Assignments, Information and Learning: the Postgraduate Student Experience

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CERTIFICATE OF AUTHORSHIP/ORIGINALITY

I certify that the work in this thesis has not previously been submitted for a degree nor has it been submitted as part of requirements for a degree except as fully acknowledged within the text.

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For my fantastic family past and present,
Iris and Richard,
Judy, Cyril and Marcus,
Michael,
Isobel and Lucilla.

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Abstract

This thesis examines the experiences of postgraduate coursework students 'doing' an assignment. Assessment is well recognised as a driving force in students' learning and many university faculties still make extensive use of essay or report-style assignments. These may be the only form of assessment for postgraduates, so they are crucial to their learning, academic success and progress. Drawing on theoretical foundations in the fields of information behaviour and student learning, the research revealed considerable variation in aspects of information seeking and use, in the context of preparing an assessed report.

This small scale, phenomenographically-based study, was focused around one research-based assignment in a program for aspiring Information and Knowledge Management professionals. Six volunteer postgraduate students participated in a series of conversational interviews conducted over the timescale of the assignment and marking. All of the volunteers were found to be high achievers. Two were subsequently chosen as subjects of case studies to provide an in-depth perspective of their individual experiences over the timeframe of the assignment. Analysis of the interviews featured intensive use of audio recordings, supplemented by verbatim transcripts.

The findings are presented in three parts. Firstly, the set of processes experienced by the postgraduates, collectively labelled ***Assignment Information Processes (AIP)***, are described as six qualitatively different categories that are hierarchically related. These range from shaping the task towards completion, to radically changing their views about information in the world. Secondly, the thesis presents five qualitatively different categories of experiences of ***Enough*** that the postgraduates were found to balance when completing an assignment. These ranged from maintaining control and getting done, to generating a creative development process. They depict Enough as far richer than simply a decision to stop. The thesis also describes patterns of change in the experiences of AIP and Enough over the timeframe of the assignment. A third major component of the thesis is based on two in-depth case studies. The case studies give insights into how the different categories of AIP and Enough are experienced by individuals as opposed to the collective experience more typically reported in phenomenographically-based work. In addition, the case studies give a vivid demonstration of the ***Affective*** aspects of student experiences during an assignment, allowing analysis of this often neglected aspect of information behaviour and student learning.

This finely grained exploration provides new perspectives on the postgraduate experience of assignments. It demonstrates that considerable variation can exist even amongst apparently similar students. Traditional research report style assessment can have a valuable role in complex and enriching learning experiences. Although significant parts of postgraduates' experiences were at levels associated with a 'surface approach' to learning, they nonetheless engaged in their work in meaningful and effective ways. It also suggests that the students' highly dynamic individual experiences are not only situational, but also 'micro contextual'. The impact of affective aspects of information use and assessment is highlighted and needs to be considered by higher educators to improve the holistic learning experiences of all students.

Chapter 1

Introduction to the Thesis:
Postgraduates, Information and Learning

"The use of the word information points to a specific perspective from which the concept of knowledge communication has been defined...it refers to the process of knowledge transformation and particularly to selection and interpretation within a specific context" (Capurro & Hjørland 2002, p. 344).

In today's highly complex global environment and knowledge based economies there are few more important assets than well educated and competent professionals (Kaldor et al. in Lea and Stierer 2000, p. viii). In this context, the creation of a continuing education or lifelong learning imperative has seen an exponential rise in student numbers in universities worldwide. In addition to an overall expansion of the university sector, the phenomenon of students returning to improve their skills; advance themselves professionally; gain accreditation for their achievements in the workplace; engage their minds and expand their horizons, has contributed to a world where 'lifelong learning' has almost become a cliché (see for example, Candy 1998; Candy 2000).

In the last decade numbers of postgraduate coursework students have increased at an even greater rate than those of undergraduates. By 2005, Australian postgraduate course work students represented a substantial proportion of the student body in some universities. (For example, at the University of Technology, Sydney they represented 5,565 of 22,000 Equivalent Full-Time Student Load in 2005.) Although the future direction of Australian universities is much debated, postgraduates studying in coursework programs have become a very important cohort within university populations.

Paradoxically, these students have been one of the least understood groups in universities. This is despite the fact that a key issue in a climate of increased competition between institutions has been the 'quality' of universities and their graduates (Lea and Stierer 2000). At a national level, quality assurance agencies, increased institutional reporting and accountability requirements have been implemented. On a more local level, institutions have grappled with new demands for marketing themselves, including differentiation, 'value adding' and institutional rankings that incorporate indicators of teaching quality and student satisfaction. Student satisfaction surveys have become ever more important to survival in the increasingly demand-driven educational climate. Despite all these changes, alongside the huge growth in student numbers, there is little in-depth research being carried out with postgraduate coursework students.

A focus for student attention and daily university life at all levels is the assessment element of courses. Where coursework assignments are the primary assessment tool, assignments provide the basis of what students will take away with them from a course. They are the foundation for both learning and professional accreditation, setting students on their way and helping them in their

subsequent life. Consequently, a large proportion of university students' learning takes place within the relatively isolated, individual and self-directed processes of researching and writing multiple assignments.

The preparation and marking of assignments is a huge enterprise. Despite the move to flexible and online learning, traditional essays and reports remain the major, sometimes only, mode of assessment in many faculties. The outcomes of these assessments are evaluated by subject co-ordinators or tutors. Typically, students' assessment in a single subject (a course unit or module) would be based on two or three written assignments. Successful negotiation of these is essential to progress and success. For instance, with approximately 22,000 Equivalent Full-time Students enrolled at UTS in 2005, a conservative estimate suggests that some 132,000 assignments are written and marked in just one year at this university alone. Assignments in this thesis refer to individual reports of 2000 to 3000 words that require use of diverse literature to investigate a chosen topic within overall parameters set out in an assignment outline given to the postgraduate students on the first day of class. Academic, library and information and learning support services required to underpin and facilitate such a vast educational enterprise represent a considerable proportion of total university budgets every year.

This thesis explores how high achieving postgraduate coursework students experience information and learning processes as they complete requirements for a research-based assignment in information science as part of an Information and Knowledge Management course. 'Information science' is a term coined in 1955 and covers *"the discipline of the science of information"* (Shapiro 1995, p.384). In this thesis the term covers: library science, librarianship, library and information science, and documentation. It also includes the narrower fields of information retrieval and information behaviour as well as the more recently adopted 'information and knowledge management', which was the name in current use for the course that was the focus of this study when the research was conducted.

Whilst the thesis looks at the variation in students' experiences as they move through an assignment, it also examines the ways they experience having 'enough' for their purposes at different stages. The concept of 'enough' is central to productivity and success in an information saturated world. In the face of growing information abundance, the continuous question of 'What is enough?' is an integral, but complex, component of information seeking and use. It is an area of information behaviour that has been recognised as needing the attention of researchers (Kuhlthau 1998) and is starting to be explored in different contexts (see for example, Agosto 2002; Berryman 2006; Zach 2002). In this thesis 'Enough' is defined as whatever is required by the postgraduate students to make sense and complete a task. For students, enough seemed to be a critical part of an assignment (Limberg 1999). Therefore the thesis also explores how the 'concept of Enough' plays out in the context of postgraduate students' experiences of doing an assignment. This is a useful step towards clarifying a key concept for 'information seeking in context'.

The thesis also looks at 'Affect', that is the feelings or emotions experienced by the postgraduates as they balance the requirements of 'doing' an assignment; the expectations of their lecturers and others; and their personal motivations and lives. The embedded nature, as well as the importance of Affect within information seeking, information use, and learning in students' experiences emerged as the research project developed. Affect has long been acknowledged in the information behaviour literature although it has not often been the focus of research (see for example, Dervin 1980; Ford 2004; Kuhlthau 2004; Wilson 1997). In the field of education the situation has been similar, with the role of Affect often recognised but seldom the main focus of research (see for example, Entwistle 1997; Illeris 2002; Marton & Booth 1997; Mezirow 1991; Saljo 1979). Higher education researchers have considered Affect to be under researched and the literature lacking in any unifying themes (Beard 2007; Hazel, Conrad & Martin 1997; Ingleton 1999). In this thesis Affect is seen as the combination of the complex of emotions which reside in the body and the feelings in the mind which derive from these (Damasio 2004). Because it was found to be such an integral part of information and learning processes this thesis explores how Affect plays out in an individual student's experiences of 'doing an assignment'.

This work builds mainly on the literature of information science and student learning. The thesis ventures into what has been an almost hidden world till now, namely the thoughts and feelings of postgraduates as they seek to make sense of an assessment task and strive to produce a piece of written work that demonstrates their learning and grasp of a specific subject. 'Postgraduates' is the term used throughout the thesis to designate the research participants. It refers to postgraduate coursework students (not research or higher degree students writing masters or doctoral theses) undertaking a course leading to professional qualifications following a three or four year degree. In many cases they have a period of work experience prior to enrolling at the postgraduate level.

1.1 Origins of this Study

My early experiences of teaching at university provided the impetus for this research. These experiences were both stimulating and challenging and, like many novice teachers, I felt the need to know more about what can be very baffling teaching situations. Prosser & Trigwell, researchers in teaching and learning, refer to their own early teaching experiences thus:

> *"We could not understand why some things we did one year for one cohort of students did not work the next year. We could not understand why our students, having studied and passed...seemed either unwilling or unable to draw upon that understanding in the subject we were teaching. We could not understand that having spent many hours on developing concise explanations ....our students still did not seem to understand what we had taught them."* (Prosser and Trigwell 1999, p. 174)

I found it particularly difficult to understand how postgraduates (most of whom had both professional and university experience) who were provided with the same teaching and learning activities could produce such different assignment outcomes. This was despite the fact that I had been a postgraduate student myself in the same classes a few years earlier. Over successive classes I wondered why what worked with one group, did not necessarily work with another.

Frustration can result from attributing each student's different learning, assessment experiences and outcomes and satisfaction to relatively fixed elements (such as ability and motivation) or relying on slowly building up teaching 'experience' (Prosser and Trigwell 1999). In pursuing these questions through undertaking a Graduate Diploma in Teaching and Learning, I learnt that teaching situations are always unique and also that the experiences of seemingly similar students can differ markedly for many reasons, even when they are engaged in an identical assessment task. These understandings, combined with a desire to explore what happens during the processes of information seeking and use while completing an assignment, informed my approach to the study and the choice of methodology.

The relative lack of research attention on postgraduates' learning, despite their significant numbers compared to undergraduate students, was the starting point for this study. Previous research has tended to centre upon the problem of mature (usually undergraduate) students' lives and ways of combining demanding working and personal responsibilities with the time commitment and concentration required for studying (Given 2000). There have also been some studies of the benefits of particular teaching innovations in specialised subjects, which have usually centred on classroom or online interactions. The focus of this thesis was to provide a close examination of postgraduate assessment and learning, through self-directed learning and information processes while 'doing' an assignment. It has provided some unexpected and perhaps surprising answers about how the learning and assessment experiences of postgraduates equip them for their future.

1.2 Rationale for the Research

The approach to the research was informed by a belief that the work needed to draw on two discrete literatures. The literature of information science provides concepts about how information and information use interact in conceptual activities such as decision making, reducing uncertainty and so on, while the education literature gives perspectives that allow exploration of student learning. It can be argued that research in the field of education has not adequately considered information processes and learning. When the term 'information' is used in education, it is often linked to a 'lower' quality of learning. Entwistle, for example, notes that the relationship between information and learning is recurringly described in terms of *"the acquisition of discrete packages of information"* (Entwistle 2005, p. 11), while referring to the outcomes of particular approaches to learning. Yet learning as an active process of making sense, relating, interpreting and changing understandings of reality (Ramsden 2003, p. 31), is the essence of what occurs with information use (Todd 1996, p. 49).

An artificial distinction between information and learning (Ward and Reed 1983, p. 678), which recurs in the two literatures, has led to a lack of focus on the way topics, and thus content and subjects, are learnt through information seeking processes. The implications of this for both the teaching and information professions are significant (Entwistle 2005; Limberg 1999, p. 1; Limberg 2000, p. 204). How students build on subject-focused learning, and go on to conceptualise disciplinary parameters and relationships, is also little discussed (Donald 1999). This thesis seeks

to integrate theories and ideas from what are currently discrete literatures and to provide a springboard to a better understanding of what happens when students are 'doing' an assignment.

It is generally accepted that student assessment in Australian universities relies heavily on the use of essays and reports and these have supplanted examinations almost entirely in many discipline areas. Some students feel that they spend their entire time at university writing (Hounsell 2005, p. 110), and in some Australian postgraduate courses a student enrolled in six subjects can complete eighteen essays and reports per year. Successfully negotiating this mountain of assignment tasks has become essential to university success. Despite this, the area of postgraduate assignments has remained relatively unmapped territory. The way students learn through information seeking and use at all levels, is greatly neglected (Limberg 1999). At university, writing essays and reports based on researching the literature of an area is *"an essentially private activity"* (Hounsell 2005, pp. 110, 123) and has until recently been largely ignored.

Assessment is well recognised as the driving force in most students' learning, and for many defines their entire learning experience (Biggs 1999, p. 141; Ramsden 2003, pp. 67-72, 182). In fact, for most students the assessment **is** the subject (Brown and Knight 1994, p. 12). In 1984, Hounsell spoke of essay writing as *"the undergraduate's Amazon"* (Hounsel 2005a, p. 106), particularly in arts and social science subjects. This continues to be the case although some diversification of assignment types and forms has been noted (Hounsell 1998, p. 520). Despite the volume of activity and huge investment on all sides, the pedagogical value of this massive enterprise has rarely been examined and research remains sparse. Library and information services staff and academic staff still know relatively little about how information provision actually helps students learn through information utilisation. The importance of understanding students' information behaviour processes, as they create the vehicles for, and evidence of, their learning processes is therefore an important issue.

1.3 Aims and Research Questions

This thesis explored the variation in information and learning experiences of students in a postgraduate course in information science while they negotiated a key learning activity: a coursework assignment.

At the outset the research questions were:

1. How do postgraduates experience information and learning processes in the context of preparing and completing an assignment?

2. How do postgraduates experience Enough (and not Enough) in the context of preparing and completing an assignment?

3. Do changes occur in postgraduates' experiences of information, learning and Enough over the timeframe of an assignment?

In the course of the research the importance of Affect became apparent and a further research question emerged:

4.   What are the affective dimensions of the experiences of postgraduates over the timeframe of an assignment?

By looking at how learning in higher education is experienced through information utilisation processes and using the focus of a very common assessment mode and a postgraduate student cohort, this research highlights the intersection between learning and information. It fills gaps in our knowledge as academic educators and information professionals and as a consequence helps facilitate student 'learning for an unknown future' (Barnett 2004; Bowden and Marton 1998).

1.4 Organisation of the Thesis

The thesis is set out over eight chapters. The next chapter describes the information science perspective on information use and learning in the context of an assignment, using the framework of the information behaviour literature. Chapter 3 then introduces the student learning research that also frames the study, including the role of assessment. It concludes with a brief overview of Affect. Chapter 4 explains the methodological choices made for exploring postgraduates' experiences of information and learning and describes the research design for the study. Chapter 5 describes the variation in the overall experiences of postgraduates 'doing' an assignment, using the pooled experiences from the interviews. Chapter 6 looks at the variation in part of this overall experience: that is, how postgraduates deal with the concept of Enough for their purposes as they complete an assignment task. Chapter 7 uses specific cases to explore the experiences of two individuals, creating a more fine-grained, longitudinal picture of information processes, Enough and Affect over the timeframe of an assignment. Chapter 8 brings together these findings and discusses the implications, along with the limitations of the study and suggestions for further research. The thesis concludes with some closing comments regarding the distinctive contributions of the study. A Glossary of key terms used in the thesis is provided in Appendix 1.

Chapter 2

Theoretical Background to the Study: Information Behaviour

> *"a model of information needs...must, I would argue, not only benefit from a sound empirical research base, but also respond realistically to the 'ecology' of learners' needs, that is, respond to the learner in a holistic way not only in which it would seem likely that he perceives himself, to judge from responses...but also in which many of his study activities and learning objectives may be determined"* (Ford 1980, p 103).

The thesis sets out to understand how the links between information and learning are experienced by postgraduates 'doing' an assignment. To understand postgraduates' experiences of learning at university requires an understanding of information user behaviour as it is embedded in information and task processes. Therefore this chapter of the thesis examines how the intersection of information and learning has been dealt with to date in information science. The thesis sits primarily within the field of information science in an area of research identified as information behaviour which is typically described as three interlocking areas of information need, information seeking and information use. This chapter reviews the relevant theoretical and empirical literature in these areas. However, for those studies that could be included in more than one of these areas (for example, Edwards 2000; Lupton 2004, McDowell 2004) my interpretation of their origins and influences has determined their placement within the following literature review. The review has focused on qualitative studies unless a particularly relevant quantitative study was found in an area of importance for the thesis.

The first section starts with a brief overview of the development of the field of information science and the sub-field of information behaviour. As information seeking and information use are important for this study, in the following section these areas are briefly outlined in terms of their importance for the study. Then the relevant studies of students and information are reviewed, first undergraduate and then postgraduate students. Key concepts for examining postgraduates' experiences in the context of completing an assignment are discussed. These concepts include: the role of a sense of Enough and uncertainty; browsing and discovery of information; assignments as an information task and the links of the work to information literacy research.

2.1 Overview of the Field of Information Science

Information science originated in early 19th century library studies, and since the development of substantial information retrieval research of the 1950's it has expanded to become an interdisciplinary field that draws on theories and methods from many related disciplines. As a field of research, information science focuses on the relationship between people and information in many different contexts and from many perspectives. It can be described as follows:

"The philosophy of information science and its history demonstrate its interdisciplinary nature (Saracevic 1992). Some theories and concepts, such as information need, classification, information retrieval, precision, information-seeking behaviour and information resources, are unique to information provision. Other theories and concepts from cognate disciplines such as psychology, communications, cognitive science, computer science, sociology, education, philosophy and management are relevant to information provision" (Parker & Kirk 2003).

The central focus of the field is not on specific information technologies or products (for example, books or the world wide web), although the implications of technologies that evolve as tools for people accessing information are important areas of research. Historically, nonetheless the discipline has focused on information and library systems and how these might be improved to provide higher levels of efficiency. The 'information use studies' of the 1960's, were based on extensive earlier library surveys but were seen as unsatisfactory during the 1980's. Dervin's 'Sense-making' approach for these studies focused on 'situations', 'gaps' and 'uses or helps' (Dervin & Nilan 1986) and was a key marker of the move to recognise the centrality of the information user as the key to understanding how people interact with information and how they seek meaning from information (Hewins 1990, p. 164; Ingwersen 1992, p. 1; Kuhlthau 2004, pp. 3-4; Wilson 1994, p. 30).

By the 1980's a broadly 'cognitive view' of information had emerged within the field which emphasised the process of individuals creating 'knowledge or cognitive structures' (Belkin, Oddy & Brooks 1982, pp. 62-66; Ingwersen 1992, p. 16). This 'cognitive' perspective is reflective of similar movement in other social science disciplines (for example, Education). For more than 50 years a stream of information retrieval research has looked at how information is retrieved from a system but it too has moved from a predominantly systems centred perspective, towards more consideration of the users' perspective. The term 'user-centred' is used to convey this shift in the way the study of systems have evolved, as were other studies of information users generally.

Most of the early research from information science in the area of information use, focused on which documents were used (predominantly through citation analysis) and took a transmission or end-state perspective (Wilson 1981; Wilson 1994, p. 27). The process of how the information is actually used has continued to be less commonly studied (Kirk 2002, pp. 3-5; MacMullin & Taylor 1984, p. 93; Tuominen & Savolainen 1996, p. 81; Vakkari 1996, p. 452; Wilson 1981, p. 4). Taylor's (1986) contextually sensitive framework for information use and 1991 development of eight categories were the basis for Dervin's important work (Dervin 1992; Taylor 1986; Taylor 1991). Salvolainen has also drawn on Dervin's work to investigate *"information use as discursive action"* (Tuominen & Savolainen 1996, p. 82) and explore information use (Savolainen 1999; Savolainen 2000).

More recently, in recognition of the complexity of information interactions, an emphasis has been placed on the fundamental importance of information users in their context and social environment. These contextual factors have come to be seen as determining both information behaviour and subsequent information interactions (Chatman 1999; Dervin 1997; Kuhlthau 1998;

Sonnenwald 1998). In the first decade of the 21st century information science research based on social and discourse perspectives continue to be influential. Within the tradition of user-centred information behaviour research, a new body of 'user-driven' qualitative research (led by information behaviour researchers), has evolved. Whereas the user-centred perspective aims to incorporate the information user into the information system, user-driven research starts with, and continues to focus on what people actually do with information in their own context, then builds its explorations from these concerns (see Anderson 2003). This thesis has likewise emerged from and been shaped by the users' experiences, that is, it is user driven research.

Whilst the field of information science overall has moved from a system focused to a user centred (and in a few cases, user driven) perspective, understanding exactly what people do, how and why has not proven easy to investigate. Information behaviour research in particular presents "*a bewildering array of topics, [and] populations*" (Case 2006, p. 265).

Information behaviour is generally categorised in the literature in three strands: information need, information seeking and information use. A brief discussion of the two aspects that are of interest to this study follows: information seeking and information use.

This thesis looks at variation in experiences of information, tasks and learning, rather than at the common need amongst groups of users or the social contexts of information interactions. Thus in this study although information seekers in their role as postgraduates and as a demographic group of mature adults are the focus, the interest is in their personal experiences and perspectives of 'doing' an assignment and how these vary. As such studies are extremely limited in number, the following section looks at studies of students and information more broadly.

2.1.1   Information Behaviour

Information Seeking

Information seeking and use are often conflated by researchers but they are two facets of a holistic experience from an individual's perspective: it is rare that information is sought and not used in some way. How people seek the information they need has always been an important focus for information behaviour researchers. As the field has become more user-centred a change has taken place in the types of studies being done from a focus on channels and sources to complex and dynamic processes studied in context.

Seminal studies on the information seeking process for learning by Kuhlthau began with her doctoral study of 1983, "*a qualitative exploration of the search process of twenty-five academically capable high school seniors*" (Kuhlthau 2004, p. 30). The importance of the dynamic processes of constructing understanding or learning through information seeking had not been well recognised in the literature prior to this. Kuhlthau has framed the research process undertaken by students as a process of making meaning and elaborated on this by using "*a number of concepts related to the learning process that have some bearing on the process of information seeking*" (Kuhlthau 1998, p. 14). Uncertainty, complexity and the 'concept of enough' are all important

themes that emerge from her body of research (Kuhlthau 1993; Kuhlthau 1996; Kuhlthau 1998; Kuhlthau 1999b). Through her explorations Kuhlthau has, significantly, added the affective dimension of cognition and information seeking to Ellis's more elaborated task model of information seeking (Ellis 1989; Ellis, Cox & Hall 1993; Wilson 1994). These affective dimensions have become increasingly recognised as central to information behaviour (see for example, Nahl & Bilal 2007).

At the time of this review there is very little work linking learning and information that goes beyond a focus on information, cognition and action. The emphasis of most information seeking research is at the information searching level (Wilson 1999b), rather than on the process of engaging with information with a purpose over time and from a user-driven standpoint.

Using Information

Information needs have historically been a focus of researchers and practitioners (often called 'information needs and use' studies) with a large volume of the research focused on sources or channels used by the information seeker. The question of how people actually use information in different contexts and for different purposes has been of interest to many of the social sciences, with the *"acquisition, dissemination, and use of information are deeply embedded in mainstream social science theories (ie, rational actor theories, theories of bureaucracy, cybernetics, decision-making theories, and communication theories)"* (Rich 1991, p. 320). 'Knowledge utilisation' has long been of interest in organisational contexts (DeMartini & Whitbeck 1986, p. 384). Research in this area has been hampered by everyday usage of the term, definitional problems, terminological inconsistency and conflicting findings, and especially confusion between information and knowledge utilisation (Todd 1999, p. 11) (Kirk 2002, p. 37; Savolainen 2000, p. 35).

Information use studies which are part of the recent constructivist perspective of information use include Todd's 'quasi-experimental' group study of teenage girls that demonstrated *"the complexity of cognitive information utilisation...[and found they] were active creators of knowledge, manipulating information selectively and creatively"* (Todd 1999, p. 21). Kirk (2002) took a very different qualitative, phenomenographic approach and found senior managers' understandings of information use varied in five qualitatively different ways. Kirk labelled these conceptions: information packaging; information flow; developing new knowledge and insights; shaping judgements and influencing others (Kirk 2002, p. 162), thus demonstrating the variation of information use in one 'group' and the richness that accompanies the complexity of information use.

As part of information behaviour, information use has physical, cognitive and affective dimensions (Kirk 2002, pp. 298-299; Kuhlthau 2004; Wilson 1981), nonetheless, a cognitive approach has continued to dominate. The connection between information, and its use for learning, has been recognised in the statement that information use *"should ultimately be linked in some way to study user behaviour"* (Hewins 1990, p. 165). Phenomenographic studies of

information use in learning contexts include Limberg (1999) and Bruce (1994) and these will be reviewed in subsequent sections.

In this thesis information use is a vital part of the investigation of postgraduate experiences of information, learning and Enough in the context of completing an assignment. Learning is "*active information seeking that is formational, not just informational*" (Todd 1996, p. 49) and is the essence of information use. The research available about postgraduates' information use is however sparse. How do students use information to complete course assessment tasks and thus move on through their degrees? How and what do 'successful' students learn from the process and how do they find meaning in what they are doing?

Researchers have conceptually and analytically tried to separate information behaviour and their research into information needs, information seeking and information use. However, for a student or any other person using information they are not distinct. It is in fact hard to separate the multiple processes of information use from information seeking (Limberg 1999). From a user driven perspective information is experienced as a whole (Anderson 2003). Because these three elements of information behaviour are interconnected the following section will describe studies of students and information as a group whether their emphasis was information needs, seeking or use.

2.2 Information and Students

Because there has been a vast amount of research and literature produced about the information needs, information seeking and information use of students in general, this review focuses on the higher education context, with the exception of a few important examples of studies carried out in high schools linking information behaviour and learning. This section will first examine these school studies before surveying some examples of the considerable literature on undergraduate students and information. Studies of mature and postgraduate research students need to be considered due to the small number of studies of postgraduate students that are of interest for this thesis.

There is a huge and growing body of research on the information needs of high school students for learning. One of the most important researchers in this area has been Carol Kuhlthau whose ongoing work over more than 25 years identified what she has called the Information Search Process (ISP) over many (several longitudinal) studies (Kuhlthau 2005, p. 230). Kuhlthau's model of the ISP has been created based on this empirical research and subsequently refined to become the most evolved and widely utilised (Spink, et al. 2002, p. 697). The ISP model includes thinking, feeling and acting dimensions in six stages: Initiation, Selection, Exploration, Formulation, Collection and Presentation (see Appendix 2). Kuhlthau has confirmed and elaborated the ISP using qualitative and quantitative approaches and large and small scale studies with a range of information users (senior high school students (Kuhlthau 1989), public and academic library users (Kuhlthau 1988a), undergraduates (Kuhlthau 1988b), a securities analyst (Kuhlthau 1997) and lawyers (Cole 2000a). Kuhlthau's initial study examined the information behaviour of high school students undertaking sustained research-based learning activities

(Kuhlthau 1994). She followed a number of these students throughout their college years and one has since been studied as a novice professional securities analyst and again five years later as an acknowledged expert (Kuhlthau 2004).

Another high school-based study on information seeking and use by learners is very relevant to this thesis because of its focus on the variation in student learning and information use. Limberg's exploration of 18 and 19 year old final year high school students doing an assignment used Kuhlthau's ISP as a framework to investigate how the information search process interacts with student perspectives on the learning processes (Limberg 1999). The assignments were done in groups of five and assessed by presentation, the students also wrote a group paper (approximately 20 pages). Limberg interviewed her students three times throughout the assignment process and found variation in the student' conceptions of relevance criteria, ways of experiencing information overload, criteria for judging enough information, and the way they experienced cognitive authority and bias in sources. The students' conceptions of the subject matter of the assignments were also developed (Limberg 1999).

Overall patterns in the students' experiences of information seeking and use process for the assignment were discerned. The students experienced information seeking and use in three different ways, categorised as:

- Fact finding

- Balancing information in order to choose right

- Scrutinising and analysing (Limberg 1999, pp. 10-12).

Limberg's research has highlighted the complexity of information seeking and use processes by describing variation in students' ways of experiencing *"**what** is complicated and **why** this is so"* (Limberg 1999, p. 13) from the perspective of the students. Limberg has noted *"a lack of research based knowledge about the interaction between how students seek and use information for learning assignments and what they actually learn about subject matter"* (Limberg 1999, p. 1).

An analysis of group patterns is incorporated in the study and Limberg notes that these group factors have had a significant impact: *"Few students differed from their group as to conceptions of either information seeking and use or learning outcome...Group patterns have strongly influenced both the information seeking and use and learning processes."* (Limberg 2000, p. 13). Unfortunately the English publication of Limberg's full thesis describing her study is still in press. There are probably many other aspects that would be of interest for the current study.

Another recent empirical study of high school students which links information use and learning, drawing on Kuhlthau's ISP research is Chung's (2003) doctoral thesis. Chung found four types of changes in students as a result of their learning tasks (simple, analytical, organisational, and holistic) which she linked to Bloom's Taxonomy of Educational Objectives.

In summary, Kuhlthau's body of research on the ISP which began in a high school setting, was among the first to focus on the meaning of 'doing' an assignment for a student. She highlighted the importance not only of cognition and action but also feelings. Her research provides an important foundation for this thesis. Chung's research highlighted changes students experienced as a result of using information in a learning context. Limberg's study is of great significance for this thesis as its aims and approach are similar, and her research highlighted variation in many important aspects of an assignment from the perspective of the students. However, Limberg's results with groups of high school students represent a very different context to that of postgraduates who are working individually.

2.2.1   Undergraduates and Information

The substantial literature about the information behaviour of university students is dominated by studies of undergraduates. This group is frequently chosen for many types of study and by researchers in different fields too, often for reasons of convenience. Some of the larger quantitative studies of students do not differentiate between undergraduates and postgraduates (for example Whitmere 1998). Studies closest to the interests of this thesis include those that examine:

- The information needs of undergraduate students

- Research testing a model of information seeking behaviour and expanding it to include undergraduates

- Undergraduate distance learning

- Information retrieval by undergraduates

- Information literacy and undergraduates.

The rest of this section will examine some of the important studies from each of these.

An early study of the information needs of undergraduates in the user-centred constructivist tradition by Ford described information need as *"an awareness of the state of 'not knowing' – or some conceptual incongruity"* (1980, p. 100) which hinders task execution and completion. He went on to point out that 'information need' or a state of 'not knowing' is a foundation of education systems. Drawing on a wide range of prior research that investigated students' individual 'knowledge structures' in a variety of contexts, Ford argued the need to consider the learner holistically:

"effects on information processing and study strategies of more general factors such as the learner's 'ego involvement' in the learning situation, the presence of extrinsic incentives, motivational orientations and features of personality" (Ford 1980, p. 103).

He thought that information behaviour research required the opening up of definitions of information need to incorporate all these contextual factors. This analysis of the intertwining of learning and information foreshadowed an explosion in research into these links (Ford 2004). The

rest of this section follows the strands of research noted above in terms of their interest for the current study.

The large number of studies of undergraduates and information which focus on students' use of resources take an information service oriented approach. This type of study commonly finds that undergraduates overwhelmingly prefer and use easily accessible and familiar resources for their assignments (see for example, Kuntz 1999). Undergraduates are pragmatic in their choice of information sources, using what they think will be the most time and cost-effective information, that is most easily accessed and familiar. They are also pragmatic about what they are looking for, working hard to find out *"what the professor wants"* (Valentine 2001, p. 108). Valentine notes that this represents a marked *"disjuncture"* (Valentine 2001, p. 109) between undergraduate and faculty perceptions of their information needs.

Kuhlthau's central work on student information behaviour and development of the ISP was continued to a limited extent when her subjects became undergraduates. Undergraduate academic library users formed part (28 per cent) of Kuhlthau's large scale verification of her ISP model (Kuhlthau 2004, p. 58). Undergraduates were also the focus of her longitudinal study following 20 of her original group of students. Four of these students were used as case studies (see Kuhlthau 1988b) and explained their perceptions of the process of searching and information systems (Kuhlthau 2004). As college students they had come to expect an increase in their interest in a topic as they learnt more from progressing in the process of information seeking, and that their topic and consequently a *"central theme"* would evolve. They had moved away from the seeking of information to support prior standpoints to become more open to a wider variety of information than they had been in high school (Kuhlthau 2004, p. 76).

The case study students saw themselves as researchers and preferred this type of assessment task to others. They wanted to choose topics that interested them or were familiar or built on their prior work and career oriented topics were a frequent choice. Kuhlthau noted that personal interest was very important to these undergraduates (1988b).

To summarise, Kuhlthau's studies of undergraduates confirmed the affective shifts from negative to positive throughout the ISP. The students (in both high school and university) perceived *"gathering"* information as what they needed to do even when they were vague and unclear about their topic or issue (Kuhlthau 2004, p. 69). Kuhlthau recommended further testing of her model with graduate students and faculty as well as with *"novice and expert information users with diverse information problems...(to see if they) experienced a similar constructive process and information use"* (Kuhlthau 2004, p. 68). However, to date few studies of this type exist. The influence of Kuhlthau's ISP model can be seen in the number of other researchers who have incorporated her work into their studies.

The ISP was used by Cole, for example, to classify the information needs of undergraduate history students according to their stage in the ISP (Cole & Kuhlthau 2000). Information needs are shaped by the students' task when they are 'researching a term paper' and these needs motivate them to use an information retrieval system. In his group of studies Cole emphasised the 'real-life'

setting. However, he experimentally tested uncertainty reduction and expansion devices, which he hoped could be administered at the appropriate stages of Kuhlthau's ISP process. In fact the ISP stages of the students did not match Cole's expectations occurring much later than predicted by the model.

Another group of studies investigating undergraduates and information looked at the information behaviour of distance learning students. Many of these are part of the previously noted practitioner research tradition which focuses on the use of services and resources (for example, Vautier 1999). Distance learning is of growing interest in Australia due to its geographically dispersed population and rapid uptake of communication and information technologies. A recent Masters study of how undergraduate students think about and use information in a specific subject is a particularly interesting example (Littler 2004). Using a case-study approach Littler showed that undergraduates from three different faculties experienced and conceptualised information in six different ways. They varied in how they preferred to engage with information and formats. Surprisingly he excluded one of his original case studies of five postgraduate education students because it *"exhibited characteristics which were significantly unlike those of the other three cases (undergraduates)."* (Littler 2004, p. 67). Although he states that this could be part of the more traditional and less flexible nature of the subject they were enrolled in, the fact that the postgraduates' case study was so different indicates that postgraduate students are worthy of study in their own right.

Information retrieval researchers have completed a number of studies of undergraduates and information. These studies are focused on how information is retrieved from a system and forms part of student experiences with information while doing an assignment. For example, Penannen & Vakkari's (2003) research with 20 psychology undergraduates aimed to analyse *"students' information needs in terms of conceptual understanding of the topic they proposed to study and its consequences for the search process and outcome."* (Pennanen & Vakkari 2003, p. 759). Information needs are narrowed to 'search goals' and they concluded that it was the articulation of their information needs in query terms used by the documents and system that were important for the students and their searching success (Pennanen & Vakkari 2003).

Halttunen's (2003) doctoral study of first-year undergraduates in an information science subject emphasises the importance of students having skills, which he framed as 'IR know-how'. He found students focused on the beginning of the process and information sources were important and tended to be viewed holistically or generally. He stressed the temporal trajectory of their search process and like Penannen & Vakkari (2003) emphasised the importance of students' formulation of their search queries.

These information retrieval studies are useful for improving our understanding of parts of the undergraduate experience with information in the context of doing their assignments. However, they do not tell us enough about the totality of the assignment and information experience.

Studies of undergraduates and information conducted by researchers who are interested in issues of information literacy, or who frame their interest in information and learning as information

literacy (see below), have grown rapidly in the past five years.

Eskola (1998) explored the information behaviour of medical students in Finnish universities using both qualitative and quantitative methods. She aimed to model the information behaviour from a comparison of 'problem based learning' methods with the traditional curriculum (Eskola 1998). Her most recent report of this work framed it within information literacy (Eskola 2005).

Lupton's study of 20 undergraduates writing an essay in an environmental science subject included students from a variety of degrees and almost half of these were mature students (Lupton 2004). The experiences of the students in Lupton's phenomenographic study of an assignment, information and learning indicated undergraduates needed information in three qualitatively different ways:

1. To provide them with evidence to argue their pre-existing viewpoint

2. As background information to broaden or build their own knowledge base and learn about the context and the topic

3. To follow their personal interest and expand the topic by linking it to the field and connecting with other disciplines, in order to communicate about topic issues and problems (Lupton 2004, pp. 61-71).

Lupton's research provides important clues to students' experiences of information when 'doing' an assignment. Their relevance to postgraduates' experiences can only be judged when similar research has been done on the variation in postgraduates' experiences of doing research for an assignment.

McDowell's (2004) doctoral study of 15 undergraduate students in biology and the social sciences also used a phenomenographic approach. She explored information and learning which she called *"the practice of information literacy"* (McDowell 2004, p. 7). The undergraduates in her study also varied in how they sought and used information for studying and writing essays or longer dissertations. McDowell found *"four standard stages could be identified within the student experiences of producing academic work"* (McDowell 2004, p. 73). She called these Getting Started, Acquisition, Production, and Outcomes stressing that these stages were not linear but could be simultaneous, recursive or iterative.

