can't do some of the things and I ask my peers and usually friends and they explain it"* (Student P). The other student described a *"really embarrassing story"* that they did not *"normally tell people"* (Student J). Due to this student's education, they had no experience of the Internet. The student changed to a school where the student's friends used the Internet regularly. This student cited their embarrassment of not knowing about Google saying *"I was actually shocked that there was such a big thing ... I was shocked that I didn't actually know about it until I was in Year 10 or something ... I was really embarrassed about that"*. These low self-efficacy levels were not apparent during the focus groups, maybe because they feared ridicule if they exposed to others their perception of their inabilities.

10.1.4 Internet use

Students' use of the Internet was explored during the research conversations and focus groups. Many students gave the overwhelming impression that the Internet was fully

integrated into their daily lives, with some students stating *"it's just become not even just a way of life, it's become a necessity now in our lives"* (Focus Group B) and *"anything that pops in my mind ... I just go and search the Internet and find it, it's really a big part of my life"* (Focus Group A). Several students said that they routinely arranged Internet access much of the day: *"Well you turn it on, when you wake up and you turn it off when you go to sleep, more or less"* (Focus Group D) and many more said that they sometimes spent a considerable amounts of time on the Internet. For example, one student said *"I spend more than 10 hours, lets say more than 5 hours a day on the Internet"* (Student R). For some students the Internet had become almost an addiction with one student saying *"Now it's an addiction ... the Internet in general is an addiction ... You know because every day you go on the Internet more or less"* (Student P). In contrast, some students had concerns about excessive use of the Internet, although these concerns did not necessarily translate into less Internet activity. For example, one avid Internet user was *"concerned"* that people *"need some sort of interaction to go out there"* (Student Q) and enthusiastic Facebook user felt it was *"better to communicate in person, not on the Internet, because I find it like gestures and facial expressions"* (Student F). There also appeared to be a contrast in the extent some students integrated the Internet into their daily lives and how discerning they were when using the Internet. That is, many of the students who had expressed reservations about excessive Internet use were sometimes the students who appeared indiscriminate in their Internet use, and visa-versa. For example, one student deliberately avoided using the Internet since it *"it keeps me in the house and I don't like to be kept in the house"* (Student V) yet also confessed to not being discerning taking *"twice as long as it should do"* to do anything because the student will *"go off chasing the butterflies"*. Maybe this is why the student avoided the Internet. Conversely, another student claimed to use the Internet for *"almost everything"* (Student I), yet was extremely selective in the Web sites viewed, only visiting booked-marked sites and another student who only visited a few Web sites because *"those sites provide everything"* needed *"at this moment in time"* (Student B). However, one other avid Internet user confessed to being not very discerning, being *"quite open to Internet advertisements"* and frequently being *"targeted by marketing people, because I am quite influenced into buying stuff"* (Student J).

The research conversations and focus groups also gave an insight into what students felt they used the Internet for. In contrast to the overwhelming impression that the Internet was fully integrated into many students' lives, the range of Internet-related

technologies used by students appeared surprisingly narrow with much of the dialogue devoted to Facebook and much less to general online technologies like *"Blogs and Forums"* (mentioned by student L), *"chat services"* (mentioned by student R) and having *"various e-mail accounts"* (mentioned by student S). Specific technologies and resources that were mentioned included the University Library's e-resources (for example, student R), Wikipedia (for example, student S), Instant messenger chat (for example, student A), the BBC website (for example, student S), Amazon (for example, student C), eBay (for example, student G) and YouTube (for example, student N). Students were using these internet-related technologies for communicating, typically to *"contact with old friends and family"* and *"see how your mates are doing"* (Student A); Entertainment, like watching *"online movies"* (for example, student Q) and generally *"keeping me entertained"* (Student A); News, particularly for headlines and the weather (for example, student Q) and related to football (for example, student R); Shopping, booking flights (Student Q) and food and clothing shopping (for example, student E); and information finding, not just for studies, but for everyday information (for example, student V) and general interest (for example, student Q).

During the focus groups and research conversations some students suggested they could have satisfied their information and communication needs using existing technologies or methods, but the affordances that the Internet provided (for example, convenience and efficiency) meant it was chosen instead. Examples include one student who shopped on the Internet because *"it's a lot easier than just going to the shops"* (Student E); a Focus Group D games player who said the Internet meant the student could *"just play straight away, at home, you haven't got to meet up or anything"*; another student who *"found it easier to kind of digest the information a bit better than in a book"* (Student M); a avid Facebook user who previously contacted friends by phone but now used Facebook to make social arrangements because *"you can tell everyone what you are doing"* (Student B); and student I who used the Internet to find information rather than libraries because Web *"sites don't close, but a library does"*.

10.1.5 Generational differences

Many students in the focus groups and research conversations perceived differences between *"their generation"* that had *"grown up"* with the Internet and their parents' generation that had not: *"We are the generation that* [has] *grown up with it"* (Focus Group D). Their logic appears to be that because *"younger people ... pick things up*

quicker" (Student N), *"it's easier to learn when you are young"* (Student F) and *"young people tend to have ... a mind like a sponge"* (Student D), they have *"picked up"* their Internet skills and understandings quicker than *"older people who are a bit slower"* (Student N) and *"seem scared of doing certain things just in case the computer suddenly completely breaks"* (Student I). As a consequence, some students felt using the Internet was obvious for their generation: *"I don't think anyone has to learn to use the Internet because it just comes ... it's something that everyone knows how to do it"* (Student C) and *"there wasn't anything like ... oh I didn't know what to do on this and had to call up someone and say oh how do I do this on the Internet?"* (Student F). Overall, many students felt that their generation was generally more efficient using the Internet, with one student specifying that *"the group between probably 15 to 30 year olds are probably the most efficient on the Internet"* (Student S). They also perceived that the *"older generation"* might use the Internet for different purposes with one student saying they might use *"the library more for research and everything else"* whereas *"the younger generation, everything is first on the Internet"* (Student Q). Ironically, this student would be classified as a mature student using the University's Admissions guidelines.

Not all students interviewed held negative views of the online ability of older people. For example one student felt that an *"older person"* might be *"better on the Internet"* because younger people tend to go *"straight onto Facebook, MSN, instant messaging"* whereas *"an older person would use it for more beneficial needs ... which includes news, probably or gathering more information for themselves"* (Student J). Another student was also more positive about *"older people's"* online traits feeling they were more cautious, whereas younger people *"are not afraid of taking risks on the Internet"* and hence *"don't ... look at the consequences as much"* (Student G).

10.1.6 Facebook

Many of the student research conversations felt slightly stilted and laboured, but when the conversations progressed to Facebook (which inevitably they did) the dialogue became more animated and open. In hindsight, I should have explored the reasons for this transformation. Maybe it was because they felt Facebook was more familiar to them or maybe it was related to a comment made by one student that *"when you are on Facebook you don't really think that you are on the Internet"* (Student J) opening-up the possibility that students had excluded Facebook from their answers because they did not conceive it as part of the Internet. To fairly represent the relative popularity of

Facebook, the apparent shift in rapport during the research conversations when the topic changed to Facebook and the possibility that some students may have excluded Facebook from their general comments about the Internet, a separate section has been included in this chapter.

Mirroring the previous general comments made about the Internet, many students referred to the considerable amount of time they and others spent on Facebook with one student saying, *"I use it every single day, 3 or 4 times a day I will log on and keep it logged on, so I am definitely on Facebook pretty much all the time"* (Student A). Feelings about the amount of time they spend using Facebook ranged from describing it as a distraction (for example, student E said, *it's like obviously a distraction from when I should be doing work and stuff"*) to some describing it as an addiction (for example, student H feeling *"it's almost like an addiction I think Facebook, it's like a need to go and see what is happening ... everybody just says it's addictive and I think that is it"*). One student resorted to radical measures to ensure not being distracted by Facebook saying, *"I kind of have deactivated it now because I am trying to get on with my work, sometimes it does get a bit addictive"* (Student U). The same student described how Facebook had become *"addictive"* saying *"it's just like a natural reflex to go on Facebook, it's like I type it in without even realising it"* and once in Facebook there is pressure to continue since chat requests appear and *"you want to go off but then other people come and talk to you, so it's just a bit rude"* not to chat. This social pressure to use Facebook was evident in some other research conversations. For example, one student referred to feeling peer pressure to be "*a producer"* and upload photographs taken of social activities soon after they have taken place (Student I) and another felt pressurised to *"communicate with people from back home"* because it *"would be a little bit unsociable"* to only contact them *"when you go over, back for Easter holidays or Christmas holidays"* (Student A). However, the social pressure to use Facebook was not felt by all students: *"I don't feel there is any pressure for using Facebook. It's not like I have to go on"* (Student F) and others who deliberately resisted any pressure to use Facebook with one student saying, *"I am not a fan of it ... it's an intrusion of my life"* (Focus Group B).

The social pressure to use Facebook appears to begin before students even have a Facebook profile. Many students described how they felt social pressure to join Facebook, for example, one student describing how all their friends had *"all moved onto Facebook, and they were all like this trying to get me to go on it, and basically I just, I signed up"* (Student B) and how another felt *"sick"* of friends repeatedly asking

the student to join Facebook how the student eventually *"went with the flow"* (Student P) and joined. There was also a strong feeling that students would be *"missing out"* (Student A) on social news by not being active in Facebook and consequently they might feel *"out of the circle ... Because people do talk, oh have you seen the photos on Facebook, oh have you read so and so"* (Student I).

Students appeared to use Facebook mainly for communication purposes, but also for safe storage of photographs, information and being part of a community. As with their general use of the Internet, students could have satisfied their needs using existing technologies or methods, but the affordances that Facebook provides meant it was chosen instead. The affordances mentioned included being able to efficiently contact people because *"I can't just ring every single one of my friends from home, every day, every week, you know it would be endless wouldn't it?"* (Student D). Students also felt Facebook was inclusive with one student stating that it was *"very easy to get in contact with people"* (Student W) because everyone the student knew had a Facebook account. In addition, to the more communicational affordances stated by many students, other communication affordances were cited. For example, one student found Facebook essential for maintaining contact with friends since the student's mobile phone signal was frequently poor (Student B). Another student valued the synchronous and asynchronous communication technologies integrated into Facebook and not always having to be *"keep looking at it, to see who is online and stuff"* (Student E). Facebook's asynchronous communication technologies were also valued by another student who no longer felt the need to write a blog (Student F). The same student also valued having a secure place to store the associated photographs saying, *"even if all the photos are lost on my computer, but they will still be on the Internet"* (Student F). Some students said that they valued being able view others' social activities describing it as *"having a nosey"* (Student N), *"general nosiness"* (Student C) and being a *"lurker"* (Student P). There was also a feeling that students valued the feeling of community afforded by Facebook. Being away from home, one student valued access to *"the social networking groups at uni ... you want to like keep up to date"* (Student C) and another felt *"it's one of those things where everybody kind of knows everybody through Facebook"* (Student I).