When starting an assignment the students in her study balanced their needs for learning and their task centred intentions with their interests. The acquisition stage (searching, acquiring and reviewing searches and resources) was experienced by these students in four different ways, and how they determined information need varied in each of these (McDowell 2004, pp. 74-79):

1. In the Minimalist experience of information acquisition the determination of information need did not involve any detailed consideration of the task in terms of the information acquired.

2. The Gathering experience of information acquisition involved taking a broader view of what might be useful for the task, but a lack of confidence in prior knowledge to be able to determine beforehand what is needed, and *"what the lecturer really wants"*.

3. The Pinpointing experience involved analysing the assignment task, terms and *"what the question is really after"*.

4. The Connecting experience of information acquisition considers prior knowledge and interests and those that have emerged during the course as a starting point, including revisiting earlier sources of information (McDowell 2004, pp. 82-89).

In summary, these studies of information and undergraduates are of interest to this thesis because they highlight many processes and contexts of students using information during their studies. The studies that have examined undergraduates' experiences of working on assignments are of particular significance for understanding how assignments 'work' from the student perspective. However, it could be argued that the context of postgraduate study is very different.

Skills for Learning

How students learn subject content through information seeking and use while completing an assignment cannot be completely separated from the skills the students use. They are inextricably linked. Within the information science literature the field of information skills has developed into an area labelled 'information literacy'. The aspect of information literacy most pertinent for this thesis is the interplay between skills and content in real-life student experiences. Although this thesis focuses on information seeking and use rather than information literacy a brief survey of this area of research is warranted.

The links between student learning and issues of information literacy and 'generic skills' have been increasingly recognised in universities and generated considerable research attention in recent years (Barrie 2003; Bruce 2002a, p. 31). For the higher education sector skills have become a prominent part of their mandate. Universities are now judged in part on how well they are teaching the skills particularly in professional courses. The contribution of key skills, the growing emphasis on the skills students learn at university and how they will use these and the relationship of these key skills to graduate employability are increasingly important (Martin & Rader 2003, p. xiii).

In this climate information literacy has grown as a field of research. Australian research has been particularly strong and national Information Literacy Standards were introduced in 2001 (CAUL 2001; Virkus 2003, p. 1). However, many students find the academic literature they need to use for the independent learning that takes place during research tasks complex, and this impacts on their understanding of content (Todd 1996). It is the learning of a subject that is the focus of this study but information literacy is an important contributory skill to this process.

Information literacy is a broad and developing field which since first emerging in the 1970's from library instruction, has evolved to become a strong area of research in the past decade (such as Andretta 2005; Breivik 2000, p. xi; Bruce 2002b; Virkus 2003, p. 1). However, information literacy is usually placed in a learning and education framework and at this stage the two fields are not integrated. Information literacy consists of two terms that are *"loaded with inherent assumptions"* (Cheuk 2000, p. 177). It is *"complex and multifaceted"* and has been examined from many perspectives (Candy 2000, p. 140). Information literacy is often linked to technological literacy and within information systems to digital literacy (for example, Bawden 2001).

Information literacy is the means by which people access and manipulate information and as such, a central concern of both information professionals and educators (for example, Bruce & Candy 2000). There is continuing debate about how to most usefully improve information literacy and even about the value and relationship of subject knowledge and process knowledge and skills. In actual learning experiences they cannot be disentangled and this interweaving of content and skills will be further discussed later in the thesis.

Bruce's (1997) classic work in this area revealed seven different conceptions of information literacy amongst higher educators. Johnson and Webber's studies of undergraduates in the United Kingdom emphasised the importance of information literacy as a key discipline of the information society (Johnston & Webber 2003, pp. 347, 349; Webber & Johnston 2005). There is some indication that the intersection of student learning and information seeking and use that can be seen in a broad definition of information literacy, is being recognised in the literature of both disciplines (see for example, Willison & O'Regan 2005). Indeed many studies which are interested in the links between information and learning explicitly frame themselves as studies of student information literacy. Some notable contemporary research in the area of information literacy that was of interest for this study because it focused on the holistic experiences students have of information for their learning includes:

- Lupton's finding that first year environmental studies undergraduate students experienced information literacy in three different ways (Lupton 2004)

- McDowell's study of undergraduates' information literacy and autonomy in the United Kingdom developed four 'information literacy pathways' (McDowell 2004)

- Edward's study (below) of undergraduates' and postgraduates' information literacy and the 'net lenses model' found four qualitatively different ways of experiencing web based searching (Edwards 2006) .

These studies emphasised different aspects of the interdependent nature of information and learning and they are further discussed in Chapter 8.

In summary, alongside the recent attention on generic skills and information literacy there has been a lack of focus on the way students learn through information seeking processes (with the

exception of Limberg 1999) and on the implications for both the information and teaching professions (Entwistle 1997; Ward & Reed 1983). Although this thesis set out to explore postgraduates' learning in the context of an assignment and was specifically not focused on 'skills', it is actually very difficult, even for analytical purposes, to disentangle the two. 'Skills' are a means to an end (of subject learning), and while not central to this thesis, are an important facilitatory component of student learning. These skills require some consideration particularly in light of some of the recent research in this area and this is further discussed in Chapter 8.

2.2.2   Postgraduate Students and Information

There are a limited number of studies considering postgraduates and information compared to other students. Postgraduates are older and more experienced in academic, work and life terms than undergraduates. They approach their studies with a completely different life experience and set of goals. As noted in Chapter 1, there has been a huge increase in students returning to universities to improve their qualifications, change careers or simply to enjoy learning something new. They often enroll in professional courses and study in a part-time mode.

A large body of literature on mature undergraduate students has emerged in the wake of the expansion of higher education provision to 'non-traditional' groups. Although mature undergraduate students do not necessarily have the academic background of postgraduate students, they share their broad-base of life and work experiences. Within the professional literature aimed at public librarians there is consensus on the necessity of drawing on the field of adult learning and andragogy (see Section 3 below) to be able to respond to the information needs of adult learners (Ingram 2000, p. 143). Emphasis is placed on the need to recognise their unique characteristics and the importance of taking prior individual experiences and contexts into account (Ingram 2000, p. 142), as well as the personal development and meaning, and close links between information interactions to the rest of the individual's life (Ghaphery 2000, p. 156). There is a consequent emphasis that establishing the information needs of adult learners must be through *"mutual diagnosis"* (Ingram 2000, p. 145). The information needs of adult learners are shaped by the *"baggage"* that they bring to their information seeking and learning making them an extremely diverse group. Adults enjoy broad, contextualised searches, serendipity and creativity, therefore librarians should facilitate an intuitive or *"organic hands on search"* (Fisher 2000, p. 414).

One major study of information in the lives of mature students (defined as aged 21 or more and having been out of formal education for three plus years) is Given's doctoral work with mature undergraduates. She argues that mature students are marginalised, treated as a homogenous group and outdated assumptions are made about their approaches to learning and motivations within both the information science and higher education literature. The belief that mature students are part-time and problematic, and the differentiation between them and 'serious students', is a common theme in many lists of the barriers mature students face and how these may be accommodated (Given 2000). This view sits alongside the equally accepted profile of a self-motivated learner found in the adult learning literature. Neither of these necessarily fit the

complexity of the 'life-world' of mature students who may be pursuing quite different goals.

Given also uses Salvolainen's (2002) framework for the study of everyday life information seeking to emphasise the diverse ways that mature students' everyday and academic contexts inform one another. Real information behaviour is both active and passive and takes place in private contexts and information seeking is woven into the complex lives of mature students (Given 2002). They use their social and cognitive capital to manage 'time budgets' and effort but their enjoyment of learning is paramount to their academic success *"as they themselves define it"* (Given 2000, p. 10). There are strong affective links for mature students and information seeking is personally meaningful (Given 2002).

Studies of postgraduate research students have grown rapidly since the 1990's, due to increased accountability and interest in progression and completion rates. Bruce's (1994) exploration of doctoral students' experiences of literature reviews is a classic early study of their information behaviour. In her phenomenographic study she found six very different conceptions of literature review which were *"rather impoverished"* (Bruce 1994, p. 228). She concluded that this important part of their doctoral work was a problematic area for students and called for more research. Cole's studies of PhD history students included his doctoral dissertation on how they became informed through their information acquisition and their need for 'names' in their quest to gain expertise (Cole 2000b, p. 445).

Kuhlthau's 1993 research was confirmed and extended by Vakkari & Pennanen (2001) with 11 Masters research students writing their proposals over four months and searching a LISA database using logs and pre and post-search interviews. They found that in the 'pre-focus stage' students sought background theories and models. When 'constructing a focus' they wanted background material and models but started looking for methodological and 'focused information' and extended their searches to other libraries' catalogues. In the final phase of their task the students looked for specific, focused information and empirical studies and added chaining to their strategies for finding information (Vakkari & Pennanen 2001).

Heinström's study of 305 Masters research students from a variety of social science, arts and humanities subjects representing all the faculties at one Finnish university examined the interaction of personality and approach to studying information seeking behaviour (Heinström 2002). She quantitatively tested thesis students using a psychological inventory and test as well as her own questionnaire. The resulting typology of three categories of information seeker considers the affective dimensions of information use with 'negative emotionality' (for example, anxiety) influencing the group of students she categorised as 'fast surfers'. This group, were strongly linked to 'surface approaches to learning'. This may have been because they were only talking about negative emotions rather than positive ones such as satisfaction or enjoyment (Heinström 2002).

Heinström (2003) stresses that students' information needs rival cognitive or emotional motivations. Information need and the information seeking process are dynamic and changeable and may vary according to individual factors which she argues need to be taken into account

along with contextual variables: *"each individual has a unique way of seeking information"* (Heinström 2003, p. 10), especially in motivating situations. Many more studies of research students and information are emerging following the growing interest in this group of students previously neglected by researchers, in other fields particularly education.

Whilst studies of mature and research students and information do exist, no studies were found that focused on postgraduates that are of interest in this thesis, at the start of the study. Over the course of the project however, a doctoral study of information behaviour was completed and there were signs of growing interest from other researchers linked to the growing use of electronic information delivery (for example, Collins & Veal 2004).

Thorstéinsdóttir's (2005) doctoral study fills this gap. While there have been several studies of the information behaviour of undergraduate distance education students (see for example, Littler 2004; Vautier 1999) she is the first to look at postgraduate students. She too noted that there is *"a constant stream"* of research focused on traditional undergraduates but very little in-depth investigation specifically of mature students who have very different needs (Thórsteinsdóttir 2001, p. 1). Thorstéinsdóttir's research is of particular interest for this thesis as she also conducted her study with information science postgraduate students enrolled in a course in Library and Information Science.

This longitudinal study covered a lengthy time span (18 months) and focused on several assignments that she categorised as imposed or extended (where students had the choice of topics for a longer assignment). Thorstéinsdóttir also focused on one subject that included several assignments and a major final paper, finding that the postgraduates in her study *"often experienced problems with locating information and mastering the techniques of seeking information."* (Thórsteinsdóttir 2005, p. 7) and also needed more technical support. In line with studies of other student groups, she found that the information postgraduates used was dictated by convenience, local availability and their skill levels, rather than the requirements of the assignment itself. She also found that her students were obviously influenced by studying Kuhlthau's model (Thórsteinsdóttir 2005, p. 201). Although this was a study of Swedish postgraduates studying in a very specific mode and context the results of Thorstéinsdóttir's study are very relevant for the current study.

In summary, the information behaviour literature points to the importance of information processes and information use for learning in the context of 'doing' an assignment. The focus on cognition, and information seeking and searching activities, seems to have obscured the role of Affect. The students' perspective on assignments in the university context has also been investigated in terms of information literacy. However, the information behaviour literature appears to have paid little attention to the postgraduate coursework students who are of interest for this thesis.

2.3 The Concept of Enough

"the concept of enough involves the deceptively simple question of, 'What is enough?'...Enough relates to seeking meaning in a quantity of information by determining what one needs to know and by formulating a perspective on which to build. The information search process treats the concept of enough as what is enough to make sense for oneself within a context. The concept of enough can only be addressed within context for it is the context that determines 'What is enough?'" (Kuhlthau 1998, p. 7).

One of the aims of this thesis, discussed in Chapter 1, was to explore postgraduates' experiences of Enough in the context of an assignment and this became one of the research questions for the study (as stated there, Enough is used in the thesis to differentiate the concept as it is developed in Chapter 6). The concept of Enough information for an assignment seemed to be a critical part of student experiences from my personal learning and teaching life. How people decide when they have enough information is still a largely speculative area of research that has attracted attention from many other fields since the 1950's particularly in management science. The notion of 'satisficing' in particular, is discussed extensively in electrical engineering, operations research, economics and philosophy (Lossau 1993). The concept of enough is also a commonsense phenomenon used daily in many different situations. It is an important feature of our information rich lives that most people, whether students, managers or professionals, intuitively understand and wrestle with information overload. Even while transacting their every day lives it is central to people getting things done in an information saturated world. The literature exploring the concept of enough including satisficing, maximising and enough information will be reviewed in the following section.

The central importance of enough, examined within context, to the field of information science was emphasised in the observations made by Kuhlthau at the Information Seeking In Context Conference in 1998 (see beginning of this section). Although the 'concept of enough' has always been a key component of information seeking and has grown in significance as our information world has expanded, to this point it has not been a major field of investigation itself, although this is beginning to change.

The concept of enough appears quite early in management literature on decision making and 'satisficing', that started with The Carnegie School research of the 1950's. The 'bounded rationality model' of decision making processes at that time focused on the practical cognitive limits of rationality (Cyert & March in Browne 1993). It emphasised that human decision making is usually concerned with satisfactory alternatives: *"only in exceptional cases is it concerned with the discovery and selection of optimal alternatives"* (March & Simon 1958, pp. 140-141), that is bounded rationality assumes that people make rational decisions but do not generally go to extreme lengths to do this. Harrison's (1987) work on 'satisficing' in management decision making is a particularly useful way to approach this issue, supporting the notion of 'satisficing' as an approach to decision making. 'Satisficing' means considering enough options in turn until one is found that satisfies the minimum criteria of the person. Further insight was provided by Harrison's 1987 work on the 'zone of optimality' highlighting that:

"the costs in human and financial terms of continually trying to perfect information rises exponentially, and the value of the information to the decision maker declines precipitously at some point" (Harrison 1987, p. 47).

These early studies were influential but their settings were experimental and they are framed strongly within an information systems paradigm. Although the term 'satisficing' is often used to describe peoples' information behaviour there has been limited recent empirical research on this topic.

The 'concept of enough' has more recently been investigated from a qualitative user-centred perspective. Kuhlthau's (1998) call for further investigation of the 'concept of enough' built on her well known body of research on the ISP, which highlighted the role of uncertainty in the context of information seeking for an assignment (reviewed above). Kuhlthau positions the process of information seeking as a sequence of choices based on four criteria: task, time, interest and availability (Kuhlthau 2004, p. 195). She emphasises the 'concept of enough' as what is sufficient to make meaning for oneself in the context of the task and observes that this may be applied at every stage of the ISP (Kuhlthau 2004, pp. 136, 199). In the presentation stage of the ISP *the task is to complete the search and prepared to present or otherwise use the findings... culminating the search with a personal synthesis of the topic"* (Kuhlthau 2004, p. 194). The final stage of the ISP ('search closure' or 'presentation') may be associated with redundancy or decreased relevance of information, lack of further resources, investment on the perceived level of appropriate effort or time to deadline considerations and an increase in uncertainty at the end of the ISP (Kuhlthau 2004, p. 50).

The redundancy, mood and prediction corollaries Kuhlthau highlighted are significant because they contextualise our understanding of 'enough' for information purposes and show the role of perception. These findings have been revisited to some extent in her subsequent work (for example, Cole & Kuhlthau 2000; Kuhlthau 1996; Kuhlthau 1999b; Kuhlthau 2004).

Kuhlthau's highlighting of the importance of enough for students' information seeking was augmented by Limberg's (1999) research. In her phenomenographic study she found that high school students in group work situations held three different conceptions of 'enough material' which she categorised as:

1. Enough to cope with, where students prioritised time and energy

2. Material to cover the topic and answer their research questions, which was the most common category amongst her group of students

3. Enough to analyse and discuss the topic where students aimed to be able to discuss their topic thoroughly.

Limberg also identified two categories of experiences of 'information overload':

1. Mechanical reduction of the number of information sources, which was related to experiencing enough as coping

2. Selection through structuring and analysing.

In the current study this aspect of information seeking is also considered to be part of the way evaluations of enough are conceptualised. Limberg identified enough information as one of the most important aspects of the students' use of information.

Agosto (2002) more recently confirmed that 'bounded rationality' (information overload, physical and time constraints) and the 'satisficing' behaviours of reduction and termination were a feature of young teenaged girls' web-based information decision making. Zach's (2002) research has added to what we know about the concept of enough with a list of 'stopping criteria' utilised by arts administrators to finish the information seeking process, following a long line of researchers. She also created a model of the information seeking of arts administrators.

Thórsteinsdóttir specifically examined *"the stage at which students felt they had gathered enough information or they decided to stop seeking"* (2005, p. 201). She identified four criteria for *"enough information"* that applied to all the assignments that were part of her study. These were:

1. Postgraduates' perception, feeling and intuition

2. The study assignment determines the adequacy of information

3. Exhaustion of sources

4. Time limits (Thórsteinsdóttir 2005, p. 201)

Her finding that some students stopped searching when they encountered redundancy echoes the findings of previous research, as does search closure due to time constraints and a deadline. Interestingly, some students cited assignment requirements as their key to closing a search and a few said *"that knowing when enough material has been obtained is simply a matter of feeling"* (Thórsteinsdóttir 2005, p. 202). These students had a picture in their mind of what they were aiming for and one student described having *"sufficient material was a mixture of a logic, analytic ability and intuition"* (Thórsteinsdóttir 2005, p. 202). She noted that this finding was not present in previous research. This is an interesting indication that research into postgraduates' information behaviour and learning in the context of 'doing' an assignment is worthwhile because their experiences are different to those of undergraduates.

Berryman has noted that research findings from human judgement and naturalistic decision-making offers insights into the nature of the 'phenomenon of enough' (Berryman 2006a). She differentiates between decisions (to stop or continue) and the evaluations that precede and feed into these decisions (Berryman 2006b, p. 2). Her research on the 'phenomenon of enough information' in a professional policy work context is ongoing.

Because decisions about enough are strongly related to how we draw boundaries and control a chaotic information world, other areas of relevant research include Vakkari's work on task performance, focus formulation and clarity of relevance criteria (see for example, Vakkari 2003a; Vakkari 2003b; Vakkari & Pennanen 2001). Individual decisions about enough have been shown to be related to individual judgements of boundaries and relevance and other strategies for working out how far to go both conceptually and when searching during a research process (Anderson 2003).

2.3.1   Uncertainty in Information Behaviour Research

A topic that is closely linked to decision making and the concept of enough in information seeking and use that information behaviour researchers have taken an interest in is uncertainty (see for example, 'the uncertainty project' (Wilson, et al. 2000). Uncertainty is part of all information seeking not just in formal learning environments. As Wilson and colleagues state *"In information science, the idea of uncertainty underlies all aspects of information seeking and searching"* (Wilson, et al. 2002, p. 705). The importance of the generalised concept of uncertainty (or confusion) and its implications for decision making, and seeking and utilising information, have been examined since the 1950's. One major study is, for example, Browne's classic study of organisational decision making (1993).

From the perspective of an individual who seeks information (or decides not to) uncertainty is a constant, but for information retrieval researchers at least it has been *"the ghost at the feast"* (Wilson et al. 2002, p. 265) and for a long time for information behaviour researchers too. However, research on the concept of uncertainty seems contradictory. Ingwersen refers to a *"state of uncertainty or doubt...in the context of a problematic situation or choice between possibilities"* (1992, p. 27). Wilson (1999a, p. 56) also defines a 'problem situation' or discrepancy between life and phenomena, as a state of uncertainty, linking problem solving strongly to uncertainty reduction or resolution. He developed a problem solving process (PSP) model to explain goal directed information behaviour (Wilson et al. 2000), and to explicate the cause of uncertainty.

The resolution of the *"problematic situation"* is the goal and an individual moves from uncertainty towards certainty through a staged process of problem identification, problem definition, problem resolution and solution presentation (Wilson et al. 2002, p. 705). The resolution can be found in information. Wilson and colleagues tested uncertainty in a large-scale, international, quantitative study of mediated information retrieval framed by Wilson's problem solving process, Kuhlthau's ISP model and Ellis's search 'characteristics' (Wilson 2002) with academic participants. They found important differences in the levels of uncertainty at problem stages (thus confirming the model's uncertainty reduction) and with variation in prior knowledge of the individual. Their investigation of the 'Kuhlthau feelings variables' and levels of uncertainty in problem solving stages led them to propose two types of uncertainty: cognitive (associated with the judgements and problem stage) and affective uncertainty (associated with other feelings) (Wilson 2002). However, Wilson links uncertainty tightly to his PSP which aims specifically to reduce uncertainty.

Kuhlthau (2004), in contrast, treats uncertainty as an integral part of the ISP and making meaning. As a normal expectation of the process it should be made explicit and utilised. This represents a significant shift from the uncertainty reduction ideals of previous research. However the ISP is seen as a process of moving through uncertainty which changes along with the feelings that accompany it. Importantly Kuhlthau found that students experienced an increase in uncertainty and a 'dip' in confidence at the Prefocus Exploration stage of the process (see Section 2.2). Success in information seeking is seen to reduce uncertainty and increase confidence over the course of the ISP, but was shown to not be a linear, positive relationship. Equally, tolerance of

uncertainty is an important part of the research process (Kuhlthau 2004, p. 95). This research normalises uncertainty as integral to information seeking, rather than a negative influence to be minimised or avoided.

More recently uncertainty has been shown to have a positive impact on information seeking and use (Anderson 2006). In 1993 Cole pointed out that as early as 1949 Shannon and Weaver's model differentiated positive and negative uncertainty. By the late 1990's uncertainty had been acknowledged to be useful in certain contexts, for example, it was seen as a good sign by an expert information worker (Kuhlthau 1996; Kuhlthau 1999a; Kuhlthau 1999b; Solomon 1998). Anderson (2006) goes further and points out that there is an important interplay between different levels of uncertainty in the ISP. She argues that there is a productive tension between what can be seen as negative and positive forms of uncertainty. Uncertainty motivates researchers and is particularly important at the boundaries of topics on understanding. It is this interplay between positive and negative experiences of uncertainty that may allow the overall tolerance of uncertainty that is necessary for moving through an information search and a research project (Anderson 2006, p. 16). As will be seen in subsequent chapters this view of uncertainty is the most useful perspective for study in this thesis.

Uncertainty moves information research beyond a focus on cognitive skills into less well mapped territory. This is one area of information behaviour research that seems to acknowledge the affective aspects of working with information in the most sustained way. Uncertainty by definition involves the unknown and therefore learning. Individual experiences and perceptions of uncertainty need more careful investigations in higher education learning contexts.

In summary, stopping a search has been an inferred focus of most contemporary information behaviour research about the concept of enough in information seeking and use. Although new research is starting to emerge that recognises the complexity of the judgement of enough in real world experiences, in the context of decisions about enough, more research is needed. The field of information behaviour is beginning to explore the concept of enough from different perspectives, but the subtleties that shape that "*deceptively simple question*" (Kuhlthau 2004, p. 199) of 'What is enough?' remain an under-researched area. There is still a lot we need to understand about the contextual influences that shape the judgement of Enough.

2.4 Discovering and Encountering Information

Exploratory information seeking, or discovering information (as distinct from 'information discovery'), has been far less of a focus for researchers than more structured modes of seeking or searching for information. However, these types of information interactions have been dealt with in the literatures of browsing and environmental scanning. Browsing for information is one of the ways people may deal with uncertainty in everyday and task situations. This section describes research shown browsing is an important means of gathering information for many individuals.

Browsing in the context of an assessed research task is of interest for this study, because it can be a strategy for searching for, and learning from, information. Consideration of browsing is consistent with the aims of this study which are to explore postgraduates' own experiences of information in the context of completing an assignment. The research questions which set out to explore these experiences include questions about how judgements of Enough and uncertainty interact with patterns of searching in this context.

Although the focus of information seeking research in general is active searching (in a database for instance), browsing is another strategy commonly used to peruse and gather text, even though it may be less planned. The small body of research which has explored browsing highlights:

- A lack of consensus in the research on browsing

- The importance of browsing in many different contexts

- Why people browse

- Serendipity and the role of pleasure in browsing

- Information encountering

- The recent attention given to electronic browsing.

Browsing plays a fundamental role in human information behaviour in many contexts and has been studied in diverse fields which include: management; marketing and mass communications as well as library and information science; end-user information retrieval and system design (Chang 1995). Whilst *"browsing is one of the most common ways in which the library user finds the books (s)he borrows"* (Shoham 2000, p. 92), it is also a particularly relevant strategy in the setting of the current study, because up to a third of the information gathered in academic libraries may be obtained by non-searching methods (Chang & Rice 1993, p. 236).

The first reference to browsing in professional literature was probably in 1890 by Professor James Hosman of Washington University. He emphasised 'reading' and 'rapture' and the necessity to 'taste' books in order to know what is wanted: *"who can tell what books he wants without preliminary tasting?"* (Hosner in Shoham 2000, p. 92). Thus from early on browsing has been associated with the enjoyment of information. More recently browsing has been explored in the context of reading for pleasure and finding information *"that helps them in their lives"* (Ross 1999, p. 343). In this context *"The reader's own preoccupations work as a filter"* (Ross 1999, p. 353). Browsing is a strategy that allows individuals to sensitively find and filter information according to their own preferences.

Although well recognised by librarians since the 1930's, browsing was a neglected part of information science research until the 1960's (Overhage and Harman in Chang & Rice 1993, p. 234). Major reviews of browsing for information by Hyman in 1972 and Ayeris in 1986 showed a growing recognition of its importance but also highlighted a lack of consensus on the nature of browsing and on how to define it (Chang & Rice 1993, p. 235). By the 1990's browsing had developed into a substantial area of research (see for example, Chang & Rice 1993; Chang 1995; Rice, Chang & McCreadie 2001).

There is however, still no agreement as to what exactly browsing is (Rice et al. 2001; Shoham 2000, p. 93). Chang and Rice state that browsing has been broadly described as *"a kind of searching, in which the initial search criteria or goals are only partly defined or known in advance."* (1993, p. 235). Browsing can be *"a casual search for items of interest, without clearly defined intentions...a search directed by the user in a dynamic but casual way"* or where a defined search 'gives way' to more flexible exploration as the search itself starts to yield information (Reitz 2004, p. 106). Lack of definition of the search and a 'casual' approach are suggested here but from a user driven perspective browsing may be more complex and creative than this would suggest.

In information retrieval research there has been recognition of browsing and 'berry-picking' by Bates (1989) in online environments and by Ellis who nominated browsing as one of the six elements of his model of searching and retrieval (1989). A switch in the focus of browsing research to electronic and digital systems was emphasised by Toms' (1997) thesis on adults' browsing of digital newspapers. Another example of research related to browsing in the information retrieval area is what has been termed 'information discovery' (as search encounters, not data mining) in an electronic medium (Proper & Bruza 1999, p.736). Searching *"the World Wide Web in a casual serendipitous manner"* or surfing has become a feature of 21st century life (Reitz 2004, p. 106). Studies of text and shelf browsing have since been left behind by researchers although there is little to indicate whether this is a true reflection of information behaviour at this point in time.

Why do people browse? Clear distinctions are often made between browsing and task oriented types of information seeking with regard to tools and behaviours used. There is an acknowledgement of the possibility of goal oriented browsing in some literature, although the emphasis is still on its unplanned nature (Toms 1999). Expansion, vague awareness, monitoring and creativity are nominated by O'Connor (1993) and identification, familiarisation and differentiation by Ellis (1989). Information needs and their clarity are also related to stages of a task with an ill-defined information need resulting in browsing rather than specific searching (Chang & Rice 1993; Vakkari 2003b).

Four dimensions of browsing seem to be constant themes in the literature: scanning; intentions; goals and the browsers' knowledge and although movement is a fundamental part of browsing it is not random (Choo & Auster 1993, p. 237). The use of different types of browsing techniques are seen to be influenced by the nature of the object that is sought; the motivation, knowledge and learning characteristics of individuals; the reason for the search and finally the context of the search situation (Choo & Auster 1993, p. 237).

Browsing is recognised to be important to particular groups of people such as managers and humanities scholars. The environmental scanning literature in the business environment covers a similar phenomenon and emphasises viewing but not necessarily collecting information (Choo & Auster 1993). What is perhaps most interesting for this thesis about this specific type of browsing is that *"scanning increases as perceived environmental uncertainty increases."* (Choo & Auster 1993, p. 303). In business settings too, browsing has been found to be linked to uncertainty.

Browsing research in a university context has been concentrated on scholars. For scholars there has historically been *"a perception (by researchers) in a variety of fields that **serendipity**, luck, browsing, or some such process standing outside the formal bibliographic apparatus has made a significant contribution to their work"* (Overhage and Harman 1965 in O'Connor 1993). This emphasis stemmed from an awareness of the inadequacies of information systems, which is no doubt still valid. It also signals something more: *"serendipity is, here, not 'dumb luck' but rather the willingness of the scholar to (search widely), to acknowledge the possible value of an unlikely item, to make many connections, and make evaluations."* (O'Connor 1993, p. 213). In order to discover *"catalytic works"* browsing is seen as a *"powerful tool"* (O'Connor 1993 pp. 212, 230).

Browsing in learning contexts was included in Kuhlthau's ISP along with other strategies appropriate to the stage of the process but is not emphasised, perhaps due to the origins of the study (Kuhlthau 2004, p. 120).

A related area of research is 'information encountering' described as the *"unexpected discovery of useful or interesting information"* (Erdelez 1999, p. 25). This *"Accidental discovery of information"* that we know of more commonly as serendipity has been largely ignored until recent *"systematic attention in user studies"* (Erdelez 2001, p. 220). Serendipity is not only strongly linked to browsing (Choo & Auster 1993, p. 238) but also to strong positive feelings. Erdelez's work in this area not only amplifies the browsing research but importantly she also links these types of interactions with information to positive affective experiences, and to Kuhlthau's (1991) assertions that these can be *"drivers of information behaviours"* (Erdelez 2001, p. 228).

Her study surveying 26 graduate-level library and information science students is particularly interesting. Eleven students were interviewed because of their high use of the web environment, which was the major focus of the research (Erdelez 2001, p. 222). Depending on their approaches towards information encountering, people have been classified as: super encounterers, encounterers, occasional encounterers or non-encounterers (Erdelez 2001, p. 220). 'Information encountering' when information seeking or browsing is an event rather than a process that is more likely to occur when a person is attuned to the information potential of situations at any time or place (Erdelez 1999, p. 28).

In summary, browsing and associated behaviours such as environmental scanning and information encountering are complex but very fruitful modes of interacting with information in academic, business and everyday contexts (Erdelez 1995, p. 9). The essentially exploratory nature of browsing, often motivated by an ongoing desire to be informed, is dependent upon users' knowledge and skill (Toms 1999, p. 202). This suggests that it is not a passive activity even if its direction is vague (Chang & Rice 1993, p. 237). Browsing techniques may be a purposeful, personal information habit for individuals who are motivated to increase intellectual arousal by interacting with their information environment (Toms 1999, p. 193). The links between browsing, strategies for handling intellectual and affective uncertainty as well as increasing intellectual stimulation (challenges and skills) and pleasure are further discussed in Chapter 8. If as Herner considers *"much of what we call 'searching' is, upon dissection, primarily browsing"*

(in Chang & Rice 1993, p. 232), it is difficult to understand why there is comparatively little research on browsing compared to 'searching'. Although browsing is harder to study than more structured and articulated searching it is intimately related to information use and important for this user driven study.

2.5 Assignments as Tasks

This thesis focuses on how postgraduates learn through information seeking and use while completing an assignment. The assignment is in a very real sense a task and they are using information in order to move through the task. Considering information seeking and use as a task is consistent with the notion of tasks within information behaviour. Information use has been increasingly examined from the perspective of work tasks in information seeking and retrieval research for the last ten years and has been framed around searching, although the context of tasks has been used inconsistently (Bystrom & Hansen 2005, p. 1050). There has been a variety of ways that tasks have been theorised and some tension exists between task analysis and problem analysis in information seeking and use research.

The approaches that Bystrom and Vakkarii take seem most appropriate for the aims of this study. Vakkari's discussion of task is associated with forming a focus in Kuhlthau's ISP and he has conducted research on students doing assessment oriented tasks in a university context. In this thesis work done on tasks in work and especially education settings is useful for framing the assignment as a work task for postgraduates (Bystrom & Hansen 2005; Vakkari, 2003b, p. 416). In this section the task aspects of assignment work are considered in light of information behaviour research on complex information tasks.

Vakkari's review of task performance in information searching focused on the electronic environment and he argued that *"In studies of information searching, it has been typical to take the characteristics of humans or systems as a starting point and ignore the tasks being carried out"* (Vakkari 2003b, p. 415). Real tasks such as 'doing' an assignment have meaning for students unlike experimental studies (for example, Allen & Kim 2001). The following definition could equally describe a student assignment: *"a task focuses on a particular item of work...the task has, when performed a recognisable beginning and end. It also indicated a task has a practical goal (i.e. result) and normally has a meaningful purpose (i.e. reason)."* (Bystrom & Hansen 2005, p. 1051).

From a user-driven perspective information seeking is pointless if it is not linked to a personal (or work) purpose or goal. In real-life situations tasks or personal goals and information seeking are not separated by the task performer (Bystrom & Hansen 2005, p. 1052). It is task accomplishment rather than problem solving within that task that is the focus from the users' perspective, in work and educational settings (Vakkari 2003b, p. 416). Rather than a problem, a task implies a specific job to be completed, usually within a timeframe. For students, assignments are work and at least in part, a task to be completed. Task activity is directed towards goal accomplishment and the resulting *"meaningful product"* (Vakkari 2003b, p. 416). Goal directed activity is accompanied by planning, which requires information and indeed for the postgraduate *" the search for*

information is a sub task in task performance" (Vakkari 2003b, p. 420). The information search that is the focus of so many information behaviour researchers, is for the postgraduates one step towards completing the goal of submitting an assignment (Vakkari 2003b, p. 416). A task framework is therefore an appropriate way to explore postgraduates' experiences of 'doing' an assignment.

Tasks have been considered in educational settings in Kuhlthau's ISP where task construction is evident in four of the six phases (task initiation, topic selection, pre-focus exploration and focus formulation) (Kuhlthau 2004). If we consider that tasks have three principal parts (task construction, task performance and task completion), this suggests that the task construction phase forms a major part of the overall task of information searching and *"is perceived as a rather difficult part of the task performance process by its performers."* (Bystrom & Hansen 2005, p. 1053). The ability to anticipate the information requirements of a task is acknowledged to improve as people proceed in an evolving search, that is, they learn as they go along (Vakkari 2003b, pp. 420, 435).

In an assessment context information seeking behaviour and strategies have been found to be linked to the students' goals for an assignment. Higher aspirations for the task lead to more comprehensive information seeking and use, and information seeking strategies are often altered over the course of a task (for example, Bystrom & Hansen 2005; Kuhlthau 2004; Limberg 1999, Vakkari & Hakala 2000). This emphasis on task construction is probably stronger in a learning and assessment context than in everyday work settings where people are more confident in their own judgements in the demands of the task (Bystrom & Hansen 2005, p. 1053).

Vakkari (1998) recognises the importance of task complexity highlighting the extent of the task and pre-determinability which is related to problem structures and is strongly tied to what and how people search for information (Vakkari 1998, pp. 40, 50). Bystrom has operationalised task complexity and uncertainty in terms of inputs, performance and outputs for the task performer (Bystrom & Hansen 2005; Vakkari 2003b). Information tasks range in complexity from 'unknown genuine decision task' to 'automatic information processing' (Bystrom 1996, p. 131) and task complexity (pre-determinability) is an important dimension that varies according to the *"task performance, perceived uncertainty about (information) requirements, process and result of task."* (Bystrom 2005, p. 176). The more complex the task the more information sources will be used (Bystrom 1996, p. 142). The relationship between task complexity and information types, means that when perceived complexity increases:

- Acquisition of more types of information also increases

- There is a lesser probability of predicting what information types are needed

- Experts are relied upon more (Bystrom 2005, p. 177).

A task perspective requires a *"focus on perceptions of the task performer and her information activities during task performance process"* (Bystrom 2005, p. 176). The information needed for tasks is always highly contextually embedded and this must be taken into account to gain a *"holistic picture"*. However, by focusing on the perceived task the relationships between context

and "*information activities*" can be clarified by moving the research focus to the specific work tasks (Bystrom 2005, p. 175). Postgraduates 'doing' an assignment are not simply seeking information, they are using information to complete a complex information and learning task. How students perceive assignment task complexity may have important implications for their information seeking and learning processes and how they deal with evaluations of Enough. This aspect will be revisited in Chapter 6 and discussed in Chapter 8.

In summary, using tasks as the basis of analysis means taking a 'process approach' to the object of study, which is consistent with the process frameworks of Kuhlthau (2004) and Limberg (1999). This study takes as its starting points their in depth explorations of information seeking and use in a task context. Using the task as the unit of analysis allows examination of different strategies that students use. Student perceptions of research task complexity and how this affects their information seeking, use and learning processes are a useful way to examine postgraduates' experiences of 'doing' an assignment.