10.1.7 Perceptions of being Internet literate and Internet literacy

Several themes emerged from the one-to-one research conversations and focus groups related to their understandings of being Internet literate. Some students

perceived a minimum set of basic skills and understandings necessary to use the Internet. With these basic skills and understandings students felt you could then teach yourself to become Internet literate. For one student, *"they are introducing new things all the time"* and the *"basics"* that education should provide are necessary to enable you to *"pick up skills"* and *"then as things develop, you just learn"* (Student C). Without these basic skills and understandings another student felt *"you can't go any further"*, since they provide the *"a building block for you to do everything ... else on"* (Student I). Without these basic skills and understandings another student felt *"you can't go any further"*, since they provide the *"a building block for you to do everything ... else on"* (Student I). The rationale for teaching just the basics was expressed by a further student who said that education provides the *"real basics"* of how websites work, since *"it would be a very long process to teach everything ... to do with the Internet"* (Student L).

Students described those that were more Internet literate as being able to efficiently use the computer and/or Internet to achieve Internet-related tasks. For example, being Internet literate was to *"get things done a little bit smarter, more efficiently, it's not about working hard"* (students Q) and someone who was Internet literate *"follows the easy routes to doing things rather than the long winded ways"* (students D). In many cases, students were referring to how efficiently someone found information on the Internet, for example: *"a person that is Internet literate is a person that can find what they need ... if someone can get that in the first few tries of searching"* (Student G). More specifically, it was about knowing the *"best sources"* (Student R), about being *"two steps ahead"* and knowing *"where you are heading to"* (Student D), knowing that certain Google keywords (for example, 'define:') *"makes it so much simpler and much faster to find what you want"* (Student T) and about selecting the best search engine tool since it would enable them *"to do it far more efficiently than anybody else"* (Student V). For several students, being Internet literate included correctly using computer shortcuts to more efficiently accomplish tasks, for example *"like search finders, like control F"* (Focus Group D) and *"press Alt and F4 to quickly close"* (Student I).

Students also described being Internet literate in terms of successfully undertaking certain Internet-related tasks. Whilst the examples cited were wide-ranging, students predominantly related this to an ability to search for online information. For example, this was described as the ability to know *"what to search for, what words and phrases to use"* (Student H), being able to *"figure out which information is good or not, which information is the thing you are looking ... which results to rely on, and which not"*

(Focus group D), *"know where to get the information from, rather than just Googling everything"* (Student F) and having a *"better knowledge of the deep web ... more hidden places to search for stuff"* (Student W). Other examples were more technical and included the ability to configure Internet-related applications like *"set up a filter to stop like Spam coming in the in-box"* (Student I) and *"the ability to spot a virus and cure it"* (Focus Group A). Some students referred to being Internet literate as having an understanding of privacy issues. For example, one student said that *"you have got to be ... Facebook literate ... if you don't want everything about you being exposed ... how to block people ... how to put people in lists ... protecting your ... identity"* (Student I). Some students described how being able to use a browser was an aspect of Internet literacy, *"What the different parts of the screen mean, like the bar at the bottom, the status bar at the bottom and the URL bar"* (Student V). For one student, being Internet literate was about being able to solve Internet-related issues and having a *"solution for everything"* (Student R).

Between conducting the focus groups and the one-to-one research conversations, the students attended a laboratory session related to Web searching as part of a core module. During this session, they were introduced to a feature of Google called 'Advanced Search'. Many students referred to using this feature as evidence of being Internet literate. Some students claimed to be unaware of this feature with one student saying, *"I didn't even know about that advanced searches and things like that before I came to Uni"* (Student C). Others appeared to be aware of it, but not aware of its power. For example, one student claimed, *"I knew that existed, but unless you are showing it in action and what difference it can make you just wouldn't use it"* (Student I). For a few students, Google Advanced was almost a revelation with one student describing it as *"extremely useful, it's saved me hours"* (Student V).

10.2 Level 3 research conversations

This section analyses the research conversations held with the Level 3 students towards the end of their studies. The following table links the sub-sections to the main research questions addressed. Essentially, the same research questions as the previous section are addressed, but the emphasis is on exploring the extent to which undergraduates perceive their studies have developed their Internet literacies (RQ3-2011) and the extent to which undergraduates' Internet literacies have evolved (RQ4-2011).

Section	Main Research questions addressed
Becoming Internet literate	RQ5-2008, RQ2-2011, RQ3-2011, RQ4-2011
Perceptions of the Internet	RQ2-2008, RQ4-2011
Confidence	RQ4-2008, RQ4-2011
Use of the Internet	RQ1-2008, RQ2-2008, RQ1-2011, RQ4-2011
Facebook	RQ1-2008, RQ2-2008, RQ1-2011, RQ4-2011
Perceptions of being Internet Literate	RQ3-2008, RQ4-2011
Perceptions of academics' Internet literacies	RQ5-2011

The first section explores how Level 3 students feel they have become Internet literate. The variation of views was wider than at Level 1, although there was still a strong sense that some students felt they had taught themselves and learnt few Internet skills during their three years in my school. The next section explores their conception of the Internet. They still hold information-centric conceptions and there was a sense that their studies had heightened this view. Unlike at Level 1, more students seemed overwhelmed by the amount of information available on the Internet, and more students recognised that information could be obtained from elsewhere. The following section concludes that those students who were confident at Level 1 are more confident at Level 3, whereas the small minority of students who appeared less confident at Level 1, were still the same at Level 3. Students' use of the Internet is explored in the next section. Overall, students still feel they could do almost anything on the Internet and was possibly more integrated into their lives than at Level 1. The only difference appeared to be the frequency they kept in contact with pre-university friends. Facebook still appears to dominate many students' lives and a separate section is devoted to this. The following section explores students' perceptions of being Internet literate and concludes that little has changed. Students still perceive those that are more Internet literate as being quicker at finding information. The final section, explores students' perceptions of their teachers' Internet literacies. Within the academic arena, all students felt that their lecturers' Internet skills and understandings would be at least as good their own, but for more social-type uses they felt they might be more skilful.

10.2.1 Becoming Internet literate

Overall, the extent to which the students' undergraduate studies 'add value' to what they would learn anyway, varied between students. For example, a few students felt they had learnt specific skills, but generally had taught themselves: "[I've learnt about] *advanced web search and database searching and the University system … but ... probably mostly self taught through clicking on a tab and seeing where it takes you*

rather than being actually told it" (Student D). Whereas, some other students felt the entire Information Management degree was devoted to information searching skills: *"It has actually because it's our course basically. It did help us lots Internet knowledge, we now have better evaluation skills"* (Student R). However, there was still a strong sense that some students felt they had mostly taught themselves new Internet skills despite studying in my school for almost three years. As at Level 1, many students adopted a satisficing attitude towards learning new Internet skills. That is, they did just enough to accomplish what they needed. However, aligning with Level 1 again, there was some recognition that basic academic Internet-related skills may still need to be taught. For example, emphasising that some teaching of basic skills was necessary, Student D said, *"… in the first year … being taught how to use, Boolean web search and advance web searching on Google, and how to use certain on-line applications or computer applications* [the] *basic set of skills wasn't necessarily enough to for you to actually just to be able to pick it up and do it straight away …* [you] *… need a certain extent of teaching"*. There were few examples of students feeling their studies had done anything other than teach them the basics. However, several students did refer to being taught how to use the search tool Mintel[36] during a Level 3 module and how this knowledge had enabled them to successfully complete the coursework. Mintel enables a business database of market details and forecast data for thousands of consumer goods to be easily searched. Students were set a task where they could only obtain the information from using Mintel. It seemed this challenged their confidence in using their normal search strategies, predominantly via Google, and their recognition that other search strategies are sometimes needed.

10.2.2 Perceptions of the Internet

As at Level 1, all students still held information-centric perceptions of the Internet and there was a sense that their studies had heightened this view. For example, Student H described the Internet as containing *"endless amounts of information"* and Student Q referred to the *"mind boggling amount of information"*. Without being prompted, few students went beyond an information-centric perception of the Internet. For example, Student B referred to Facebook and online shopping, and Student W referred to the Internet as *"a big communication tool"*. However, unlike at Level 1, there was also a sense that some students were overwhelmed with the amount of information on the Internet with Student V referring to the Internet as *"A minefield. A black hole [since] you*

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[36] http://www.mintel.com/ [Accessed 7 January 2012]

don't know the extent to what is there and it's very difficult to know if you have found ... everything there is to know on a subject". In addition, students now seemed to recognise that the Internet is not the sole source of information. For example, Student W referred to being only able to *"only see a small proportion of* [the Internet] *... obviously you have got all the Deep Web"* and Student J saying how *"when you get to 2nd and 3rd year you need to go into the library actually read books and get the information out the books which is not something the Internet can really help you with"*. However, even after a prompt a few students still held on to a information-centric perceptions of the Internet with Student V (maybe recounting her Level 1 studies) referring to *"images are information they are visual forms of information"*.

10.2.3 Self-efficacy

As at Level 1, most students expressed high levels of self-efficacy during the research conversations. Those who were confident before appeared to be even more confident at Level 3. For example, Student D described himself as *"quite confident"* using the Internet at Level 1, but at Level 3 said: *"I am very confident in my skills and abilities and understandings, in using the Internet, full stop ... if I don't find it, it's probably because it's not there"*. No student stated that they were not confident using the Internet, although Student V who was not overly confident at Level 1, said university experiences had *"if anything ... humbled me ... I feel completely different about my search-abilities now, than I think I did before"*. The student then went on to suggest that there was a *"semantic gap between you and the computer"* suggesting that whilst this student's confidence to find information may have diminished, the student's more general Information Management understandings may be higher. Many other students referred to how the perception of their abilities had changed as a result of their studies. Student J for example, recalled feeling *"very confident really ... that's only because I didn't know how far it went. ... the further I went into my course the less confident I became ... I think before it was more arrogant than confident"*. However, these students then went on to say that, although their studies had challenged their Internet searching confidence, they now felt more able than they did at Level 1.

10.2.4 Use of the Internet

Most students still held the view that they could do almost anything on the Internet with only a few qualifying the statement. For example, Student H *"you can't do everything but you can do a lot of things"*. However, when probed many students qualified their views either by referring to availability of quality information on the Internet (Student R and Student V) or how real-world activities could not be emulated (Student W). Despite most claiming that you could do almost anything on the Internet, their Internet use broadly matched their use two years ago. The only noticeable difference related to keeping in contact with previous school or home friends. Only one student (Student D) mentioned this during the second set of research conversations. Similarly, all students gave the impression that the Internet was still integrated into their lives and for some possibly more integrated than it was in the first set of student research conversations. For example, whereas at Level 1 only one student (Student Q) accessed the Internet from a mobile device (Blackberry), two more students (Student A and Student J) referred to regularly using mobile devices to access the Internet. However, amongst their continued almost euphoric statements about their use of the Internet, Student V was more sobering saying, *"I think the Internet is a really good tool for finding out, information that isn't absolutely imperative"*. This view coincided with Student V's back at Level 1 with reference to wanting real world, not virtual experiences. All students appeared content with their current use of the Internet which was typically restricted to a few applications or web sites and there were no indications that they wanted to utilise the Internet more. The only exception was Student A who said, *"I don't think there is any possible way that I could use it more really"*. As Student A claimed to be on the Internet *"9 out of 10 times"* a day, maybe the student is confusing intensity with the selection and variety of Internet experiences.