2.6 Conclusion

The literature reviewed in this section of the thesis first introduced the background to the study in the field of information science, then focused on the information behaviour literature that is significant for exploring the intersection of information and learning. The framework of the user-centred studies it discussed offer a starting point for exploring aspects of information behaviour in learning. The small number of user driven studies (for example, Anderson 2003), alongside the phenomenographic studies that focus on the relationship between people and information (for example, Edwards 2006; Kirk 2002; Limberg 1999; McDowell 2004), provide deep insights into the holistic experience of complex information and learning interactions and this research needs to be extended into other contexts.

The information behaviour literature has focused on information seeking, often at the micro (or searching) level (Wilson 1999b). There are, as well, rather fragmented studies of the information behaviour of very specific groups, although these areas may not be as important as the extent of the literature's focus would have us think. How information is actually used is of central importance for information science researchers to understand. Studies focused on information use have been uncommon, but highlight the importance of understanding information use for a complete picture of human information behaviour.

This study aims to enhance our understanding of how students use information to learn about a subject by 'doing' an assignment. Research on students' information seeking tends to compress the fundamental and ongoing process of information use, or leaves it out of consideration almost entirely. This review argues that learning is not explicitly addressed by information behaviour researchers even in studies of students 'doing' assignments and that this represents an uncomfortable gap in our knowledge about a core element of university education.

Whilst there has been a great deal of research of undergraduates seeking information in order to complete an assignment, there has been far less on mature students and even less on the growing number of research students. Postgraduates have been relatively neglected, apart from a few studies analysing specific issues. Many studies of postgraduates do not investigate the students' perspectives, with the exception of Thórsteinsdóttir (2005) who focused on distance education and Edwards (2006) who had a mix of students and did not distinguish between them.

How students build on subject-focused learning and go on to conceptualise disciplinary parameters and relationships is also little discussed (Donald 1999). Research into how students learn through information seeking and use in assessment has been constrained by the separation of research traditions between the disciplines of information science and education, both of which downplay the intersection of learning and information processes. Where does one start and the other stop, and how do learning and information intersect in this process? Information behaviour research on learning is rare. The quest for content is a fundamental driver of information seeking and use and research is needed to build on the findings to date (see Limberg 1999).

In contrast however, the field of information literacy is mature and vast. Like the literature on 'generic skills' in other areas (see for example, Barrie 2003), information literacy studies necessarily focus on the skills that facilitate information use, but not information use itself. Some elements of this study (Chapters 5 to 7) could help clarify the role of information literacy in postgraduates' experiences of assignments.

The literature on making decisions, which draws considerably on research from other disciplines, has been a foundation for more recent studies of enough. The research on how people decide 'What is enough information?' in various situations is important for understanding how information is used for a task. The early 'library anxiety' studies and the more recent work on uncertainty in information seeking, especially studies following in the footsteps of Kuhlthau, have recognised the affective dimensions of information seeking and use. However, we still have an inadequate understanding of this important aspect of information behaviour. Understanding how Enough is negotiated and uncertainty is dealt with might enable better outcomes for students using information to learn.

The ongoing use of information at all points of interaction with a complex task has not so far been thoroughly addressed. A small number of longitudinal studies investigating the relationship between information and learning over the length or life cycle of a task have enriched our understanding. These need building upon to determine 'what is left behind' well after an information task is finalised. Further exploration of the role of discovering, encountering and browsing for information in an assignment context is also important for understanding information seeking and use from a student perspective.

The next chapter describes the literature of student learning, assessment, learning and assignments, and concludes with a brief examination of the literature on Affect that is relevant to students 'doing' assignments.

Chapter 3

Theoretical Background to the Study: Student Learning and Affect

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In the same way that the information science literature described in Chapter 2 has moved from a system centred to a user-focused perspective, the higher education literature shows a strikingly similar development. Over recent decades higher education has become more strongly student focused, most notably in the 'student learning' literature. For this thesis the implications of these parallel shifts towards the appreciation and prioritisation of the perspectives and experiences of students as information users by both educators and the information profession are significant. For an individual student, in the context of 'doing' an assignment, it is the task (that is the assignment itself) that is important, rather than their 'information seeking' activities.

In this study, to understand the university experiences of postgraduates from a student driven perspective, an understanding of student learning and how this is intertwined with the task and information processes of 'doing' an assignment is required. Therefore this chapter of the thesis examines how the intersection of learning and information for such a task has been dealt with in the field of higher education and student learning to date.

The first section of the chapter reviews the research on learning from a student perspective, discussing approaches to learning, conceptions of learning and the adult, mature or research students. Then it considers assessment from a student perspective, introducing the literature on assignments, essay writing and student writing. The literature on undergraduate, and postgraduate, assignments and learning is then considered. In response to the emergence of the final research question, the second section gives a brief overview of how Affect has been dealt with in information behaviour, and student learning and some areas of psychology.

3.1 Student Learning and Assignments in Higher Education

In Europe an alternative paradigm emerged which centred on the perspective of the learners themselves and research using the phenomenographic approach began. This approach focused on variation in how students experienced or conceived of learning and educationally important concepts (Entwistle 2005). The phenomenographic approach to teaching and learning is widely used in higher education today and is reviewed in the next section.

3.1.1 Student Learning

Student learning research has had a great impact on the field of higher education and is seen as offering a distinctive approach in the way it *"seeks empathic understanding of what is involved in*

student learning derived from students' descriptions of what learning means to them"
(Entwistle 2005, p. 13).

Approaches to Learning

Research in higher education has been extensively influenced by the concept of 'approaches to learning' for more than 20 years (Biggs 1999; Prosser & Trigwell 1999; Ramsden 2003). In the field of student learning, learning began to be investigated as part of the original studies of reading by Marton and Saljo in 1976, who found deep and surface approaches to processing which they saw as being *"about how people experience and organise the subject matter of a learning task...what and how they learn"* (Marton & Booth 1997; Ramsden 2003, p. 40).

The terms 'deep' and 'surface' approaches to learning are commonly used in the student learning and education fields, but clarification of the way the terms are being utilised in this project is worthwhile. It is accepted that, a deep approach to learning involves a focus on meaning, relating prior learning and connecting evidence and argument with the intention of creating personal meaning. In this way task and content structure are made coherent. The contrasting surface approach to learning emphasises external factors and concentrates on bits of unrelated and memorised facts or concepts, rather than the underlying messages. Principles are not discerned and task structure is distorted. Student learning research looks at students' approaches to learning in terms of their intentions (Ramsden 2003). It is held that extrinsic intentions lead to surface approaches to learning, while deep approaches produce personal meaning, build concepts and then link them together in order to understand.

The qualitatively different ways students approach their learning relates strongly to the quality of learning outcomes: *"students who adopt a deep approach achieved an overwhelmingly superior understanding of the message ....and also retained information better than their surface colleagues"* (Booth 1994, p. 3). Many *"misconceptions"* about what deep and surface approaches to learning mean now exist (Prosser & Trigwell 1999, p. 83). Approaches to learning are not fixed and students can change according to their perceptions of the context of the task and their situation (Prosser & Trigwell 1999; Ramsden 2003), *"Approaches to learning...are not something a student **has,** and applies when necessary, but they represent what a learning event, a learning task, or a class of situations **is** for the learner"* (Marton 1988, p. 75). Different students' perceptions of the same teaching and learning context can be very different and key aspects (identified by Ramsden) are their perceptions of the assessment process and the quality of teaching (Prosser & Trigwell 1999, p. 66).

As approaches to learning are relational not fixed, a student can approach different assessment tasks according to how they perceive them. For example, Scouller's (1998) research shows that students can approach Multiple Choice Questionnaires and assignment essays differently within the same subject. Student-centred teaching aims to encourage all students to adopt a deep approach to learning (Biggs 1999; Ramsden 2003). Entwistle emphasises that tapping into the

students' perspective is highly significant for teaching, and without this, it becomes very difficult to communicate with and understand students on a meaningful level (Entwistle 2005). As mentioned in Chapter 1, difficulties that I experienced when trying to help students with report assignment tasks and encouraging them to adopt a deep approach to learning, prompted me to undertake investigations which include this thesis.

Critical characteristics of learning environments, highlighted by Prosser and Trigwell (1999, p. 4) and by Ramsden (2003, p. 81), have been linked in a varied body of research to students adopting a deep approach to learning. Of these factors assessment, including total workflow and learning choices or independence in assessment tasks, has consistently shown to be the most important factor in learning (see Section 3.1.3 below). Therefore understanding approaches to learning is important for understanding students' experiences of their learning when 'doing' an assignment.

Entwistle and Entwistle found that some students had developed their learning to the extent that they described their understanding of extensively revised topic content material in terms of a structured entity and talked of *"the feeling that you understand"* (1992, p. 148). This has been described as a 'knowledge object'. These are particularly interesting due to their strong affective aspects (Entwistle & Marton 1994). Prosser and Trigwell describe this type of understanding as an especially high-quality learning outcome (Prosser & Trigwell 1999, p. 123).

In summary, the 'approaches to learning' perspective is a well tested and useful way to investigate student learning. For this study, investigating deep approaches to learning in the context of 'doing' an assignment provided a starting point for a fruitful line of inquiry.

Conceptions of Learning

As with approaches to learning, conceptions of learning are not properties of a student but are a relationship between a student and a learning situation. Students' conceptions of learning were studied by Saljo (1979) in his classic Swedish study. His aim was very different to that of traditional 'psychology of learning' research. He wanted to examine how learners *"establish a relationship between the learning material and an outside reality which he or she aims at understanding by means of the discourse"* (Saljo 1979, p. 6). Saljo took a second order perspective, that is, he studied the students' experiences of their learning, rather than studying the students' learning processes or artefacts of their learning directly.

Described as a nested hierarchy, Saljo's 'well established' (Marton, Dall'Alba & Beaty 1993) five conceptions of learning of students in his study ranging from high school students of 15 to adults of 55 who had held jobs (or even retired) were:

- Learning as the increase of knowledge

- Learning as memorising

- Learning as the acquisition of facts, procedures, etc which can be related and/or utilised in practice

- Learning as the abstraction of meaning

- Learning as an interpretative process aimed at the understanding of reality (Saljo 1979).

Saljo argued that approaches to learning should not be related to traditional individual differences (that are relatively stable) but that *"they can be understood in terms of people's conceptions of learning"* (1979, p. 21), whilst emphasising that this is not a causal relationship. He suggested that the variation in conceptions *"of what learning is all about"* (Saljo 1979, p. 22) are likely to influence an individual's approach to learning tasks, including 'how', as well as 'what', they are able to take away from the task, that is the outcomes and their satisfaction with these (Saljo 1979, p. 22).

In 1993 Marton and colleagues using a longitudinal study of adult undergraduates at the Open University added a sixth conception: *"learning as changing as a person"* to Saljo's by then accepted five conceptions of learning (Marton, Dall'Alba & Beaty 1993, p. 278). They stressed that this conception was rare, even in their atypical group but that its discovery was important for the very reason *"that such a conception can actually be found"* (Marton, Dall'Alba & Beaty 1993, p. 299).

As well as overall conceptions of learning *"there is substantial variation in the way students entering higher education conceive of knowledge in the field in which they are studying"* (Prosser & Trigwell 1999, p. 35). Students may also vary in their prior conceptual understanding of:

- Key concepts, issues or ideas taught in the subject

- Nature of subject matter task in the subject

- Nature of knowledge (Prosser & Trigwell 1999, pp. 34-36).

Variation in students' conceptions of knowledge in the context of their studies is an important consideration in student learning (Prosser & Trigwell 1999, pp. 34-6).

The emphasis in the student learning literature on the experience of learning and its *"vitally important role in determining and improving student learning"* (Entwistle 1997, p. 38) provides another useful foundation stone for the study of postgraduates' use of information for learning while they are 'doing' an assignment.

Learning and the Adult, Mature or Research Student

Although there have been countless studies of undergraduates and learning over a 20 year period, there still seem to be very few studies of postgraduate learning despite their growing numbers. A major report on 'best practice' in postgraduate coursework found "*the neglect of coursework issues striking*" (Reid, Rennie & Shortland-Jones 2003, p. 14). Whilst research on postgraduates is sparse there is a vast literature in related fields which is of some relevance to postgraduates as learners at a different life stage to traditional entry undergraduates. These fields are:

- Adult learning (for example, Knowles, Holton & Swanson 2005)

- Adult (Gonczi 1996) and continuing education evolving from evening colleges (see Whelan, et al. 2002) and lifelong learning (Candy 2000; Illeris 2002a)

- Mature university students as undergraduates, often focused on as being of 'nonstandard background' (for example, Morris 2005; Thorpe 2000)

- Higher degree by research students, much of this literature focuses on problems of supervision, large project management and thesis writing (for example, Grant 1999; Hughes 2005).

Lifelong learning implies a continual requirement for flexibility, for reorganising oneself (mentally, developmentally, technically or academically), in one's work, and learning, all of which are profound changes (Illeris 2003b, p. 12). Postgraduates are usually (and in thesis they turned out to be) in the life age of 'stable adulthood' or middle generation from 25 up to 50 *"empirically based on the very obvious differences of consciousness, ways of thinking and attitudes towards education"* (Illeris 2003b, p. 18); (Illeri 2003a). As people age there is an increase in the *"individuation of learning to personal development, needs and interests....[and] responsibility for learning develops"* (Illeris 2003b, p. 15).

Learning in adulthood is of interest for managing the challenges of the life stage (focused on family and work) and more generally towards interest, lifestyle and perspectives (Illeris 2003b, p. 9). The characteristic striving for realisation of life goals at this stage of life has become more complex in our rapidly changing world and continuous decision making is required. Personal responsibility for life choices has become increasingly felt (Illeris 2003b, p. 10). Fairly significant gender differences are found in this group and those who also identify as wage earners tend to be more accepting and their attitude towards education is focused on the professional content and qualifications, but personal development is also a factor (Illeris 2003b, p. 19).

Individual adult learners find out what will be personally useful to them in what they are studying, and concentrate upon this to optimise their personal outcomes. A negative overall strategy can be 'instrumentalisation' or getting through requirements as easily as possible and sub-strategies include 'perfectionism' (Illeris 2003a, p. 21).

In summary, the literature from these fields points out some important differences between traditional undergraduate students and other groups, indicating the importance of a student's whole life picture to their learning.

3.1.2   Assessment from a Student Perspective

The literature has for some time recognised the fundamental importance of assessment for student learning (Biggs 1999, p. 141; Ramsden 1992, p. 182). Several decades ago Rountree pointed out that *"The spirit and style of student assessment defines the de facto curriculum"* (1987, p. 1). Assessment is the driving force in most students' learning and *"Assessment is the most significant prompt for learning"* (Boud 1995, p. 37). For many students it defines their entire learning experience (Brown & Knight 1994; Elton & Johnston 2002; Entwistle 1997). In brief: *"Assessment defines what students regard as important, how they spend their time, and how they come to see themselves as students and then as graduates"* (Brown & Knight 1994, p. 12).

This section gives an overview of the research on assessment including: recognition of its importance in learning as well as progression; issues in assessment, such as constructive alignment and assessment anxiety and some trends in assessment. The subsequent section considers the literature on assignments, essays and reports.

The well recognised centrality of assessment and the often repeated maxim that *"if you want to change student learning, change the assessment"* was first stated in 1979, if not earlier (Elton & Johnston 2002, p. 15). In their review Elton and Johnson (2002) noted that a massive literature of assessment existed. Whilst differences in styles of learning and teaching have long been recognised in higher education (see for example, Entwistle 1980), issues of assessment from an institutional or teaching perspective have also been an enduringly prominent part of the literature. Positivist concerns about reliability and validity of assessment derived from psychological measurement have been part of assessment theory if not practice until recently. These concerns about 'measurement', whilst still part of assessment management and practice, have benefited from perspectives such as student learning that position the student at the centre of the learning and teaching process (Elton & Johnston 2002, p. 8). The importance of assessment for learning (formative assessment) as well as assessment for decision making (summative assessment) has been increasingly recognised in the literature (Boud & Falchikov 2006). James and McInnis argue that Australian universities need to reconsider assessment in order to improve teaching and learning and respond to issues of assessment (for example, plagiarism, large classes and international students) and perceptions of standards (James & McInnis 2001).

A considerable amount of research has focused on the relationship between assessment and students' approaches to learning (see for example, Entwistle 2005; Hounsell 2005c; Ramsden 2005; Morgan & Beaty 2005). One recent trend in the literature has also been to consider teaching learning and assessment in terms of constructive alignment, *"How well the assessment tasks address the teaching objectives"* (Biggs 1999, p. 159). In this approach, all elements of the students' learning experience need to be working together in order to optimise conditions for

every student to engage meaningfully with the subject and to encourage students to take a deep approach to learning (Ramsden 1992). Laurillard discusses linkages between goals and feedback and actions using examples that reinforce the different perspectives students and lecturers can have (Laurillard 2002). If the assessment objectives differ to the 'declared learning objectives' students have a dilemma to either learn, be interested and possibly fail or focus on assessment (Elton & Johnston 2002, p. 27). Recent research on a large project involving several universities has led to an evolution of constructive alignment to 'congruence' (Hounsell 2005b). This means taking account of constraints and opportunities in each context, including a greater diversity of elements and being flexible about how to achieve this (McCune & Hounsell 2005).

There is also an active interest in the literature in new and innovative forms of assessment such as self assessment, peer assessment and online assessment (Hounsell 2005a). This has been the trend for some time: *"In past decades, educationists have been much more concerned with new methods of assessment (doing better things) than with improving current methods (doing things better)"* (Elton & Johnston 2002, p. 5). Boud (2006) has proposed the notion of sustainable assessment which should meet not only students' current needs but also assist them to evaluate their learning throughout their lives. Despite the interest in innovation, serious consideration of the still dominant traditional forms of assessment such as essays and reports or assignments is less common.

Although once seen as innovative, the introduction of coursework assessment in the UK happened around 1967 in the universities of East Anglia and Surrey (Elton & Johnston 2002, p. 8). Coursework assessment, unlike exams, can be both formative and summative. Issues with coursework assessment include the fact that they are less reliable than exams and there are difficulties of 'lack of practice' or practice events devised by teachers which do not carry a mark. *"Coursework assessment is particularly suitable for assessing process objectives, and essential for assessing true creativity and problem solving abilities"* (Elton & Johnston 2002, p. 26). In terms of motivation although assessment marks are a trigger, without intrinsic interest motivation suffers (Elton & Johnston 2002, p. 27). Assessment based on research reports, essays or presentations can encourage a deep approach to learning but teaching and assessment practices can paradoxically encourage a *"passive reproductive form of learning"* (Entwistle 1997, p. 4; Hounsell 2005a).

Analyses of students' perceptions and experiences of assessment are not frequently represented in the literature. Prosser & Trigwell state that in order to enhance both the approaches to learning and outcomes for students, their perceptions of assessment tasks are as important as other factors (the total workload, the clarity of goals and standards, the quality of teaching and the amount of choice they have in their learning) and need to be addressed (Prosser & Trigwell 1999, p. 4). The influence of 'backwash effects' was noted as early as 1968: *"students take their cues as to what and how to learn far more from the assessment that they will be subjected to than from the teaching"*. The importance of these effects on student learning has been increasingly recognised over the last 30 years (Elton & Johnston 2002, p. 9).

One common theme in the literature that considers students' perceptions is assessment anxiety. In 1995 Boud made a particularly interesting observation:

"It is clear [from this] that even successful, able and committed students...have been hurt by their experiences of assessment, time and time again, through school and through higher education. This hurt did not encourage them to persist and overcome adversity... It caused them to lose confidence, it entered their self-esteem and led them to never have anything to do with some subjects ever again" (Boud 1995, p. 35).

For many students assessment anxiety in the form of exam nerves or confusion about expectations and feedback is a very real issue. This highlights the role of affect in assessment which is further discussed in Section 3.2.

In summary, the research on assessment has considered: the relationship between approaches to learning and assessment; assessment design and constructive alignment; innovative assessment (online, peer, self) and specific issues (plagiarism, large classes, international students). What could now perhaps be called 'traditional' assignments that require in-depth investigation, framing and writing, remain commonly utilised forms of assessment. While there has been considerable previous research on student learning from essays there has been limited work on other types of assignments, particularly when those are done by postgraduates rather than undergraduate students. Elton and Johnson have argued that improving assessment *"requires both the fundamental research – grounded in appropriate learning theories, and evaluated research – which evaluates both traditional and innovative practices"* (2002, p.5). Students' perceptions of assessment through essays and reports are described in the next section.

3.1.3   Assignments: Learning and Assessment

"In the arts and social sciences, Essay-Writing is the undergraduates' Amazon. Throughout a degree course, the processes of studying often proceed along a river of coursework essays...Essay-writing occupies a central place within higher education because it serves two fundamental purposes: it is both a tool of assessment and avenue to learning" (Hounsell 2005a, p. 106).

Although the terminology varies from the ubiquitous 'term or research papers' of the US undergraduate programs (Ford 1995), to 'essays' in Arts degrees or 'reports' in many professional courses, the literature agrees that assessed pieces of writing are the most dominant assessment mode (particularly in the arts and social sciences) and can be a valuable way of both encouraging deep approaches to learning and for assessing learning (Brown, Bull & Pendlebury 1996; Ford 1995; Hounsell 2005a; McCune 2004; Ramsden 1992). As has been noted (see Chapter 1), there has been relatively little sustained research attention given to this important aspect of teaching and learning (Hartley 2001; Hounsell 2005a). The dominance of assignments in many postgraduate (especially professional) courses, make this an important form of assessment to investigate for understanding postgraduate learning.

The link between assessment and learning in the successful completion of study tasks noted in the quote at the beginning of this section is, however, problematic. Although writing is central to

student learning, an assignment can be considered as an unauthentic task, whose outcomes (the essays) have been little researched (Hartley 2001). Assignments are also complex. Hounsell explains that writing an assessed essay is not like other forms of writing because: it is writing for an (unusually more expert) audience of one. The initial motivator is the externally imposed task and in a formal education setting highly prescriptive parameters in terms of topic, presentation, depth, length, sources to be used and time allocation are usually specified beforehand. *"As a learning activity therefore, the process of essay-writing is inherently more complex than reading and listening, and its product may reflect even more strongly the personal sense which the student has made of what he or she has learnt"* (Hounsell 2005a, p. 106). A student's desire to learn and make meaning from the experience can therefore conflict with the imperatives of the task (Hounsell 2005a, p. 107).

Assessed essays and reports have been considered in the literature from several perspectives that can be divided into the following:

- Student learning research (Hounsell 2005a; McCune 2004).

- Practice oriented teaching and learning perspective of the academic development and scholarship of teaching in the discipline's literature. This may take a more or less student centred approach (for example, Brown, Bull & Pendlebury 1996; Martin & Ramsden 2000; Schwartz & Webb 2002).

- Institutional perspective represented in the assessment literature (reviewed above).

- 'Writing or skills centre' perspective which includes counselling and support literature as well as study skills texts (for example, Charnock 2004).

- Student writing perspective including composition, academic literacies, language and power (for example, Ford 1995; Lea & Stierer 2000).

The 'writing or skills centre' perspective and study skills books focus on technical tips about the form of an essay, style and bibliographic citations (see for example, Coffin, et al. 2003; Hounsell 2005a). The large body of work that takes a skills-based perspective (which makes it transferable to any context) has a rules-based emphasis and problems are seen as student deficiencies. The teaching of writing becomes marginalised into study skills and learning support unit for English as a second language and other 'non-traditional' students (Lea & Stierer 2000, pp. 2-3). The traditional emphasis on an accepted (and a fairly standard) way of writing well in assessing their switch focuses on learning *"homogenous and transferable"* skills to become a good writer (Lea & Stierer 2000, p. 6). Charnock argues that students in Arts degrees should be explicitly shown how to join the academic conversation of the disciplines within their assessed essay or report. This literature has links with the student writing literature.

The student writing literature is a rapidly developing area of research and student writing of an assignment is seen as an important part of the learning experience. The expansion in higher education to include more diverse groups of students has placed more of a spotlight on teaching and learning and this has started to filter through to assessment and student writing (Lea & Stierer 2000) (see Chapter 1). This context is integral to writing and assessment.

The more recent emphasis in student writing on a 'writing as social practice' perspective is embedded in the disciplines. The 'academic literacies' approach in the student writing literature and the progression from generic 'study skills' and disciplinary socialisation models (Lea & Stierer 2000) contains the tension of:

- The pace of change in higher education

- Professional work biases in academic learning and 'discourses'

- Traditional academic written genres and those developed to underpin learning of professional knowledge (Lea & Stierer 2000, p. 9).

Professional or vocational courses have special writing demands, linking professional communicatory demand, alongside the demonstration of a command of academic written genres. Conflicting demands exist as a result of postgraduate requirements, curricula and practices remaining as they were when such students were transitioning to academic roles. Confusion about developing professionals, rather than novice academics (Lea & Stierer 2000) is the result.

Practice oriented teaching and learning researchers have also neglected examination of students 'doing' assignments. They have focused instead on the reliability of marking (Hounsell 2005a, p. 108). In 1984 Hounsell highlighted this gap:

> *"essay-writing would seem to be a crucial area for discussion and investigation, yet what we find instead is a puzzling neglect. In some books on undergraduate teaching, essay-writing is hardly mentioned at all, while in others it has been consigned to the corner.... As a learning activity, essay writing remains virtually uncharted territory"*
> (Hounsell 2005a, pp. 108-109).

In 1984 only two studies were found that investigated students' perceptions of new experiences in essay writing for assessment. In 1995 Ford (1995), using the example of the field of English, argued that although the sense of the research paper had been used so widely for well over half a century and the hours devoted to it by both students and staff were immense, it had been relatively ignored in academic scholarship and publishing: *"research paper instruction may be the most demanding responsibility within the [English] profession which has yet to be professionalised"* (Ford 1995, p. 2).

In summary, the student writing literature sees students' perceptions, not just their knowledge and skills as determining the quality of essay or report writing and their learning. Within this substantial body of literature and its many perspectives however, there has been a predominant interest in undergraduate students and essay writing.

Assignments: The Undergraduate Experience

This section will review important studies of undergraduate learning and essays, then consider other relevant studies. Hounsell's landmark work (Brown, Bull & Pendlebury 1996, p. 60) in 1984 was the first study conducted into students' ways of experiencing an essay in different disciplines (Hounsell 2005a). Interviewing 17 history and 16 Psychology second-year undergraduates about a specific, recently completed essay, he found they had a heavy essay workload, having to write up to 20 essays over a year. These students were asked about their preparation, activities, the content and the course overall. The aim was to examine the experiences of essay-writing in context and as a learning activity, from a student perspective. To this end the focus of analysis shifted from the initial individual essay task to students' conceptions (the term Hounsell uses, rather than 'way of experiencing', used in this thesis) of what an essay should be, and what writing one involved in a particular discipline.

Hounsell discovered three conceptions of an essay which had cascading effects upon the way students went about 'doing' their assignment, its content and the mark they received. The three conceptions of an essay were, from the least to the most sophisticated:

- An ordered presentation, or 'arrangement' embracing facts and ideas

- The ordered presentation of the distinctive 'viewpoint' on a problem or issue

- An ordered presentation of an 'argument' well supported by evidence (Hounsell 2005a, pp. 111-114).

These conceptions had implications for differences in both the procedures students used to write their essays and the content of the essays themselves (content analysis focused upon the conclusions to the essays which differed greatly between the different conceptions of essay writing). Students holding an 'arrangement' conception were more passive and mechanical in their process and product, as in a surface approach to learning. Hounsell described this as: *"learning as studying but not learning as understanding"* (Hounsell 2005a, p. 123). The 'viewpoint' conception demonstrated the global focus of a deep approach, but in only a partial way. Certainty is prioritised. This conception shares elements of the Multi-structural level of the SOLO taxonomy (Saljo 2005). The 'argument' conception of an essay had a focus on creating meaning through engagement with the topic and can be linked to taking a deep approach to essay writing and having a thematic conception of learning. These students normalise the 'interpretive stance' they take to their topics. These three different conceptions had important effects for student learning, resulting in a different way of integrating data, organisation and interpretation in the essay process.

An important study linking both the process and the product of students 'doing' essay assignments examined their perceptions, or conceptual understanding of the process, in relationship to the attributes of their essays (Prosser & Webb 1994). This study pointed out that the usual approach to teaching university students how to write tended to be prescriptive and focused on teaching and strategies, and was seldom based on research. Combining a

phenomenographic interview approach with systemic linguistic analysis of the essays of 19 undergraduate sociology students they found, as expected, that students' conceptions of essay writing and their approach to the essay were tightly linked. A multi-structural conception (Biggs & Collis 1982) was linked to taking a surface approach and a relational conception to a taking a deep approach to the essay.

Analysing the students' essays, they also found that the essay's structure and meaning were 'substantially related' to a student's way of experiencing writing an essay, and to the mark they received. They concluded with the need for *"writing development as part of learning a new discipline"* (Prosser & Webb 1994, pp. 8-9) and for making implicit contextualised processes explicit. Importantly, they demonstrated the value of combining process and product approaches (that had been separated previously) to teaching 'academic literacies' and writing within the disciplines.

McCune (2004) states that despite the focus on innovative assessment in recent times, traditional coursework essays have remained a widely used assessment method. She agreed with previous literature that essays seem appropriate for encouraging students to take a deep approach to learning, as well as learning how to participate in the academic discourse of conversations of their discipline (Charnock 2004; Lea & Stierer 2000; McCune 2004, p. 257; see also Prosser & Webb 1994). In her small scale longitudinal study, which used phenomenographic and case-study approaches, McCune interviewed 19 first-year psychology students on three occasions during their initial year at university.

The overall study focused on students' perspectives of learning to work in a discipline in their first year. This learning was the most problematic in their essay writing (McCune 2004, p. 5). McCune found three hierarchical sets of categories of variation in student conceptions of essay writing, focused on the key components of: evidence, structure, and conclusions. Analysis of nine students showed only limited development of their conceptions of essay writing during the first year. The students appeared to minimally engage with feedback and advice offered, a common theme in the literature. She argued that the difficulties students can have with developing more sophisticated conceptions of essay writing are also relevant for other forms of assessment, and that research in other contexts was required (McCune 2004, p. 280).

Other literature on undergraduates writing essays (reports are scarcely mentioned) has echoed Prosser and Webb's conclusion that students need to understand the process of writing an assessed piece of work in the context they are working within (Prosser & Webb 1994; Smith, Campbell & Brooker 1999). Developing an understanding of these two elements is part of learning to interpret, access and participate in the specific disciplinary discourse or conversations (Charnock 2004). This can be problematic for undergraduate students in terms of interpreting the language and implicit requirements of writing essays in a discipline (Campbell, Smith & Brooker 1998; Charnock 2004; Prosser & Webb 1994; Williams & Gibbs 1995).

Essay writing is a developmental process of conceptualising both a body of knowledge and content, as well as the process of creating an essay (Smith, Campbell & Brooker 1999). This was

the conclusion of a study using the 'SOLO taxonomy' to examine students' conceptualisations of the process and content of writing an essay. A focus on dialogue about expectations is needed to communicate with students rather than teaching skills or showing them exemplars (Campbell, Smith & Brooker 1998). Students' misinterpretations of expectations seem to be connected to the important issues surrounding feedback identified in the literature (Hounsell et al. 2005).

The 'pivotal' importance of assessment feedback for student learning has been a consistent finding (McCune & Hounsell 2005, p. 285), which had received little attention in the research (Hounsell 2004, p. 31). However, many undergraduates only engaged with feedback they received in a very minimal way (Hounsell et al. 2005; McCune 2004). Mismatches have also been found between the purposes of the essay, teachers' feedback regarding structure and mechanics, and students' expectations (Storch & Tapper 2000). Assignment criteria can be easily misinterpreted by students and this is compounded by the assumptions of teachers.

Assessment practices and criteria have been shown to be not only related to the discipline in which the student works, but are also implicit (Norton, Dickins & Cook 1997). In a study of more than 200 undergraduates from different disciplines, students believed that they would be given marks for what they termed 'rules of the game tactics' (Norton, Dickins & Cook 1997, p. 165). Tutors believed that taking a deep approach to writing an essay was essential, whereas their students were routinely using strategies consistent with a surface approach to learning, in order to get marks (Norton, Dickins & Cook 1997). Later research has emphasised that: *"closer attention is needed to the congruence of feedback practices with the promotion of high-quality learning outcomes"* (McCune & Hounsell 2005, p. 285).

Conceptions of essay-writing have an effect on what students do, produce and learn (Hounsell 2005a; McCune 2004). The complex individual differences of students (McCune 2004) contribute to feedback being considered as marginal to students' interest, and dialogue is a way to counter this. It is believed that issues surrounding essay writing for undergraduates may be hindering students' development through their essay writing and could explain the persistence of unhelpful habits (McCune 2004). The complexity and idiosyncratic differences of students are an important consideration.

In summary, studies of undergraduates have shown that essay writing was a problematic task for students. They have very different perspectives, or conceptions of essay writing, which in turn influence the way they use information (for example, integrating data, organisation and interpretation). There is agreement that more writing development is needed so students understand the processes and expectations of writing within their discipline. The issue of feedback is central. However, students often have difficultly engaging with feedback for reasons that include individual complexity. There is an acknowledged need for more communication with students about these important issues. The importance of understanding students' information and learning processes, and the products they create when they are assigned complex research based tasks for assessment, is a vital and relatively under-researched issue.

Assignments: the Postgraduate Experience

There is little research on postgraduates' experiences of learning and assignments. Studies that do exist are often done in the context of evaluating:

- Broad issues of course quality and growth (McInnis, James & Morris 1995)

- The relationship between work experience and study success for selection of MBA students (Dreher & Ryan 2000)

- Aspects of particular courses, such as curriculum design (Bertrand-Gastaldy, Bernhard & Cyr 1993)

- Teaching techniques and innovations such as peer assessment (Topping, et al. 2000) or collaborative assessment (Elwood & Klenowski 2002)

- Specialised modes of study (Thórsteinsdóttir 2005)

- Flexible, online or Web based learning (Rosie 2000).

These studies are not usually student centred: that is they do not investigate the postgraduate students' perspective on learning and assignments (with the exception of Thórsteinsdóttir's study which is discussed in Chapter 2).

One feature of the scarcity of research about postgraduates as a group in their own right, is that many of the studies in which postgraduates are participants have mixed them with undergraduates, yet do not differentiate between the two groups in their results. One such example comes from Fuller (1998) who reported on his own teaching experiences of undergraduates and postgraduates and examined the role of reflection especially 'metacognition'. He noted that overall *"many students do not trust their own judgements about the quality of their learning"* (Fuller 1998, p. 5). Meyer and Bolton-Lewis (1999) combined post graduate and undergraduate students and focused on different cultural contexts.

Edward's (2006) doctoral study (reviewed in Chapter 2) also combined postgraduate with undergraduate students studying the same information technology subject, and again she did not differentiate these groups in her results. Edwards found four categories of learning to search for information on the web and in databases for assignments. These were not essays but a reflective journal, an information search and report of process, as well as a group project to create a subject resource guide. Her mixed group of respondents identified that assignments encouraging reflection helped to change their conceptions or experience (Edwards 2006; Edwards & Bruce 2002).

Postgraduates were also included in part of a large scale UK research project focused on three final year, honours level bio sciences courses which considered students' perceptions and experiences of assessment. Amongst the 85 students just over one third were Masters level students but they differentiated between undergraduates' and postgraduates' experiences only with an occasional comment. For example, *"the MSc students, by contrast the relative newcomers to the Department and thus much more anxious about feedback"* (McCune & Hounsell 2005, p. 279).

A study that analysed the effectiveness of a workshop program that had been designed to help students write academic essays, looked at assessment criteria in three institutions in the UK (Norton, et al. 2005). One of these included undergraduates and postgraduates from all disciplines and another included postgraduate business students. The quantitative responses of MBA students in relation to the question *"I have a clear idea of strategies I can use to stay focused on the essay title"* (Norton, et al. 2005, p. 165) were low and it was suggested that this echoes the findings of first-year psychology students who are confident in their understanding of the criteria but not sure how to implement their knowledge in terms of writing strategies. The open-ended responses from the MBA students led the authors to conclude *"that even postgraduate students feel unsure about writing academically"* (Norton, et al. 2005, p. 166). Their overall findings pointed again to the mismatch in perceptions of the assessment process between teachers and students, and that students 'feel unclear' about what is expected of them when 'doing' an assignment. Differences between teaching staff and problems in interpreting feedback suggested that much more direction and support for the assessment process is required.

Turning to the research that considers the postgraduate coursework students' perspective in their own right, rather than as part of a varied group, we find a scarcity of studies.

A survey of postgraduate coursework students in an education faculty aiming to enhance satisfaction, achievement and retention of this important group of students (Watson, Johnson & Walker 2005). The researchers collected demographic and student satisfaction survey data along with responses to open ended questions which they interpreted using discourse analysis. They found high levels of satisfaction with assessment and feedback in general and suggested some micro policy initiatives to address the issues they identified. For assessment these were to improve the timeliness of feedback and to identify satisfaction with different methods and timing of assessment which had not been differentiated in their study. Differences between different groups and even within groups reinforced the fact that individual students experience learning in very different ways (Watson, Johnson & Walker 2005, p. 603).

One study of postgraduates has analysed 60 tutors' assessment commentaries on assignments of 6000 words written by students in four Masters degree programs in education, in order to identify generic features within feedback. This highlighted *"the problematised notion of the assumption of transparent academic discourses"* (Hyatt 2005, p. 352). The focus on tutors written feedback highlighted some issues but does not give a lot of insight into the postgraduates' perspectives.

In summary, there is a scarcity of research about postgraduates and a lack of qualitative research that considers 'doing' an assignment from the perspective of postgraduates as a distinct population. The most detailed studies to date focus on feedback or peer and collaborative assessment. Whilst postgraduates have been included in studies that take a student perspective, these studies do not focus on postgraduates in their own right. The mixing of postgraduates with undergraduates points to a concern to include their experiences in investigations, but does not provide any substantive findings about postgraduates' own experiences of 'doing' an assignment.

This is especially striking when we consider the role of assignments (and essays or reports) in assessing student learning. We know very little about how postgraduates learn from 'doing' assignments.

3.1.4 Summary of Student Learning Review

Like information science, education has moved towards more person centred approaches and contemporary research in the field reflects this. The influence of student learning research can be seen in the adoption of 'approaches to learning' and recognition of qualitatively different learning outcomes. In order to find out how students' approaches to and ideas about learning interact, the contexts in which they work and their perceptions of achievement should be examined (Prosser & Trigwell 1999). The student learning literature has shown the value in looking at all learning contexts from a student perspective.

The sixth conception of learning found amongst Open University students, that is, 'learning as changing as a person' (Marton, Dall'Alba & Beaty 1993) provides a useful starting point for an investigation of how post graduates experience learning. The literature dealing with older student groups also indicates important differences between these students and younger undergraduates.

The student writing literature has emphasised the importance of students' perceptions of writing, and the assessment literature has emphasised the centrality of assessment in students' lives. However, this is not reflected in a body of research into students' perspectives on assessment. Studies of essays have pointed out the detrimental effect of heavy essay workloads, difficulties of the task for many undergraduates and issues with feedback. The fact that students' different perceptions of essay writing influence how they go about 'doing' an assignment, using information, and how, and what they learn, make this an important aspect of learning to investigate.

The research on postgraduate students tends to examine teaching and course issues, or to include postgraduates with other students in mixed studies seeking diverse participants. From these studies there are indications that postgraduates are unsure about academic writing, like undergraduates, but that there are differences between these groups that need further investigation. Although research indicates that educational background or overall prior experiences of students is important because they generalise between contexts (Ramsden 1992), the distinctive ways that postgraduates learn have been little investigated. If we consider that for students, challenges (and skills) relate not only to the subject they are studying but also their entire life context, (Prosser & Trigwell 1999) and the central role of assessment, then it is important to investigate how postgraduates learn in the context of assessment tasks. In light of this, further exploration of learning and assignments is desirable.

3.2   Affect and Students Doing Assignments

Affective dimensions of human experience are not clearly understood or defined in any field, although all fields articulate the complexity and 'fuzziness' of these aspects (Athenasou 1999, p. 130). The affective components of information behaviour and student learning are acknowledged in some of the literature reviewed in Section 3.1 and Chapter 2. This demonstrates that Affect is infused throughout human experience and is thus difficult to separate from other aspects of that experience. This was the case in the current study (as noted in Chapter 1). As a result this section offers a brief overview of research in information behaviour, and then in student learning, that has to a greater or lesser extent either noted affective aspects as a factor in their studies, or examined Affect as a phenomenon in its own right. This is followed by a short selection of research from psychological fields that may be useful for further understanding Affect in information behaviour and learning.

3.2.1   Affect and Information Behaviour Research

Information search processes for learning have been studied since the 1980's. Early work by Dervin (1980) outlining 'situation movement states' in a health context incorporated the notion of Affect (for example, "*I do not feel in control*"). Other studies have noted that there is an affective component to information behaviour without exploring this aspect in any depth. For example, Wang and Soegel (1998) mentioned 'emotional value', but simply said that this may, or may not be influential in information related networks. Cosijin and Ingwersen (2000) discussed the role of 'affective relevance' and Mutch (1999) pointed out the embodied nature of the brain. More recently Julien and colleagues (2005) surveyed the systems literature and found that it substantially ignored the affective aspects of information seeking.

An early strand of information science research that has consistently examined Affect and information behaviour, albeit in a rather narrow way, is research on 'library anxiety'. Research into the attitudes of university students to libraries and staff was initiated in the 1960's (Collins & Veal 2004). Subsequently, Mellon in her often cited study (1986), and Sullivan-Windle (1993) both used qualitative methods to get student perspectives on their library experiences and anxiety. More recent studies, which are quantitative, include the relationship between library anxiety and procrastination (Onwuegbuzie & Jiao 2000), and a study of 'off-campus adult learners' anxiety and information use, which concluded that adult learners' perception of their skills are an important part of library and electronic resource use (Collins & Veal 2004, p. 13). Although these types of studies consider Affect and information behaviour, they do so from a library based perspective in order to reach conclusions about how librarians can intervene to improve negative information seeking perceptions and experiences within libraries and information systems. This type of research does not start from a student perspective, and it focuses almost exclusively on negative impacts.

In contrast, Kuhlthau's ISP model in the early 1990's juxtaposed the complex dynamism of three realms of activity: physical (the actual actions taken); affective (the feelings experienced) and

cognitive (thoughts concerning both process and content). All three realms are prerequisites for a *"holistic view of information use encompassing affective experience as well as cognitive aspects"* (Kuhlthau 2004, p. 7). Kuhlthau has elaborated the affective part of her model by describing strategies and moods accompanying each of the six stages in her expanded description of the ISP (Kuhlthau 2004, pp. 44-50). Drawing on Kelly's (1963) two moods in 'constructive processes', she describes a mood as *"an attitude which determines one's approach to the task at hand...opens or closes the range of possibilities in a search. An invitational mood leads to expansive actions, while an indicative mood leads to conclusive actions"* (Kuhlthau 2004, p. 118). The central role feelings of anxiety or confidence play at different stages of the ISP has been highlighted, as has the importance of 'interest' in information seeking, the 'individualised learning process' and the role of uncertainty (Kuhlthau 1993).

Wilson has also continued to include affective needs alongside cognitive information needs throughout his research since the 1980's (see for example, Wilson 1981, p. 8). He included psychological variables, stress and coping, and risk/reward theory as activating mechanisms in his revised general model of information behaviour (Wilson 1997) and affective elements appear in his subsequent models (for example, Wilson 1999). Both Kuhlthau and Wilson have given very important recognition to the role of Affect, but it has not been the major focus of their work.

Ford (2004) has highlighted an interest that runs through his research by building Affect into his learning-related information behaviour model (p. 258). Nahl's long term work in this area is characterised by her 'affective load theory', conceptualised as a negative and binary influence of Affect on cognitive behaviour, and she has emphasised that *"Affective behaviour initiates, maintains and terminates cognitive behaviour"* (Nahl 2005, p. 40). She has also proposed an inventory for information counselling which incorporated affective and sensory behaviours (Nahl 1997).

More recent groups of studies which examine Affect and information behaviour in somewhat more detail include Solomon's (1999) work on affective personal sense making style. Julian (1999b) has noted a relative neglect of the affective aspects of information behaviour and their importance for a truly user-centred view of information behaviour. She has also reported in some detail about anxiety in adolescents' career information seeking (Julien 1999a). The influence of Affect in seeking personal sources of information is pointed out by Julien and Michels who emphasised that *"There are theoretical implications for information behaviour models in the degree to which affective factors clearly influence decision-making about appropriate sources of help"* (Julien & Michels 2000, p. 12). Erdelez (1999) and Given (2002) both found affective elements in their studies of university students. Kracker (2002a) has analysed the affective responses of senior undergraduates exposed to Kuhlthau's ISP model, and went on to classify emotional states, perceptions of the process and affinity in the same group (Kracker 2002b). Anderson (2006) has emphasised the dualism of experiences of Affect in information use with her work on positive and negative uncertainty amongst academic researchers.

3.2.2   Student Learning and Affect

While the affective dimensions of learning have been well recognised in the education literature, (for example, Illeris 2002b; Ingleton 1999; Mezirow 1991), the affective focus tends to be secondary, with the cognitive aspects of learning dominating. The student learning and assessment literatures have consistently pointed to the importance of Affect in learning (Marton & Booth 1997; Ramsden 1992), and emphasised the *"Crucial emotional and social components of learning"* (Entwistle 1997, p. 17).

In 1979 Saljo drew on Colaizzi for his well known 'conceptions of learning study' (see Section 3.1.2 above) and highlighted that *"Learning is defined by the intentional power of the learner...This intentional co-constitution....appears as a constellation of attitudes, emotions, motives, techniques and values, which derive their significance from the context of the learner's total life as he views it during his engagement in the learning situation"* (Colaizzi in Saljo 1979, p. 4). Many studies, however, do not investigate Affect in great detail, including phenomenographic research which has been criticised for not dealing with the affective dimensions of experiences (Ingleton 1999) (Hazel, Conrad & Martin 1997).

Drawing upon Perry's work (1970), Morgan and Beattie (2005) looked at part-time, adult undergraduate students of the Open University, studying by distance learning, and found Affect was an integral part of these students' learning. They argued that *"skill in learning"* (Morgan and Beattie 2005, p. 236) developed over the course of study and included three areas of development: confidence; competence and autonomy. Confidence developed over the time the students studied, although most of them started with *"very low levels of self confidence"* (Morgan & Beaty 2005, p. 229) and often doubted that they could complete their course. Gaining confidence was one of their aims of studying. This study showed that:

- Competence developed alongside and required confidence

- Control developed from initial ambivalence and reliance on the course and University to independence and autonomy (Morgan & Beaty 2005, pp. 232-233).

The students' orientation to learning was often personally driven and they used studying to accelerate and shape their development and change their lives (Morgan & Beaty 2005, p. 235).

The study found clear changes in students' conceptions of learning and identified *"changing oneself"* as a sixth conception of learning (Morgan & Beaty 2005, p. 235). Morgan and Beattie considered that adult part-time students in the Open University (a large proportion of whom were probably female), progressed through similar stages of intellectual development to Perry's (1970) young (predominantly male) students. They attributed this finding partly to the early lack of confidence and familiarity and a relative lack of autonomy. Morgan and Beattie related their findings to Belenky et al.'s (1986) work with women and suggested that confidence was initially the missing link.

There is also some mention in the literature of the affective impact of essay writing for students. Sambell and colleagues explained that students were often anxious and uncertain about essays (Sambell, Miller & Hodgson 2002). McDowell and Sambell found that barriers and uncertainty were faced by traditional and non-traditional students alike (2004). Uncertainty about essays and *"coping with the challenges posed by their essay writing"* (McCune 2004, p. 279) can have a major influence on undergraduates' development.

Undergraduates' concerns about feedback on assessed work have been found to not just be about the need for more informative feedback but also *"unease about guidance on tutors' expectations, uncertainty about both assessment criteria and the ground rules"* (McCune & Hounsell 2005, p. 28). Hounsell and colleagues have also referred to the *"emotional responses"* of students to feedback and suggested this can have a markedly negative effect on motivation (Hounsell et al. 2005, pp. 21-22). Carless (2006) in his discussion of the emotional nature of assessment and the personal investment that students have in completing assessment tasks cites Boud (1995) and comments that *"the emotional side of assessment is worth further investigation"* (Carless 2006, p. 230). He further notes that both students and tutors in his study were aware of the emotional aspects of assessment. However, he focused solely on negative emotions such as fear (or failure), distress and students being discouraged. Researchers also point to the tensions of the considerable *"adjustment to changed study demands"* (McCune & Hounsell 2005, p. 285) required of students moving into their senior undergraduate years. These changed demands are usually only acknowledged in the school to university transition context, so the adjustment issue (and associated emotions) is under recognised for later stages of study.

Interesting discussions of Affect can be found in studies of teaching in higher education. For example, Åkerlind has explicitly identified varying feelings as a key aspect of her phenomenographic categories of growing and developing as an academic (Åkerlind 2005, p. 19). Martin and Lueckenhausen (2005) in their study of teachers' changes in understanding of their subject, stated that emotions are an aspect of academic life that is at the same time both 'obvious' but minimised and little researched. Using metaphor analysis to examine the 'emotional impact' of these changes they reported on the 'emotional feeling associated with the overall experience' for each of five lecturers. They concluded that perhaps their key finding was that *"Teaching and learning is not an emotion free zone"* (Martin & Lueckenhausen 2005, p. 410), and linked feelings to challenges to identity and integrity.

3.2.3   Emotions and Feelings in Psychological Fields

The term Affect used in this thesis incorporates the phenomena of emotions and feelings. Educational psychologists talk of conceptual and definitional confusion in theories of emotions, and focus on 'basic emotions' such as fear or anger that can be described in terms of neurophysical, expressive and experiential characteristics (Athenasou 1999, p. 131; Illeris 2002b). While still poorly understood, emotions can be considered as a system that activates cognitive, physiological and behavioural components, or actions (Athenasou 1999; Forgas 2000). Demasio, for

example delineates emotions from feelings: *"Emotions play in the theatre of the body. Feelings play out in the theatre of the mind. Emotions and related phenomena are the foundation for feelings...so intimately related along a continuous process that we tend to think of them, understandably as one single thing"* (Damasio 2004, p. 28).

Despite terminological problems, there seems to be agreement that *"affect is not an incidental, but an inseparable, part of how we see and represent the world around us; how we select, store and retrieve information; and how we use stored knowledge structures in the performance of cognitive tasks"* (Forgas 2000, p. 11) and that understanding Affect is integral to human progress.

Alongside the focus on basic emotions, much of the psychological literature relies on laboratory results. These experimental findings are not highly relevant to the complexity of real life learning and assessment. However, Forgas's 'affect infusion model' from social psychology has considered Affect within social cognition in a more interactive context. He found that *"tasks that require more elaborate, constructive processing also allow more extensive reliance on affectively primed information and tend to produce greater affect infusion effects"* (Forgas 2000, p. 14), recognising the role of Affect in complex tasks.

The positive psychology literature, although grounded in laboratory research, has also been used in 'real life' situations (for example, Csikszentmihalyi, et al. 1997). One potentially useful way of understanding students' information interactions and learning is Csikszentmihalyi & Csikszentmihalyi (1988) theory of 'flow', or absorbing enjoyment, which *"provides a most useful theoretical framework for understanding enjoyment"*, and for discussing meaningful learning and teaching (Csikszentmihalyi, et al. 1997; Jonson 1996, p. 6). The 'flow model' of optimal experience combined with complex system theory (integration and differentiation), has been used to understand educational success. This model provides an indication of need for clear objectives and rules in line with the findings of 'flow research', and how teachers can use the principles of 'flow theory' to encourage students to experience a balance of challenges and skills, avoiding boredom and anxiety (Csikszentmihalyi 1990). The view that teachers who can *"encourage integration by providing support and harmony and who stimulate differentiation by making involvement and freedom possible will be successful"* (Csikszentmihalyi, et al. 1997, p. 195) echoes the support in the higher education literature for encouraging students to take a 'deep approach' to learning (Ramsden 1992).

3.2.4 Summary of Affect in Information Behaviour, Student Learning and Psychology

Affective influences on learning are not clearly understood or defined in any field although their complexity is universally recognised. Both the fields of information behaviour and student learning have in varying degrees highlighted the existence and importance of Affect but in both fields there is a scarcity of empirical studies that investigate Affect directly.

Perhaps because it has been found problematic to separate feelings from thoughts, research work that focuses on the affective dimensions of information behaviour is not common, tending to occur as a byproduct of the research. The student learning literature emphasises the need to look at all learning from a student perspective. Those studies that have considered Affect, both historically and more recently have noted only the negative influences of Affect on information seeking and use or learning.

More recently however, this area of research has started to gain greater notice with studies emerging of the positive contribution of Affect in both fields (Åkerlind 2005; Anderson 2006; Martin & Lueckenhausen 2005). Information behaviour and teaching and learning researchers are beginning to focus on the affective aspects of individual experiences when using information and learning. However, to date there are few studies that consider the affective dimensions of students', let alone postgraduates', experiences of information and learning in the context of assessment.

Chapter 4

How Information Use and Learning Was Investigated

This chapter explains my decisions about the setting, choice of methodological approaches and research design selected to achieve the aim of this study. The chapter is presented in two parts. The first part discusses the theoretical considerations and the selection of research approaches for the study. The second provides details of the research design and methods.

4.1 Methodological Choices

In this part of the chapter the methodological choices that were made to achieve the aims of the study are outlined. Qualitative approaches are briefly discussed, followed by a description of each of the two methods that were selected to meet the requirements of this study.

4.1.1 The Value of Qualitative Approaches for this Study

This study takes a qualitative, interpretive research approach. Qualitative, interpretive methods *"are more sensitive to and adaptable to the many mutually shaping influences and value patterns that may be encountered"* (Lincoln & Guba 1985, p. 40) than quantitative methods and are thus appropriate for investigating how students experience complex information interactions in an assessment task. Following the 1920's and 1930's work of the 'Chicago School' in sociology, which *"established the importance of qualitative research for the study of human group life"* (Denzin & Lincoln 2000, p. 1), qualitative methods were employed in other social sciences fields, including education (Denzin & Lincoln 2000; Tesch 1990, p. 15).

Anthropologists used ethnographic methods in school education researches as early as 1955 (Spindler 1955 in Tesch 1990, p. 15) and educational evaluation programs provided a further impetus for qualitative research. A large body of literature appeared through the 1980's (see for example, Lincoln & Guba 1985; Miles & Huberman 1984). Twenty years later the range of qualitative interpretive methodologies including grounded theory, phenomenology and ethnography had expanded, diversified and influenced research in other 'human disciplines', that value examining *"how human beings construct and give meaning to their actions in concrete social situations"* (Denzin & Lincoln 1998, p. xvii). Growth in the use of qualitative methodologies is continuing, for example phenomenography, ethno-methodologies and the use of case studies to explore an increasingly diverse range of contexts (Denzin & Lincoln 2000, p. 6).

Important assumptions inherent in 'the qualitative paradigm' include:

- The existence of 'multiple constructed realities'

- The inevitability of the effects and relationships created by the research process

- Context is always integral and essential

- The value of description and interpretation of events rather than control

- The inescapability of values in research (Higgs 1997, p. 9).

In summary, qualitative interpretive approaches are well suited to an in depth exploration of complex real life experiences, such as those of postgraduates completing assignments.

Qualitative Approaches in Information Science

The discipline of information science, in common with many other young academic disciplines, has drawn on qualitative methods established in other fields for dealing with the particular human complexities of the *"social phenomena with which they are faced"* (Glazier & Powell 1992, p. 8). Each discipline then adjusts these methods to suit its particular requirements (Tesch 1990, p. 16). Initially, qualitative research approaches were introduced in 1975 to explore the processes and behaviours associated with people and information (Wilson 1994). Dervin and Nilan's seminal 1986 article, and the subsequent paradigm shift to focus on the 'users of information', rather than information systems, increased interest in qualitative ways of exploring the 'how' and 'why' of human interaction with information (Dervin & Nilan 1986; Williamson 2002, p. 34).

Researchers in various areas of information research (for example information behaviour, information retrieval, information science) subsequently aimed to understand real life information situations *"from the perspective of those involved...to understand why people behave as they do....(and) use procedures from areas that have traditionally concentrated on in-depth study of people"* (Mellon 1990, p. 3). These types of questions are now recognised as central to the field and qualitative methods have dominated the field of information behaviour for the last 30 years. Moreover Wilson states that *"over the past 50 years or so there has been a shift in information research from a predominantly positivist model of the world to a predominantly phenomenological perspective"* (Wilson 2002, p. 2).

A Qualitative Approach for this Study

Building on existing studies in the area of information seeking and learning (for example, Kuhlthau 2004; Limberg 1999) the study required a methodology suited to exploration of a new area of interest. Therefore in order to *"capture the lived experience of participants in order to understand their meaning perspectives"* (Janesick 1998, p. 53), it was decided that using small numbers of participants' experiences would allow the participants themselves to influence both

the direction and manner of data collection. It would also allow a depth of sensitive details of human behaviour to emerge. My interest in exploring information use in the context of 'doing' an assignment as it is experienced by postgraduates in their daily lives, meant that qualitative research approaches were the most appropriate, if not essential to the research aims and perspective of this thesis.

In terms of the choice of a particular methodological framework, a wide variety of qualitative approaches including Sense Making, Grounded Theory, and Critical Analysis approaches have been used by information behaviour researchers (see for example, Fisher, Erdelez & McKechnie 2005).

Grounded theory was considered for this study because of its emphasis on iterative engagement with the data (Glaser & Strauss 1967) and on allowing the data to emerge and shape the research process and direction. However, grounded theory was judged inappropriate for this study because a key focus was to be on variation in the 'relationship' between postgraduates and information and learning while 'doing' an assignment.

Another prominent and heavily used approach in information behaviour research since 1972 is Sense Making (see Dervin & Nilan 1986), (for example, Cheuk 2000; Reijo Savolainen 1993; R. Savolainen 1999). Sense Making's primary focus is on process and real experiences, and its behavioural emphasis, along with the triangle metaphor of 'situation – gap – helps' and the notion of information bricks to bridge the 'gaps'. This means it is often used to determine what will help a person fill the gap and 'cope'. Assumptions that information use is problematic, imply a constructivist perspective on information (Bruce 1997, p. 83), which was not suitable for this study, that was to focus on understanding postgraduate experiences and the variation in these. Another possible qualitative approach explored, and ultimately chosen, was phenomenography. This is described in the next section.

4.1.2   The Phenomenographic Approach to Student Experiences

'Phenomenography' is a research approach that has been used in higher education since the 1970's to explore students' experiences of learning and their conceptions of important educational ideas (see Marton & Booth 1997). It has been more recently adopted by some information science researchers to focus on students' experiences and conceptualisations of aspects of their information and learning worlds (Bruce 1997; Glazier & Powell 1992; Kirk 2002; Limberg 1999).

Characteristics and Unique Approach of Phenomenography

Phenomenography is one of a range of qualitative approaches with roots in phenomenology (Hasselgren & Beach 1996). It began with research dating back to the late 1970's and early 1980's, specifically into student learning in academic settings (see Marton 1981). Phenomenography looks at 'ways of experiencing' the world and uniquely explores variation in people's experiences of the same phenomena. Phenomenography has been described as *"less a methodology than an explorative*

and analytic approach to qualitative research" (Barnard 1999, p. 223) deriving from *"an interest in describing the phenomena in the world as others see them, and in revealing and describing the variation therein, especially in an educational context"* (Marton & Booth 1997, p. 111).

The approach grew from an interest in the relationship of a learner to the world, rather than the constructions of others on their behalf. Phenomenography is fundamentally relational in nature. It focuses on and describes peoples' conceptions of phenomena (Svensson 1994), that is the relationship between a person and the phenomenon of interest. Phenomenographic studies have generated growing and sustained interest in a *"relational approach to teaching and learning in higher education"* (Bruce 1997, p. 84).

The differences between phenomenography and phenomenology are important to note. Phenomenology was of some interest as a potential framework for the study as it is

> *"characterised by multiple perspectives...(with) an attempt to understand experiences through the lenses of those describing the experience...while recognizing one's own perspective and the influence of the perspective"* (Eyring 1998, p. 141).

For my study I was interested in how the participants were experiencing assignments and what they experienced as the context. Wilson states that

> *"if we wish to understand the world of the information user and his or her actions in settings... We need to have conceptual tools that have been designed to foster that understanding... Phenomenology offers those conceptual tools"* (Wilson 2002, p. 7).

Given that phenomenology focuses on finding the essence of the experience, I judged it unsuitable for the purposes of this study (Hasselgren & Beach 1996). While phenomonology and phenomenography both focus on human experiences of phenomena, phenomenography was chosen as it has a particular focus on variation in this experience.

Phenomenography focuses on the variation in collective conceptions of different phenomena, or 'ways of experiencing' (Marton & Booth 1997, p. 124): that is how peoples explanations or 'conceptualisations' vary (Tesch 1990, p. 65). In this study I have used 'ways of experiencing' even though the term conceptions is more frequently used in the information science literature. The use of 'conceptions' can imply a focus on conceptual or intellectual understandings only, whereas, in this study the postgraduates' ways of experiencing aspects of their assignment had very strong affective aspects. Ways of experiencing better describes holistic experiences, including the affective which Hazel, Conrad and Martin (1997) noted are often ignored.

Important characteristics of phenomenography are its:

- Focus on variation in ways of experiencing a phenomenon
- Use of open and exploratory data collection methods and collection
- Analysis that is interpretive
- Aims to constitute 'categories of description' which describe key qualitative differences in people's experiences of phenomena in the world (Svensson 1994, p. 12).

Phenomenography, being relational in nature, takes a non-dualistic second order perspective which sees experiences not as psychological, nor physical. That is they:

> *"comprise an internal relationship between the subject and the world...They are descriptions of the internal relationship between persons and phenomena: ways in which persons experience a given phenomenon and ways in which a phenomenon is experienced by persons."* (Marton & Booth 1997, p. 122).

From these patterns, categories of description are 'constituted'. In the process of phenomenographic analysis collective categories of description are formed by comparing and contrasting differences across the pool of transcripts. These differences may be between individuals or within an individual but the categories of description are at a collective level and they have a second order or relational nature (Marton & Booth 1997, pp. 124-128). Categories of description are representations of ways of experiencing phenomena interpreted by the researcher (Bruce 1997, p. 88). They are 'constituted' as a relationship between the researcher and the data. Categories of description depict the different ways phenomena may be experienced by any one person in various situations or the ways it is experienced by equivalent groups of people (Marton & Booth 1997, p. 128).

The outcomes of analysis in phenomenographic research are constructed as 'outcome spaces' (Bruce 1997). There are internal relationships between the categories and the 'outcome spaces' show the categories and the internal relations of the phenomenon of interest. The unit of analysis is not the participants, in this case the postgraduates themselves, but the variation in their relationship with the phenomena of interest (for example, information and learning).

The application of phenomenographic research approaches to investigating student learning for nearly three decades provides a broad base of qualitative research for other disciplinary areas such as information science to draw upon. As indicated above, phenomenography has been used in information science as a means of exploring aspects of information behaviour since the 1990's (for example, Bruce 1997; Bruce 1994; Edwards & Bruce 2002; Heinström 2002; Kirk 2002; Klaus 2000; Limberg 1999; Lupton 2004; McDowell 2004). It is an approach well suited to exploring information behaviour in context and is increasingly being seen as useful for research in that field and in information science more broadly (Limberg 2001).

Why Phenomenography is Suited to this Project

Phenomenography is suitable for exploring variation in postgraduates' experiences of 'doing' an assignment for many reasons. Firstly, it can explore postgraduates' own ways of experiencing aspects of 'doing' an assignment in specific learning situations. It enables the study of a practical and perennial classroom dilemma that inspired the research: why, given the same classroom situation, do postgraduates' experiences of information and learning in assignments, and their outcomes, vary so much?

A second point to note is the primacy of interest in the 'content of thinking' in phenomenography (Barnard 1999; Limberg 2000; Svensson 1994). 'Content' of thinking is fundamental to phenomenography, *"learning cannot exist without an object. There is no learning without something learned"* (Marton & Booth 1997, p. 115). Because phenomenography doesn't 'psychologise', indeed it is *"fundamentally non-psychological"* (Marton, Fensham & Chaiklin 1994, p. 7), it is a practical way of exploring awareness of variation and reflection in learning, without relying on the strongly quantitative paradigms of much psychological research (Booth 1994, p. 4). Rather than focusing on psychological characteristics of students, phenomenography explores 'what is going on inside students' heads' by focusing on variation in what students are experiencing and how they are experiencing it in a specific context.

A third feature of the suitability of phenomenography for this study is that it goes beyond individuals to describe collective understandings of phenomena but focuses on variation within the collective. Information science has historically used 'information user groups' as a unit of analysis and for design of service provision and this has proved unsatisfactory in many ways. The earlier practice of using socioeconomic factors was even more unreliable for predicting and understanding information behaviour. Group members often do not interact with information according to expectations based on their membership of a predefined 'user group'. But because phenomenography treats the relationship between a person and phenomena as being *"best understood at a super-individual level"* (Marton, Fensham & Chaiklin 1994, p. 7), experiences are not tied to one person. In this thesis there is the juxtaposition of the collective and the individual. The collective pool of responses is used to constitute the phenomenographic categories of description of the postgraduates' ways of experiencing aspects of their assignments.

By taking a perspective that goes beyond the individual (for example, one information user), or their group membership, to look at variation in the pooled experiences of individual postgraduates, a phenomenographic approach allows the research questions of this study to be appropriately investigated.

A fourth aspect of phenomenography that makes it suitable for the study is its focus on variation in a specific context. One person may experience a phenomenon in very different ways on different occasions depending on context. Investigating and categorising the most important ways of experiencing a phenomenon in these specific contexts (or situations) is the necessary precursor to understanding how we could optimise postgraduates' experiences, learning and achievement. By looking at variation in individual postgraduates' experiences of the same learning phenomenon at different times the external context is kept constant, although the perceived context may vary enormously.

In summary, the aim of this study was to explore postgraduates' experiences of the interaction of information and learning in the context of assessment in higher education and to do this required a qualitative approach. Phenomenography was found to be a suitable qualitative

approach for exploring the research questions of this thesis. For all the reasons discussed in this section phenomenography is uniquely suited to this study which sought to uncover the variation in postgraduates' experiences of information and learning, and to usefully categorise these differences. Wilson has commented that:

> "To understand the process of seeking meaning ... We have to undertake a deep analysis of what the information seeker believes s/he is doing, of what the intention is in the acts employed to discover information, and in what the information found means to the information user" (Wilson 2002, p. 4).

Phenomenography is a methodological approach that specifically focuses on the intentions and strategies of participants and their 'relationship' with the phenomena of interest. It has been used extensively to study learning in different contexts.

Issues in Phenomenographic Research

Despite the power of phenomenography for illuminating student variation in experiences of many different phenomena, many researchers find aspects of this approach problematic. Issue is taken with phenomenographic research principally in regard to:

- The notion of 'deep approaches to learning'

- The denial of individual voices

- The 'subjectivities' of the researcher.

These are longstanding issues and have generated extensive debate (see for example, Ekeblad 1997; Entwistle 1997b; Webb 1997a; Webb 1997b).

Critiques of phenomenography often focus on the perceived overuse of 'deep and surface approaches to learning' in higher education, rather than the tenets of phenomenography themselves. Much of the critique of the notion of 'deep approaches to learning' stems from its extensive use, and consequent misuse (Ashworth & Lucas 2000; Bowden & Walsh 2000; Hasselgren & Beach 1996; Hazel, Conrad & Martin 1997; Richardson 1999). Some critiques take a postmodernist perspective (Webb 1997b). The concept of a 'deep approach to learning' has been stretched beyond its original use within phenomenography, as it has become popular shorthand for the elusive 'quality' in student learning.

The criticism of phenomenography that "the researcher purports to categorize an individual conception with a description that denies the individual his or her voice" (Bowden & Walsh 2000, p. 16) was an important influence on the conduct of this study. This concern was addressed by the collective ways of experiencing 'doing' an assignment in Chapters 5 and 6, with individual experiences in the case studies which will be presented in Chapter 7. Many of these critiques relate to the issue of researchers projecting their own pre-existing biases. In this study conducted with participants who were postgraduates I was teaching, this was an important consideration. How I dealt with or minimised this factor is discussed in the Quality of the Study (Section 4.2.4 below).

In summary, the critiques of phenomenography that focus on the ideas of 'deep approaches to learning', the individual voice and the bias of researchers are addressed in detail in the text of the thesis.

4.1.3   The Case Study Method

As mentioned above, critiques of phenomenography have highlighted its lack of capacity to reflect the individual case. In response to this view and in keeping with an emerging trend in phenomenographic research (for example, McCune 2001; Reid 1999) it was decided to use a case study method to augment the usual phenomenographic analytic process and to show patterns of variation in individual participants' ways of experiencing the phenomena of study. This also allowed examination of the dynamic longitudinal process of completing an assignment and the way changes in an individual postgraduate's understanding and activities emerged over the time span. An additional benefit from including case studies was the potential for triangulating the findings by analysing individual experiences in addition to the pooled experiences.

The following sections describe different case study approaches in qualitative research and consider the choice of a method for this study.

Characteristics of Case Studies: What is a Case Study?

Defining the case study research approach is not straightforward as there are differing definitions and controversy about what a case actually is (Merriam 1988; 2002, p. 178; Yin 2003, P. 12). The breadth of possibilities in the two word label also leads to some confusion *"case study is defined by interest in individual cases, not by the method of enquiry used"* (Stake 2003 p. 136). However, the overall interest may be in understanding the phenomenon or a group of cases rather than just the individual. To add to this confusing picture the term case study is used for both the process and the product (Stake 1995, p. 136).

In information behaviour research there are *"substantial precedents"* (Kuhlthau 2004, p. 33) for the use of case study research (Gorman & Clayton 2005, p. 47; Fidel 1992, p. 37). Dervin advocates their use as part of a range of approaches (Dervin 1997). This is particularly true for the use of longitudinal case studies which are becoming increasingly popular:

> *"Longitudinal study combined with case study, unlike the snapshot approach, has the power to reveal the complex cognitive process that takes place over a period of time involving the whole person, emotionally as well as intellectually, and so offers a holistic view of the search process"* (Kuhlthau 2004, p .75).

Kuhlthau suggests case studies are particularly suitable for understanding information behaviour in a user-centred way and highlights the example of Vakkari & Serola's (2002) longitudinal case study of postgraduate research students working on their proposals (Kuhlthau 2004, p. 33). Case

studies are *"essential for filling the gaps....and for raising new questions"* (Kuhlthau 2004, p. 75). They are also considered very useful for exploring dynamic phenomena (Williamson 2002). Gorman and Clayton note that the types used in information research include observational, interview, organisational, historical and comparative case studies (Gorman & Clayton 2005, pp. 47-48). The power of longitudinal case studies in particular lies in their potential to give a complete or rounded picture, and this has no doubt contributed towards their adoption in information behaviour research.

In both education and higher education, case studies have been used extensively (Bassey 1999). In recent years case studies have been utilised as an adjunct to phenomenographic analyses. For example, rather than use case studies to describe what was typical, Reid (1999) wanted to explore the intrinsically fascinating case itself, then to stand back and see what is different or unique or interesting about a particular case. In a case study Reid argued that the *"Whole person is returned"* (Reid 1999, p. 52). McCune also used case studies as part of her overall thesis study to get a *"more holistic overview"* (McCune 2004, p. 278) of students' experiences, including of essay writing, over time. A key part of the appeal of combining case studies and phenomenography is the contrast it provides to the pooled experiences that are the unique focus of phenomenography. Case studies illustrate the highly complex and idiosyncratic nature of student experiences in a way the generic or 'stripped' categories of phenomenography where *"the specific flavours, the scents, and the colors of the worlds of the individuals have been abandoned"* (Marton & Booth 1997, p. 114), cannot.

Issues in Case Study Research

The issues that need to be considered in case study research overlap with those of other qualitative approaches. These include implementation issues such as: the researcher being the primary research tool; having no well codified knowledge base to draw upon and the fact that case studies are also extremely time-consuming despite the small numbers usually involved (Merriam 1998, p. 42). Case selection and then how to tell the story of the case are other ongoing issues (Denzin & Lincoln 2000; Merriam 1998; Stake 1995; Yin 2003).

Problems of bias, reliability, validity and generalisability (Denzin & Lincoln 2000; Merriam 1998, p. 43) stem from the 'subjectivity' of case study research which is both its strength and weakness. A case study researcher uses prior expert knowledge and personal experience to inform their enquiry and needs to equally be aware of their role in the research and reflect on this factor during both data gathering and analysis.

Why Case Studies were Suited to my Research

In this study the aim was to explore postgraduates' experiences of utilising information for learning purposes: namely 'doing' an assignment. Williamson indicates that case studies may not

be appropriate where the phenomena *"are well understood and mature where constructs exist already and are well developed"* (Williamson 2002, p. 112). However, because our understanding of individual experiences of the interaction of information use, assignment completion and learning is not well developed, and because this understanding is sought in 'contexts of action', a case study approach was seen as suitable for the study.

Putting 'back together' the individual and their experiences chronologically and reintegrating them into a whole was seen as important to contextualise the findings about the way postgraduates utilise information interactions for assessment and learning. Therefore in this study a 'case' was the experiences of an individual postgraduate taken from the set of three interviews. Using a second method to analyse the postgraduates' experiences in this study provided a means of clarifying and confirming (triangulating) the findings and filling out in greater detail postgraduate experiences of assessment.

The use of case studies as an additional research strategy provided these benefits:

- Capacity to re-examine the categories found in the pool of data and their significance for an individual as well as examining how the categories of the whole fit the individuals (Reid 1999). The case study could thus provide real life examples of the phenomenographic experiences.

- Showing at a holistic level the meaning of the experiences for the individual in their context.

- Demonstrating the links over the three stages of the interviews and highlighting the individual's process of 'doing' an assignment (Merriam 1998. p. 33).

- Tracking the contradictions that individuals manifested between and sometimes within interviews and exploring these.

- Showing the impact of time and convenience factors on experiences of an individual postgraduate.

- Demonstrating the fine grained nuances in different stories of individual high achieving postgraduates and the nature of the individual epic of an assignment journey.

In summary, it was decided that a case study approach, given the small number of participants in the study, would provide a very useful way to look at postgraduates' experiences of assignments. It would also provide a more personalised, individualised interpretive perspective on the way the participants utilised information for learning and assessment (Williamson 2002, p. 113).