10.2.5 Facebook

All students still felt Facebook dominated many students' lives, although there were varying thoughts about whether they still felt it was addictive. Several students implied that they start Facebook almost unconsciously after they have logged on to a computer. Student J, who stated that she was addicted to Facebook at Level 1 recollects, *"I still find it an addiction and it's still quite a big part of my life … it is something that you just go on, you automatically do it while I am doing my work, I will just suddenly stop and go on Facebook it's like autopilot I just can't, you can't help it"*. Student E also claimed to start using Facebook without thinking, but felt uncomfortable with the term 'addicted' claiming, *"I don't see why it's a bad thing always being on*

Facebook. I mean, you are not always necessarily like communicating with people, it's almost like you are on standby". Others appeared more controlled in their use of Facebook. For example, Student A states, *"Facebook is certainly a big part of my everyday life … I am on it every day, I do use it every day ... I am not addicted to Facebook I could give it up, it's not like I need it"*. Also apparent, was students' use of Facebook in their studies. Whilst there was little evidence that students discussed academic related issues, many students seem to use it to arrange group coursework meetings and to clarify coursework requirements. As at Level 1, the main reason stated for this use of Facebook was convenience, as one student said, *"If I really want to get hold of somebody, I can talk to them there and then … whereas well as opposed to having to send an e-mail where I have to wait for them to check for it"*.

10.2.6 Perceptions of being Internet Literate

As at Level 1, most students perceived that those who are more Internet literate ('better at using the Internet') are quicker at finding information, typically because they were more able to select appropriate search terms. These views persisted at Level 3. Few students explicitly referred to the quality of the information found or considered other aspects of being Internet literate. Typical responses included: *"because the Internet is so vast, I think those that are better will find it* [information] *a lot quicker"* (Student B); *"all you have to do is type in a few words these days and it can find it straight away for you"* (Student A). The context of these statements was not always clear, although some students did appear to be referring to all their online searches. However, there were also some students who distinguished between their more everyday information needs and those related to their studies. For example, Student R who felt "*quite confident in using the Internet because now I could locate anything I need on the Internet better than I used to before"* did acknowledge that *"before we started the Information Management [degree] … using the library's online resources … for locating anything … used to be hard"*.

Whilst students acknowledged that being able to efficiently find online information was an important aspect of being Internet literate, some students stressed that it was more than that. For example, Student A said that it *"depends on what they use the Internet for"* and Student W said it was *"80% true …but it is not so blunt as to say if you are good at the Internet you are efficient* [at retrieving information]*"*. However, when these points were pursued during the conversations, students struggled to give examples. However, one student felt that most students were equally efficient at searching the

Internet and, if there were any differences in ability at the beginning of course, these were less apparent at the end because those that needed to *"probably paid more attention to the teaching process of how to … go about finding* [information] *… whereas people who thought they already could do it, would have paid less attention and would just think, oh I can already do it"* (Student W). one student did mention that an Internet literate student would be *"more aware of the … functionalities and capabilities needed"* (Student D).

During the Level 3 student research conversations, an additional question was read out to the second half of the students (see Q11, Section 8.3.4). The purpose of the additional question was to introduce 15 perceptions of being Internet literate from two years ago that were either unique to a particular student or not shared with many other students (as opposed to perceptions that were common to most or all the students). From their responses, it was clear that the students broadly agreed with the statements that were read out and seemed genuinely surprised at the variety of Internet skills and understandings. Only Student W disagreed that *"evaluating information"* was an Internet skill or understanding. Student H described the list as *"interesting"* and Student R said that *"if a person possesses all these skills … they are not just … Internet literate … they are professionals"*.

10.2.7 Perceptions of academics' Internet literacies

All students felt that lecturers' academic Internet skills and understandings would be at least as good their own because of their role. The reasons given were varied, but Student B felt the reason was because lecturers are always checking *"for people stealing information for essay"*, Student E because *"they obviously do know what they are doing"* and Student T because they *"have gone on special courses for doing it"*. However, Student D felt that lecturers had a range of skills *("my lecturers are far more capable and have far better skills than me on the Internet, while some of them maybe at the same level and some of them are not"*) and Student J felt the gap between lecturers' and students' skills narrows as they progress through their degree since *"we are now using the Internet the way you were teaching us how to use the Internet"*. However, when the conversation explicitly moved away from more academic use to more social uses, students felt they were more skilful and had a better understanding. For example, Student A said, *"students will have a better understanding of you know for example social networking sites, because it is more a younger generation focused area of communication"* and Student W, *"you wouldn't really expect them* [lecturers] *to*

use the Internet for say social networking, they would use it more for you know education purposes".

10.3 Issues

The final section continues the exploration of issues related to the research conducted with the undergraduates in my school and how my micro and macro level actions may have affected what undergraduates might have said and behaved. The source of these reflections was mainly my recollections, but I also kept a research diary and made memo notes.

10.3.1 Issues related to the researcher-student relationship

Section 8.3.5 drew attention to potential issues of reflexivity that would be implicit in any researcher-student relationship. Despite adopting a more conversational approach to collecting information from undergraduates, issue related to my relative power inevitably enter into the relationship. The above analysis has drawn attention to how many students appeared highly confident in their Internet-related abilities. Students may have exaggerated their abilities and confidence levels because they feared any negative comments might influence my perception of them and their abilities. It might also have caused some students to unnecessarily couch their answers from a theoretical perspective thinking this is what I want to hear. Both implications resonate with my feelings during and after the research conversations. It follows that the research conversations with students may represent, not perceptions of their Internet literacies, but the perceptions they wanted me to hear. This is an unavoidable limitation of the research undertaken and also a key conclusion, since it raises further research questions. For example, why might some undergraduates want to appear confident in their Internet-related abilities when academics stress they want students who have an open mind and aware of their limitations (see Section 9.4.4.2)?

10.3.2 Issues related to student-student relationships

Issues related to the use of research focus groups to collect information from participants were mentioned in Section 7.5.2. Despite these, research focus groups were used as a pragmatic solution to collecting information from all participants during a short timeframe. However, I did note several issues with the use of focus groups to explore the diversity of student views and understandings. For example, some students who were less vocal and subdued during the focus groups became conversational and animated during the one-to-one research conversations. Aléx and Hammarström

(2008) review of the reflexivity literature highlights how power-related issues affect the narrative between people of different ages, education, gender and ethnicity. These issues were not obvious during the focus group sessions or obvious from listening to the audio recordings. In contrast, there was an overall impression that students were attempting to maintain group harmony by supporting each other. However, this could also be interpreted as a consequence of power relationships within the focus group. For example, in the following focus group extract Student A makes a profound statement that the some others disagree with. Student A listens to the comments and, rather than disagreeing with what has been said, refines the statement previously made and incorporates some of their comments:

Student A: *I think like society kind of forces you to use the Internet a whole lot more than what you would want to do, originally.*

Me: Wow, so you are saying society forces you to use the Internet more than you want to? Say more.

Student A: *For example, if … most of your friends didn't have Facebook you wouldn't go on it hardly … for example, with Sheffield University you have to go onto MOLE …*

Me: There are quite a few nods … so do you all feel a sort of pressure to use the Internet?

Student B: I wouldn't say so much pressure.

Student C: No because we are used to it.

Me: Why wouldn't you say so much pressure?

Student B: I wouldn't say I don't want to go on it, I am not oh God, I have got to go on the Internet.

Student D: It's convenient isn't it?

Student B: Yes.

Student A: *I think there is not so much pressure, because I believe that it's actually there because it's more convenient for us to have the Internet there to do that. … it's sort of convenient because you can access the same information from anywhere you are.*

Hence, drawing conclusions from the focus group narratives was problematic. Does Student A feel there is, or there is not, pressure to use the Internet? To what extent did Student A feel pressurised into modifying their view? By holding the one-to-one research conversations after the focus groups, I hoped students would feel less pressure from peers to align their views with the apparent group consensus. As stated above, the primary purpose of the focus groups was to identify potential

undergraduates' understandings and views to be explored in more depth during the one-to-one research conversations. That is, whilst issues related to student-student power during the focus groups may not significantly impact upon the research outcomes.

10.3.3 Issues related to focus group reflexivity

The use of undergraduate focus groups to frame the subsequent Phase 2 one-to-one research conversations, and the analysis of these research conversations to frame the Phase 4 research conversations, raises additional issues related to reflexivity and the pivotal role the focus groups had in steering this research and overly affecting the research outcomes. Whilst this may have been an issue, steps were taken to ensure its impact was minimal. These included asking a set of questions that represent all common themes emerging from the previous analysis as opposed to emphasising dominate themes. In addition, during the research conversations I tried to be particularly receptive to dialogue not related to the questions being asked. There is some evidence that this approach may have been successful. For example, the online social networking site Facebook dominated many focus group conversations. However, during the subsequent one-to-one research conversation questions, Facebook was only mentioned indirectly in question 10. The questions posed referred to undergraduates' underlying views, understandings and experiences, and not the volume of conversation related to a particular topic. Despite this, Facebook still dominated much of the Phase 2 research conversations and consequently formed a significant part of the research outcomes.

10.3.4 Issues related to using research conversations

A key aspect of this research is an exploration of undergraduates' perceptions of being Internet literate. This requires students to recall previous Internet-related experiences, conversations and observations, and assimilate them to answer the questions being asked during the research conversations. Some students found it easy to recall memories, whilst others appeared to struggle. The latter students needed several prompts before recounting something of significance for this research. Lincoln and Guba's (1985) stress that information collection should take place in a *"natural setting"*. Arguably, a 'more' natural setting might have included students talking about their Internet literacies whilst sat at a computer connected to the Internet. If necessary, students could have demonstrated their use of the Internet and might have enabled some students to more easily recount their experiences. This approach augmented the

Children Go Online research conduced by Sonia Livingstone and her colleagues (Livingstone, 2003; Livingstone and Bober, 2003; Livingstone and Bober, 2004; Livingstone et al., 2005; Livingstone, 2008), and was the sole approach used in the undergraduate digital literacies research conducted by Jones and Lea (2008). Hence, despite the additional issues it would have introduced, particularly around students' privacy, the research conversations might have benefited from a more natural setting with students and I sat at an Internet-enabled computer.

Chapter 11: Discussion

The aim of this chapter is to build upon the previous reviews and analyses to identify curriculum and pedagogic implications for the School's learning and teaching strategy (research aim A2-2011 and research objective O2-2008). In particular, this chapter highlights disparities and tensions that exist between the views and experiences of academics and students (research question RQ13-2008). These have implications for the success of any curriculum intervention and various strategies are proposed to alleviate the consequences. This chapter concludes by illustrating how the frameworks and models developed so far could be used by my school to evaluate and develop the Internet literacy aspects of the undergraduate curriculum (research objective O3-2008). This chapter begins by orientating academics' understandings of Internet literacy within those Internet-related conceptions of literacy found in the literature (research aim A3-2011).

11.1 Academics' understanding of Internet literacy

During the research conversations, academics tended to stress the competencies, capabilities and qualities found in more conventional information literacy-related literature as opposed to the newer digital literacy-related literature. That is, academics primarily stressed the competencies related to seeking online information, evaluating information found online, creating online information, and disseminating information online. The essence of these competencies existed prior to the Internet, albeit in the context of libraries, printed literature, typographical tools, editorial boards and so on. Conceptions of literacy that stress competencies and capabilities align with Street's (1984) notion of an autonomous literacy, one which primarily views literacy as a cognitive ability. This contrasts with Street's notion of an ideological literacy, one that views literacy primarily as a social practice. Table 5.1 illustrated the use of a two dimensional framework for locating, comparing and contrasting various conceptions of literacy found in the literature that relate to the Internet. This model locates conventional literacies as those typically conceived before 1997, but have been reconceived because of the Internet. In contrast, new literacies were typically conceived after 1997, during the exponential growth of the Internet, during a time when educationalists were questioning what it means to be literate in a digital age. However, if the notion of date of conception is relaxed, the framework could be applied to individuals' the perceptions of Internet literacy. Highlighting cells in the framework that

correspond with the dominant views of Internet literacy expressed during the research conversations with academics would produce this profile:

	Conventional literacies	New literacies	
		Peripheral cases *Just new 'technical stuff'*	Paradigm cases *New 'technical stuff' and new 'ethos stuff'*
Autonomous literacies *Literacy as a cognitive ability*	**Autonomous – Conventional perspective**		
Ideological literacies *Literacy as a social practice*			

Figure 11.1 Dominant perceptions of Internet literacy held by academics mapped to those found in the literature

This literacy profile would align with the reports, strategies and reviews emanating from Government, HEFCE and JISC that stress HE's role in promoting competent and capable labour force, and how HE should capitalise on students' pre-university digital abilities. The profile of Internet literacy and of being Internet literate also aligns with the University's graduate attributes that foregrounds skills rather than literacies.

The above literacy profile represents dominant perceptions held by academics. However, there was much variation in academics' perceptions of Internet literacy. During the research conversations some academics described being literate in terms of facets that are peculiar to the Internet. For example, academics mentioned how students should know about the use of 'smilies' when communicating, how to create mash-ups of Web pages, and have an understanding of online security issues. Whilst it could be argued that these are example of conventional 'stuff' re-conceptualised for the Internet[37], I consider these more akin to Lankshear and Knobel's (2007) new 'technical stuff'. In addition, academics stressed that Internet literacy is about students critically reflecting upon their own and others' Internet literacy practices. Primarily, this was to enable students to become more Internet literate, but also there was a sense that was an outcome in itself and an ideological perspective of literacy. Furthermore, there were few examples of academics articulating what might be considered a paradigm (new 'technical stuff' and new 'ethos stuff') view of Internet literacy. For example, in section 9.7.3, one academic referred to the inverse relationship between increasing digital literacy and decreasing information literacy, as digitally literate people become like

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[37] Chapter 4 refers to Street's (1996) argument that printed texts have always been multi-modal. Hence, it could be argued that, prior to the Internet, certain font faces were used to emphasise feelings in the same way that smilies are now used online

fighter pilots responding instantly to multiple incoming messages, but at the same time, spending less time slowly reflecting upon any one aspect. This type of dialogue aligns more with Lankshear and Knobel's (2007) paradigm examples of new literacies since it is not only about new 'technical stuff', but is also about new 'ethos stuff'. Hence, notwithstanding issues related to quantifying academics' perceptions, the following literacy profile conveys a more nuanced understanding of their perceptions of Internet literacy, with the darker shading attempting to indicate the increasing number and intensity of views:

	Conventional literacies	New literacies	
		Peripheral cases *Just new 'technical stuff'*	Paradigm cases *New 'technical stuff' and new 'ethos stuff'*
Autonomous literacies *Literacy as a cognitive ability*	Autonomous – Conventional perspective	Autonomous – Peripheral perspective	Autonomous – Paradigm perspective
Ideological literacies *Literacy as a social practice*	Ideological – Conventional perspective	Ideological – Peripheral perspective	Ideological – Paradigm perspective

Figure 11.2 All perceptions of Internet literacy held by academics mapped to those found in the literature

Unlike the research conversations with undergraduates where students had opportunities to reflect upon the views of other students, there were no opportunities for academics to reflect upon other academics' views and understandings of Internet literacy, what it means to be an Internet student, and undergraduates' perceptions of being Internet literate. With the exception of academics that have a research interest related to literacies, most academics will be unaware of the diversity of literacy views that exist within my school and literature related. Academics should be given opportunities to reflect upon the variety of views and understandings that exist within my school and literature with regards to conceptions of Internet literacy, what it means to be an Internet student, and undergraduates' perceptions of being Internet literate. The frameworks and models developed during this study would contribute to such discussions.

11.2 Disparities and tensions between academics and students

This section primarily addresses the research question related to the [dis]parities exist between undergraduate' and academics' perceptions of Internet literacy (RQ13-2008), but in so doing, draws upon much of the previous analysis. To a lesser extent it also

addresses the research question related to the implications of any digital native-immigrant narrative that might exist in the Information School (RQ5-2011).

11.2.1 Contrasting perceptions of being Internet literate

In contrast to the multidimensional, multifaceted and multileveled perceptions of Internet literacy and being Internet literate presented by academics, students struggled to describe what they felt it meant to be Internet literate, primarily perceiving it as being able to efficiently find information online, an awareness of online security issues and having some core technical knowledge. This view was still evident at Level 3, although a slightly richer understanding did emerge. Most evident, was the contrast between how academics' and students' perceived the role of online information seeking. Academics perceived searching for information as just one aspect of a series of information and Internet related activities that included seeking, evaluating, creating and disseminating information. Students on the other hand, struggled to describe anything more than the technicalities of using Google, even at the end of their studies. As our undergraduates will eventually take up information management-related positions, many academics in my school might be surprised that our graduates have such a shallow perception of the information aspects of Internet literacy. Section 9.4 proposed a two dimensional triangular model to encapsulate the perspectives and multiple facets of Internet literacy held by academics. The focus groups and research conversations with undergraduates focused on their perceptions of being Internet literate rather than their perceptions of Internet literacy. That is, my questions may have delimited their responses. Regardless, it is illuminating to map their perceptions onto the Internet literacy triangle:

Internet literacy as competencies

- Communication
- Ethics
- Technology
- Security
- Seeking information
- Evaluating information
- Having an open-mind
- Creating information
- Citizenship
- Disseminating information
- Being empathetic
- Being motivated
- Employability
- Exploitation

Internet literacy as qualities

Internet literacy as capabilities
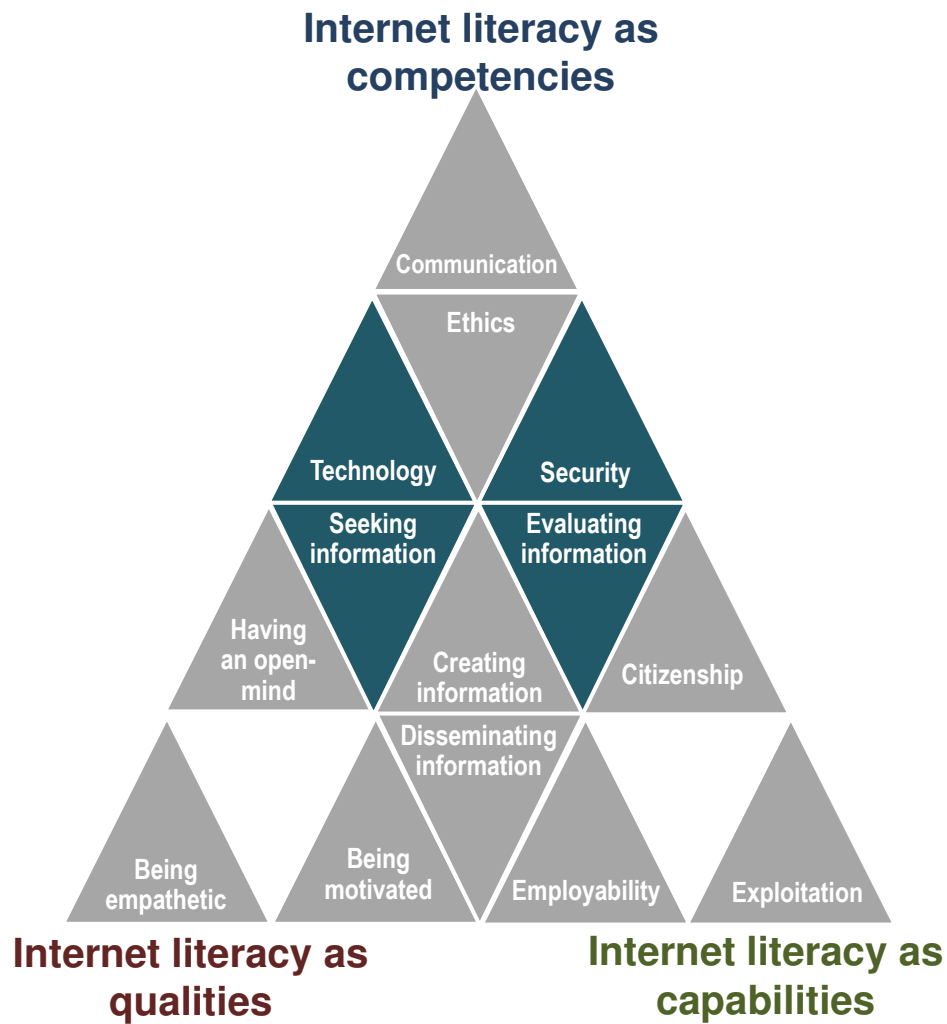
Figure 11.3 Comparison of students' (coloured) and academics' (grey) perceptions of being Internet literate

Undergraduates' and academics' perceptions of being Internet literate coincide in the areas of technology, security, seeking online information and evaluating online information. Conversely, academics' perceptions of being Internet literate encompassed all the ideas mentioned by undergraduates. Hence, notwithstanding the differences between the purposes of the two sets of research conversations, there are significant differences between undergraduates' and academics' perceptions of being Internet literate, even at the end of undergraduates' studies.

11.2.2 Academics imply student confidence hinders their ability to learn

The overwhelming impression from the student research conversations and focus groups was that most students began their studies as confident users of the Internet, particularly in their ability to satisfy their own information-related needs, and ended their studies, feeling just as confident. The American ECAR study (Smith et al., 2009) came to similar conclusions. Whilst the aim of this research was not to assess the level of students' Internet literacies per se, most of the research conversation and focus group dialogue was concerned with more 'mundane' uses of the Internet, with few indications that students were undertaking tasks that academics would consider as indicative of higher levels of Internet literacy necessary for academic work (see the Cognitive-Affective model presented in Section 9.5.2). This was despite undergraduates frequently implying the Internet's affordances, predominantly the search engine Google, were almost limitless. In addition, academics were highly critical of students' Internet-related abilities, particularly their ability to evaluate information found online. There were strong concerns that students' are over-confident in their Internet-related abilities and that this over-confidence is severely hampering their ability to be receptive to new knowledge and have an 'open mind'. Academics' views concur with Lea (2009) who suggested that students' everyday engagement with the Internet may have impaired their ability to treat more academic Internet-related matters seriously. There were also concerns that this over-confidence had affected their ability to judge appropriate levels of formality when communicating. Overall, students may be what 'Higher Ambitions' (BIS, 2009) describes as a *"digitally self-confident"* population, but academics feel it is impeding their ability to become Internet literate.