4.1.4   Summary of Methodological Choices

Phenomenography's strengths lie in its non-individual focus and use of variation that can be used to explore and delineate experiences of information and learning in higher education. The case

study approach provides a detailed individual case by case holistic perspective (Reid 1999). Therefore, these two approaches combine to provide a well-rounded exploration of the research questions of the study. By combining a phenomenographic approach with case studies this research has balanced the benefits and limitations of both, providing a more complete picture of information use and learning in higher education assessment.

How the study was designed, implemented and analysed is described in the following section of this chapter.

4.2 Research Design and Implementation

This part of the chapter outlines the design of the study, how it was carried out and the interpretive processes used throughout. Phenomenographic and case study approaches were used to examine postgraduates' experiences of information interactions while they were 'doing' an assignment. These methods were directed to developing an understanding of:

- Variation in postgraduate experiences of the processes of acquiring and using information for their assignment

- Variation in postgraduate experiences of deciding when they had Enough information (and other things) for their purposes

- Two individual 'journeys' through the process of doing and completing an assignment.

4.2.1   Parameters of the Study

This section explains the setting and context of the study, how it evolved from earlier work and pilot interviews. It also describes the participants that were selected and why.

Evolution of the Study Design

In early 1999 I conducted some interviews with undergraduate students I was teaching as part of requirements for a module in a Graduate Certificate in Higher Education. These interviews illustrated the benefits of obtaining students' perspectives on their learning. They showed how useful a phenomenographic approach could be for exploring students' experiences from their perspective and indicated that interviewing postgraduates could be an effective way to explore information use and a learning context.

At the proposal stage of the current research, exploratory pilot interviews based on the earlier work in the literature were conducted to explore students' approaches to learning, assessment and information. Two postgraduates studying different courses and subjects in information studies were interviewed and asked how they went about learning in their courses, as well as how they thought about learning and assessment and 'doing' an assignment. In all their subjects assessment was based solely on research reports or presentations. What I learnt from these developmental

interviews influenced the main study by defining the setting, participants and interviews.

Many issues about interviewing arose from the pilot study and these are discussed later in this chapter. More pilot testing with summer school students was also considered, but I decided instead to use the first participant in the main study for further testing of the research design and to inform subsequent interviews in order to maintain consistency of context. These two interviews were analysed prior to starting the main round of interviews once the research questions were more fully developed. This aided design of the interview guidelines (see Figure 4.4 below) and informed my interview technique.

In summary, following the pilot interviews the aims of the study were confirmed as: exploring variation in postgraduates' experiences of information in the context of 'doing' an assignment for a specific subject. In light of the pilot results a number of decisions were made in order to achieve the aims of this study and these are described in the following sections.

The Context of the Study

The study was conducted at the University of Technology, Sydney which teaches and researches across a number of different faculty areas with a substantial proportion of postgraduates and a significant number study part-time.

This study was focused on exploring postgraduates' experiences of information use and learning while researching, writing and completing an assignment. To pursue this aim the decision was made to select an issues based subject (see Figure 4.1) because in the exploratory study participants expressed differences in how they approached 'issues based' versus 'technical' subjects. Three subjects were considered and a subject called Information Environments and Networks was selected as the most appropriate for the purposes and practicalities of the study from the postgraduate program in Information and Knowledge Management (IKM). It is described below.

Figure 4.1: Subject Description

Information Environments and Networks

This subject introduces students to the information environment and its social, economic and political infrastructure. The subject covers ideas about data, information and knowledge; the information industry; information work in a range of organisations and agencies in the public and private sector. Electronic and non-electronic information networks are examined. Issues in information practice are considered, including ethics and values and the impact of government information policies on topics such as intellectual property and protection of individual privacy.

Source: Information Environments and Networks Subject Outline 2000, UTS

The selected subject was one I was assigned to teach. The participants in the study were postgraduates I was teaching either as tutor or subject coordinator, under the direction of the Head of Department. Dealing with postgraduates I was teaching was important for the aims of the study in the following ways. Firstly, in order to be able to investigate the postgraduates' information and learning experiences in depth in the selected subject, I needed to be aware of the structure and exact content of the subject as it was actually presented to the postgraduates. This is essential for understanding the context or individual situation of their experiences (Prosser & Trigwell 1999, p. 18).

Secondly, I had decided that I needed to be continually present and part of the communication process of teaching in order to explore actual and realistic postgraduate learning and to disrupt this as little as possible. In other words, I believed that the researcher needed to be part of the real teaching and learning environment, rather than as a third person observer and researcher. The impact of the entire learning environment, including any of the interactions that occur within that environment, is a vital part of the 'context of learning' for background in the analysis phase.

However, I was not the designer of the subject as this was the role of a senior academic. Being the junior teacher for the subject created a hybrid teacher / researcher role which had the benefit of increasing opportunities for interaction with the postgraduates about their assignments. This created a collegial relationship which was an important part of the data gathering phase and interviews (discussed in Section 4.2.2 below). These researcher roles had benefits for the study but also required attention to possibilities of research bias (discussed in Section 4.2.4 below).

I was also 'part of the research' in another way as well, having been a postgraduate in an earlier iteration of the subject. At a similar age to many of the participants and the same gender and similarly retraining in a new profession I had studied the same course. So in this sense I was not only the researcher and teacher, but I had also shared the student experience in a similar context ('been where they were'). There was consequently an unusual sense of collaboration and level of co-understanding for a student teacher study, that invited the conversations, contributing to the nature of the participant interactions and the interviews.

The assignment selected for this study asked students to research the literature for an exploration of a chosen information industry (see Figure 4.2 below and full description in Appendix 3).

Figure 4.2: Assignment Description

Industry Report

Task:

In this assignment you will explore a specific area of the information industry in Australia and prepare a report on current aspects of the area including trends, issues, policies and opportunities for information professionals.

Report Content:

You will undertake a range of activities (see below) to research the area then analyse and synthesise the information gathered to prepare your report. The report should include:

(a) a short description of the area being explored including information on aspects such as history, size, main functions, markets, clients and other factors considered relevant.

(b) an analysis of the internal and external environment of the area to identify current trends and issues affecting the area; changes in technology, market trends, government and industry policies, opportunities for employment in the area and so on.

(c) a description of industry and professional associations relevant to the area; what they do, what services they provide.

(d) a discussion of the work of information professionals in the area including current ethical issues and the development of standards.

(e) your conclusion about the future directions of the area.

Activities that could be undertaken to gather information include:

- monitoring of print and electronic media;
- analysing relevant industry and professional literature;
- analysing relevant government reports and discussion papers;
- analysing scholarly literature and research reports;
- interviewing practitioners and other relevant people in the area

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Selection of Participants for the Study

As discussed earlier the majority of phenomenographic research on student learning to date has concentrated on school or undergraduate studies of reading and writing. Phenomenographic studies of information behaviour have focused on schools and the business environment with the exception of Edward's study of experiences of undergraduate and post-graduate IT students searching the web (Edwards 2006; Edwards & Bruce 2002). Despite a large volume of literature focused on the generic skills of 'adult learners' which includes Bruce's (1994) investigation of postgraduate research students doing a literature review and her investigation of information literacy with 'higher educators' (Bruce 1997) there is little or no research on postgraduate experiences of information, assessment or learning. The gap in the literature about this group was confirmed by Given (pers. comm. 17 August 2000) and this situation has not changed since then. The decision to choose postgraduates as the participant group for this project also took the following factors into account:

- Their unique blend of familiarity and prior accomplishment in tertiary study, and work and life experiences

- A personal interest stemming from earlier experiences as a postgraduate student myself and as a teacher of postgraduates.

The participants in the study were drawn from a Graduate Diploma and Masters of Arts in Information and Knowledge Management joint class. Postgraduates interested in and being trained to think explicitly about information processes were assumed to be more familiar and comfortable with handling information. This means the impact issues of information literacy (or illiteracy) have on student approaches to information seeking and learning (which are not directly part of the study) were minimised. It is important to note that the focus in this research is how postgraduates handle assignments through these information processes, rather than their information literacy and competencies as such.

The number of participants used in phenomenographic studies varies but:

"The number of interviewees normally falls between 20 and 50 persons and is related to the scope and possible depth of data analysis" (Limberg 2000, p. 5).

A minimum of fifteen participants is often expected in phenomenographic studies in order to find a maximum variation in the phenomenon of interest (Kirk 2002; Limberg 1999; Sandberg 1994; Trigwell 2000). However, Sandberg states that:

"In any phenomenographic study, the number of participants should be sufficient to yield adequately rich descriptions of the varying conceptions which, together, comprise the phenomenon. It is generally accepted that approximately twenty participants will achieve this" (Sandberg 1994, p. 72) and in (Bruce 1997, p. 94).

This assumes a single interview with each participant. This study differed in that each postgraduate was interviewed three times. In order to explore the variation in what was important to the postgraduates over the course of the assignment task and the entire individual experiences it was necessary to use a small group that could be the focus of intense analysis over an extended period of time. In this case, the number of participants involved was six. Each postgraduate participating in the project was interviewed three times, giving a total of 18 in-depth interviews. Phenomenographic studies aim for a sufficient variety of experience to be explored (Bruce 1997) and the interviews represent 18 different experiences of an assignment.

The number was also a pragmatic and logistical consideration in terms of volunteer numbers and teaching and working around class times. A small number of participants allows the opportunity for very in-depth interviews which was an important consideration for the study. In order to keep the context as stable as possible it was decided to use participants from the same subject. In light of the number of students in the subject and the probability of attracting committed volunteers to the interview program, data collection continued over three semesters to obtain a total of six participants.

Ethical considerations were an influence in choosing to use volunteers. Potential postgraduates' concerns were addressed by emphasising the voluntary nature of participation and anonymity of participants (see Appendix 4). As postgraduates could feel a sense of obligation to participate in

the study I ensured that the completely voluntary nature of participation was continually emphasised. Apart from an introduction to the study after the first tutorial and a brief check that any latecomers also had information about the project the study was not mentioned to the class again.

Assessment objectivity in course assessment is a well researched issue in higher education including when a research study is not being conducted (Brown & Knight 1994) (see Chapter 3). To avoid any misapprehensions about postgraduates' marks being affected by their participation or non-participation, those that took part had their assignments marked by the Head of Department. These steps for ensuring objectivity in their assessment and avoiding marking bias implications were clearly outlined and repeatedly emphasised.

As phenomenographic research is interested in exploring variation in the selected context, purposive sampling (Bruce 1997) to find maximum variation among participants would have been ideal. In this study because participation was by class volunteers, and the research context was held constant (one specific subject and the same assignment), participants were self selected. Postgraduates in IKM classes I was teaching were presented with information about the research project at the end of the first tutorial. These tutorial classes were given a five minute explanation of the study where the voluntary nature of participation was emphasised. They were then provided with an information sheet and contact details (Appendix 4). Interested full-time and part-time volunteers contacted me at their convenience to discuss potential participation. Therefore being enrolled in the chosen subject and volunteering for the study were the only selection criteria. Selection continued with cohorts of postgraduates across three semesters in order to reach the final total of six volunteers from the chosen subject (Autumn Semester 2001, Spring Semester 2001 and Autumn Semester 2002).

Despite the self selection for participation in the study, in light of the diversity of the postgraduate population it was expected that a wide range of students would volunteer. In fact, the volunteer participants were quite homogenous in terms of age, gender and the way they entered their courses. As expected there was a mixture of full-time and part-time enrolment and a variety of work backgrounds.

All participants were mature female students (early twenties to mid forties) of no discernible minority group and with several years of prior professional work experience. They reflected the majority of postgraduates in these IKM courses. As volunteer participants they were all very engaged in the subject and unintentionally (from the point of view of the aims of the study), they were also all high achievers. They were successful from an assessment viewpoint in both the assignment and the subject overall with course grades of Distinction or High Distinction level.

In the event, the unexpected dominance of high achieving postgraduates in the participant group was not an issue as there was found to be more than adequate variation between the postgraduates' experiences of the phenomena of interest, to allow for a satisfactory phenomenographic analysis and for selection of postgraduates suitable for the case studies. Some phenomenographers use the grounded theory approach of 'saturation' to obtain the maximum

variation in participant selection. In this study after 15 interviews 'saturation' was reached and there was already a wide range of variation evident as will be described in Chapters 5 and 6. The data from the sixth postgraduate provided only further confirmation of the findings.

4.2.2   Data Gathering Using Interviews

Interviews are a key tool of qualitative research and a major data collection method in phenomenographic and information science research (Bruce 1997; Entwistle 1997a; Marton & Booth 1997). They are also the principal data collection technique for both the selected methodological approaches (phenomenography and case studies). A semi-structured interview approach is often recommended by qualitative and phenomenographic researchers alike (Barnard 1999; Bruce 1999; Kvale 1996) to maintain focus and clarify the responses (Kvale 1996). However, a less structured approach is indicated by Kvale's argument that interviews and interview research are "forms of conversation" or "literally as inter - views" (Kvale 1996, p. 277). Other researchers have questioned the idea that interviews can, or should, be 'objective' (Ashworth & Lucas 2000; Dortins 2002; Patrick 2005; Sandberg 1994). Dortins (2002) describes the richness of data obtained in a truly qualitative phenomenographic interview and discusses interviewing as conversation, empathy and sharing. The following section describes the conduct of the interviews and important aspects of those interviews for this study.

Conducting the Interviews

Conversational or thematic interviews with the six volunteer postgraduates from Information Environments and Networks varied between 30 and 120 minutes in length. Audio tape recordings were made of the interviews (Kvale 1996). Each participant was interviewed at their choice of venue (such as research student office, coffee shop, restaurant) at whatever time suited them best. In deciding to make this study as user or student responsive as possible, the interviews were conducted in often noisy locations when students were on the move just before or after their classes, or were having a meal (Åkerlind 2005, p. 116).

This made tape recording difficult and maintaining recording quality proved problematic, but these disadvantages were more than compensated for by the participants' consequent levels of relaxation and the richness of the interview data. However, interview transcription became very challenging. Three interviews from different participants were not transcribable due to the quality of the recording although this was compensated for by including a sixth participant in 2001. In the end, fifteen interview audiotapes and transcriptions were available for the phenomenographic analysis. Notes had also been taken during the interviews and field notes of impressions were made immediately after each interview.

As mentioned above, interviews were conducted at three points over the timeframe of the assignment with each participant to capture the information and learning processes over the whole assignment process. This was intended to allow:

- Examination of postgraduates' use of information (information processes) changed over the process of 'doing' the assignment.

- Comparison of findings to Kuhlthau's (1996) well-established model of the Information Search Process. This has been theorised as 'stages' related to the information seeking process (Kuhlthau 2004).

- Building upon previous phenomenographic research on an assignment and student learning in information science (Limberg 1999).

- Participants and the researcher ample opportunity to build rapport over the interviews and revisit and elaborate where required.

Finally, the spacing of the interviews over time allowed me to look at what changed, not just in terms of the primary phenomena, but at what happened over the course of a lengthy, complex task. These spaced interviews allowed me to gain a more complete picture of a process that took place over many weeks than could have been gained from a single interview and to 'catch' the students at different times during the process. This provided a more complete picture of their experiences and meant that I was not reliant on capturing experiences at any pre-ordained 'stage' or day. This strategy in turn, allowed me to embrace the variability of participants and their experiences over time.

Postgraduates were interviewed 'before', 'during' and 'after' one assignment according to their interpretation of these 'phases':

- The at the beginning interview ('before') was held after the assignment was discussed with the class, but before any information seeking had taken place. This was a preparation phase.

- The in the middle interview ('during') happened during the most intensive phase of the information search process. This was the principal research phase.

- The after the assignment interview ('after') occurred as soon as possible after assignment completion, marking, feedback and return. This incorporated the main writing and presentation phase of the assignment for assessment.

As well as the interview conversations over the timeframe of the assignment there were many other interactions between the researcher and the postgraduates as part of the tutor-student relationship. These provided a rich supply of information, but as these interactions were not the focus of the methodological approach, notes on these were only a supplement to the interview data. However, this information was used to select the case studies and gave background knowledge which was invaluable for contextualising the transcriptions. Consultation about topic selection and discussion of their assignments was a class requirement and one assignment consultation in the topic selection phase was offered to all postgraduates in the classes.

The interviews that formed the main source of data for the study, and consultations about the assignment at the same meeting were separated during the first interviews, but ultimately became quite intertwined. Also there was email correspondence with all students in the class although

some of these were about meetings and some requests for clarification of the assignment. Other interactions with participants which provided background and contextual information included 15 three-hour combined lectures and tutorials, a total of 45 hours of group contact, along with the six hours of in depth conversations (interviews and consultations) with each participant and several emails.

Interview Questions

Phenomenographic interviews, while not highly structured, focus around open ended questions designed to make participants comfortable and to allow them to explore and share their experiences in the areas of interest. The questions I asked the postgraduates evolved from the pilot study up until (and during) the interviews themselves, and went through many iterations between interviews as well. Adjustments were made as issues emerged from the first phase of interviews and were revisited with the postgraduate in subsequent interviews. Interviews varied in the exact wording of questions because the interviewees varied, and the aim was to have 'discussions' or 'conversations'. The focus of the questions however always remained on 'what was important for the postgraduate' at each of the three interviews in relation to my area of research focus. Figure 4.2 gives examples of some early questions which appeared on the information sheets provided to postgraduates as background to the study.

Figure 4.3:   Sample Questions

> **Example of Some Early Questions**
> What do you do first when you have an assignment to do?
> What do you do then?
> Do you always do it like that? Why?
> Can you explain how do you go about researching the assignment?
> Describe your picture of an effectively completed assignment?
> How will you know when you have learnt something?

Introductory questions were used as a warm up or ice-breaking activity and to test recording equipment. An Interview Guideline with examples of possible questions appears in Figure 4.4 below. It is important to note that only some of these questions were explored in any one interview and no particular order was followed within the interviews. I did not ask about some concepts I was interested in directly as my priority was to understand how the postgraduates experience the assignment, not suggest what I thought might be important.

The interview guideline used was:

Figure 4.4: Interview Guidelines

Interview Guidelines

Exploring Postgraduate Coursework Students' Experiences of Information Seeking and Use for Assessment and Learning

Introductions

Ice-breaking conversation about ourselves and the research.
Taped to test equipment and then replayed for checking. (Erased if participant wishes)

Assignments

What purpose do you think university assignments are meant to serve?
What about in this subject?
How do you feel about assignments yourself?
How do you go about doing them? Please could you describe what you do?

Information Seeking and Use

How did you think about researching the assignment?

What did you do first/ next?
How did you feel while you were doing XXX?

Learning

How do you think of learning? What is learning for you?
How do you know when you are learning?
How do you know you have learnt from doing something?
What makes this happen or not happen?

General Questions for Clarification or Elaboration

Intentions:

What are you aiming for when you do this? What do you hope to get out of doing that?
What does XXX mean to you?
Can you explain why you do that/ do it like that?
When you do XXX what are you thinking about?

Strategies:

How do you go about doing that?
Why like that?
Do you always do it like that?
What sorts of things alter (or could) what you do or how you do it?

What do you mean by that? Can you give me any examples?
Can you tell me any more about that? What else can you tell me about XXX?
Please explain? Can you explain that in some other way?
Tell me more about XXX?

Some of these questions have been adapted from Kuhlthau (1996); Bruce (1997) and Limberg (1999)

At the first interview, which took place as each individual postgraduate was starting their work on the assignment, orienting type questions were used at the start, for example, why they were doing the course and the stage of their course. Then I asked some questions about assignments

in general, including their past and work related research and writing experiences. These led into conversations centred around what was important to them at the 'starting stage', and focused on the assignment that each postgraduate was just starting. The second interview focused on what they thought was important in the most intensive phase of the assignment. Questions covering areas such as what they were doing at this stage and what was important to them, were used to encourage them to talk about how they were thinking at that time. The third interview took place at least a week after the assignment had been graded and returned, so there was a chance for them to reflect on feedback and move on to other things. The postgraduates were asked about what seemed important at that point about the assignment and what had stayed with them before asking them about learning.

Although the interviews aimed to be conversational and as responsive to the individual as possible, the research questions remained central at all times. This focus on the goals of the study drove my part in the conversations, while also allowing the flexibility to follow up what was of interest to the postgraduates at the time. One example of how this worked was in relation to the way the concept of Enough when 'doing' an assignment emerged as a key theme. Although the idea of examining how postgraduates determine if and when they have Enough (and other things) was the basis of one of my research questions, it does not appear in the Interview Guidelines (above). I very rarely asked about Enough directly because I did not want to introduce the concept myself. If it was important to the postgraduates' experiences it would emerge from the interviews. Enough emerged throughout the three interviews during conversations about what they were doing, had just done, or usually did and how, or in follow-up interviews. For example, although I rarely asked questions about Enough, descriptions of the evaluations that are associated with judgements of Enough across many different parameters including Enough being expressed as too much (overload), not Enough and just Enough ensued without these questions. For example:

Do you record what you do? Meredith 1:271

had evolved a few minutes later Meredith describing:

I'll, I will gather a fair amount of information and I, I generally. Umm I will generally in most cases, gather most of what I need. Um, I never feel I, I never feel I get too much and I never feel I get too little. I guess that my own measure of what, (laugh) I mean other people~~~ Meredith 1:393

I did ask occasional questions about stopping when postgraduates were talking about their searching, for example:

When would you stop looking for information? Laura 1:269

Throughout all three interviews each participant returned to Enough (or not Enough, see Figure 6.1) again and again, whether directly or indirectly. However, the fact that Enough was one part of my research questions may well have led me to pursue any related issues with further probing during the interviews.

Issues Arising from the Interviews

In terms of the conduct of interviews, this study differs from the techniques used by most other phenomenographic researchers. As described above, rapport was built up over the sixteen week semester (during lectures, tutorials and consultations and before and after interviews) and continued to develop during the three lengthy interviews conducted in convivial locations. Indeed, one transcriber asked if we were friends as there was such a relaxed atmosphere and laughter and good humour in the interviews. This level of interaction was undoubtedly a major factor in the extent to which the participants collaborated and shared their very thoughtful, incisive and reflective perspectives.

It is acknowledged that the research study itself also 'changed' the postgraduates' experiences of teaching and learning in unavoidable ways. For example, several of the postgraduates who participated commented that they had benefited from the opportunity and encouragement to talk about their experiences to reflect on their learning. This supports the view that reflection is a vital part of meaningful professional practice and learning (Mezirow 1991; Morrison 1996; Schön 1995) and is also a side effect of the in-depth conversational interviews in this study that encouraged the postgraduates to talk about what was important to them.

In assessing the outcomes of the interviews, it was concluded that the insights were deeper than they would be in more formally conducted interviews. The conversational nature of the interviews yielded 'messy' but rich data with the researcher so clearly present in the interactions. This can be seen as a strength and a problem in a conversational, interactive interview style. The issues of 'objectivity' and ways of dealing with this, such as 'bracketing' (Bruce 1997) and Sandberg's (1994) notion of 'interpretive awareness' are discussed as part of the consideration of the quality of the study (see Section 4.2.4 below).

4.2.3   Data Analysis

This section explains the analysis procedures used in the study, starting with the development of an audio centred analysis which became the primary mode, and then describes the transcription process. Description of these techniques is followed by an outline of the phenomenographic and case study analysis procedures, while the last section deals with the quality of the study. The backdrop to the approaches described in this section was an understanding of the multiplicity of views of what constitutes an appropriate way to tackle the task. As Tesch has observed: "*The only agreement among qualitative researchers is that analysis is the process of making sense of narrative data*" (Tesch 1990, p. 4). The decisions I made for my particular circumstances about the analysis of the data collected are explained below.

An Audio Centred Analysis

In phenomenographic research, pieces of interview transcript are usually reproduced verbatim and contrasted with another passage to illustrate any variation that has emerged and thus transcripts are central to phenomenographic research. The qualitative literature documents many longstanding concerns held by qualitative researchers about the transcription process (see for example, Dortins 2002; Minichiello 1995; Poland 1995, Poland 2002). These problems can be somewhat minimised by the researcher themselves doing the interviewing, re-transcribing and analysing of the interviews (Poland 2002, p. 305). In this situation the re-transcription process also provides a solid background for analysis through familiarity from checking. Sandberg (1994) notes that as well as the errors from the transcription process there is the issue that:

> "... when reading the (protocol sic) we are unable to hear the tone of the interviewee's voice, whether he or she speaks loudly or quietly, is upset, amused, excited, or takes long pauses between utterances" (Sandberg 1994, p. 83).

The importance of recording to best capture an interview rather than relying on notes or memory (Johnson 2002, p. 111) is now well recognised, "*video and audio recordings are what provide the richest possible data for the study of talk and interaction today*" (Denzin & Lincoln 2005, p. 875). However, most of the published phenomenographic literature places little emphasis on tone of voice and verbal delivery.

As this study evolved a form of analysis that prioritised the audio material was developed to specifically address this issue as I was very struck by the depth and extent of feelings and emotions that were being conveyed by the participants as they spoke of their experiences. It was at this early analysis stage that it became evident that Affect is an important part of postgraduates' experiences of the assignment.

The development of the listening strategy was done in the spirit of Denzin's metaphor of fashioning a technique to achieve an aim: "*The qualitative researcher as bricoleur ...[so that]...If new tools or techniques have to be invented, or pieced together then the researcher will do this*" (Denzin & Lincoln 2000, p. 4). Listening to the audio record became the main way of interacting with the data. For example, an extensive initial phase used the audio tapes to facilitate a holistic focus on what was important to the postgraduates, and involved listening to all the interviews over and over again for several months. This listening allowed the rich information available from individual voices to be taken into account, and added another layer to the traditional 'stripped' phenomenographic analysis.

But other ways of analysing conversations were also considered. For example, the 'conversation analysis' (CA) approach of Silverman and colleagues was examined but was not deemed appropriate because of its specific concern with 'turns of talk' negotiation, sequences, roles and outcomes in order to "*discover how we produce an orderly world*" (Silverman 2000, p. 300). CA does not prioritise the audible qualities of voices and the feelings conveyed by the participants. In addition, Poland (1995, p. 299) argued that verbal and non-verbal aspects are hard to translate adequately using the CA style of notation. Doucet and Mauther argue the importance of

*"amplify[ing] the volume of our respondents' **voices** (emphasis added)"* (2001, p. 10) but focus their discussion of data analysis on 'readings' of transcripts to extract meaning without considering that listening may be more valuable than reading. Prose has been noted as problematic for adequately rendering speech by Richardson (2002 p, 879) who has suggested that poetry can be more appropriate for conveying sound patterns, pauses, pace and emotions of speech. In summary, reading of text seems to have been the technique of choice of most researchers even when they are paying special attention to 'conversation' and 'voice'.

The rationale for the audio analysis in this study draws on the observation that while we live in a world that is print based, the human voice can be far more informative than black-and-white words on a page. Over the course of an hour or so of conversation there is a building of an aural picture. The informative value of delivery gives more richness than the written word alone can provide (Anderson 2003; Solomon 1997; ten Have 2004). Ten Have (2004, p. 52) points out that audio tapes provide constant availability of 'details' that cannot be accessed without sound. Silverman (2000) also notes that *"it is within [these] sequences...that we make sense of conversation" (p. 149)*. The informative qualities of the human voice also extend to the emotions that are able to be conveyed. This thesis argues that tape recordings provide better access to subtleties of mood and feelings. Attention to the audio allows analysis of 'how' not just 'what' a person says (ten Have 2004, p. 48). This means the raw data from the interview should remain the postgraduates' experience as recounted by them and should be kept in that form for as long as possible. No matter how good transcripts are they are always a flawed representation of the human voice *"at best they are, as written records, partial accounts of a much richer interaction experience"* (Poland 1995, p. 306).

Non verbal techniques are often acknowledged by researchers but less often included in analyses. Gorden's (1980) useful classification of proxemic, kinesetic, chronemic and paralinguistic communication (in Fontana & Frey 2005, p. 713) - of which the latter two relate to voice rather than nonverbal communication - is not easily translated into text. Sandberg (1994, pp. 82-83) whilst acknowledging problems with interviews and transcriptions, points out that there is no way to monitor body language from an audio tape. Poland argues that not only non verbal communication but also some of the *"emotional context"* (1995, p. 291) of lived experience is lost, so a recording is not any more useful than an 'accurate' transcript. Data about body language is, of course, lost when the interview is tape-recorded but a great deal more is lost in the translation of sounds into print. Nonetheless, accent, tone, volume, pace and emphasis in voices can signal in a very useful form what is happening to an interviewee as they reflect on their experiences. What emerges is not just the differences between oral versus written language forms, but also the greater amount of information inherent in verbal person to person communication.

Another key benefit of the audio analysis in the study was the insight into the motivation, ambitions, and so on, of the participants and the enhanced contextualisation of these affective dimensions that this provided. For example, the nuances in what was said, and also when and how it was said, were especially helpful in the case studies that were developed to illustrate the individual experience of 'doing' an assignment.

For this project, because the audio record proved so valuable, analysis of the interviews' audio recordings without transcript analysis was considered. This would have meant transcribing selected pieces for reporting only. However, this was found to be difficult in terms of management of the audio data for analysis (for example, locating passages readily, marking sections of interest). Consequently it was decided that analysis of the data based directly on listening to the audio-tapes would be supplemented by the more traditional technique of transcription to allow ease of data management as well as an opportunity to work directly with the transcriptions. In summary, a combination of analysis of the audio-tapes in their entirety, use of transcripts to manage data and a further stage of a more 'classic' phenomenographic full transcript analysis formed the basis of analysis. This process is described below.

The Transcription Process

Whilst the audio recordings continued to be central throughout the analysis, use of transcripts was incorporated for practical aspects of data management, presentation and for a typical phenomenographic analysis. Ensuring the transcripts were as accurate as possible was part of the overall 'familiarisation' process (see Step One below) as follows:

- Checking detail of the transcript to confirm or clarify a difficult-to-hear part of the interview

- Cross-checking whole transcripts against the audio and marking the significant fragments considered to be important for postgraduates in areas such as: information seeking; knowing when they had Enough and what 'doing' the assignment meant for them as individuals

- Using the transcripts as a checking and locating mechanism for accumulating evidence on particular aspects of the findings.

As is standard practice in phenomenography, the interviews were tape recorded and fully transcribed in the first instance. For logistical reasons three different typists were involved in the task. Each was briefed to transcribe the interviews 'verbatim' and this was explained as including all pauses, exclamations, sighs, laughs, etc because all verbal signals and punctuation should be noted carefully in transcripts as these are a vital first interpretive step (Kvale 1996). After the draft transcripts were returned and reviewed by me, further instructions and feedback were given. This however proved inadequate as the typists, despite instructions, often omitted words, formalised the language, abbreviated comments and did not always note non-word verbalisations (for example, exclamations, pauses, etc) in their transcriptions.

This difficulty in obtaining transcripts of the appropriate standard meant that the transcripts of all interviews had to be extensively and exhaustively amended by the researcher while listening to the audio tapes. The tapes were effectively re-transcribed in this process by using a transcription machine alongside the soft copy of the initial transcript. The aim was to produce a text that had been minimally edited as written speech, rather than as standardised text, to ensure as far as

possible meanings and emphases were recorded. This was an extremely lengthy process but essential to make sure the transcripts were as accurate a reflection of the audio recording as they could possibly be. As the literature notes *"Even minor errors in the transformation from interview to written transcripts may bring about changes in meaning relating to the (participants') conceptions of their work"* (Sandberg 1994, p. 83). One of the outcomes of this intense work required to develop very accurate written transcripts was a confirmation of the earlier realisation that even very detailed transcripts would not be able to reflect all the nuances or affective tones available in an audio recording.

In summary, the intensive and extended use of audio analysis, which went well beyond simply checking the meanings in transcripts, proved to be a valuable way of recapturing the interviews and their complexities in this study. In the early phases of analysis the sounds transported me back instantly to the changing feelings, mood and flavours of the conversations and made clear once more the affective aspects of their experiences that participants conveyed through their voices. The power of this audible context provided the most complete dataset and was vital throughout the analysis *"committing verbal exchanges to paper seems to result in their immediate deterioration: Context, empathy, and other emotional dynamics are often lost or diminished, and the language seems impoverished, incoherent, and ultimately embarrassing"* (Poland 1995, p. 299). At all stages of analysis I had to acknowledge the primacy of the audiotapes for best reproducing the *"knowledge produced and tested inter-subjectively through conversations"* (Kvale 1996, p. 297).

In 2002 Tierney & Dilley envisaged the presentation of research projects in technologically sophisticated ways, linking sound files, video material and analyses via hypertext links. For the current project the full exploitation of the audio record was crucially important for the researcher throughout the analyses as this was the most complete data set readily available.

Phenomenographic Analysis

For the analysis of postgraduates' experiences of information and learning processes and the concept of Enough over the timeframe of an assignment, I used a process that was iterative but can be described in steps that were in reality often happening simultaneously. These steps were based on those suggested by Sandberg (1994), Bruce (1997, pp. 104-106) and Patrick (2005).

Step One: Familiarisation

This step was reiterated in different forms across most of the analysis period. The aim was to become very familiar with the data so that the researcher could fully engage with, and empathise with postgraduates' experiences and to identify 'pools of meaning'. Guiding questions were: How is the postgraduate experiencing 'doing' an assignment? What concepts does she use to explain it?

What else is introduced to explain, illustrate or associate with this? This step included the following activities:

- Taped interviews listened to one by one as recorded, then making general notes

- Tape sets of all interviews for each participant listened to with transcripts once available, noting prominent themes

- Transcripts amended while listening on an ongoing basis and then re-transcribed once a transcription machine became available

- Listening to tapes and marking significant passages on transcripts

- Creating keyword index cards and identifying dimensions, themes and topic clusters

- Identifying sections demonstrating significant differences in ways of experiencing the two phenomena (changes in thinking)

- Summarising the analyses.

Most of this part of the analysis was audio centred, as discussed above, and these activities were repeated at different times throughout the analyses.

Step Two: Refining Analysis

Refining the objects of study

The aim of the study was to explore postgraduates' experiences of information and assignments. However, part of the analysis process was determining what the foci were for the postgraduates and thus refining the phenomena of interest. This was done using all the transcripts initially then, when more precision was required, using a subset of three transcripts from different participants and different phases of the assignment. The broad process was similar to Step 1:

- Audio analysis and listening for what was being focused on by participants and summarising in note form.

- Marking up transcripts while listening.

This process was repeated many times. Three main foci emerged interwoven throughout the interviews:

- The overall processes of 'doing' the assignment

- Enough information (and other things) recurred time and time again in different ways

- Personal meaning of the assignment.

These foci were further refined by going back to the transcripts in the subsequent analysis steps. These became the phenomena of Assignment Information Processes (AIP) and Enough (see Chapters 5 and 6). The personal meaning focus was incorporated into the analysis of Affect in the case studies (see Chapter 7).

Deciding on the unit of analysis

It became evident from the familiarisation (Step 1) tasks that trying to isolate fragments of transcripts for analysis was not satisfactory for this study, in terms of maintaining context of the postgraduates' experiences. As a result the decision was made to keep working with whole transcripts alongside the audio for as long as possible. Although this proved cumbersome at times the focus on the whole interview and the live aural rendition maintained the context until presentation of the analysis.

Refining the modes of analysis

This took place over the early phases of the analysis and was continued throughout as refinements were made to procedures. This included, for example, the development of audio analysis techniques as well as recognition, as the analysis evolved, of the importance of returning throughout the analysis to many of the steps outlined for familiarisation.

Step Three: Developing Descriptions of Intentions Expressed and Relationships

After the first analysis steps had been repeated at different times the descriptions of the phenomena that had emerged as major foci were further elaborated. This step aimed to identify the remarkably different meanings postgraduates attribute to AIP and Enough and expressions of the relationship between them and the phenomena. The process of listening to tape sets (three interviews) one by one was alternated with listening to all interviews in each phase together (for example, all the 'before' interviews). Guiding questions to identify ways of experiencing the two phenomena were: In what ways are AIP and Enough being experienced here? How are they seen? How is this expressed? What is the relationship between the postgraduate and the phenomena? What do postgraduates focus on? What is the relationship between these different ways of experiencing? These differences were sorted and grouped in terms of their similarities and differences (Bruce 1997, p. 104). What is the relationship between the form of expression and the way of experiencing? These became the basis for the categories of description for AIP and Enough in Chapters 5 and 6.

Step Four: Refining Constitution of Categories

All the transcripts were reassessed in terms of the developing descriptions and the categories then refined. The aim was to draw together the 'referential' or meaning elements and 'structural' or focal elements to describe the subject- object (intentional) relations which make up the different conceptions (Bruce 1997, p. 105), or experiences. Labelling and contrasting of emerging categories took place as they were clarified and revisited. The descriptions were reapplied to the transcripts and further refined throughout the study (and can be seen in the following two chapters). The next iteration of this step was to mark up two fresh sets of transcripts in terms of the occurrences of the categories of description for the two foci of the study (that is, AIP and Enough). This provided the examples in Chapters 5 and 6. The sets of three transcripts had remained whole and alongside their audio records until this point in the analysis.

Step Five: Relating Categories

Considering the relationship between the categories and further refining them was the aim in this final step, in order to establish the 'outcome space' (see Table 5.1). The relationship between the categories was developed in tandem with the descriptions of the categories and meaning structures. These relationships were then refined to create the 'outcome space' (see for example, Bruce 1997, p. 87) for each of the two phenomena: AIP and Enough. Earlier stages of the analysis were revisited as required. The relationships between the categories and their presentation continued to be refined until the final stage of the study.

It is important to note the relative emphasis on individual and collective shifts in this study. The pool of collective meanings is used when constituting the categories. However, the focus is on the individuals for the analysis of the 'micro contextual' variation in the case studies (see the following Case Study Analysis).

In summary, these five 'steps' were iterated repeatedly as part of the ongoing analysis spanning the length of the project. Perhaps because of the extended and intensive Familiarisation step once the phenomena of interest were refined the constitution of the categories and the relationship between the categories was fairly rapid. The analysis procedures in this study differed from many phenomenographic studies in that:

- The audio recordings were the most important priority throughout the analysis

- The extensive and ongoing 'familiarisation' stage was integrated with several of the other stages of the analysis.

The results of this phenomenographic analysis process are the findings presented in Chapters 5 and 6.

Case Study Analysis

In brief, the case study analysis started with interviews of two postgraduates from the first part of the phenomenographic study being reanalysed. The interviews were listened to and scrutinised as two sets of 'before', 'during' and 'after' interviews for each participant. This provided an overview of the experiences of the ***individuals*** in the study and differs from the phenomenographic style analyses of the ***pooled experiences*** of all the participants (in Chapters 5 and 6). Because AIP and Enough had emerged as important for the postgraduates in this study, establishing the relationship between these two phenomena for individuals was of interest in the case studies. Initial attempts to analyse these interactions within the transcripts and on the audiotapes were unsatisfactory. Eventually I arrived at a process of reinterpreting the interviews through the lens of each of the phenomena in turn whenever they changed or were restated, depending on the immediate context. Then instances of the different ways of experiencing the two phenomena

were looked for in the set of interviews for individuals. In this way the categories found using the pool of data were reinterpreted in terms of individual experiences to provide concrete examples of the experiences in action. The affective dimension of 'doing' an assignment was also highlighted using extracts from the interviews with Caroline and Laura chosen as the two case study participants.

Some terminology used to describe the cases in Chapter 7 requires a brief explanation. The 'case' is Caroline or Laura 'doing' their assignment. A phase of the assignment means either: 'before' the assignment; in the middle of ('during') or 'after' the assignment was over, represented by the three interviews. These phases are divided into 'topic chunks' which are thematic parts of the interview, labelled with a broad descriptor made up of key 'sub topics'. Some topic chunks related to the phenomena of interest. The interview components are speech intervals, or 'comments'.

The analysis process for the case studies was as follows:

Step One: Selection of the Cases

After an overview analysis of all the interviews on an individual participant basis, I decided to select two of the six postgraduates to provide contrasting perspectives of the individual experiences of 'doing' an assignment. The cases selected, Caroline and Laura, were the examples that best illustrated the range of phenomena and themes in the study, including Affect. A short profile for each case was written to confirm selection. The principal sources used for the case studies were interview transcripts. These profiles were later built upon using notes of interactions with postgraduates (interviews, consultations, e-mails) about their individual assignments, as well as copies of my feedback sheets for the assignment as given to all postgraduates. These were used to provide supporting or background information alongside those made during the analysis process in the phenomenographic part of the study.

Step Two: Process Descriptions

Listening anew to the set of tapes with fresh copies of the transcripts for each case (two lots of three interviews), while keeping the individual experience in mind, I wrote the Process Descriptions (Appendices 5 and 6). The process used was:

- Writing a sequential 'story' about each phase. This was intended to be a page or so but ended up much longer.

- Structuring these descriptions by listening to the tapes several times making new notes and marking key topic threads in the interviews. (These were usually a result of my probing comments, comments made by the case study participants or new threads that were introduced by them.) These topic threads were used as ways to chunk the evolution of each interview. They also provided the framework for charting how experiences of AIP and Enough coincided which became Tables 7.1 and 7.2 Dynamics of AIP and Enough Across Phases of the Assignment. These tables give an impression of the 'micro contextual' variation that postgraduates experience.

- The topic threads were marked with keywords that conveyed significant content.

- This topical structure and keywords were incorporated back into the Process Descriptions of each interview. The final Descriptions appear in Appendices 5 and 6.

These initial attempts to analyse the trajectory of the individual's experience through the Process Descriptions were unsatisfactory for the final case study analysis, but provided the basis for Tables 7.1 and 7.2 and the following stages of analysis.

Step Three: Considering the Relationship Between the Phenomena of AIP and Enough: Creating the Tables

To establish the relationship between the two phenomena of AIP and Enough I then turned to the process of reinterpreting Caroline's and Laura's experiences in each phase. This was done using the lens of each of the phenomena in turn, as they changed within their immediate topical context. To do this the marked transcripts from the AIP and Enough analyses were examined in terms of intervals and occurrences of different ways of experiencing each phenomenon.

The three phases (or interviews) were carefully marked into key sub topics and then topic chunks according to what the postgraduate was describing. Listening to the tapes with a chart of the topical evolution (topic chunks in sequence) of each interview and focusing on AIP and Enough, the different ways of experiencing the phenomena in each speech interval or comment were noted. If the way of experiencing changed within one comment that change (category) was also marked. Laura's ways of experiencing first the AIP, and then Enough were noted for every: new occurrence; restatement in a comment; or change. These occurrences were noted on a chart. The same procedure was then applied to Caroline's three interviews (see Tables 7.1 and 7.2). The differences between AIP and Enough were compared for each postgraduate in turn. The resulting tables are a visual representation of the frequency of ways of experiencing AIP and Enough alongside each other. In this way a sketch of the occurrences of the ways of experiencing the two phenomena within their topical context was built up. Ultimately, the patterns and relationships of the two phenomena for Laura and Caroline were compared. The outcome of this analysis and the tables are part of the case studies presented in Chapter 7.

It should be emphasised that this was not a linear or an entirely black and white process. Our conversations swirled around probing, incorporating any comments divergent or otherwise by Caroline or Laura or looping back for clarification of something mentioned earlier, or that was not mentioned. The resulting tables represent more of an impressionist picture of how Caroline's and Laura's experiences of AIP and Enough changed, rather than a table recording absolute amounts. It is this overall picture, not the numbers themselves that are considered important. However, in the tables I have reflected as closely as possible the frequency and relationships across the three interviews for Caroline and Laura. One of the ways this was checked was to repeat the analysis several times at widely spaced intervals throughout the study. This produced nearly identical results.

Step Four: Describing Individual Experiences of AIP and Enough

Selecting the most appropriate and interesting categories of description of AIP and Enough to illustrate in more detail for each case was based on the patterns found in Tables 7.1 and 7.2. Caroline's and Laura's transcripts were extracted from the AIP and Enough analysis transcript sets and the tapes were listened to again to select examples for presentation. Instances where Caroline and Laura experienced each phenomenon in a specific way were identified and some of these selected for inclusion. The topic chunks were useful here as markers. This process was time consuming but relatively straightforward.

Step Five: Describing the Affective Dimensions of the Cases

A specific analysis of Affect in each case study was undertaken by listening several more times to the audiotapes of the interviews while following fresh copies of each set of three transcripts. From this process notes were made highlighting the affective dimensions of 'doing' an assignment. In order to do this I had to dig beneath the surface and pay attention to everything that could be discerned, the sighs, the silences, the inflections and emphases, not just the words. Selections were made from case which were then analysed on an audio and a phrase basis. These take the form of 'vignettes' (see Figures 7.1 and 7.2).

The affective factors that became part of the case studies had not been noted particularly until the interview audiotape was played back and certainly not during the interviews themselves. The postgraduates had appeared confident and articulate during the interviews so that the affective elements of their contributions were obscured. The impact of Affect on the postgraduates became apparent only when I began my early audio analyses (see above). The more I listened to the audiotapes (rather than reading transcripts), the more clearly and strongly this dimension of the postgraduates' assignment experiences emerged although, affective factors were not overtly raised by the postgraduates.

Close attention to the audio record showed that affective elements can be found in a way of speaking, for example, 'throw away lines' (or sub-text) delivered with a powerful emotional tone and a delivery that suggests importance (for example, see last segment of Figure 7.1). The words themselves sometimes also indicate the Affect being expressed, for example Laura says (in an emphatic tone): *"I hated my undergraduate degree....Oh I just loathed it."* Laura 1:410. But this was the exception rather than the rule.

From the auditory form of analysis emotion could be inferred as observed by Damasio:

> *"emotions are actions or movements, many of them public, visible to others as they occur in the face, in the voice (my emphasis) in specific behaviours....feelings on the other hand are always hidden"* (Damasio 2004, p. 28).

This had not been anticipated and only became apparent after listening to the audiotapes several times. The initial auditory analysis built up a vivid picture of all the participants' underlying and varied descriptions of both negative and positive affective elements to describe their experiences. This is one of the key benefits to flow from the audio approach taken to the analysis.

In summary, the phenomenographic analysis process described in this section refined the object of study, resulting in the categories and the 'outcome space' that describes variation in postgraduates' ways of experiencing AIP and Enough. AIP describes postgraduates' overall processes of collecting and using information for the purposes of completing an assignment and is discussed in Chapter 5. The second major area that emerged from the phenomenographic analyses was how postgraduates judged that they have Enough information and other things for their purposes. This is discussed in Chapter 6.

The case study analysis was designed to provide insights into the personal meaning derived by postgraduates from their assignment experiences as well as a better understanding of the role of Affect. These are explored in Chapter 7 and demonstrate the complexity and richness of two individual cases. The next section of this chapter discusses the quality of the study.

4.2.4 Quality of the Study

This section explains the approaches and techniques employed, from both internal and external sources to improve data gathering and analysis: Kvale (Kvale 1996) calls this 'quality of craftsmanship'. Interpretive researchers use concepts other than reliability, validity and generalisability to do this. Lincoln & Guba (1985), for example, state that *"trustworthiness"* rather than validity should be aimed for and further suggest triangulation to supplement interview data. How the phenomenographic and case study results of this research were 'traditionally' reliable, valid and generalisable is now described drawing on Sandberg's (1994) interpretive approach.

The idea of reliability, or consistency, in this study is framed in terms of Sandberg's idea of 'interpretative awareness': that the researcher's procedures for faithfully describing student conceptions are of more importance than external procedures (for example, establishing inter judge reliability). Indeed from this perspective

> *"...researchers with a perspectival subjectivity are more aware of how their own interpretations influenced the research process. As they are aware of their interpretations in the research process, these become a strength rather than a threat to reliable results,"* (Sandberg 1994, p. 66).

Four of Sandberg's recommendations for interpretive awareness were used in the study:

- An orientation toward the appearance of the phenomenon through ongoing clarification of the research questions.

- A describing orientation which restricts the generation of descriptions to the experiences under investigation rather than jumping to explanation and interpretation.

- Horizontalisation of all phenomena where everything the research participants say is treated as equally important for as long as possible. This is a good reason for not reducing the data until the last possible moment and therefore listening to the whole tape for most of the analysis. This was also a factor in the long term familiarisation phase which sought to hold everything the students said that was interesting in context until the latest possible stages.

- Looking for structural features of the phenomena and accepting multiple possible interpretations until the structure of the conceptions has been stabilised. (Sandberg 1994, pp. 67-69).

Interpretive awareness puts the focus on the quality of the researcher's interpretations rather than relying on external measures.

Validity or 'trustworthiness' in this study also follows Sandberg's approach to validity as 'defensible knowledge claims', *"Throughout the research process we must continue to question and check interpretations of the research object under inquiry"* (Sandberg 1994, p. 62). This questioning and checking is achieved through communicative and pragmatic validity. Communicative validity requires:

- Descriptions to be generated in the form of a dialogue (Theman 1983 in Kvale 1996; Sandberg 1994)

- Analysis of the descriptions communicated or written in a way that achieves interpretations faithful to the research object

- Dialogue with other researchers and professionals in the process of the work (Sandberg 1994, pp. 62-63).

The series of statements made by the participants in early interviews were reiterated and confirmed by me as we spoke so that my interpretation was clarified. Dialogue about the work involved frequent discussions with academic supervisors and colleagues as well as presentation of conference papers that were subject to critique and feedback from senior researchers in phenomenography.

For pragmatic validity statements should not be taken at face value. One way to evaluate the application of statements to actually 'doing' an assignment and verify interpretations is to ask probing questions about the actual assignment situation to establish practical relevance (Sandberg 1994, p. 63). Checking back with participants about what has been understood throughout an interview (Kvale 1996) is another way pragmatic validity was sought in this study. Pragmatic validation of interpretations needs was continued over the course of the study (Sandberg 1994).

Apart from issues of validity and reliability generally, there is an important need to acknowledge my subjectivities in this study which require interpretive awareness throughout the analysis. These can stem from the researcher's previous role as a student; the teaching role that was part of the study; and the conversational style of the interviews. 'Subjectivity' was recognised throughout the process of the study and remained a constant consideration during analysis. By continually going back to the interviews themselves to listen to and read what the postgraduates actually said, and examining the data at different times and from different angles it was possible to carefully and closely distinguish different ways of experiencing the phenomena that were most important to the postgraduates. For example, because I had previously been a student in the same course and done similar assignments one of the things that I was very conscious of in the analysis was being critically aware of any assumptions I might make on the basis of my own experiences. Sandberg

also argues that *"the researcher's description of the research object is not outside his or her experience but within it"* (Sandberg 1994, p. 64). This 'subjectivity' was judged ultimately to be a strength and a way of adding to the richness of the data.

One of the ways in which I dealt with the issue of ensuring reflective accounts of postgraduates' experiences rather than responses framed by their desire to appear 'good' to me as the teacher and researcher, included arranging for the assignments to be marked by the Head of Department. As a consequence participants had no marking incentive. Throughout the interviews I also:

- Used direct questions as a critical checking mechanism

- Sought confirmation of descriptions by asking for examples and probing

- Returned later in interviews for clarification of points made earlier (McKenzie 2003, p. 82).

The relative success of these measures can be seen in the interviews themselves. For example, the interview responses show complex accounts that include accounts of struggles and not just smooth stories of 'success'. The engagement of the postgraduates with the interview process and content is evident in the laughter, joking and getting excited about what they had been doing throughout all the interviews. Their interview responses also have a predominantly self questioning tone and content, rather than a one that might be construed as designed to flatter. The extracts in Chapters 5, 6 and 7 demonstrate this.

Phenomenographic research, in common with other qualitative approaches, does not make claims to absolute generalisability. On the contrary it deals with phenomena experienced in a specific situation, and these experiences always have *"a sociospatial temporal location"* (Marton & Booth 1997, p. 82). Phenomenography also uses modest numbers of participants and acknowledges that *"the system of categories presented can never claim to form an exhaustive system"* (Marton & Booth 1997, p. 125). The results of a phenomenographic study are the ways in which a specific group of people experience the phenomenon of study and *"this range of ways is seen as one possible subset of the overall range of ways in which the phenomenon in question can possibly be experienced"* (McKenzie 2003, p. 76). The particular context of each study therefore needs to be clearly laid out so that others can accurately contextualise the results for themselves. This chapter has described in detail the procedures followed in the context of the thesis study.

This study triangulated its results internally through the use of both case studies and phenomenographic analyses. I have also used more than one case from the phenomenographic analyses to diversify the findings (Merriam 1998, p. 204). The 'trustworthiness' of qualitative research relies on studies being conducted in an ethical way (Merriam 1998, p. 198). The internal validity of the case studies comes from the effort I have made to understand the perspective of the postgraduates over the timeframe of a subject across one semester. I have also endeavoured to uncover the complexity of postgraduates' experiences in context and present my interpretations holistically. I have outlined my assumptions and perspectives in this chapter. As with the phenomenographic analyses I have provided detailed descriptions of the study and the context to enable others to judge the findings for themselves.

4.3 Conclusion

Exploration of human complexity through qualitative or interpretive research approaches is well established in education, and more recently, the information science research traditions. This study required a combination of qualitative approaches that were adapted for the exploration of postgraduates' experiences of information use in learning situations. Using conversational and interpretive interviews that merged with pedagogical interactions, the interviews became part of the larger 'conversation of learning'. The resulting interviews demanded a variety of analytical approaches to tap the richness of the data. Through use of both phenomenographic and case study methods, as well as innovative audio analysis techniques, this study provides new perspectives on how postgraduates do assignment work.

The following chapters present the results of the study. Chapter 5 deals with the variation in postgraduates' experiences of AIP: the overall process of 'doing' an assignment, particularly their information seeking, retrieval and use. Chapter 6 describes variation in the way the postgraduates judge that they have adequate, or Enough, information for their purposes. Chapter 7 presents individual case studies of postgraduates' longitudinal experiences and the affective dimension of the assignment.

Chapter 5

Information Processes
for Postgraduate Assignments

"Thinking is ordering of subject matter with reference to discovering what it signifies or indicates...The way in which the subject matter is supplied and assimilated is, therefore of fundamental importance...and the method in which they are carried out directly affects the habit of thinking" (Dewey 1998, p. 247).

In this chapter postgraduates' experiences of the overall processes of 'doing' an assignment are described based on the phenomenographic approach described in Chapter 4. The focus is on their experiences of information, broadly speaking, during the processes of 'doing' an assignment. The scope of these experiences includes information seeking, retrieval, use and presentation. Importantly, from the postgraduates' perspective these are not discrete, nor distinguished from the assignment itself. The postgraduates experience these activities only as they are embedded in the task. These processes are consequently broader in scope than Kuhlthau's (1993) Information Search Process (see Appendix 2) and are collectively labelled in the thesis as Assignment Information Processes (AIP). They reflect what was important about their experiences for the postgraduates in this study

The chapter deals with the research question:

> How do postgraduates experience information and learning processes in the context of preparing and completing an assignment?

The research question was examined through the experiences of a group of postgraduates who were engaged in completing a report assignment in a single subject in a postgraduate Information and Knowledge Management course (see Appendix 3). As indicated in Chapter 4, the participants were all high achieving postgraduates and volunteers for the study.

The next section presents the variation in postgraduates' experiences of AIP as a set of six categories which are hierarchically related, and ordered from the least to the most complex. Each category is described in turn and illustrated with extracts from the interview transcripts. In a later section of the chapter the hierarchical relationship between the categories is described and the 'outcome space' depicting these relationships presented. The themes that vary are then summarised for the six categories of AIP in Table 5.2. Two other important aspects of postgraduates' assignment experiences: how they experienced the concept of Enough; and the meaning the overall assignment process had for two individuals will be described in Chapters 6 and 7 respectively.

5.1 Postgraduates' Experiences of Assignment Information Processes

The categories describing the variation in postgraduates' ways of experiencing AIP are hierarchically related through the variation in meaning of each category. They are also related through the internal structural relationships between categories. It is interesting to note that despite homogeneity of the participant group (all female high achievers) this did not produce homogeneity in the results of the study. These high achieving postgraduates demonstrated considerable variation in their experience of information processes over the assignment timeframe.

Postgraduates' experiences of AIP presented here have been constituted through the iterative analysis of whole interview transcripts and audio analysis as described in Section 4.2.3. It is important to remember, that the meanings of the postgraduates' information experiences in these varying categories were not statically held by one individual postgraduate or another, but are compiled from evidence across the whole set of transcripts and from the three different stages of interviews. Therefore, no individual postgraduate experiences AIP in any single way, but rather an individual postgraduate shifts back and forth between experiences depending on their own equally dynamic 'micro context'.

Attention is also drawn to the discussion in Section 4.2.3 explaining that the extracts are presented, as far as possible, in their original conversational vocabulary, structure and emphasis and they may consequently not read as smoothly as edited material might. In the extracts presented, the interviewers' speech is presented in italics and any words added by the researcher appear in square brackets. The interviewees have each been given a pseudonym and the numbers 1, 2 or 3 denote the 'before', 'during', or 'after' the assignment interview respectively. The number after the colon denotes the initial line number of the extract. Tildes denote a pause in speaking, and dots a break in the quote.

The six different ways that postgraduates experienced AIP are summarised as:

Category 1 Shaping the Task Towards Completion:
Assignment information processes are experienced as completing a substantial but straightforward assessment task by using personal strategies to shape and manage the task.

Category 2 Finding Out More About the Profession:
Assignment information processes are experienced as a means of finding out more about something of current interest about their chosen professional field.

Category 3 Discovery and Engagement with the Research Process:
Assignment information processes are experienced as an engaging journey to discover and understand interesting things, by hunting down leads and having the opportunity to focus and reflect on what they find.

Category 4 Professional and Personal Perception and Understanding:

Assignment information processes are experienced as a process of growing awareness, learning and understanding about different facets of the profession and oneself through activity and thought.

Category 5 Growing and Changing:

Assignment information processes are experienced as personal growth and change by expanding ideas and skills through communication and reflection while investigating a topic and completing the task.

Category 6 Changing Views About Information in the World:

Assignment information processes are experienced as radically changing one's way of seeing a familiar part of the world and personal values as the result of an extended engagement with information about a topic.

5.1.1   Describing the Six Categories

Category 1 Shaping the Task Towards Completion

Assignment information processes are experienced as completing a substantial but straightforward assessment task by using personal strategies to shape and manage this task.

In this category postgraduates experience AIP as an extrinsic task that is best managed by a pragmatic and 'minimalist' approach and applying strategies they have developed in earlier times and different contexts. Great emphasis is placed on control and management of the task situation. The postgraduates expect the assignment to be routine but they also shape or personalise the whole process. The object of the information process, namely what they focus on, is doing and completing the task itself and this provides their initial motivation.

There are four important interlinked aspects of this category which are:

- An unproblematic or problem solving attitude to the task

- Defining and structuring the task according to assessment requirements

- Shaping the task to their personal preferences

- Objectifying the task and its components.

A problem solving attitude to the task: forms an important part of Shaping the Task Towards Completion (Shaping the Task), with a 'can do' action oriented approach. The postgraduates here assume that assignment completion and production will be 'unproblematic', based on their personally tested, standard procedures. They are setting out to use a variety of personal strategies to complete their version of the assigned task in their own way. They repeatedly described a predictable process of movement through the assignment task and see their information processes as straightforward, familiar and not problematic. There are many descriptions of this

experience of AIP as a 'straightforward' and familiar process and task that they know how to handle. For example, the following postgraduate was talking about searching as filling in a structure, something she had done many times before:

> *Right and from what you were saying before, once you've done that, it's more or less there? You just do a bit of editing after that?*
>
> Um, um. Yes. Yes. You see the thing is, I guess I find this, this particular assignment, at the moment it seems straight forward because~~~. I have, you know I do have background knowledge. Meredith 2:204

And she went on to say that even if she had more time she would have approached things the same way:

> *Is it because of the type of assignment or~~~?*
>
> Hum?~~~I think, I think the assignment is um~~~. Can I say straightforward?
> Yeah. No it is! Meredith 2:526

Other postgraduates expressed this in a similar way:

> I mean I guess I had some fairly clear ideas from the outset about what I'd find, um and it was just a case of going through and finding. And there weren't a lot of surprises.
> Laura 3:301

and:

> ~~~I mean I didn't worry so much about this, it was just. Because I think I could sort of~~~. I felt like~~~I felt it was quite straight forward. Yeah! Straightforward. OK!
> Anne 2:590

This sense of clarity is a very strong feature of the category.

Another aspect of a positive 'can do' attitude includes dealing with the task when the supposedly 'straightforward' process becomes unpredictable. Turning inevitable failures and problems along the way to their advantage, using them fruitfully is an essential part of postgraduates succeeding in AIP and the assignment itself. This demonstration of a positive and problem solving way of thinking was also evident in relation to technological glitches, for example:

> *So when you say the process had broken down, can you explain that a bit?*
>
> Umm, one example was sitting for a good few hours at home on the computer accessing library catalogues and databases. Finding all the references and then exporting them~~~ummm (laughs)~~~and then emailing them but to the wrong address~~~combining my two email addresses, having a wrong. Sending a days work to a non-existent email address (laughs)...
>
> *Oh dear, so how did you capitalise on that?*
>
> I went back through history and labouriously retrieved the results of the search~~~so I still had a way of getting around it but initially when I saw that it was all gone I just thought Ahhh!! Caroline 1:143

Briefly, the postgraduates relate the task of producing an assignment as a straightforward and unproblematic academic exercise.

Defining and structuring the task: and product is critical for both moving through the process and producing a successful product (assignment). Clear definitions are repeatedly sought by

postgraduates, and reconfirmed in order to anchor and interpret the task. There is a focus on defining the assignment in all the phenomenographic categories but in this category it is about defining the task, which postgraduates consider a crucial part of the process. Note taking, reading and collecting information are all described as clear cut and there is a strong awareness of streamlining the task and keeping on track. To achieve this, postgraduates frequently refer back to the assignment outline, and to their translation or interpretation of this, to check the pertinence of what they are doing for producing the assignment.

Although postgraduates described the task as clearly structured, this is an outcome of considerable effort in interpreting the question or assignment. They are careful to define the task, which in turn enables them to go on and create their own clear structure and this can be seen in their frequent descriptions of structure, criteria and definitions.

A flexible and creative attitude was also evident in the following example of a postgraduate defining the task as well as being prepared to turn mistakes into serendipitous new areas to explore, to advance the process towards completion:

> *Right. What made you decide to start, with that sort of a~~~track?*
> Umm~~~~~~. I think it was actually a slip, um. It was a slip up because when I spoke to you about a topic we spoke about information consultancies I think? Information broking, that is what I was looking for. But in the time between our conversation and then when I searched I just put in information services. And um, from the first sort of set of twenty I saw that it was quite, diverse~~~. Yeah, so I did this information services search and there were 67 and I thought I can handle that (laughs)~~~. So in fact the search results~~~ um shaped my project. Yeah. Caroline 2:368

The following example showed that definition was problematic. Uncertainty lay in unravelling what the question really meant:

> The most difficult aspect of this assignment has been on focusing on what I have to write. Actually understanding what the, the question is asking or understanding what is expected of it has been the most difficult part of it for me. Laura 2:102

Postgraduates stressed that they always worked closely off the subject outline from their first encounter with it:

> But it's got to be also because I, I looked at this assignment, the day we were given this. So I started thinking about it from day one in class and sort of reading through it, and thinking 'Oh what does this mean?' you know and~~~
>
> *Did you find that confusing?*
> Um Um, I sort of had, when I first read it I was a bit, I was a bit confused because I just, took it as industry and I didn't really notice the second part in it. And then as we moved, moved on towards this and focusing a bit more closely on it, I thought this is it~~~ I wanted to know what was, what was the key sort of point and I'd sort of thought it was about the industry and the professional, but then I thought 'Well I just want to double check that.' Anne 2:558

At the same time they placed great emphasis on definition:

> And um I guess it's sort of realising what I'll, I will have to, I knew I would have to put in a definition. But this time I'm really going to have to be clear on what my definition of ah information whatever is, Information Services. Rebecca 2:123

Defining the actual task content was a strong focus in this category.

In brief, this search for clarity and definition is ongoing and the postgraduates regularly came back to the assignment outline, and their interpretations of this, to check the pertinence of their efforts.

Shaping the Task to personal preferences: postgraduates experiencing AIP in this way shape their own version of the task by drawing upon a personalised repertoire of strategies to deal with the work ahead. They use strategies to manage the overall process, as well as for information seeking, information use and writing. Postgraduates consciously and repeatedly concentrate on developing their own patterns of working and apply their pre-existing and considerable knowledge, skills and judgement to help them 'make it their own'. They emphasise their own established patterns of working, which they characterise as highly focused, and also talk about specific patterns or strategies which they both recognise and rely on. For example:

> I know I have a very particular way of working which is, you know, I see that it is in three stages. Meredith 1:279

In this category personal patterns of reading, collecting and writing were all described as standardised:

> *Right so, when you're doing, making those notes you've already stopped looking for anything else~~~?*
> I do, I do my first read and highlighting. I do my notes from the readings, then it's in there, then it just comes out in an argument and I go back to the reference material to check on material~~or to get a citation~~~.
>
> *How long do you think, do you plan on that taking for this particular assignment for instance?*
> About a week~~~
>
> *And trips to the library~~~?*
> Probably two or three trips.
>
> *Would you go for short burst of time each time or~~~ ?*
> Yep, absolutely! I am really, really focused. I've got all my call numbers down and I know exactly where I am going. I don't stuff around.
>
> *How long would you be in the library for?*
> Oh, hopefully no longer than half an hour at a time. Laura 1:280

The following example showed personalised restructuring and presentation of the task:

> *In this case you're saying your defining of the area might be a bit problematic but you can see a structure quite clearly?*
> ~~~.I'll just show you how I do it. [Pulls out a stylish black notebook.] As soon as I get a topic I tend to re-write it and truncate it. [Points to mind map style structure, beautifully drawn.]
>
> *Oh how interesting, in your own words?*
> Umm it's well taking key words out I think so it's a kind of a short hand, but that then structures the piece. Caroline 1: 248

In brief, postgraduates recognise their own established patterns of working toward academic goals and employ these across contexts.

Objectifying the task and its components: As well as talking about dealing with 'bits' of the assignment, postgraduates talk about 'gaps' in their information and 'holes' in their knowledge. This part of Shaping the Task is linked to the experience of Enough as Control and Getting Done (see Chapter 6). In this way they work towards reduction or minimisation of complexity. In the following example a 'hole' in the assignment was filled by information that the postgraduate could just 'go and get':

> *Have you got any questions you wanted to ask about anything, it sounds like you~~~ pretty?*
> No think I'm, I think I'm OK. It's just I know that I probably, I'm a bit behind where I would like to be and I'm still, this hole here I have a little bit of knowledge on that, but Friday's the only day I can go and get that information! Anne 2:659

This example also showed the relationship between this way of experiencing AIP and external criteria and requirements such as deadlines, as well as personal restrictions, such as the specific time slots available for searching or working on the assignment.

There are also examples of this category being reiterated by the postgraduates talking about a much broader context than just this assignment. They often referred to what they usually, or often did in other contexts (not assignments at University) having an influence on 'doing' an assignment. Although their experiences in these other contexts were not used to constitute the categories, they are interesting as they show the links and transference that postgraduates make between their characteristic ways of using information in different contexts. The following example showed that prior experiences influenced the way Caroline approached this assignment:

> *So when you think about doing an assignment does anything come to mind? How do you sort of think about that?*
> OK having just come through a big research project I found the whole process one of umm (laughs) turning your failures to best advantage. There seemed to be so many points along the way where the process kept breaking down for various reasons and it's about getting over those broken down bits in order to keep going. Caroline 1:135

In summary, this category describes a confident use of individual strategies directed towards personalising and completing a required assessment task. In all aspects of this category there is an emphasis on controlling the situation (task) and its variables. In this way of experiencing AIP postgraduates deal with known variables even when the topic or area is unknown. They see the need to gain clear definitions that anchor the task on one hand but also to give them flexibility to utilise a variety of creative strategies to both shape and complete the task. AIP are initially motivated by the assessment task, but even in this least complex category, the process has become inherently engaging for the postgraduates as they progress. Despite the information itself often being experienced as an object, the task itself gains subjective, individual meaning as it progresses. While this way of experiencing AIP is concentrated on completion of an assessment task to meet course requirements, the task becomes inherently absorbing.

Category 2 Finding Out More About the Profession

Assignment information processes are experienced as a means of finding out more about something of current personal interest about their chosen professional field.

This way of experiencing AIP is as a quest for information, not simply a task to manage and complete as in Category 1. In common with the first category, this category centres on an instrumental task that is simplified as far as possible by the postgraduates experiencing it. Whereas, Category 1 seems to be focused on 'how' the assignment is done, in Category 2 there is a shift in focus to 'what' it is about as well as how it is being done. Familiar patterns and strategies are implemented to accomplish the task. However, in Finding Out More About the Profession (Finding Out) the focus of AIP has changed from being principally the task (ie the assignment), to being a quest to find out something quite specific about the profession. This is something of current personal interest which the postgraduate may have been interested in when they entered the course or subject but which is external. This shift in awareness means the instrumental process is no longer principally about the task (ie completing the assignment) but has expanded to include wanting or needing knowledge about the profession in order to move forward in life. All the postgraduates in the study experienced this category, although, for some it was less focal and evident in a more fragmentary way.

In the context of this research, which was conducted in a subject leading to professional accreditation and centred on a specific assignment about the profession, it is not surprising that the Finding Out is career or job-related. This makes AIP in this category more useful and meaningful, but also more taxing because potentially important personal answers are sought about the profession and their place within it.

The following example shows a postgraduate hoping to find out something that is useful for her job as well as interesting. She thought about selecting the topic with these aims in mind:

> I guess what I have been doing with topic selection is looking at, is things that are relevant to my job, and also interest me~~~. I was really interested in getting some data on how to put together an international relations protocol information site, so that was easy to~~~. So it was easy for me to come up with those~~~. Laura 1:229

Definition of the task in this category has moved beyond the prioritising of assignment requirements of Category 1 to defining one's own topic in order to answer their own questions which intersect with career purposes. For the postgraduates clarifying what they wanted to know in this context was often hard, for example:

> I want to look at an area of the industry that I don't know anything about and I then suspect that I don't really know how to define it, but I'm not interested in looking at something fairly standard like say the area of academic librarianship.
>
> Yeah. I mean that was just an example that's easy to use and umm.
>
> I understand that the field is quite cutting edge, therefore ummm~~~ah~~definition of the industry area is probably, perhaps the most challenging part of this assignment it's at the very beginning~~~. The hardest part of any project is the understanding the question~~~. Caroline 1:193

This example illustrates the inclusive relationship between Categories 1 and 2 because it concentrates on clarifying an area of potential interest and employment, as well as the definition required for the assignment task.

In this experience, uncertainty comes from the need to define precisely their area of career interest, and from the decision-making required to solve real problems or answer significant personal questions. For example, the postgraduate continues on to talk about her need to 'find out' about job possibilities as particularly pressing for financial reasons. This generated strong feelings about the assignment:

> The other issue is that because the post grad is a vocational choice, it is about learning more about the industry and now it's coming to the time where I have to do more research for job seeking purposes and so umm, ahh,~~~. I suspect that the research for this project is going to be meshed with my job seeking process over the next month or so (laughs).
>
> *Right. Oh well, in a way that's good? It makes it more useful, does it?*
>
> It does but it also uhh~~, trammels it up with umm~~a more emotional side.
>
> *Does it?*
>
> Yeah.
>
> *And what effect does that have?*
>
> Umm so, so that process of ummm problem solving that is going to occur throughout the research process isn't just going to be problem solving for an essay but actually problem solving to try and find a way of making a buck as well and so I'm concerned (laughs). Caroline 1:216

This makes the assignment process more useful for a postgraduate, but also more difficult and more emotive.

In summary, the relatively straightforward process in the previous category (Shaping the Task) focused on completing the set task itself. This category has expanded to include needing to know something of personal significance about the information profession in order to move forward in life. In this category moving forward in work and career needs (and aspirations) is the priority. This expansion has complicated AIP for the postgraduates, but it also to makes the assignment more useful and meaningful.

Category 3 Discovery and Engagement with the Research Process

Assignment information processes are experienced as an engaging journey to discover and understand interesting things, by hunting down leads and having the opportunity to focus and reflect on what they find.

In this category the focus on finding out something career-specific (seen in Category 2) has expanded to become curiosity and interest, 'finding out interesting things' for their own sake.

The experience has become one of voyaging to discover, uncover and understand things of interest by hunting down leads, and having space to concentrate on what they find. Unlike in Categories 1 and 2, the process of discovery and learning about what an individual postgraduate finds interesting and the evolution of the content or topic of their assignment, (see Table 8.2) has become central. The focus has shifted from 'what' to 'how'. Postgraduates became extremely engrossed in following the threads they are uncovering. It is the process of discovery which has become the most important, not the end product (Category 1), or an answer (Category 2). What they seek in Discovery and Engagement with the Research Process is to be able to immerse themselves, to have space to think and reflect. There is enjoyment of the process despite the considerable effort and commitment required.

This is a strong element of AIP and there are many examples of postgraduates enjoying the challenge of discovery, following a trail and making sense out of what they find. Finding new information and the process of discovery kept life interesting and generated new challenges as shown in the following example:

> I love researching, it doesn't matter what it is as long as it changes fairly regularly. I get bored doing the same thing over and over again~~~
>
> *Oh good and what, do you know why you like really doing research or~~?*
>
> Umm, I like useless, useless information (laughs). No umm~~~I like finding out about things. It doesn't matter really what it is. But I just, I like discovering new information. Laura 1:360

In this category, it was the process of doing the research itself that was valued by postgraduates:

> Yeah, yeah and what I find with the, I guess, first four assignments was that I'm really not happy with the quality of the products, but I am very happy with the quality of the learning that's gone on in producing these things. It's something that I've also caught glimpses of in consultancy. Umm, that a document that describes a scenario, they're not always earth shattering. But the challenges that the author has put in to, in order to create! That is very useful (laughs). Caroline 3:353

This extract also showed Caroline linking her assignment work to other contexts (also see Category 1).

The process of discovery in this category is hard to convey as postgraduates described this experience over the course of a whole interview. The interest and excitement are particularly apparent in postgraduates' voices. However, giving several examples from one interview helps to convey this experience. Meredith stated that:

> Now you see I know that my preference would be to go fairly....you can get very theoretical management material and I was looking for that~~~but between the light stuff and the heavy stuff there is a middle ground and I did find a nice article ~~~ up in the lightweight end, the really lightweight trade journal end where it's statements and there is nothing backing it up. Whereas I want to see research that has been done~~~ I want to see how they made their case and I want to see um, ambivalence. Because life's not. Meredith 1:834

She continued a little later with:

> Yes! You see I'll do my key word search or, you know, I'll do my data base search and

in the results, you know as I say, I'll, I'll look through you know as I'm, as I'm sort of checking likely results....you know it's that sort of serendipity thing. 'Oh! Gee! This article's good', you know 'And that', you know it's and obviously the source says everything about, umm, about it. If it comes from [journal name] well gee it's going to be, it's going to be a really chewy article you know (laughs). Meredith 1:897

A bit further on she articulated the engagement of this category quite explicitly and went on to talk about the physical and mental space to think and reflect emphasised in this category:

While I am in it, you know, I'm totally engrossed and engrossed is the word. I like the, I like, you know, I like the mental challenge, I like making sense~~~

The context at this end of the semester is that I would be anxious about not being able to get enough time to reflect! Because a very important part of my assignment work is~~~space in between the various, we'll call them stages.