11.2.3 Disparities between students' and academics' expectations

A corollary of the above tension was raised in Section 10.3.1. Students may have exaggerated their confidence claims, and unnecessarily used theoretical concepts during the research conversations, since they perceived this is what I, as an academic, wanted to hear. Articulating high levels of confidence is at odds with what most academics in this research were saying. They stressed students should have an open mind and be aware of their limitations. This would lead to being receptive to new ideas and motivated to learn. A more reserved and cautious approach would be indicative of someone who was Internet literate, as opposed to an overly confident approach. I would concur with this view. Hence, if students were exaggerating their levels of confidence, they may not have sufficiently reflected upon their Internet literacies to come to an informed view. Furthermore, as this view persisted to students reached

Level 3, my school may not have provided sufficient opportunities for students to critically reflect upon their Internet literacies.

11.2.4 Conflicting messages about students as 'Internet natives'

Academics held views about undergraduates' Internet-related abilities that were consistent with aspects of the digital native-immigrant rhetoric, particularly when considering students' non-academic Internet-related activities. This was despite also claiming they were unsure about students' Internet-related use. The following paragraphs present two conclusions which support the native-immigrant views held by academics' and four conclusions that suggest that their use of the native-immigrant narrative might be misplaced.

Students gave the impression that the Internet is fully integrated into their lives (see Section 10.1.4) and reported considerable amounts of time on the Internet, predominantly using the social networking site Facebook (see Section 2.10). These findings are consistent with the larger ECAR (Smith et al., 2009) study. Some students felt their excessive use of Facebook was like an addiction, whilst others saw it as unproblematic and quite 'natural'. Students frequently used the word 'natural' to describe their use of the Internet. In most cases it was to emphasise that the choice of some Internet technology was more out of habit than a conscious decision based on experience or maybe teaching. If students are natives of the Internet landscape, one would imagine that they would spend significant amounts of time engaging in Internet-related activities and their use of the Internet would become habitual. The findings of this study seem to support this view.

The research conversations and Survey of Communication Technology Use found that Internet technologies were a popular way in which students communicated, particularly with friends and family. Students reported and spoke about having friendships that were solely online and how these Internet communications resulted in many face-to-face friendships (see Section 2.10). If students are Internet natives, one might expect students to use the Internet as a key way of communicating and for the Internet to become one way of creating and maintaining friendships. This research seems to confirm this, but contradicts other research that suggests young people rarely had formed relationships with people they had not previously known offline (Livingstone et al., 2005) and research which suggests that undergraduates do not use Facebook as way of communicating with people they do not already know (Bumgarner, 2007; Pempek et al., 2009).

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However, the analysis of the student focus groups, research conversations and Survey of Communication Technology Use challenges academics' perceptions that students are Internet natives, even within their personal worlds, and supports the four critiques of digital native narrative presented earlier (see Section 3.2).

The first critique relates to the assumption that students are avid users of a diverse range of Internet technologies. The analysis concluded that, whilst the Internet appeared to be fully integrated into many students' lives, they used a relatively narrow range of Internet-related technologies. For example, students rarely mentioned anything other than Google and Facebook during the research conversations and focus groups, reported not even knowing some popular Web 2.0 technologies and, despite owning camera-enabled mobile phones, few students uploaded their photographs and videos to popular Web 2.0 sites like Flickr and YouTube. In addition, students reported that the Internet was not their first choice technology to communicate with friends and family, preferring to use the phone and text messages. Hence, it appears that the Internet is one of many technologies used by students to communicate, but their Internet use is not as diverse as the digital native narrative might suggest.

Secondly, the critiques referred to in Section 3.2 question those Government initiatives that assume students welcome or even demand Internet-related technologies in their studies. This study found no evidence of this and some evidence that students prefer to separate their academic and social use of Internet technologies. For example, Higher Ambitions (BIS, 2009) claimed that students are increasingly becoming critical online learning consumers. Whilst I did not ask students' about their use and views about the University's virtual learning environment, many conversations referred to how they used the Internet in their studies. It was as if university's virtual learning environment was not considered part of the Internet. Hence the findings from this study do not concur with Government view that students welcome or even demand Internet-related technologies in their studies. It is therefore not surprising that recent JISC strategies and studies are tending to focus on using social networking tools to support student learning as opposed to centrally supported virtual learning environments.

The third critique relates to the assumption that students are confident and competent with modern technologies including Internet technologies. This study would concur with the view that many students who are highly confident with their Internet-related abilities, particularly in their ability to find information using the search engine Google. However, paralleling undergraduate studies conducted by Hardy (2009), Jones et al

(2010) and Kennedy et al (2008), there were also a significant minority of students who were not so confident with their Internet-related abilities and, at beginning of their studies, were careful not to let the very confident majority know this for fear of being ridiculed. This lack of confidence did not appear to be associated with a particular group of students. Whilst this study did not set out to evaluate students' Internet-related competencies, the academics in my school were critical, sometimes highly critical, of students' abilities to find information related to their studies. They were also concerned that their over-confidence sometimes interfered or even prevented them from being receptive to new ideas. These views concur with research that has evaluated students' online information skills and shown that there are wide variations in students' abilities (Edwards and Bruce, 2006; Ofcom, 2006; UCL, 2008). Hence, the sweeping assumptions associated with the digital native narrative that students are confident and competent with Internet technologies, needs to be tempered with evidence that suggests this confidence may not necessarily be well-founded. It follows from the third critique, that if not all students are confident or competent Internet users, undergraduates do not form the homogeneous group that the digital native narrative suggests. This is the premise of the fourth critique and hence this study concurs with the findings of Bennett (2008), Jones et al (2010), Jones and Ramanau (2009b; 2009a), Hardy et al (2009), Hosein et al (2010), Kennedy et al (2008; 2010) and Ramanau et al (2010).

Elsewhere in the literature are claims that the nature of students' Internet-related activity is evolving. Opposing Bruns and Humphreys (2005) finding that online collaborative production is now common place and Gillen and Barton's (2010) claim that distinctions previously made between consumer and producers of information are becoming less relevant, students in this study appear to be largely consumers of information. This is despite the popularity of Facebook amongst the students studied where one might imagine that both the consumption and production of information might be prevalent. For example, the Survey of Communication Technology Use students reported uploading content to Facebook less than once a week, the second most frequent use of the Internet was 'gathering news' and relatively few students owned a blog. This behaviour supports the conclusions from Pempek's US undergraduate study (Pempek et al., 2009) that many students spent observing content on Facebook rather than actually posting content.

In some respects, the undergraduates that took part in this research could be described in ways that parallel digital native narrative, particularly in their use of the

Internet outside of their studies. However, whilst the digital native concept might be useful in encapsulating many students' confidence with, and involvement in, Internet-related activities, there are many indications that this is a shallow concept and undergraduates' interactions with Internet-related technologies are little different than undergraduates' interactions with television and video media ten years ago.

11.2.5 Students' views of academics' Internet literacies

If the digital native-immigrant narrative is applied to the University setting, the converse of academics perceiving students as Internet natives might be students perceiving their teachers as Internet immigrants. During the Level 1 focus groups and research conversations there was evidence that students felt they were 'naturally' more Internet literate than those that had grown-up without the Internet. As most of their teachers would have spent their youth prior to the growth of the Internet, the implication might be that students view academics as Internet immigrants. Notwithstanding issues related to reflexivity and not wanting to criticise those that had taught them, this area was explored in the Level 3 research conversations. Undergraduates claimed that academics were an exception to the digital immigrant narrative they had been pursuing, and whilst they still felt those older are generally less Internet literate, academics were considered experienced with a wide range of Internet technologies. Nonetheless, students still felt that academics were more purposeful in their Internet use and less inclined to use it to socialise or for recreational purposes. In these areas, undergraduates still felt they were the natives.

11.2.6 Potentially conflicting views about the evaluating the trustworthiness of sources

Most academics perceived that being Internet literate involved being able to evaluate information found on the Internet. Typically, they said this was by knowing or determining the authority of the Internet source. Beyond coursework, there were no indications that students judged the authority of an Internet source, most trusting website user ratings, their friends or simply not considering the trustworthiness of the source. Lankes (2008) talks about the shift away from notions of authority on the Internet towards notions of reliability. Students appear to be embracing this idea. Whilst this research did not set out to explore academics' and students' views related to online trustworthiness, tentatively I would suggest that academics and students hold fundamentally different views about judging the trustworthiness of an online source.

11.2.7 Contrasting views about acquiring Internet skills and understandings

Nearly all Level 1 students claimed that they acquired their Internet skills and understandings by 'picking it up' and 'trail and error', attributing little credit to their previous education, some even sounding disparaging. At Level 3, no student sounded disparaging, but few credited their studies for their current Internet-related abilities. This contrasts with the view of academics who felt that Internet literacy was something that needed to be taught, whether it be their or someone else's responsibility. Whilst studies have shown that students are highly influenced by academics' technological and information-related practices (for example, Beetham et al., 2009; Lea, 2009), no evidence was identified in the student research conversations and focus groups that suggest Information School undergraduates were similarly influenced.

11.2.8 Potential limitations in academics understanding of how students use the Internet

Whilst academics held strong views about students' Internet literacies and weaknesses, they also confessed to not knowing what they used the Internet for, or how they used it. Whilst there was some collaboration between what academics suggested students used the Internet for and what students said they used the Internet for, academics frequently mentioned uses like instant messaging, gaming and Second Life, that students rarely mentioned or reported. In a school where the Internet has such a high profile, it is maybe surprising that some academics, particularly those not aware of the Survey of Communication Technology Use, did not feel this lack of knowledge might sometimes limit their ability to teach effectively.

11.2.9 Students' general learning styles may conflict with Internet learning style

It was particularly evident during the Level 1 focus groups and research conversations that some students were reasonably content with their level of Internet skills for the purposes that they required the Internet for and would only learn new skills when required (see Section 10.1.1). This satisficing attitude towards online learning coincides with Entwistle et al's (2001) Surface and Strategic approaches to learning and studying (see Section 2.11). However, countering this finding, the ASSIST self-assessment found that most students had a Strategic-Deep approach to learning as opposed to a Strategic-Surface. Hence, notwithstanding the ASSIST test results are only indicative

of the research cohort's approaches to learning[38], students' satisficing attitude towards Internet-related learning appears at odds with their general approach to learning.

Furthermore, students claimed they had gained their Internet abilities by 'trial and error' and 'picking it up'. However, the Kolb learning style that mostly aligns with this approach to learning ('Accommodative') only applied to 35% of the students who took the self-assessment test. Hence, the majority of undergraduates do not have a dominant learning style that complements the way in which they claim they gained their Internet-related skills and understandings. However, implicit in this statement are many assumptions including the legitimacy of extrapolating the findings from the focus groups and research conversations to those that participated in the test, the questionable reliability and validity of Kolb's LSI and the whole debate surrounding the existence on learning styles (Coffield et al., 2004). Regardless, it could be tentatively suggested that the learning styles these students bring to online activities may not always be compatible with their immediate online learning needs.