OK.

A very important um, a very important part is there is~~~um~~~is there's a space between sort of saying 'I've pretty much found enough work, enough material to get started'. Um, and sort of reading that. There's then, I need space and time before~~~. I'm going to sit down at that PC

Oh OK. So there is space there?

Absolutely.

And you don't forget?

And I, no I don't, oh no it's, it's, because it's churning away in there. I'm sort of turning, turning it over. Or... it might even be just I'm giving my mind a rest from it. So that when I sit down and start writing, it's clear! Meredith 1:967

This space for reflection was also emphasised by Anne:

the one that we did, it was very broad, but you could just, I don't, it's sort of like sending yourself on a journey from different points that get brought up because we covered things at a very, very high level I think and you needed to be able to sort of think what does that actually mean in different sorts of contexts or something? Anne 3:304

The sense of a journey of discovery in this category could also be seen in Anne's description above.

Rebecca also conveyed the joy of discovery and hunting down leads:

So it was like 'Ooh! Here's a little piece, gem I'm going to take away with me'. ~~~Umm and maybe it doesn't work all the time, but it does work sometimes in that looking at the references at the back of article I found, and going 'Oh, actually that one there would be better again', and, and going back and finding it, because then you've already got the citation, and it's like 'Oh, that's so much easier than umm.' Rebecca 3:975

In summary, in this category the experiences of AIP have changed from having an instrumental content focus to an internalised focus on the interest in and enjoyment of content. The emphasis has also moved to a process of discovering and pursuing content that is intrinsically worthwhile and even captivating.

Category 4 Professional and Personal Perception and Understanding:

Assignment information processes are experienced as a process of growing awareness, learning and understanding about different facets of the profession and oneself through activity and thought.

In this category postgraduates' experiences of AIP, unlike in the previous categories, are centred on a process of learning about themselves. This involves discovering different things about themselves, their information management and themselves as information professionals by doing and thinking. This happens during, and as a result of learning about the profession while 'doing' the assignment. Here, the postgraduates have moved beyond the joy of discovery of Category 3, to an experience of perception, clarification and a new awareness of themselves as a result of AIP in the context of the assignment. This learning about themselves, the information profession and the professional world is an intrinsic process that is serendipitous and discovered along the way as opposed to Category 2 where they intentionally set out to find information.

Professional and Personal Perception and Understanding (Perception and Understanding) has an internal focus. Postgraduates emphasise discovering and clarifying how, and what, they think and do. This is both in terms of the personal (realising how they do things, coming to know how they think and what they think) and themselves as professionals. It also opens up questions of 'who' they are. This emphasis on self and skills is inherently challenging, involving some painful self-doubt and negativity. Postgraduates believe they 'should know how' to do things or think they have inadequate information seeking skills. These feelings contrast sharply with the pleasure of discovery found in the previous category.

The changes can be in terms of facets of 'self' that are the subject of a new awareness and questioning including:

- Level of skills (for example, information retrieval, information management)

- What it actually means to be an information professional

- Evaluating oneself in relation to information practice and issues.

The concern with development of personal self-awareness and knowledge and its challenges seem to be ongoing and cumulative across assignments and subjects. Although the challenges of perceiving ways of thinking and working as an information professional arise from 'doing' this assignment. In this category the postgraduates are struggling with their learning, and whilst they are becoming aware of new ways of understanding and working, they have not worked through them and fully assimilated this new knowledge.

Professional Examples
Perception and Understanding described in relation to learning about aspects of the information profession, requires new ways of thinking and changing one's perspective on something quite familiar, and can include learning about different strategies of information retrieval and management. In the following example Rebecca talked about an information seeking technique

she had read about in the literature, discussed in classes and had decided she should incorporate into her own repertoire. This example also showed the embedded and interlinked nature of postgraduates' experiences of AIP because it incorporated Perception and Understanding, as well as the joy of discovery of Discovery and Engagement (see the extract in Category 3):

> Well, I found~~~~'berry picking', umm, that for me~~~ it was after I'd done that, that I realised that that worked for me quite nicely.
>
> *Right, right. That you already were doing it?*
> No, I hadn't thought of doing it!
>
> *Right?*
> So it was like 'Ooh! Here's a little piece, gem I'm going to take away with me'. ~~~Umm and maybe it doesn't work all the time, but it does work sometimes in that looking at the references at the back of article I found, and going 'Oh, actually that one there would be better again', and, and going back and finding it, because then you've already got the citation, and it's like 'Oh, that's so much easier than umm~~~' Rebecca 3:965

In the following example a postgraduate was finding it hard to distance herself from her job and the way she usually saw information, but was aware that she needed to take a different perspective. She was recognising the limitations of her current way of thinking about information:

> That was something that I definitely did when, when I was writing that research report. Because I was looking at it from my desk. You know I was looking at [field] and thinking about what the issues and implications are for [field] but not bringing it back to the information professional which is what the assignment was asking for ....
>
> *So, would you say you've learnt anything?*
> Yeah I have in terms of umm. I mean I don't on a day-to-day basis look at the issues and trends. I guess the things are coming across my desk. I am not really thinking about what it, what the implications are even, you know, just for the (organisation). I'm not thinking about what the implications are. So I learnt something there. Laura 2:152

She went on to talk about professional associations, ethics and standards which was also a new perspective on the information profession for her:

> The professional association and stuff I found really interesting. The ethics and um standards. Ah, material relating to that. Umm I had NO idea how many professional associations were out there until I started looking at that. Laura 2:158

This example also described how the postgraduate was expanding knowledge of something that she has not had cause to investigate before in the information field.

In this category information seeking strategies were also used to expand postgraduates' idea of themselves and to see themselves as something else: an information professional:

> [Postgraduate is describing her extensive use of browsing.]
>
> *~~~But what does that give you that if you didn't do it, if you walked out cold, you wouldn't get?*
> Yeah~~~well umm. I wonder whether it's got something to do with kind of~~~well OK, or an identification thing. So I'm researching that thing but sat down and read some of the journals out of pure interest I am (laughs). Not I am an information professional but like this is the field which is what I am in. It's as much a feeling as information (laughs) collecting! Caroline 1:451

This example also showed the embedded nature of feelings in AIP and this is revisited in Chapter 7.

The following example also described the process of shifting one's perceptions through knowledge gained over the AIP:

> Um~~~I think, I think what I realised was that um~~~I realised that what I was calling information~~~I was excluding~~~I think. No start again. I think~~~I had a certain idea in my mind what an information consultant was or what would fit into that industry. But what I've realised is that within the industry they have a broader interpretation, of what an information service is.
>
> *Oh OK.*
>
> Um, you know, information brokers, information resellers, and information gatherers. No, no they are connected to it. I think it is more information broking. Um~~~er people, you know what they call non-independents. The ones attached say to the State Library or to the University of NSW. I've realised there's, oh, I had this view of literally the small business person but it's broader. It is one or the other, but they sort of connect don't they?
>
> They all connect, yes, yes!~~~And um I guess it's sort of realising what I'll, I will have to, I knew I would have to put in a definition. But this time I'm really going to have to be clear on what my definition of ah information whatever is. Information services. Meredith 2:100

Personal Examples

Here the challenge and thus the element of uncertainty is about oneself and one's skills. This includes feeling they 'should know how' to do things. But despite their skill levels, these postgraduates are never sure that what they have done is 'right'. For example, a postgraduate who considered herself to have poor information seeking skills, especially under time pressure, said:

> Oh their information behaviour is really flawed.
>
> *Oh OK!*
>
> And so is mine, what I do for work is, is not effective. Or it's not the best it could be~~~it's just optimal. The best use of time in the sense that it's time focused more than anything. Really it's a lack of time and lack of energy. Laura 1:161

Another postgraduate also expressed self doubt:

> *Anything else you want to say about 'searching'?*
>
> Oh, just that, you know we, it's like um I wished I knew how to do it better! I mean I~~~.Yeah, yeah~~~I still don't feel~~~.I'm sure that there's better ways to use, the facilities.
>
> *And, when you say facilities?*
>
> Like the library facilities and things like that. That you don't. It's a bit hit, still a bit hit and miss for me. I mean maybe, maybe there was a class or something we were supposed to go to, to make ourselves, avail ourselves of something but I don't find it's, it's not um~~~ Anne 2:683

This way of experiencing AIP also emphasised how the process helped postgraduates discover what they think and how they work:

It's, it's the first time I'm probably really, really um~~~making everything very clear. I'm sort of, I'm, it's the first time I'm really~~~. It's the first time I'm explaining my logic to myself. Because I actually use the PC~~~to make my logic visible to me. That's what it is! So just, just as, just as this, this stage is making the logic of the report clear to me. Whenever I start down, writing this and this, I'm explaining the logic of each part, to myself. Meredith 2:650

The following example shows a postgraduate expressing surprise that her assignment had indeed been of the standard required and looking back on the assignment said she didn't know how she could have written what she did. This was a common experience for her:

When you look back over the assignment did you think the same things, or did you think~~~ differently when you got it back~~~?

Ummm well I guess I was surprised because I genuinely believed that~~~ I, hadn't really got to the depth that was needed. But umm, and~~~ but I sort~~ I always find it interesting though, when I go back and read my assignments~~~ even in years to come I sort of go, 'Did I write that?~~~Could I have?~~~.Yeah sometimes it's just... most of the time I am surprised as to how well it flows or something like that. So it's sort of maybe because of that detachment~~~(laughs). Yeah! Where did I get those words from (laughing)? Sonia 3:100

Sonia referred to the pressure she put on herself throughout the lengthy process of an assignment timeframe:

You said you found it [the assignment] a bit torturous at times?

Yeah, I think, I think, what made it~~~because it was something new, what made it difficult. ~~~

Not that, I, I guess it's probably more~~~ the pressure I put on myself. I guess~~~ assignments take a lot longer to go through and do. And there's a lot more work involved in it. Whereas I mean, I know that you, you normally study up before an exam.~~~But um, you can't. Whereas you can potentially go into an exam without studying seriously! You can't do that for an assignment. It's very, you definitely have to have done your work (laughs).

~~~

I guess it is probably just the~~~ the pressure, that I put on myself.

Pressure?

Yeah~~~

And where does the pressure come from?

Probably my own expectations and the fact that I don't want to hand in anything~~~ sub-standard~~~

Yeah?

And if I thought I did then it, it would be downright bad! Sonia 3:380

There was also a feeling that what the postgraduate was doing had no academic significance:

What else do you, do you think about, that you're aiming for?

Umm. I struggle with issues about how much of what I am doing is new and how much of it is just regurgitation (laughs).

Umhuh, what do you mean by regurgitation?

Well, that I am taking in a large amount of information, processing it and then turning out a small shaped object at the end. How useful is it in the scheme of things or whatever (laughs)? Caroline 1:306

In summary, in this category AIP are focused on learning about oneself and one's own skills through learning about the profession and how information professionals work. It includes reflecting on ways of working, adequacy of skills for the task at hand and a more sustained level of personal challenge and self-doubt, particularly about the quality of assignment outputs. This contrasts strongly with all the other categories, whether less or more complex.

Category 5 Growing and Changing:

Assignment information processes are experienced as growth and change by expanding ideas and skills through communication and reflection while investigating a topic and completing the task.

In this category the postgraduates do not focus on finding out something in particular, or the process of research. They go beyond a stage of understanding themselves in the profession (Category 4), to actually changing the way they do things and their ways of thinking. In this category they are constantly on the lookout for better ways of doing things. Postgraduates expand their knowledge base, implement changes and are conscious of this. In this experience their skills are honed through doing academic and intellectual work and they continuously seek to improve their information management and learning techniques in many ways. This category includes:

- Changing how they do things generally and becoming confident

- Incorporating technology as a tool

- Enhancing skills by exposure to content

- Building a repertoire of tools and strategies

- Refining their concept of an information professional

- Demonstrating a capacity for deep reflection.

There is no sense of uncertainty described by the postgraduates in the earlier categories in this particular way of experiencing AIP. They express confidence and are excited about implementing what they had learnt.

There is evidence that technological integration is one area of change. The way postgraduates use technology to structure, then gather and sort information during their use of what they find and their interpretation process has changed. They are not only aware of different ways to handle information, but also implement this in their practice. In the following example, computer technology was integrated in the information use process:

> Yeah, Yeah. So I've gone from the notebook technique to the on-line technique, just in the course of this assignment.
>
> *That's amazing!*
>
> Yeah~~~[both laugh]!
>
> *And, and how do you find it?*

It's ridiculous writing these things down, I hated, I've always hated doing that!

Do you? Have you? Oh, that's interesting!

Well with full sort of bibli. You know with all the things you need.

Oh yeah, it's very labourious isn't it!

Yeah.

Um. So you find, but you still end up doing some notes? You've still got your notebook?

Um, yeah but like I'm on the last page and it probably won't be coming with me next time [pats the notebook. Both laugh].

Poor notebook!

Poor notebook! Caroline 2:443

It also became clear in this category that skills of information management and handling were enhanced not only by the process of doing their literature research for the assignment, but also through the content postgraduates encounter in the professional literature in the subject. This could lead to changing their own practices, for example Caroline continued:

And I'm also learning through reading about um, Mary Ellen Bates [sic] has a lovely description of a day in her life. Have you read that? On her web site~~~it's fascinating um, talking about work of information professionals, that's the whole thing.

No, no. Oh well that'll be great, well that'll be a good one to, you know, you could use that?

~~~And it's funny because it's actually through a relationship with the content of what I'm looking at. So we're looking at the work of information professionals and through learning about, researching the work of information professionals I'm taking on that [unintelligible].

It is giving you ideas?

Yeah.

Oh, isn't that interesting!

It's exactly what I've done. Caroline 2:476

Because they were investigating the information industry they came across articles that described improving professional information management practice, postgraduates could use this new knowledge to improve their personal information management within AIP. They could learn how to do things differently, both as a student and as an information professional, based on the content they were dealing with for the assignment.

The postgraduates were always on the lookout for ways to improve, and consciously seek and try out new strategies and build a personal store of tools to draw upon as required. Newly acquired knowledge, strategies and skills change the way the postgraduates proceed in terms of thinking, content approaches and skills. The following example showed this in the case of text structures:

It was, it was, it wasn't just a matter of making you more expert at doing what you had already done? It did change the way you did things?

Absolutely! Absolutely changed the way. And I still, I kept all those notes and if I see anything at all which deals with~~~with any sort of, any of those text structures like an essay, a report, a discussion, an argument, I've grabbed them. And I keep building a little portfolio because um~~~because when I have to. When an assignment indicates a particular type of text structure I'll go back and remind myself. Meredith 2:993

Postgraduates also change the way they think about aspects of the topics they encounter. The following postgraduate described how 'doing' the assignment had expanded her understanding of the role of information in her job and helped her to do her job more effectively:

> The connections that I think about a bit more and I~~~sort of. And also you know, seeing issues that are coming through at work that are being discussed and~~~bringing those linkages together so talking to people and all of a sudden I go, 'Oh so that's where that fits in'!
>
> ....
>
> Well a lot of it's sort of stuff that's coming up at work, particularly in terms of my role, seems to be more looking at information resources for~~~ our client groups~~~ and I guess it is interesting that, I have to work quite closely with the girl who looks after the group of extension officers, that we've got! So I, I tend to have a lot of um, conversations with her and then while I'm thinking about things in terms of how we can provide information to these groups of people a bit easier and that type of thing. It's sort of, um you know I draw on stuff that I have written in that case. Sonia 3:223

The change seen in this category alters what postgraduates already know and do, as a result of what they have learnt from the assignment. Unlike Category 4, it is assimilation and adoption of new knowledge rather than grappling with growing understandings.

In summary, in this category postgraduates experience AIP as change and growth. Learning has been integrated and ideas and skills expanded. This comes about through interacting with others' texts, the challenges of creating their own text and also reflection while focusing on a topic and task while 'doing' an assignment.

Category 6 Changing Views About Information in the World

Assignment information processes are experienced as radically changing one's way of seeing a familiar part of the world and personal values as the result of an extended engagement with information about a topic.

In this most complex category, postgraduates experience AIP as bringing about a radical shift in their thinking. They change the way they see part of the world to an extent that personal and professional values are overturned through the research process. In common with Category 5 it includes learning as change, however, unlike previous categories this radical shift in beliefs marks an overturning of their previous understanding of a part of the information world. It is an outcome of focused and sustained engagement with a topic as part of information seeking, finding and generating processes for the assignment.

The end result of Changing Views About Information in the World (Changing Views) is seeing the topic (or aspects of it) in an entirely different way that reverses the previously long held and familiar perspectives on issues in the information profession: that is through a new lens. This change in their relationship to the world can also be accompanied by a shift in personal values.

The postgraduates may, for example, become more critical and analytical in their interactions with information as a result of their experiences. In this category they encounter strong feelings due to a major reversal of their familiar ways of thinking. They may also have a heightened sensitivity to the topic because of their new perspective. They now see this topic 'everywhere', even in areas they have been very involved in through their past or current work:

> And I mean that, that was quite an interesting~~~ sort of, sort of realisation that um I had. That the two topics I had chosen it, they, commodified information keeps on coming up! Of course I now realise~~~ I see it everywhere, that's right! Meredith 2:1189

Indeed, it is in areas of greatest familiarity that such a major shift in beliefs seems to occur. The following example describes a shift in a firmly entrenched perspective on a professional issue:

> So I mean the assignment, was quite valuable I think~~~. Investigating that ~~~ that shifted ~~~
>
> *What do you mean?*
>
> Well because we were looking at privacy, the privacy sort of area in, in, in health, in the legislation I held a very strong view that sat like over here, that was very much the nurse doctor view of the world. And after I had gone through the process of looking at all of the, the documents and um, what was um sort of trying to happen, and that sort of thing. I actually (short laugh/ gasp) shifted to a bit more of a different road, but um ~~~
>
> *That's interesting!*
>
> Yeah! So my whole beliefs ~~~
>
> *So for instance your first, when you say the doctor nurse perspective, what's, what is that?*
>
> Well it's much more 'Well we need to have access to the information, um no matter what. Yeah and this is the reality of how it works.' And then I moved to ~~~ 'Well I think we need to be a bit more focused on trying to make sure that we actually get consent and, and yes there is reasons why people will not, um, want you to have access to that information and they have right to say.' (Waiter interrupts) So ~~~so that was, yeah that was quite something!
>
> *Interesting. And what, where did that come from?*
>
> Much more from just having to…Go and look at all the information that was there and start to, start to think about why, um~~~.Yeah and it was um, I suppose it just opened my mind! The information opened my mind to say 'Well now hang on. Just let me think about this in relation to what these other people do!' Anne 3:480

She acknowledged that her beliefs had become diametrically opposed to those she had held previously. This represented a radical change in her professional perspective and values. These new discoveries can reverse previous understandings and important personal and professional values, as seen in the following extended example:

> *Can you just sort of, explain for you why that was building a new knowledge base?*
>
> Right, because um~~~I had to read outside, I had to read outside the~~~ library and information science literature. And I had to change my viewpoint. I had to change, um~~~. Yea, I did. I had to change my sort of, this sort of, firmly held and untested belief in information for the public good. And I had to make a shift to 'Well, it is necessary, at times for information~~~.' So there was a fundamental shift going on in there (laughs) you know.
>
> *Ohhh! Why did you, when you said you had to~~~ change why did you have to change~~~? What made you change?*
>
> Um because~~~because I had to acknowledge that um~~~. You know my research had

certainly confirmed that information, the creation and storing and gathering of information requires, financial resources~~~~~~.

And this, these other things they were~~~the opposite of what you'd thought or~~~?
Um, they challenged my belief. Yea, they challenged my values? Uh, I was, it seems strange, I was sort of calling that a new knowledge base but um~~~ maybe it's a new values base? Um, you know the, I couldn't, I couldn't go one eyed into the whole issue of information commodification because there was so much evidence to show that many, you know there were many, many uses for information as a commodity~~. Sort of saying 'Yeah well you know that's one view but there this other very valid view!' And um, by, by taking that view into account, you could then look at the whole issue, in a more balanced way. Meredith 2:1124

The uncertainty in earlier categories was related to defining their task, profession, or interest (their thinking). In this category it has expanded to become a redefinition of postgraduates' beliefs and values as professionals. The end result of this way of experiencing AIP results in the individual developing a completely different perspective on the information world and a shift in professional and personal values too.

In summary, the result of AIP in this category is a profound change to the postgraduates' personal views about an aspect of information in the world. This change in the way they view information can be so profound that a shift in beliefs occurs. An aspect of information that they held strong beliefs about previously is now seen so differently that they feel that some of their personal and professional values have changed.

5.2 Relationships Between the Categories: the Outcome Space for AIP

The 'outcome space' depicted in Table 5.1 below shows the relationship between the categories in terms of their meaning and focus. The categories are related both logically and empirically. The postgraduates' experience of AIP changed in its meaning from a management exercise (Category 1), to an exploration and a positive challenge in terms of thinking about topics and learning (Category 3). Challenge is also experienced in Category 4, but in a more negative way in terms of judging oneself and one's capabilities, as well as considering one's knowledge and skills ('doing'). Ultimately change is experienced from their learning (Category 5) and sometimes the postgraduates had to radically alter what they used to believe (Category 6) as a result of the assignment.

These changes in meaning also represent a change from an instrumental focus with predetermined and defined goals (Categories 1 and 2), to intrinsic motivations (Categories 3 to 6). The awareness of the postgraduates also shifts from a task to a question (Categories 1 and 2). In Category 3 it is interesting content, discovered as a result of the research process, that is their focus. In Categories 4 and 5 the focus is on aspects of themselves as information 'handlers' and information professionals. Firstly, as new knowledge and then as changes to what they do, or how they think as a result of learning and reflection. In Category 6 the focus is on deeply held convictions, values or beliefs.

Challenge is present in all the categories, but the focus of the challenge is qualitatively different. It is only in Category 4 that challenge is a critical aspect of the category. What is seen as the 'challenge' of the assignment by the postgraduates changes across the categories. The intentions postgraduates hold also change depending on their focus, as shown in Table 5.1. The criteria they are using to measure 'success' also change depending on what is in focus in each category (see Table 5.2 below).

The categories are also related in their changing structure or focus across the categories. This focus expands in scope from a task with a blueprint in Category 1, to a change in the way the postgraduates see themselves and the topic in relation to the world in Category 6.

The categories of AIP are internally related through a hierarchical structure that increases in sophistication of meaning and inclusiveness. There is a cumulative effect that builds from Category 1 to Category 6. The categories are hierarchically related and inclusive, with each category expanding in complexity. A postgraduate who experiences a radical shift in their thinking (Category 6), also experiences a less startling change in what they do and think, in terms of information management or other skills and knowledge, as a result of their learning (Category 5).

Category 1 (Shaping the Task) is focused on 'how' to complete the project and this shifts to an emphasis on 'what' they are looking for in Category 2 (Finding Out). In Category 3 (Discovery and Engagement) the focus has moved back to 'how' in the process of discovery. In Category 4 (Perception and Understanding) the 'what' focus includes personal awareness or awareness of previous learning as well as an objective emphasis on outside information. Category 5 (Growing and Changing) has a 'what' focus on their growth in knowledge and skills. Category 6 (Changing Views) has a joint to focus on 'how' they change and 'what' they now believe.

Interview transcripts that express the most complex category of AIP also included the least complex categories. Postgraduates who described experiences that are part of the more complex categories also described elements of the less complex categories. More complex ways of experiencing AIP mean an awareness of an increasing number of elements of AIP.

All the postgraduates in this study experienced being caught up to some extent by their interest, which was to some extent generated by the research process (Category 3). They had chosen this professional subject and course in order to find out where they might fit within the profession in the future and often had very clear ideas of things they wanted to find out in the course of their studies (Category 2). As high achieving students they all came back to how they were Shaping the Task Towards Completion (Category 1) continuously throughout the AIP.

Table 5.1: Outcome Space: Illustrating Relationships Between Categories of Description for Ways of Experiencing Assignment Information Processes

STRUCTURAL

		Assigned Project Focus	Profession and Oneself as a Professional Questioning Focus	Interest in Content Focus	Personal and Professional Thoughts, Actions and Capabilities or New Knowledge and Skills Focus	World Views Beliefs and Values Focus
Instrumental (Predefined Goal) External	Organising, Managing Finding and Completing	1	2			
Intrinsic	Process of Discovering (Exploring, Investigating and Enjoying)			3		
↕	Process of Perceiving, Understanding & Being Personally Challenged				4	
↕	Changing				5	6

(left vertical label: Referential)

5.3 Themes that Vary Across Assignment Information Processes

This study also identified a number of themes that occur and re-occur, changing across the categories in AIP. Each of the six categories could be described across four different aspects:

- The main focus of the category as experienced by the postgraduates

- The activities undertaken as part of AIP

- The time factor, including when the category was more frequently experienced in the overall process to assignment completion

- The dominant emotions of the postgraduates as they experienced a particular category.

The focus of the postgraduates (as described above) changed from the assigned project, to the profession, including what they wanted to know about the profession and their possible place within it. Table 5.2 shows that each category was associated with a set of critical aspects or themes. The postgraduates' emphasis on following their interest in what they find in Discovery and Engagement (Category 3) changes back to a more internalised focus on the profession, and on themselves as professionals, in Perception and Understanding (Category 4). In the more

complex categories the focus has moved to the changes in their thinking and how they go about using information for their assignment in Growing and Changing (Category 5), and finally changing strongly held beliefs in Changing Views (Category 6). The focus in Categories 2 and 4 is on the 'what' of the assignment and in Category 6 it is on both the 'how' and 'what' of the assignment.

The intentions of the postgraduates also change across the categories from personalising the extrinsic task in Shaping the Task, to enjoying the research process and the content they discover in Discovery and Engagement. Their aim is to learn and enhance their skills further in Growing and Changing and to accept and embrace the major shift in their beliefs in Changing Views.

The criteria the postgraduates use to judge achievement of their aims change in a similar way across the categories. In Shaping the Task (Category 1) the criteria are the requirements of the course and assignment. In Discovery and Engagement (Category 3) their enjoyment and excitement are the major criteria.

In Growing and Changing (Category 5) it is whether changes in their knowledge and skills has been affected: that is they have learnt and implemented new ways of thinking and doing things. In Changing Views (Category 6) the criteria is the scale of the change they have undergone.

The postgraduates' activities moved from shaping and managing the project, to moving through different modes of information seeking and information use. In the more complex categories the activities shift to internal changes to their ways of thinking and acting. In the most complex category (Changing Views) this change involves a radical reversal of something they were previously certain of.

The way the postgraduates view time also changes across the categories. The timeframe of the assignment, milestones along the way and ultimately the deadline are the focus in Shaping the Task (Category 1). In Discovery and Engagement (Category 3) there is a conflict between taking the time to explore (which takes precedence in this category) and a lesser awareness of the project deadline. In Perception and Understanding (Category 4) the challenges are focused within the assignment timeframe. In Growing and Changing (Category 5) the changes that take place within the assignment timeframe are also consciously described as changing what the postgraduates think and do beyond this particular assignment. In Changing Views (Category 6) the temporal focus is on the dawning realisation that they had to radically change their beliefs, although there is some focus on what led up to this and the implications for the future.

Table 5.2   Themes that Vary Across the Assignment Information Process

Category	Focus of Postgraduate	Intention or Aim	Criteria	Activities	Temporal Focus	Common Emotions
1 Shaping the Task	Assigned project	Personalising the extrinsic task to complete	Course and assignment requirements	Shaping, structuring and managing	Milestones timeframe and deadline	Control
2 Finding Out	Profession and place within it	Finding answers to their questions	What they find	Browsing, searching, choosing and looking	Project related but not bound	Curiosity, resolve
3 Discovery and Engagement	Interest in content	Carry out a research process and investigate content (topic and subject)	Enjoyment and interest (flow)	Browsing, searching, engaging and following	Conflict between exploration and deadline	Enjoyment, excitement, interest
4 Perception and Understanding	Profession and professional self	Manage personal and professional investigation	Outcome of process of challenge	Browsing, searching, engaging and reflecting	Assignment timeframe	Uncertainty
5 Growing and Changing	New knowledge and skills	Learn and enhance (thoughts and skills)	Change has taken place	Changing thoughts and 'how' and 'what' they do	Assignment timeframe and beyond	Satisfaction, excitement
6 Changing Views	Worldviews, belief and values	Embrace change/ accept change	Scale of change	Changing long-standing beliefs about information	Centred on realisation	Surprise and rueful excitement

Another dimension of AIP inherent in all the categories is an affective dimension. There are some common emotions associated with particular categories and these have been noted in Table 5.2. The affective aspects of 'doing' an assignment are discussed further in Chapter 7.

Finally, AIP as a phenomenon has associated acts and objects of those acts. The content focus of the postgraduates is one of these which also changes across the categories. The evolution of the content across the timeframe of an assignment is discussed and illustrated in Table 8.2. However, content also changes across the categories and this is worth briefly noting. In Shaping the Task (Category 1) the right content that fits the question and a structure is all that matters. In Discovery and Engagement (Category 3) the specific content is unimportant because the research process is engrossing for its own sake and this increases their interest in the topic. The content focus in Categories 4 to 6 is strongly centred on personal and other aspects of learning.

5.4 Conclusion

This chapter has shown that postgraduates experience AIP in six qualitatively different and hierarchically related ways. These six categories have been described and illustrated with extracts from the pool of interviews. The chapter has also demonstrated the relationship between the categories in an 'outcome space' for AIP. Finally, it has summarised themes that vary across the categories of AIP and are documented in terms of focus, activities, temporal and emotional aspects. This has demonstrated that AIP are a very complex phenomenon, including a wide variety of qualitatively different experiences with many different aspects.

The thesis will now explore one aspect of AIP, namely the different ways in which postgraduates conceptualise and experience having Enough information for their purposes at a given time while they work through the task of completing an assignment. For the purposes of the thesis, this phenomenon is labelled 'Enough' (see Chapter 1) and forms the basis of the following chapter.

Chapter 6

Variation in Ways of Experiencing Enough

Deciding 'what is enough?' has become ever more important in the 21st century as information sources and channels continue to increase exponentially. Precisely because most of us have more information than we can cope with, the matter of deciding 'what is enough?' for various purposes is familiar to us all. The current study labels the phenomenon as 'Enough' and in this chapter addresses the research question:

> How do postgraduates experience Enough (and not Enough) in the context of preparing and completing an assignment?

It describes the variation in the ways that postgraduates experienced Enough for an assignment in this study.

The literature about enough that was reviewed in Chapter 2 emphasised the importance of the 'concept of enough' in information behaviour (for example, Kuhlthau 2004). Some studies have provided insights into how enough is manifested in certain contexts (Agosto 2002; Zach 2005), and the variation in ways in which high school students experienced assignments (Limberg 1999). However, we still do not have a detailed picture of enough in information seeking and use.

In the current study Enough was found to be a very significant part of Assignment Information Processes (AIP). It was an integral and embedded part of the entire process of 'doing' an assignment for the postgraduates in this study. Enough, was also highly complex, dynamic and multidimensional, with strong affective aspects. Due to this complexity various components of Enough when 'doing' an assignment were identified in order to describe the variation in postgraduates' experiences of Enough.

The next section presents the variation in postgraduates' experiences of Enough as a set of five categories which are hierarchically related, and ordered from the least to the most complex. The categories are preceded by an explanation of how Enough was found for constituting the categories. Then each category is described in turn and illustrated with extracts from the interview transcripts. In a later section of the chapter the hierarchical relationship between the categories is described and the 'outcome space' depicting these relationships presented. The themes that vary across the five categories of Enough are then summarised.

Finally, 'Types of Enough' are introduced which address the question of 'Enough for what?' when postgraduates are 'doing' an assignment. Their relationship to the categories is discussed and presented graphically in Figure 6.2. The elements of Enough, which address the question of 'Enough of what'? are outlined in Appendix 7. Other important aspects of individuals' assignment experiences of AIP, Enough and the meaning the assignment process had for them as individuals will be described in Chapter 7.

6.1 Postgraduates' Experiences of Enough

This section introduces the categories by outlining how I identified examples of Enough for postgraduates in this study, that is, how I decided what constituted Enough. The literature review has shown that information behaviour researchers know that Enough is an important part of information seeking and use, but no clear definitions of Enough, that is 'what Enough is?', have been articulated. In contrast to the literature, the variation in the ways postgraduates experience Enough encompasses a much broader perspective of Enough, which is illustrated in this chapter.

I rarely asked the postgraduates directly about Enough (except on a few occasions at the end of interviews or when probing their comments) because I did not want to lead them since they were sharing their experiences. As they often did not use the word Enough it made the evidence of Enough more fragmented. It is important however, to examine and articulate experiences of Enough that are nuanced and embedded in the participants' actual experiences of information seeking and use in the context of an assignment. Therefore, the word Enough does not often appear in the transcripts and extracts used to illustrate the categories in this chapter, even though it was evident that postgraduates were describing ways they were experiencing Enough. The extracts presented in this chapter are a clear reflection of this.

The process of analysis started with the theoretical assumptions that a phenomenographic approach would allow description of ways that Enough is experienced by a particular group of people in a specific context (see Chapter 4). The analysis, in common with phenomenographic style analyses, was not coded but was inductive and started during the interview. The analysis process involved considering the research question and then repeatedly listening to the interviews with this question in mind. Basically, I systematically listened for how Enough was manifested.

Because Enough expresses both a concept and a quantitative evaluation along a scale, 'degrees' of Enough were identified in order to analyse postgraduates' experiences and constitute the categories. Evidence of the phenomenon of Enough in this study was naturally easily located when postgraduates use the actual word Enough. However, because the phenomenon of Enough is not only a concept, but also a measurement, it is also expressed as degrees, or along an evaluation scale and it has associated variants. I needed to take note of phrases that described this component of Enough. Those that the postgraduates expressed included:

Figure 6.1 Degrees and Other Expressions of Enough

Degrees of Enough	Variants of Enough	Indirect Expressions of Enough
• Enough • Nearly Enough • About Enough • Just Enough • Not Enough • More than Enough • Too much	• Enough (or not Enough) of the 'right thing' • Not 'having' Enough • Not having 'done' Enough (Effort element) • 'Good' Enough or not good Enough • Not 'interesting' Enough • Forecasting and 'calibrating' Enough	• Not as good as wanted • Just right • Got what I need • Got to stop • Get finished • Need more resources • Getting too large

So, for example, not Enough is a lack of Enough and part of the same phenomenon. Too much is likewise negative, signifying overabundance, but is still considered by postgraduates as part of the phenomenon of evaluating when they have Enough.

Postgraduates experienced Enough in the current study in five qualitatively different ways. As postgraduates complete an assignment they have to negotiate what constitutes Enough for many different purposes in the context of 'doing' that assignment. This could be as simple as how many words or how many references, or more intangible things (for example quality, content, meaning, answers, originality and presentation of ideas). The experience of evaluating when they 'had Enough' emerged as a significant proportion of the interviews with the postgraduates in this study. The students spent an unexpectedly large amount of time throughout the three interviews ('before', 'during' and 'after' the assignment) discussing Enough, and other degrees of Enough (for example, 'not Enough' or 'too much') as the case might be.

The findings of this study have shown that postgraduates' ways of experiencing Enough, while completing an assignment vary in five qualitatively different ways. These five categories that describe this variation are hierarchically related and are presented below in order, ranging from less complex (Category I), to more complex (Category V).

As noted in Chapter 5, these extracts are reproduced in their original colloquial format. Sample quotations have been carefully chosen in order to highlight the major distinctions between the categories but it is important to emphasise, once again, that no single quotation can illustrate all the elements of a category which occurs in fragments across the whole set of transcripts. Quotations in italics denote the interviewer's words, the postgraduates' pseudonym, the different interviews and the starting line for each extract.

The five different ways that postgraduates experienced Enough while completing an assignment are summarised as:

Category I Control and Getting Done:

Enough is experienced as the right amount of essential elements of acceptable standard in place, in order to keep (or regain) control, get the task done and avoid disaster.

Category II Optimal Production:

Enough is experienced as what enables optimal physical production in order get it right and create a high quality report.

Category III Understanding and Engagement:

Enough is experienced as what allows engagement and enjoyment of a process of discovery and 'working out' in order to understand and successfully produce.

Category IV Completion and Satisfaction:

Enough is experienced as an internalised qualitative sense of completeness and coverage in order to satisfy curiosity and make sense to oneself of the topic and the assignment.

Category V Generation and Creation:

Enough is experienced as a generative driver of the content vision and development process of risk taking in order to engage in discovery and create a unique, ideal product of value in its own right.

6.1.1   Describing the Five Categories

Category I Control and Getting Done

Enough is experienced as the right amount of essential elements of acceptable standard in place in order to keep (or regain) control, get the task done and avoid disaster.

This category is characterised by postgraduates experiencing Enough as simply whatever is necessary to get the assignment done appropriately. It is an experience of Enough which is strongly focused on quantification of assignment components and dividing the larger task to make it manageable. Postgraduates strongly emphasise physical elements and make the task concrete by using strategies such as breaking the assignment down into 'bits' which can be manipulated; quickly structuring sections under headings to gain clarity; directing information seeking to fill in the structure and expanding 'dot points'. The approach is in a sense physical, putting 'stuff' in to fill 'gaps' and working within a structure for the assignment.