11.2.10 Implications

It follows that if students feel highly confident in their Internet literacy abilities, view the Internet as intrinsically part of their lives, view academics' Internet literacy practices as being different than their own, have a relatively unsophisticated perceptions of being Internet literate, learn new Internet skills only when needed and see little relevance to judging the credibility of an information source, then much Information School Internet-related teaching may seem irrelevant or even patronising. However, if academics are critical of students' academic Internet literacies, view students' as Internet natives, have multidimensional, multifaceted and multileveled perceptions of being Internet literate, view it as their role to teach Internet literacy, place emphasis on the authority of information sources, yet have little understanding of how students use the Internet, then undergraduate teaching sessions related to the Internet are potentially fraught with conflicts and tensions. If students' Internet learning styles and approaches to Internet learning differ from their general learning styles and approaches to learning, any tensions and conflicts that may exist in teaching sessions could be intensified. Whilst not suggesting this is categorically what is happening in my school, it accords

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[38] Section 2.10 notes that the Survey of Communication Technology Use, ASSIST and LSI self-assessments were conducted on research cohort (55%) and a parallel group of dual degree Information Management students (45%).

with my own feelings and experiences, and other academics. As one academic asserted, students frequently:

> *"… feel frustrated, they say we know how to search, why are you teaching me this? ... students constantly complain saying, are we going to do a degree in searching for three years? … they perceive themselves to be able to use search engine"*
> (Academic 04)

… whilst others used words like *"fight"* and *"battle"* to describe how difficult he felt it was to get students to reflect upon their online behaviour. The implications of such tensions and conflicts are, at the very least, not helpful in a school whose academics want to facilitate students' Internet literacies.

11.3 Proposals emanating from this research

This section primarily addresses one of the main aims of this study: To inform School discussions and strategy related to undergraduates' Internet literacies and effective pedagogies that enable our undergraduates to become more Internet literate (A2-2011). Key to achieving this aim was research that focussed on undergraduates' and academics' perceptions of Internet literacy. Perceptions were highlighted due to their influence on behaviour, including learning (see Section 1.6). Student's perceptions of being Internet literate, of their teachers' Internet literacies and how they learnt to become Internet literate, will influence the extent to which they are receptive towards, and internalise, learning activities that promote Internet literacies, and the extent to which they incorporate their Internet literacies elsewhere in their studies. Conversely, academics' perceptions of students' Internet literacies, of being Internet literate and of Internet literacy, will influence the learning outcomes they propose and the pedagogies they employ including and beyond any specific activities that promote students' Internet literacies. Applying Guba and Lincoln's (1989a) ontological criterion that authentic research should elevate the consciousnesses of all those involved, I propose that:

P1-2011: Undergraduates should explore their and others' understandings of Internet literacy so as to develop a better understanding of themselves as Internet literate people.

P2-2011: Undergraduates need to better understand the contribution of their studies to facilitating their Internet literacies so as to increase the likelihood that they are receptive to any Internet literacy-related teaching.

P3-2011: Undergraduates need to reflect upon the relationship between their approach to learning Internet literacies and their overall learning style, to help align the two and better exploit learning situations.

P4-2011: Undergraduates need to experience situations where their Internet literacies are challenged and then have opportunities to reflect upon these experiences in order that they gain a more informed understanding of their own Internet-related abilities and in turn are more likely to internalise any Internet literacy-related learning.

P5-2011: Undergraduates need to reflect upon the extent to which the digital native-immigrant narrative may have unconsciously influenced their attitudes towards their own and others' Internet literacies so as to become more informed learners and information managers.

P6-2011: Academics need to reflect upon the role of Internet literacies in their own teaching and the School to help ensure student have the Internet literacies for their studies, life-long learning and their future information management-related roles.

P7-2011: Academics need to reflect upon their own role in the promotion of more Internet literate students so as to exploit any opportunities that might arise.

P8-2011: Academics need to become more aware of the diversity of perceptions of Internet literacy that exist in the School and the literature so as to broaden their own understandings of what it means to be an Internet literate student and how their own teaching could facilitate this.

P9-2011: Academics need to become more aware undergraduates' Internet literacies, and their understandings of being an Internet literate student, to help ensure the effectiveness of their curriculum interventions.

P10-2011: Academics need to reflect upon the relationship between their current views for judging the trustworthiness of an online source, that used by students, and that promoted by newer conceptions of literacy, so as to ensure any views and methods adopted are relevant and appropriate for the digital age

11.4 Use of models and frameworks

The various frameworks and models developed and referred to in this study to satisfy research objective O3-2008 could be used to promote and inform discussions related to developing students' Internet literacies. In addition, the same frameworks and models could be embedded within teaching situations where students' Internet literacies were being promoted. In particular:

The various conceptions of Internet literacy promoted by organisations, educationalists and governments, present a bewildering array of perspectives and understandings. The framework developed for comparing and contrasting various conceptions of Internet literacy (see Table 5.1) could be used by academics and students to clarify their own position with regards to Internet literacy and enable other conceptions to be more easily compared and contrasted. It was tentatively applied to academics' perceptions of Internet literacy (see Figure 11.2) and revealed an overall school profile that could be used to inform and promote my school's Internet literacy discussions.

The model developed to encapsulate academics' perceptions of Internet literacy (see Figure 9.1) illustrates the diversity of views found to exist when the research took place. This model could be revisited by current academics[39] to judge the extent to which it still applies and if any revisions need to be made. The model presented above (see Figure 11.3) could be tentatively presented to illustrate the gap between what academics perceive as Internet literacy and what undergraduates perceive. The model could also facilitate an evaluation of the current Information Management curriculum to determine the extent to which it provides opportunities to develop the competencies, capabilities and qualities, and highlight potential omissions.

The analysis of the academic research conversations revealed that academics in my school collectively expressed all of Bloom's cognitive, knowledge and affective taxonomy levels, although individual academics emphasised different aspects. The Cognitive-Affective Model (See Figure 9.2) developed could be used by the academics in my school to evaluate its current undergraduate curriculum with respect its Internet-related cognitive and affective objectives. It could also be used as a framework for

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[39] 13 of the original 17 academics involved with this research still teach our undergraduates. 4 new academics have joined the department and the 2 academics were not available at the time the research was conducted.

developing the Internet-related cognitive and affective aspects of any new Internet literacies intervention.

Academics could use the JISC learning design framework (see Table 6.2) for comparing and contrasting learning designs and pedagogies, and reflect upon the research conducted by Walton and Hepworth (2011) where a research design which emphasised the more constructive and situative perspectives of learning, was particular useful for promoting undergraduates' online evaluation skills. That is, they promoted an Internet literacy pedagogy that involved goal-centred activities, learning by doing, and the construction of meaning via conversation and ongoing negotiation between learners.

Chapter 12: Conclusions

This thesis began by asking a set of tentative questions related to my experiences teaching undergraduates and how my observations did not align with the Internet savvy rhetoric portrayed by the various Net Generation, Digital Native and Millennials narratives. By conceptualising this knowledge in terms of 'Internet literacies', as opposed to a set of skills or understandings, and by also considering the views and understandings of academics that are central to facilitating the development of Internet literacies, a multifaceted and multidimensional understanding of my original tentative questions evolved.

The first aim of this research was related to undergraduates' Internet literacies and their views about Internet literacy education (A1-2011). Internet literacies were defined in Section 5.4 as the abilities a person or social group draws upon when interacting with Internet technologies to derive or produce meaning, and the social, learning and work-related practices that these abilities are applied to. This definition highlights the two perspectives: 'literacy as cognitive abilities' and 'literacy as a practice'. Using the research questions as structure, the following paragraphs summarise the findings and conclusions associated with the first research aim.

RQ1-2008: What are undergraduates' conceptions of the Internet and experiences of Internet-related technologies?

Students tended to view the Internet as a vast information resource or a collection of Web pages. Despite having studied modules where other conceptions of the Internet and other Internet-related technologies were promoted, three years of study appeared to have heightened, rather than lessened, this view. Students also claimed to use a surprisingly narrow range of Internet-related technologies, with few students claiming to use popular Web 2.0 technologies like Flickr or Twitter. Of the few Web 2.0 sites mentioned by students, it was online social networking site Facebook that dominated. Students appeared to devote considerable energy to maintaining their Facebook presence and 'lurking', with many describing how distracting they felt it was, some describing it as an addiction. Social pressure was the main reason for this perceived excessive use of Facebook, and also the initial reason for creating a profile.

RQ2-2008: To what extent do undergraduates value the Internet and Internet-related technologies?

After three years of study, students still felt they could do almost anything on the Internet, particularly in terms of its capability to satisfy their information needs. This tended to centralise around students' ease at finding information using search engine Google. With such a positive perceptions of the Internet's affordances, it is maybe not surprising that the Internet appeared to be seamlessly integrated into their daily lives. Students were also unanimous praising the affordances that Facebook facilitated, claiming it satisfied various social and digital needs in one convenient location.

RQ3-2008: What are undergraduates' perceptions of being Internet literate?

At Level 1, students described those that were more Internet literate as being more efficient and successful at using the Internet to achieve online tasks, particularly to find information. This view persisted at Level 3, although students also felt a person's ability to evaluate online sources was important. To a lesser extent, students felt being aware of online privacy issues, and having certain technical and communication skills, were important.

RQ4-2008: To what extent do undergraduates perceive themselves as Internet literate?

Students appeared highly confident with their Internet-related abilities, particularly to satisfy their own information-related needs. However there was also a not so confident and less-vocal minority. Those students who were confident at Level 1 appeared more confident at the end of their studies, whereas the less confident minority at Level 1 appeared just as insecure.

RQ5-2008: How do undergraduates perceive they have become Internet literate prior to starting their university studies?

Students perceived a minimum set of basic skills and understandings necessary to use the Internet. With these basics students felt you could then teach yourself to become Internet literate. Most students felt they taught themselves when needs arose as opposed to feeling they have been previously taught. On the rare occasions that they needed support, students sought the advice of someone they perceived as Internet literate. Underlying many students' attitudes was what might be described as a satisficing attitude towards online learning. That is, they claimed that they only learnt as much as they needed to know.

RQ6-2008: How do undergraduates perceive the value of their pre-university teaching?

Students were generally disparaging of their pre-university education, claiming it had either provided them with the basic skills to use the Internet or claiming it had taught them nothing.

RQ1-2011: To what extent are undergraduates, critical and sophisticated users of the Internet technologies, seamlessly integrating them into their lives?

This study found little evidence to support the narrative promoted by post-2008 national reports and strategies that the students are critical or sophisticated users of Internet technologies. On the contrary, students appeared to select technologies according to social pressure or habit as opposed to any critical reflection. In addition, students' use of Internet technologies was more mundane, being related to supporting their hectic social lives than anything radically different. However, there was evidence of even the least frequent users of the Internet seamlessly integrating Internet technologies into their social lives (see also RQ2-2008 above).

RQ2-2011: To what extent do undergraduates demand Internet technologies and pedagogies in their studies?

This study found no evidence to support the narrative promoted by post-2008 national reports and strategies that students demand Internet technologies and pedagogies within their studies.

RQ3-2011: To what extent do my school's Information Management undergraduates perceive their university studies have developed their Internet literacies?

There was wide variation in the extent to which students felt their university studies had impacted upon their Internet literacies. Some claimed that their entire degree was related to ensuring they were Internet literate, whereas others felt their studies had only improved their abilities to find online academic information.

RQ4-2011: To what extent do undergraduates' Internet literacies, and perceptions of being Internet literate, evolve through their university studies?

Despite three years of studying Information Management, where a range of Internet literacies were developed as part of their degree, students' perceptions of being Internet literate were narrow and unsophisticated compared to their teachers'. Whilst students claimed their academic online information seeking practices had changed, there was no evidence of other Internet-related practices or their perceptions of being Internet literate had evolved. In addition, given that the Information School promotes the Information Management degrees as providing students with the necessary skills to cope in an Information Society, there were a surprising number of students who felt overwhelmed by the amount of information available online.

The third research aim was related to exploring academics' perceptions of undergraduates' Internet literacies, what it means to be an Internet literate student and their views about Internet literacy education (A3-2011). Using the research questions as structure, the following paragraphs summarise the findings and conclusions associated with this research aim.

RQ7-2008: To what extent do academics value the Internet and Internet-related technologies?

There was almost unanimous agreement that the Internet had profoundly transformed academics' way of working. However, there were mixed feelings regarding whether these changes were welcome, being particularly concerned with the amount of time spent communicating via e-mail and how the Internet has brought work into their homes. A minority of academics appeared to resent these changes and retained pre-Internet practices wherever possible. Academics also varied attitudes towards using Internet technologies outside of work, from indifference to feeling concerned they were not keeping-up.

RQ8-2008: To what extent do academics perceive themselves as Internet literate?

Academics claimed to be confident using the Internet to find academic content, but generally felt less confident with their technical Internet-related abilities and their abilities to seriously engage with Web 2.0 technologies.

RQ9-2008: What are academics' perceptions of undergraduates' Internet experiences?

Academics were unsure what undergraduates used the Internet for and how they used it, although most presumed online social networking sites like Facebook would figure greatly in students' lives.

RQ10-2008: To what extent do academics perceive their students are, or have to be, Internet literate?

Academics were almost unanimous in their concern with students' poor academic-related Internet skills, particularly in their ability to locate information and evaluate online sources. No clear picture emerged about when academics felt Internet literacy skills should be taught. Some felt that students should be Internet literate when they start their university studies, whilst others felt these skills should be developed at Level 1 or throughout students' studies.

RQ11-2008: What are academics' perceptions of, and pedagogies for, Internet literacy?

Academics' held multi-perspective, multifaceted and multileveled perceptions of what it means to be an Internet literate student. Three primary perspectives and composite facets were identified: Internet literacies as competencies comprising of ethics, ICT and security; Internet literacies as capabilities comprising of employability, exploitation and citizenship; and Internet literacies as qualities comprising of being motivated, having an open-mind and being empathetic. In addition, the analysis showed that academics used the full range of Bloom's Revised Taxonomy three dimensions to describe an Internet literate student: cognitive processes, knowledge and affective, although individual academics tended to stress certain categories or dimensions. Furthermore, academics perceived being literate is either about achieving a level of proficiency or about becoming progressively more able.

Academics tended to associate Internet literacy with online information literacy, viewing the two literacies as synonymous, perceiving Internet literacy as overlapping information literacy, or perceiving one as the subset of the other. Academics either felt Internet literacy teaching should be embedded within credited modules or felt it could be taught as a stand-alone module. Academics viewed Internet literacy education as involving higher-order thinking skills incorporating some level of critical thinking or reflection.

RQ12-2008: Whose role do academics feel it is to facilitate Internet literate students?

Academics described two principal levels of responsibility for teaching students Internet literacies: it was viewed as the responsibility of all academics or it should be devolved to an academic that who was a specialist in this area.

Two research questions bridge the outcome of the two research aims summarised so far (A1-2011 and A3-2011). These are presented in the following paragraphs.

RQ5-2011: To what extent is the digital native-immigrant rhetoric prevalent amongst the academics and undergraduates in the Information School?

Academics implied that students' relationship with the Internet was fundamentally different than their own, and that these differences might be generational. Undergraduates maintained two viewpoints regarding how they perceive the Internet literacies of those older than them. Firstly, as they learn quicker and have 'grown up' with the Internet, they must be more experienced than the older generation who tend to be more cautious and less likely to play. However, they also maintain that their lecturers' Internet skills and understandings should be at least as good their own. Hence, the digital native-immigrant rhetoric is prevalent amongst our undergraduates, but they appeared to be unaware of contradictory perceptions.

RQ13-2008: What [dis]parities exist between undergraduate' and academics' perceptions of Internet literacy?

There was some parity between undergraduate' and academics' perceptions of Internet literacy in terms of ICT and security-related competencies. However, in contrast to the multidimensional, multifaceted and multileveled perceptions of Internet literacy and being Internet literate presented by academics, students struggled to describe what they felt it meant to be Internet literate, particularly in relation to seeking online information.

Charmaz (2006) conceptualises research as a 'journey' and the sense we make of this journey takes the form in the completed work. To help readers judge the journey and its outcomes, I will frame the discussion around Lincoln and Guba (1985) trustworthiness criteria, Charmaz (2006) criteria for Constructivist Grounded Theory studies and Guba and Lincoln's (1989a) authenticity criteria.

12.1 Contribution and usefulness

This research makes contributions at three levels: my own teaching; teaching within information schools and departments; and the wider educational-related literature. These three levels are discussed in more detail in the following paragraphs.

Firstly, this research has contributed to my own understanding of undergraduates' Internet literacies and will enable me to better align my teaching to students' needs and experiences. For example, I coordinate and teach a module that aims to improve Level 1 undergraduates' information literacy abilities and their understandings of information literacy. By all external measures, this was a successful module last year: most students passed, attendance remained relatively stable and student module evaluations were positive. However, there was an overall feeling that students 'didn't get it' and lacked motivation to really engage with the topics covered. The conscientious student referred to in the Introduction (Section 1.1) who typed, "*What are the factors that might cause Climate Change?*" into Google, was a student in this module. Having conducted this research, I have a better understanding as to why the module ultimately failed to achieve its learning objectives. Primarily, I now feel the students' online information literacies were never really challenged. For this year, I will begin with the premise that their online information literacy confidence is based on a narrow conception of information literacy and years of successfully finding information online, primarily via using the search engine Google, has led them to overestimate their confidence. This research has underlined the need to provide opportunities that allow students to assess their own abilities and understandings on a range of online information literacy tasks, from those that might be familiar to those that might challenge the most information literate student. In addition, the Internet literacy triangle (Figure 9.1) and the Internet literacies grid (see Table 5.1) could be used as a starting point for students to reflect upon and develop their own understanding of online information literacy and what it means to be an information literate student.

Secondly, this research could inform discussions related students' Internet literacies within other university departments (see Section 11.4). In particular, the disparities and tensions identified in Section 11.2 may resonate with academics in other information schools and departments. The implications for their success their curricula are profound. Whilst the proposals (see Section 11.3) to resolve these disparities and tensions relate to my own School, academics in other information schools and departments may find them relevant. In addition, they may find the various models and

frameworks developed in this research helpful in analysing and designing curricula (see Section 11.4). The Internet literacy triangle (see Figure 9.1) has already informed discussions in my own School related to the technical strand of a new Informatics undergraduate degree. It encapsulates the fundamental perspectives and facets of Internet literacy that academics in my school felt were important for students to be successful in their studies and beyond.

Thirdly, this research has contributes to the literature that critiques digital native-immigrant narratives (see Section 3.2). It questions those assumptions which cast students as a homogeneous group, avidly using of a wide range of Internet technologies. More significantly, this research adds a new dimension: that of students' teachers, who are cast as digital immigrants by the rhetoric and whose Internet-related experiences and views about being Internet literate have hitherto not been considered (see Chapter 9). More generally, the Internet literacies grid (Table 5.1) presented in Section 5.3 may be a useful and novel conceptual tool for others to position the numerous conceptions of literacy that are related to the Internet relative to other conceptions[40]. The Cognitive-Affective Model proposed and demonstrated in Section 9.5.2 could also be a useful tool to conceptualise and categorise learning outcomes more generally. Finally, the Internet literacy triangle (Figure 9.1) represents the collective views of a sample of national and international leaders in information-related research. As such, it adds a valuable (albeit limited to the Internet) contribution to recent literature attempting to define what it means to be a digitally literate student.

12.2 Credibility

Having now spent almost seven years within my school, over a thousand hours teaching undergraduates and transcribed over half a million words, I feel in a strong position to claim that I understand the subtleties of, and am empathetic towards, the research context. However, prolonged and intensive engagement with the research context does not automatically lead to trust between me and the research participants or negate issues related to my role in the information collection. Hence, I have adopted a reflexive stance throughout the study and, where my research decisions and actions could potentially affect the outcomes of the research, I have explicitly drawn the readers' attention to them (see Sections 8.3.5, 9.2 and 10.3). For example, I have

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[40] For example, a search of the Library and Information Science Abstracts (LISA) database found 736 articles that contained the words Internet AND literacy OR literacies in the article's abstract and 45 articles contained these terms in the title.

attempted to be candid about power-related issues related to the researcher-student relationship. Not only has this arguably given my research more credibility, it has also led to further insights into students' perceptions of being Internet literate and potential failings in the School to provide sufficient opportunities for students to critically reflect upon their Internet literacies.

To further add credibility to this research, I have endeavoured to represent all views and understandings revealed during the analysis of the focus groups and research conversations, even if those views and understandings did not entirely coincide with the narrative I was presenting. Negative Case Analysis was used to illuminate potential cases that were odds with the tentative hypotheses I was developing. These were either accommodated into more refined hypotheses or explicitly exposed as deviating from the hypothesis being developed. For example, in Section 9.4.5 I revealed one academic's perspective on Internet literacy that seemed contrary to all other academics' views. Rather than dismissing the perspective as an anomaly, an additional delimitation of the Internet literacy triangle model was included, and the perspective included in the overall narrative.

The credibility of this research is also increased if there is some triangulation of methods employed, the results of any analysis are checked with participants (member checking) and the research outcomes resonate with all participants' views and experiences. These areas are discussed in the next sections.

12.3 Resonance

The conclusions from this research are primarily the product of my own analysis and reflections. However, my conclusions were discussed with my PhD supervisor and close colleagues at various stages in the research cycle. Notwithstanding potential reflexive issues related to using research participants to offer additional credibility to this research, their feedback suggests that the research conclusions have resonance with their own perceptions, views and feelings. In addition, the analysis of all student and academic information gathering was been shared with respective participants towards the end of this inquiry. Whilst this member checking phase did not lead any extended dialogue, all those participants that responded felt I had fairly represented their views.

12.4 Transferability

The outcomes of this research have (see Section 12.1) and will inform school discussions and strategy related to undergraduates' Internet literacies and develop effective pedagogies to enable our undergraduates to become more Internet literate (research aim: A2-2011). As stated in Section 12.1, aspects of this research that may transfer to other university departments. The transferability of the findings is subject to the ideographic delimitation of all constructivist research. That is, the findings may have broader applicability if, as a result of reading Chapter 2, readers feel sufficient contextual similarities between the context of this research and their own situation. Many information schools and departments would satisfy this proviso. Indeed, many university departments whose curricula are dependent on students accessing in the Internet may find value in the research findings.

12.5 Dependability and confirmability

The dependability of the outcomes from this study primarily arises from the use of triangulation and the creation of an inquiry audit trail. The analysis of the undergraduate and academic research conversations has been triangulated in two ways. Firstly, in addition to coding the all the research conversation transcripts using Bloom's categories, all the transcripts were analysed twice using different code naming techniques (see Section 8.3.1). The categories from both analyses were merged to produce a more refined set of categories that subsumed the individual codes. Secondly, the results from the Survey of Communication Technology Use and learning style self-assessments augmented the conclusions drawn from analysing the undergraduate focus group and research conversations (see Sections 11.2).

Auditors could satisfy themselves with the dependability and confirmability of this research by studying copies of every document saved during each project working day of this study. These have been archived on an external hard drive purchased with money gained from a University Senate Award for learning and teaching. These files would enable an inquiry auditor to vicariously experience the research process that took place and reassure themselves that a rigorous and dependable research process was undertaken. In addition, readers of this study can reassure themselves of the confirmability of the research that took place by reflecting upon how I have attempted to represent the research context and multiple perspectives of the participants, and its meticulous internal and external referencing.

12.6 Authenticity and final comment

The authenticity of this study has yet to be fully realised. The conclusions of this research have yet to be fully shared with all colleagues. However, judging from the strong and sometimes passionate views expressed during the research conversations, particularly regarding students' academic Internet literacies, I feel confident that the conclusions of this research will resonate with their feelings and they will feel sufficiently motivated to want to bring Internet literacies to the forefront of my school's learning and teaching agenda. Furthermore, my own understandings of undergraduates' Internet literacies and academics' Internet literacy-related views has transformed as a result of conducting this research. I feel that I have addressed my over-arching question: 'What is going on?' (Section 1.1).

Appendices

1. Terminology

Various terms used in the Internet-related literature are used inconsistently and ambiguously. In this section I briefly highlight the issues surrounding the use of the terms 'internet' (lowercase *"i"*), 'Internet' (uppercase *"I"*), 'World Wide Web', 'Web 2.0', 'online' and 'digital', and state how they are used throughout this thesis.

The term 'Internet' is typically used in the literature to loosely mean a worldwide set of linked computers, and the resources and technologies they support. Within technical network discussions it has a more specific meaning, referring to a particular worldwide set of interconnected computer networks that adheres to the TCP-IP protocol (Berners-Lee, 1999; Parziale et al., 2006). The common noun version with a lowercase initial letter refers to any interconnected network adhering to any protocol. That is, there are many 'internets', but only one 'Internet'. As there appears to be no consistency in its use, even within the technical literature (Parziale et al., 2006) or consensus of its spelling (see discussion in Blanche C, 2008), this thesis uses the proper noun version to mean the applications and technologies enabled by the Internet, and the resources that it makes potentially available.

The confusion over the use of the terms 'Internet' and 'internet' highlights another common misconception which arguably has more relevance to this thesis; many people use the terms 'Internet' and 'World Wide Web' (often abbreviated to Web or WWW) interchangeably (Webopedia, 2010a). However, the terms are not synonymous and, whilst the World Wide Web is supported by the Internet, the Internet is not the World Wide Web. The World Wide Web is an additional layer or protocol (HTTP) on the Internet's protocols (TCP-IP) that supports the transfer of Hypertext of Markup Language (HTML) documents or web pages (Berners-Lee, 1999; Parziale et al., 2006). Hence, whilst many e-mail, chat or video streaming applications require users to interact with a Web page, the underlying technology may not be HTTP. In addition applications like Second Life and Thunderbird use the Internet and not the World Wide Web. This thesis distinguishes between the terms 'Internet' and 'World Wide Web' and, as the World Wide Web is a proper noun, capitalises the abbreviated version Web.

The terms 'online' and 'digital' are also used ambiguously in the literature. The former tends to have two meanings; an electrical device like a printer is *"turned on and*

connected" or a user *"is connected to a computer service through a modem"* (Webopedia, 2010b). Typically, the *"computer service"* might be a user's Internet Service Provider (ISP) and the user thus able to access the Internet or World Wide Web. This use of the term 'online' is used throughout this thesis. The term 'digital' is frequently used in the literature as a synonym for the Internet. However, its use in the Government's Digital Britain (BIS & DCMS, 2009) report is much broader including discussions about digital radio and television broadcasting transition, and digital mobile and Internet communication infrastructures. This broader meaning of the term 'digital' is used throughout this thesis.

Within the literature, authors distinguish between 'Web 1.0' and 'Web 2.0'. The term 'Web 2.0' was popularised and arguably coined by O'Reilly (2005) to describe what he perceived as a new Web paradigm. Contrasting Web 2.0 with what he called Web 1.0, O'Reilly (2005) highlighted seven fundamental differences. Paraphrasing, these were: the Web as service as opposed to a platform; the harnessing of the collective intelligence of its Web users as opposed to some authoritarian organisation; the central role of data as opposed to software; users as application co-developers as opposed to passive receivers of organisational developed software; programming models aimed at users as opposed to specialised programmers; software packages that run on multi-platforms as opposed to just a personal computer; full-scale applications as opposed to single purpose applications. Examples of Web 2.0 applications frequently cited include social networking sites like Facebook, micro-blogging sites like Twitter, photograph sharing sites like Flickr and bookmark sharing sites like Del.icio.us (Cox et al., 2008). Contrasting with O'Reilly's (2005) technical business-centric notion of Web 2.0, Gillen and Barton (2010:10) focus on social practice aspects of Web 2.0 defining it as *"the proliferation of tools on the Internet that are allowing so many to become involved in collaboration, creativity, not least in finding various ways of representing and performing roles and identities"* (Gillen and Barton, 2010:10). A combination of the technical-business and social practice perceptions of Web 2.0 is used in this thesis, since they are not contradictory.

2. Original information sheet (2008)

You are being invited to take part in a research project. Before you decide it is important for you to understand why the research is being done and what it will involve. Please take time to read the answers to the following questions and discuss them with others if you wish. Feel free to ask any more questions and then decide whether or not you wish to take part.

1. What is the title of the project?

Academics' and Students' Perceptions of being 'Internet Literate'

2. What is the purpose of the project?

The purpose of the project is to discover students' and their academics' perceptions of what it means to be literate in the 'Digital Age'.

3. Why have I been chosen?

[Students] You are a BA or BSc level 1 student at University of XX's Department of XX who has previously taken part in an exploratory interview to discover perceptions of what it means to be literate in the 'Digital Age'

[Academics] You are an academic of University of XX's Department of XX teaching Level 1 BA and/or BSc students.

4. Do I have to take part?

Taking part in this project is voluntary. If you do decide to take part this would be much appreciated. However, you can still withdraw at any time without any prejudice or repercussions. In addition, you will not be asked to give any reasons for your decision.

5. What will happen to me if I take part?

We will spend the next 60 minutes developing the issues raised and the conclusions reached during the exploratory interviews students' perceptions of being digitally literate in the 'Digital Age'.

You will incur no financial costs by participating in this project. A light lunch and/or refreshments will be provided free of charge.

6.   What are the possible disadvantages and risks of taking part?

Taking part in this interview will take some of your time (approximately 60 minutes). There are few, if any risks, and you can be assured that any contributions made will be kept confidential and made anonymous. You can also be reassured that taking part will not prejudice your academic grades.

7.   What are the possible benefits of taking part?

In addition to being interesting and potential beneficial to your own studies, the research will increase understanding of an area that underpins much teaching in university academic departments and in particular inform policy and curricular decision making within the Department of XX. Towards the end of the project you will also receive a summary of the project's findings.

8.   What happens if the research study stops earlier than expected?

In the unlikely event that the research is prematurely terminated, you will be notified and that any interesting outcomes will be communicated.

9.   What if something goes wrong?

If you feel uncomfortable about any aspect of the project, please feel free to raise the issue with me, or alternatively, XX. If you still feel unhappy, please contact the University's Registrar and Secretary. All contact details are listed below.

10.   Will my taking part in this project be kept confidential?

All the information collected during the course of the research will be kept strictly confidential. You will not be able to be identified in any interview notes, reports, summaries or publications.

Participants are asked to respect the confidentiality of all comments made during the focus group.

11.   What will happen to the results of the research project?

The results of the research will be published in my PhD thesis and hopefully form the basis of articles written for academic journals. As mentioned previously, all participants will be sent a summary of the research findings. There are no plans to use the data collected for any other purpose. Should this happen, your written consent will be obtained first.

12.   Who is organising and funding the research?

The research is funded by the University of XX. The light lunch and/or refreshments are funded by the researcher's Senate Award

13.   Who has ethically reviewed the project?

This project has been ethically approved via the University of XX's Department of XX Ethics Review procedure.

14.   Contact for further information

[omitted]

Finally, I would like to thank you for considering taking part in this research and look forward to meeting you.

Yours sincerely

Peter Stordy

3. Student information sheet (2011)

You are being invited to take part in a research project. Before you decide it is important for you to understand why the research is being done and what it will involve. Please take time to read the answers to the following questions and discuss them with others if you wish. Feel free to ask any more questions and then decide whether or not you wish to take part.

1.   What is the title of the project?

Undergraduates' Internet Literacies

2.   What is the purpose of the project?

What is it that undergraduates know, or need to know, when using the Internet?

3.   Why have I been chosen?

You took part in this research during the first year of your studies

4.   Do I have to take part?

Taking part in this project is voluntary. If you do decide to take part this would be much appreciated. However, you can still withdraw at any time without any prejudice or repercussions. In addition, you will not be asked to give any reasons for your decision.

5.   What will happen to me if I take part?

I will read out ten statements related to the focus groups and interviews conducted at the beginning of your studies, followed by a question related to your feelings now.

6.   What are the possible disadvantages and risks of taking part?

Taking part in this interview will take some of your time (approximately 30 minutes). There are few, if any risks, and you can be assured that any contributions made will be kept confidential and made anonymous. You can also be reassured that taking part will not prejudice your academic grades.

7.   What are the possible benefits of taking part?

In addition to being interesting and potential beneficial to your own studies, the research will increase understanding of an area that underpins much teaching in

university academic departments and in particular inform policy and curricular decision making within the XX.

8.   What happens if the research study stops earlier than expected?

In the unlikely event that the research is prematurely terminated, you will be notified and that any interesting outcomes will be communicated.

9.   What if something goes wrong?

If you feel uncomfortable about any aspect of the project, please feel free to raise the issue with me, or alternatively, XX. If you still feel unhappy, please contact the University's Registrar and Secretary. All contact details are listed below.

10.   Will my taking part in this project be kept confidential?

All the information collected during the course of the research will be kept strictly confidential. You will not be able to be identified in any interview notes, reports, summaries or publications.

11.   What will happen to the results of the research project?

The results of the research will be published in my PhD thesis and hopefully form the basis of articles written for academic journals. As mentioned previously, all participants will be sent a summary of the research findings. There are no plans to use the data collected for any other purpose. Should this happen, your written consent will be obtained first.

12.   Who is organising and funding the research?

The research is funded by the University of XX and my Senate Award

13.   Who has ethically reviewed the project?

This project has been ethically approved via the XX's Ethics Review procedure.

14.   Contact for further information

[Omitted]

Finally, I would like to thank you for considering taking part in this research and look forward to meeting you.

4. Consent form

<table>
<tr><td>Title of Project:</td><td></td></tr>
</table>

Academics' and Students' Perceptions of being 'Internet Literate'

Name of Researcher: Peter Stordy

Participant Identification Number for this project:

Please tick box

1. I confirm that I have read and understand the information sheet for the above project and have had the opportunity to ask questions.

☐

2. I understand that my participation is voluntary and that I am free to withdraw at any time without giving any reason.

☐

3. I understand that my responses will be made anonymous before analysis. I give permission for members of the research team to have access to these responses.

☐

4. I agree to take part in the above project.

☐

Name of Participant   Date   Signature

Researcher   Date   Signature

5. Screenshot of NVivo being used to code the research conversations with academics

6. Screenshot of NVivo being used to code the research conversations with students

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