The postgraduates in this study aimed to submit work of a high standard so as to avoid personal embarrassment. They were also aiming to properly complete the requirements to their own minimum standards (which were high) and accommodate prevailing academic requirements (see Types of Enough in Section 6.4 below), so achieving what they considered Enough was experienced in this category as a risk avoidance strategy.

The first example shows postgraduates dealing with information and overload and aiming for control and closure in quantitative terms (amount) and qualitative terms (depth). It describes experiencing Enough as dealing with information overload, ending up with too many search results and considering how to effectively manage these to meet a range of criteria:

> What I often find with a lot of assignments is that there is so much information now that~~~is that, whilst you might have trouble searching, if you do, if you're successful searching, you can end up with this huge amount and then you're going well~~~where? How do I actually~~~streamline that? I mean what sort of depths do I need to go to and what? And where do I? I mean that's, that's the sense that I had when I was sort of finishing off the assignment I was going. I'm going "Oh there's more! I haven't done Enough here!" (Laughs) You know I nearly like, when I was writing stuff up I was nearly about to jump, jump in and go!~~~ For another big search and stuff! But then I thought, "Now hang on this is going to get too large if I do that! And also like, it's Sunday night and I've got to (laughs) get finished. You know I've got to stop. But it~~~and so it is, it is often quite difficult, I think, to know? Have I, have I got what I need to, to get here? Anne 3:173

Anne then goes on to describe Enough for the assignment and Enough effort. She also describes the way Enough evaluations interweave with evaluations and uncertainty about the assessment task and response.

In this category, postgraduates also experience 'not Enough' and too much. The focus in this category is on quantitative elements such as 'not Enough time', or words, or too many gaps in their assignment. This means visual as well as conceptual assessments are often used to gauge 'not Enough'.

> *[Recapping] You said you did a visual sort of check~~~ "I look like I've got enough there." Is that how you decide when to stop? Any other ways of deciding?*
> I do that and then go through and read those articles and then make an assessment. 'Well have I or have I not got them'? Anne 2:366

Despite this visual and conceptual evaluation there is a qualitative emphasis implied, and a reference to the intangible nature of 'capturing' the essential elements of source materials expressed in *"got them"*.

In the context of AIP there are lots of forms of Enough. As will become evident from the examples in this chapter, manifestations of postgraduates' experiences of Enough within the AIP overlap with experiences of AIP described in the previous chapter. This is because AIP and Enough are intertwined. Enough can be a way of stopping or continuing AIP, but it can also be a lot more.

Enough for covering requirements, finding a structure and filling in the blanks and its visual elements laid out on the page are important. This often comes from the postgraduates' first contact with the assignment. In the following example Rebecca starts off describing how she divides the assignment up:

> *(Recapping) So, that process of, of interpreting what's required and then that carries on and as you're finding resources~~~it changes your perspective, does it?*
> Definitely. Yeah~~~m, I guess, in my mind, I try and start thinking about it in~~~stages or bits that are going to be required for the assignment. Rebecca 1:28

Rebecca goes on to say these 'bits' (Enough to cover the assignment subtopics) can be sections, or subsections of the assignment that have been specified, as well as points (paragraphs) that will be used to do this:

> *Can you explain what you mean by 'stages or bits'?*
>
> I guess, normally an assignment is made up, I think, of more than, more than one part in the actual ~~~ if it's a written assignment then it er, then it would be the different err, topics that have to be covered, all the different paragraphs so~~~
>
> *Any umm any other thoughts about what's important at the beginning of an assignment, when you start an assignment~~. Do you actually do it as you go along or~~?*
>
> I've actually ahh~~~set myself up with, for each of the assignments umm. I usually start~~~once, as soon as I'm given, I'm given the assignment I set up an outline on~~~like I type it up~~~so I have that~~~and it's a, it's a, maybe it's not an important thing necessarily, but at least it means you haven't got to worry about it later on. Rebecca 1:35

Outlining the assignment helps her to know what she will need and monitor what she has, or has not got, in order to move through the task.

Enough as words or pages written is often used as a gauge of progress and an anchor. The following example also shows this atomistic approach being used:

> I'll say 'OK I've got four days to do this' and I set myself, if, if the assignment is 2500 words I say 'OK today you've to write 1500 and tomorrow you'll write 1500'~~'Oh God'. I used to be so bad. But I say now 'OK you write a 1000 today'. It, it's, it feels good because you end up with pages of stuff, and you've got physical stuff you can look at and think, yes, I have done something finally with this. Meredith 1:652

Enough is being used to bring what is being done back into line with the task in a way that is productive and compatible with achievement.

This way of experiencing Enough facilitates making judgements about when to stop a task or change activities and is linked to feeling organised. The intention is to avert feelings of anxiety and stay in control, to cope with feelings of overload, pressure and uncertainty while getting the assignment done. For example:

> *How you've focused, defined your area and what you've left out. ~~And maybe your reason why, you know that would be nice to know?*
>
> I could, could~~~I mean, I could be~~~writing~~~a whole thesis even~~~. So I think that is another thing with the assignment, you tend to~~~like you can get a bit lost in your research and then you feel~~~.
>
> *So how do you stop yourself doing that?*
>
> Well I keep having to come back and look at well what, what are the key headings?~~~ Yeah I think~~ 'OK I'll just stick to these otherwise I could get too out of control.' Anne 2:434

Time, an aspect commonly associated with Enough in the literature, is most dominant in this category and usually represented as 'not Enough time' although it can also include 'too much' time and is related to physical and affective stress. Time management is emphasised and in the following example Rebecca again refers to its importance:

> Well! I think it's something coming back to that time management I mentioned earlier, you know ~~~ can you manage your time? Rebecca 3:702

Rebecca is constantly evaluating what she does in these terms: does she have the time to do something? How is she spending her time? She also indicated that the urgency of time changes over the time period that she works on the assignment.

Another example of the impact of the time dimension is the approach of the deadline. In the following example Rebecca predicts from past experiences, that as the deadline comes closer her perception of her situation, her feelings and her behaviour will change:

> *So what sort of things do you mean when you say that the, the time factor kicks in....?*
> Yeah, it kicks in later on. I have a~~~I can sense it in myself now. I umm, I can't quite~~~ it seems like the assignment isn't due for a long, long time...There's definitely no sense of urgency about getting the assignment done, and it doesn't usually kick in until~~~ that sort of real pressure~~~until about a week, I guess, before the assignment is due. And then that's when I... would also realise that I need more resources and I haven't got enough time! Rebecca 1:180

Her understanding of having Enough includes having the skills to manage herself and the project in relation to time and the motivational urgency of the deadline.

For some postgraduates success is being able to cross the task off a metaphorical list and moving on. This is evident in the following comment about the 'relief' of getting the assignment completed:

> *What would learning be for you and what would a successful assignment be? We've sort of touched on it already but~~~*
> Yeah~~~I guess~~~I don't~~~mmm. Normally once I hand the assignment in I'm so relieved to get it out, that I don't think of it again, (both laugh). Sonia 1:331

In summary, this category represents how postgraduates experience Enough as what they need to efficiently get the assignment done. They see the task as straightforward and they use strategies to make it so, thus regaining a sense of control. This way of experiencing Enough is particularly common at the end of AIP or whenever they feel overloaded with other assignments, the effect of 'doing' the assignment on them physically and cognitively. Time is experienced in this category in a particular way because there is an overriding focus on getting the task done. This way of experiencing Enough is one of making things manageable, in order to move forward to successful completion of the task.

Category II Optimal Production

Enough is experienced as what enables optimal physical production in order get it right and create a high quality report.

In this way of experiencing Enough, the postgraduates' focus has expanded to working effectively to create a coherent piece of work that will satisfy external and personal criteria (set at a high level). As in the previous category, the emphasis is on the product, or the actual assignment report. This category goes beyond the predominantly quantitative nature of Category I above, to incorporate qualitative dimensions. There is a corresponding shift to a 'what' focus. The production of a quality report is emphasised, rather than just the completion of 'bits' aimed at completion, that is predominant in the previous category. There is a strong focus on sound construction and making sense of ideas which are not a priority in Category I and an aim to utilise information gathered to write something 'good'. In this way of experiencing Enough the interest is in making sense of the topic and clearly expressing this, within a high-quality physical product, and this is balanced against not wasting time. In the following example Meredith emphasised that in her use of information to formulate her draft, Enough is what she needs to craft a clear logical piece of writing as she goes along:

> I craft as I go. My first draft is probably one of two. I do my draft! And it's,
> it's~~~probably it takes me about three days to do that.
>
> *(Recapping) So you're very economical?*
>
> Very economical. I cannot write, I can't write crap! (both laugh) You know, I can't write
> reams and reams of what I consider crap. It, I'd look at it and say this doesn't make
> sense to me. You know, I literally craft each paragraph. I've got my~~~my opening
> paragraph. Then I~~~I try to make sure that within each paragraph I have made, you
> know, it sort of sensible. It's logic, it is flow. Meredith 1:621

She has to work like this at this stage of composing, rather than working through several drafts to end up with a 'good' Enough assignment.

In this way of experiencing Enough, the sense of producing a good assignment can also be linked to carefully building an assignment, rather than working through several drafts to end up with a 'good' assignment. As in the previous category, structure is important, but is not just to fill in the blanks. It is an iterative development process focused on building quality, rather than including a particular amount of content. This iterative development from an outline is described by Sonia in the following example:

> I'll set out with an outline, of the, points I want to make. Um a jot of ideas. A jot of ideas
> and perhaps types of headings. Structure a bit of a structure and then I'll umm~~~I'll
> start to~~~to write with that in mind and what I, I tend to do I'll type into the computer
> a fair bit of words, print it out, take it on the train with me to work and then start writing
> on the train and then I'll put that into the computer, print it out again and sort of.~~~I
> almost make corrections to what I've already written and add to it. Sort of in a
> backwards, forwards process. Sonia 1:303

Presenting the assignment so that the content is clearly communicated to the audience is also part of Enough to produce a quality product. This can be challenging for the postgraduates who may

struggle to articulate aspects related to their work, for example:

> I mean as a part time postgraduate you always try to do something that's related to work! But then that becomes~~~it can have a catch to it, is trying to write it so that. I mean **you** know what you're talking about. How you actually write it in the form that someone else can actually really get it? Anne 3:273

Enough for a good-quality assignment means working to communicate well, including communicating tacit work-based knowledge. This aspect is connected to Category 4 of AIP (Perception and Understanding).

Enough to maintain a certain standard of quality, that postgraduates use to evaluate their work and management of the project, is expressed by Meredith in the following example:

> Everything, everything is worth doing your best for. Um, it will tend to be 'OK my time is limited. I know I can only get this amount done to this. But I will do it to the best. I will do it to, as much as possible, to the standard that I want to do it. And it may not be, It may be just a little less, um a little less we'll say rigorous than I would like to put in, but it's good enough. I won't put in not good enough. Um, I may just work faster, I may do a little less editing. But it's still~~~um.~~~it's if anything it tends to be just 'mmm'. I don't lose interest in it. It's just sort of a personal sort of thing 'Well~~~um I should have made more time! Meredith 2:1048

This example expresses the driving focus in this category of 'good' Enough.

The judgement of Enough for personal standards of quality is often expressed as making sense of the topic as Meredith goes on to describe:

> How do I know when I've enough?
>
> *Yeah!*
>
> Um~~~~~~(Laughs) I don't know! ~~~hmm. hmm~~~ Yeah~~. 'This doesn't make sense. Or I've got a question here'. You know, I that's when the gaps shows itself. 'I can't make a nice logical, flow here because there's something missing!' Meredith 2:1253

This example also shows that the concern about 'gaps' that was expressed in Category 1 has progressed to a goal of the quality of content in this category.

Along with the emphasis on quality and the production of a 'good report' in this category, there is also the negative component of the experience of Enough or 'not Enough' in evidence. This expresses the postgraduates' concern with the lack of, rather than presence of pertinent content and clarity. For example, not Enough depth, information overload, or not Enough information in general. The desire for quality is also manifested in this category negatively, through a strong thread of not having done Enough. Gaps are still a feature, but the emphasis is on qualitative aspects, gaps of sense, logic or content and depth. This shows the postgraduates' lack of confidence in having achieved their aim in this category: having done Enough to fill requirements well.

One example demonstrates thinking at the final stage after completing the assignment, that not Enough had been done to get to the desired standard because time had run out. The postgraduate started off referring to a previous assignment to illustrate her ideas and expressed

regret that she did not achieve the level of quality she thought she could have with more time:

The same thing happened this time?

Yeah that's right.

You felt bad when you handed it in?

Yeah, because I felt oh you know, that it's not quite what I would have liked to have done. Maybe if I, had a bit more time, or spent a bit more time I could have~~~~. You know, done something a bit better. And all that type of stuff.

Did you have anything specific in mind, or~~~?

Um, yeah. I guess it was more~~~I, kind of thought that I didn't go as in depth into things that I would have liked. And I think that may have been~~~partially because a lot of the information that I had. And I also sort of thought that I had a lot of similar information. You know.

Um! Right. OK. [Coffee interruption] So there was a lot of information that was repeating itself you mean, or~~~~?

And I guess I would have um~~~. Yeah that basically I think that's just it, the fact that I~~I would have liked to melded things in a bit more, and I, you know, like anything, once you start, like when I hand it in then I start thinking of really good things. Oh I didn't put that point in or I, I could have, you know~~~fixed up that bit. Sonia 3:36

Sonia had also expressed dissatisfaction with the 'depth' of her assignment (also see AIP Category 4 in Chapter 5) and it not being 'good Enough'.

This category of Enough also emphases efficient use of time, whereas in Category I the concern was to not waste time. For instance:

So how I think about plotting it out~~!yes.

What you are aiming for or what purpose of doing the research for this report, whatever the report is for?

OK~~~so looking at the academic report, yeah I would want to know where I was going with it before I started doing any research because I can't stand just accumulating information~~~and then it's such a waste of time~~~so I'd want to make pretty well (sure) what I was after before I started. Laura 1:48

In summary, in this way of experiencing Enough there is an emphasis on depth of content, use of information and optimisation of AIP, in order to create a 'good' product or high quality assignment report. The physical aspects of the task remain important (as in the previous category), but cognitive aspects have become important as well. Time still has an important role but is monitored and optimised, rather than being as central as it was in Category I.

Category III Understanding and Engagement

Enough is experienced as what allows engagement and enjoyment of a process of discovery and 'working out' in order to understand and successfully produce.

In this category Enough is experienced as what each individual requires to understand and make sense for themselves, in order to engage with the task and stay interested. The content focus of the previous category has developed into a focus on the process of learning. This category has a 'how' focus on the quality of the process and intrinsic interest, rather than just the product and its quality (as in Category II). In this way of experiencing Enough the explicit focus is on having Enough for a useful and enjoyable learning process and doing whatever will foster enjoyment and interest. This way of experiencing Enough is closely linked to the process elements of AIP and the examples reflect this. This category can include: finding out, clarifying, understanding and learning more about an area, as well as enhancing skills and learning more about oneself. This category is also linked to keeping boredom at bay and to changing one's perspective considerably.

The postgraduates' focus on the learning process, rather than the assignment product in this way of experiencing Enough is expressed in Caroline's following description:

> I think at this, perhaps this postgraduate level the work that we're doing is about, a learning process rather than, a product in the end~~~yeah, yeah and what I find with the, I guess, first four assignments was that I'm really not happy with the quality of the products, but I am very happy with the quality of the learning that's gone on in producing these things~~~the challenges that the author has put in to, in order to create, that is very useful~~~(laughs). Caroline 1:325

This example also highlights the element of challenge that is an important part of learning in this category.

Enough experienced as engagement in this category, builds on a desire to know more about the topics of research because of interest and a commitment to both the content and the process of research. Rebecca describes her thoughts when she receives the Assignment Outline (Appendix 3) in the following example:

> I start to think to myself~~. What, what do I know, or what do I want to investigate, umm so that I can then put it into the assignment? What am I going to choose to er, to look at?'
> ~~~because I know I have options I can choose to take it to a certain level or take it further. So then I, I, I sort of like to have some idea of that in my mind before I~~~as I'm finding material, so that I'm not, I have~~~some idea of when I might have enough (Laughs) yeah. Rebecca 1:72

From the outset, the focus is on pursuing the topic and deciding how best to do this for the assignment requirements, personal interest or other criteria.

Enough in this category is whatever keeps postgraduates interested and facilitates engagement in the process of discovery. This is often expressed as a hunt for information while searching and successful searching, including serendipity, is part of this way of experiencing Enough. Meredith's

search description of serendipitously finding an article while browsing through a journal she thought might be useful gives an impression of this aspect of the category:

> I've key words in my mind but again, um~~~what I wouldn't of thought of doing, what I did end up doing was taking **On-line Currents** , and looking through it. Because that's was where certainly key information was found.

> *Right. OK and what made you decide to do that?*

> Because I **knew** but hadn't really acted on it. That Online Currents is an, important journal!

> Yeah, I think what it was, was that I had sort of thought, you know I expect to find information there. But it was whenever I saw, um, there was an article by Elizabeth Swan, giving an overview of, essentially the fee-for-service. This is where she had the non-independent and the independent categories and then resellers and the gatherers and well I thought Oh~~~!

> *Oh OK. How useful*

> Yeah. I thought 'OK!' It made me sort of look, it made me look at the, I think, I think the subject heading or the index entry was information services? Or it might even, I think it was a 'see' reference from information broking and stuff. I thought 'Oh, oh. OK. I better look a bit deeper here because um, this is a broader definition than I had in my mind. And I will have to, you know this is how industry sees it so this is how I'm going to have to~~.' So it certainly made me look, um.~~~I would have headed to their annual index and started looking for, for~~~any other relevant headings or references and check those ones out. Meredith 2:285

Another example of Enough for forging understanding is using different strategies to work out understanding. Meredith needs to feel she has a clear and complete picture of the topic before she can start writing, as follows:

> I have to have a good rounded picture in my mind of the issue or the topic, whatever, before I can start writing. And~~~by starting at the Introduction that actually, that's part of my work of clarifying. Which is saying 'OK, I'm going to look at, this. I'm going to look at these issues'. And that sort of, as I say, that's me working through, what I am actually going to do. I'm putting it, putting it into words. I'm seeing it, it myself and saying 'Yes. This is what I'm going to do.' And then whenever I'll do the scope I'll say, you know 'These are the issues I will look at.' I say 'Yes these are the issues!', and that's~~~um, and I'm sort of explaining to myself why, why I'm~~~why I'm here. Meredith 2:632

She reinforces this by working sequentially from her introduction.

An example of Enough for understanding, often mentioned in this category, is a postgraduate wanting to pursue subjects for personal reasons and professional interest:

> The course is, umm. The reason I am doing the course is I guess when I finished my undergraduate degree I didn't feel like I knew quite enough~~~and I just wanted to~~~know, it just seemed to go so quickly. Well~~it didn't go quickly but it just, I didn't seem to feel like I took in enough information. So I just wanted to extend~~~a bit further~~~

> *Right. Keep going?*

> Keep going a little bit more, yeah, that's right! So, also it's not job related, it's just more the fact that I just felt for myself I wanted to know what~~~.

> *And so it's quite, is it~~~it's quite strongly work related then is it or just personal exploration?*

> Umm~~~. Well exploration. It is related to what I do~~ummm and I guess~~~it~~~ my choice is more not so much that I want to~~~just more that I want to extend what I know and~~~. Yeah, so it is personal but it is related to my job. So I think I'd feel better in my job if I~~~had more skills and more experience and more knowledge. Sonia 1:99

This way of experiencing Enough as engagement with content and ideas requires time and space for sorting and developing thoughts and understanding. The difference between having, or not having, Enough time to do this is expressed by Rebecca in comments about her preferred conditions when 'doing' an assignment:

> Well, the best assignment I~~~best~~~doing of an assignment for me was when my fiancé went away for the weekend and I was just there by myself~~~and umm no distractions~~~and paced myself. It was really good~~~.
>
> ~~~
>
> *It was productive?*
>
> It was really productive, yeah. And umm it felt like I got flow happening in my head it wasn't, I wasn't sort of distracted and starting stopping~~~. My concentration, I suppose, is probably quite good, although I do stop, but I stop and I have silence. Rebecca 3:745

This example expresses both the awareness of Enough as Understanding and Engagement requiring conditions that will allow this, intertwined with the experience of AIP as Discovery and Engagement.

Postgraduates' deep involvement in the process and how this continues even after the assignment is submitted is illustrated in the following example:

> I would have liked to have melded things in a bit more, and I, you know, like anything, once you start, like when I hand it in then I start thinking of really good things. Oh I didn't put that point in or I could have, you know~~~fixed up that bit.
>
> ...
>
> I didn't, yeah~~~I didn't really get~~~~more information afterwards. But I think that yeah it's more~~~ my understanding and I think that is probably the writing process, and if I was organised, I could probably, if I finished my assignments you know one or two weeks let them (gestures) beforehand (laughs)~~~. And then come back to it, I'm sure that umm you know with that fresh eye, that brings things together a bit better but~~~. Sonia 3:67

This example also illustrates the inclusive nature of the categories. Sonia is describing 'bits' in a quantitative way (Category I) and the quality of the content (Category II), as well as a process of understanding through writing (Category III), even though she is saying she didn't have Enough to feel satisfied (Category IV). She is aware of experiencing Enough in all of these four different ways.

In this category the negative scale of Enough is expressed as not knowing Enough about the content, or not having the components in place to be able to understand. Making sense for oneself in the context of 'doing' the assignment is the primary consideration in this way of experiencing Enough:

> Well~~~if I was to make a decision of when I've enough, it's when it makes sense to me.
>
> *Yeah. That, that's what I sort of without~~.That's what it sounds like, that you've got quite a, quite a strong um focus on it making sense to you as you go through?*

> Yeah, it has to make sense to me, yeah~~~. And I guess that's, that's the bottom line about um~~~about everything. Whether or not I have limited time or um~~~whoever the audience is. Obviously I will write for the audience, but I~~~the very first person, it has to satisfy is me!
>
> And it has to make sense to me. If it doesn't make sense, if one sentence doesn't make sense! Doesn't make, it sort of jars in the middle of, it does, that's not making sense. And it (unintelligible word). So it's me and then it's you (laughs)! Meredith 2:1300

Enough, or not Enough, in this category means Enough to keep postgraduate interested. Laura describes some of her reading as not interesting Enough to hold her interest in the following example:

> *When you say reading. I might have asked you this before but just to clarify um, do you read, do you usually read things from cover to cover, are you ah skimming, scanning?*
>
> Ah, a combination. It depends, it depends on the, what I am reading and how useful I, I think it is. Um and there, there was one chapter in the, one of the first books that I picked up that was really interesting. So I read that from first page to last page of that chapter. Then it started getting into all this theoretical stuff about such and such said this in 1950 and then that led on to a Cartesian effect or whatever and I just lost it completely and thought yuck oh! Flick, flick. Where, where's the highlight bits in this. Um, so it would depend on what I am getting out of it. If I find it, I mean it's a really bad way to go about things I guess and in, in terms of~~~. It's the boredom factor. You know, if I am bored by something then I, I just can't get into it. Laura 3:600

Laura had Enough information, or perhaps too much information but it was not interesting to her so she just skimmed it. She did not have the 'right' information in this instance to maintain her interest which is how she was experiencing Enough in this example (as lack of Understanding and Engagement).

In summary, this category focuses on postgraduates' interest in the content and process of learning. This can be part of the impetus for the assignment and its topic choice, or part of a process of engagement that emerges during the assignment. It is also linked to keeping boredom at bay and to considerably changing one's perspective on issues and on values that one has held. In this category the pursuit of personal understanding is paramount.

Category IV Completion and Satisfaction

Enough is experienced as an internalised qualitative sense of completeness and coverage in order to satisfy curiosity and make sense to oneself of the topic and the assignment.

This way of experiencing Enough as a sustained feeling of satisfaction with their work, rather than as a dynamic part of AIP, is similar to Category III with the same aspect of making sense for oneself of the information. However, in this category it has expanded to using the information to make sense of the topic and produce something that feels like it 'makes sense'. Although Enough is still focused on what is needed for learning, in this category Enough has changed to an on-going feeling of satisfaction rather than as a dynamic part of AIP. By making sense and coming to

know the what, why and how for their chosen topic, postgraduates satisfy themselves with what they have found out and accomplished. AIP have been carried out to the point where the postgraduate feels they have done Enough (and have Enough). There is an internal sense or feeling that the work is complete, rather than a sense there are 'gaps' in the process or the product of the less complex categories. This way of experiencing Enough as Completion and Satisfaction is less common than other experiences of Enough, and unsurprisingly is most evident at later phases of the task, but it is also found along the way at personal milestone points. There is a focus on the assignment and AIP as a whole (or on major milestones) in this category, which contrasts with the atomistic aspects of Categories I and II or on the process of Understanding and Engagement in Category III.

An example of experiencing Enough as satisfaction and an internal feeling of completeness when seeking and using information is described by Rebecca:

> *When you're looking for sources and information, when it's enough, how do you decide? I mean, it's just you were talking about gaps, weren't you? And that when you think you'd plugged the gaps you feel like you've finished, you got enough?*
>
> Yeah, I guess~~~I suppose especially with report type assignments, it felt like when I found material that~~~it felt to me, was, satisfying the criteria or meeting it to a certain level then and I could use it, and I'd written a section that I felt answered~~ the question, then I was, like, that feels complete~~~that does feel as such~~~yes! Rebecca 3:876

This shows the satisfaction with achieving personal assignment milestones during the process of 'doing' an assignment. This way of experiencing Enough can be linked to the milestone of sitting down to write.

This way of experiencing Enough as completeness and coverage so that everything makes sense in order to be able to utilise the information gathered to start writing is expressed by Meredith:

> I'd have set aside a particular day when I'm starting my reading and that's when I'm really beginning to focus~~~. That's when I'm~~~Really making sense of the whole thing!
>
> ~~~
>
> I rarely, whenever I start writing I rarely have to go and get another piece of, article, another journal thing, I don't have gaps. Meredith 1:522

Although this experience of satisfaction can happen while completing the assignment there is, not surprisingly, more evidence of this category at the closing phases of 'doing' an assignment when it has all come together. In the following example Rebecca describes her feelings of satisfaction and achievement when she has finished documents in her hand and feels and knows it is complete:

> Well, it's the productivity and the sense of achievement and the umm~~~feelings that come afterwards that make it good.
>
> *Afterwards, meaning when?*
>
> For me, actually after I've printed. Even, you know, when I've printed and stuck together and said OK~~~it's the finishing. The very finishing, and getting a good mark back is always a bonus. But it's actually that finishing there when I, it's a big sigh of relief, 'Oh yeah! Rebecca 3:822

This differs from the experience of Enough in Category II, in that Optimal Production does not focus on feelings of satisfaction or the sense of closure and completion that can be seen in this category. The category of Completion and Satisfaction is not an active one, but a result of actions associated with the other categories.

A negative experience in this way of experiencing Enough was uncommon. The following example of the lack of a feeling of satisfaction is one of very few examples across the interviews. Laura is looking back after the assignment and describing her frustration at not being able to cut out what she knew was too much material in her assignment:

> *But in the terms of the amount of detail?*
> I didn't know how to leave that out and~~~I, I guess in my own head have it make sense. You know I went through it and through it and through it. Laura 3:123

She articulated an experience of conflict between two types of Enough (Personal Resonance versus Assignment Task, see Section 6.4) when trying to complete the assignment.

Laura goes on to reiterate her lack of satisfaction and her feeling that she only began to get a sense that she had 'grasped' the assignment at the very end but even then remained uncertain, for example:

> Umm~~~ I guess that assignment was a little bit different to any other one that I've done because it, it wasn't until right at the end that I felt like I had a grasp on it. Umm, and even then it was 'God', have I done the right thing. Like, I guess I didn't ever really feel confident about having captured what the assignment was asking for.
>
> *So why do you think, any ideas on why that was?*
> I just couldn't get my head around it. I, I mean we'd sat down and we'd talked about it, umm but I um, it probably would have been easier if I'd gone at it from something that I didn't know. Laura 3:148

This example also shows the inclusive nature of this way of experiencing Enough as Laura is simultaneously considering the assignment topic and task. This is interesting in light of the nature of this specific assignment which was quite factual (see Appendix 3) in order to make sense for herself and Enough for the Assignment Task and Academic Expectations (Section 6.4).

The central role of time and lack of time in other categories has little impact in this more reflective category of Enough. Although less frequent, this way of experiencing Enough is more static and permanent than the dynamically shifting nature of the other categories. The focus on the assignment in this category includes the topic and task focus of earlier categories.

In summary, this is the most satisfying, although least frequent way of experiencing Enough for high achieving postgraduates in the study. The sense of closure and feeling of completion postgraduates express is absent in all of the other categories, whether they are less or more complex.

Category V Generation and Creation

Enough is experienced as a generative driver of the content vision and development process of risk taking in order to engage in discovery and create a unique, idealised product of value in its own right.

The way the postgraduates experienced Enough in this category is distinctly and critically different from all the previous categories. A hitherto absent focus on the creative and aesthetic emerges. This category goes beyond simple production of an assignment, engagement with content or even personal satisfaction, to eliciting a desire to create something intrinsically worthwhile, valuable and useful. The postgraduate goes beyond the learning and assessment process and sees the output of their learning as aesthetic representations, in a similar way to artworks, which they want to be valuable in their own right. Intuition is utilised by the postgraduates and creative risks are taken as they go beyond not only what they know, but also beyond perceived boundaries of the task. This way of experiencing Enough is also the most strongly generative, because it acknowledges the open ended nature of intellectual endeavours and the possibility of continuing to pursue threads, long after an assignment has been completed.

This most complex category is rarely expressed and then usually in a fragmentary way. Therefore there are few passages in the pool of interviews that articulate this experience clearly.

The sense of an aesthetic ambition and vision is expressed by Caroline, who equates research products with artistic works that have their own intrinsic value:

> *So the way you, just to clarify the way you used to think about them was~~?*
> As artworks (laughs)~~~I struggle with issues about~~~how much of what I am doing is new and how much of it is just regurgitation (laughs). Caroline 1:341

There is also evidence in this category of the generative nature of Enough in the current study. Caroline shows that Enough for her in this assignment gave her a willingness at this level to go beyond perceived boundaries set for the assignment, and to take risks in doing so. For example:

> Well I think~~~for me the biggest thing about the assignment was deciding to take the risk to use non-traditional~~~sources~~~. And I felt like I was being pretty radical in doing that, (laughs)~~~but also, it sort of feels like a breakthrough because I went through incredible angst, and, almost like great sort of depression. I think getting sick too helped. But I went through awful angst. Because that was what I wanted to do! I wanted to do it that way. But I felt like it perhaps wasn't appropriate and there was another sort of product that should be coming out the end?
>
> *Did I, did I ever say that?*
> No never! (laughs)
>
> *So you're saying~~~that the project helped you~~~because~~~you took risks with it?*
> Yeah, sort of intuitively, allowed my intuition to work on it and not to worry. Caroline 3:13

Caroline later reiterated that taking these risks was an important part of her whole assignment and success, both in satisfying herself (Category IV, Completion and Satisfaction) and for meeting the Academic Expectations (Section 6.4) and achieving a high mark (Category II, Optimal

Production). This example also shows that working intuitively can be a part of this category.

The challenging aspect of Enough is an integral part of this category as it is an experience where the postgraduate is aware that there is always the possibility of further exploration. The following example of the open-ended expectations of assignment research and production processes, as opposed to exams, illustrates this:

> I love exams!~~~that sort of~~~whatever! I know now that's what I know, if I don't know it all then, you know, whereas with an assignment you have got that, time and there is almost greater expectation on~~~delving into things deeper and knowing more and that type of thing. Sonia 3: 306

In this category, affective or even aesthetically oriented information seeking strategies are used for immersion in the research and are considered to be part of Enough for Personal Resonance (Section 6.4). An example of this can be found as Caroline explains her rather unusual way of setting the scene and creating an atmosphere for her searching. An extended extract illustrating this can be found in Figure 7.2 in the following chapter.

In summary, this category drives postgraduates towards a deep level of exploration and the need to balance multiple dimensions and sets of criteria is accepted. Postgraduates engage in risky behaviours in terms of assignment requirements in a quest for an intrinsically valuable and useful output.

6.2 Relationships Between the Categories: the Outcome Space for Enough

The outcome space depicted in Table 6.1 shows the relationship between the categories in terms of their meaning and focus of Enough over the course of AIP. As was described for the phenomenon of AIP outlined in Chapter 5, the categories describing variation in the ways postgraduates experience Enough are hierarchically related and inclusive, with each category increasing in complexity. There is a cumulative effect from the first to the final category.

The postgraduates' experiences of the concept of Enough changed in its meaning as their experiences varied from closure, to generation and finally creativity across the categories. There is a focus on closure of the task in the least complex category which changes to a focus on quality in Category II. There is a change in meaning in Category III to a more generative experience of Enough. In the most complex category (V) Enough has generative and creative meaning.

One of the most striking differences is the shift in focus across the categories. The focus on a physical and extrinsic task and the production of 'bits' of the assignment in Category I moves to a focus on a cognitive task in Category II. Interest is the focus in Category III which has affective as well as cognitive aspects such as understanding, learning and discovery . This contrasts with a strongly affective focus on internalised feelings of satisfaction and an affective sense of

completeness in Category IV. This is also similar to Kuhlthau's (2004) findings of the importance of affective factors in the information search process. In Category V the strong affective aspect goes beyond internal feelings from the assignment process, to the assignment being an idealised, aesthetic vision. There is also now a focus on creating the right atmosphere and thus the appropriate aesthetic feelings for oneself, and a shift to ideals of creativity and artistry and perfection in the research. It is the object of Enough, that is, 'Enough for what?' that distinguishes the categories primarily, with the 'how' being related.

There is also an increase in integration (from quantitative to qualitative) across the categories. In the least complex Category I, for example, Enough has an atomistic or quantitative focus on number of words, or sections, required and days to submission. In Category II there is a balance of a more qualitative focus on depth of content. An expanding qualitative focus on the exploration of the subject and understanding for the self and the world in the more complex categories culminate in the expansive, holistic and aesthetic stance taken in Category V where the postgraduate's concept of Enough is concerned with value to the larger world.

Table 6.1: **Outcome Space: Illustrating Relationships Between Categories of Description for Ways of Experiencing Enough During an Assignment**

		FOCUS			
		Task/Project	Interest Content & Process	Sense of Achievement Completeness	Vision
NATURE	MEANING	Physical	Cognitive	Affective	Aesthetic
Extrinsic	Closure	I			
	Quality (Good)	II			
Intrinsic	Understanding/ Engagement		III		
Internal	Satisfaction			IV	
Aspirational	Creativity				V
Themes that Vary		Product >	Process > > > >		Product >>
	Time	Prioritised Optimised	Forgotten	No Longer an Issue	Never Enough

6.3 Themes That Vary Across the Categories of Enough

While high achieving postgraduates experienced Enough during the assignment in five qualitatively different ways, far more complex relationships were also discovered. In each of the five categories there are dimensions or aspects of the meaning of Enough that vary in different ways across the categories. Each theme is specified in the way it is manifested in that particular

category depicted at the bottom of Table 6.1 above. These themes are described in more detail in this section.

The Product > Process Theme

Across the categories a product or process dimension is also evident moving from a strong product focus in Category I (Control and Getting Done) to an increasingly process focus in the more complex categories. However, notably in the complex Category IV (Completion and Satisfaction) the product and process are both in focus. In Category V (Generation and Creation) the focus has come back to the product, however, now the product has become more like a vision that in turn drives a highly creative and often risky research process.

The Time Theme

This is an important theme in the postgraduates' experiences of Enough in AIP. The time theme changes across the categories but in a quite different way to other foci and themes which either represent a growth or a cycling between extremes. The relationship to time is unique in each category although it occurs in them all.

The dimension of time shifts from being the main priority and an overriding part of the experience of Enough in Category I (Control and Getting Done). All other considerations give way to it. Time is also a key part of Category II (Optimal Production) where the emphasis is clearly on optimisation and cost benefit analyses. It is of marginal significance in the middle categories, in Categories III (Understanding and Engagement) and IV (Completion and Satisfaction) time has receded in importance. The theme of time then re-emerged as important although elusive, it comes back in quite a different and whimsical 'if only' sense in Category V (Generation and Creation). Not Enough time can be associated with all categories, except Category IV where it no longer matters.

Time can be a motivator and a constraint. It has a generation as well as a closure aspect. Time to reflect is also important, but this changes across categories too. It is a strong theme in Categories I and II, but less so in III, IV and V. There can never be Enough time to achieve the idealised vision but nonetheless a huge amount of real time is devoted to creating something unique.

6.4 The Different Types of Enough or Enough for What?

Judgements of Enough are made by postgraduates on many different levels. In addition to the varying experiences of Enough described above, analysis has indicated that the types of Enough postgraduates referred to also changed. In effect, these types of Enough answer the question: 'Enough for what?'. In the assignment there were at least six sets of judgements postgraduates were making. These types of Enough intersect and are interwoven in the conversations about

what was important to the postgraduates when 'doing' an assessed research assignment. Each type was judged by quite different criteria.

The types of Enough which postgraduates referred to as they constructed the task were:

A. Assignment Task

The assignment itself as a complete object or 'thing' including the written outline and assessment criteria, structure, format (words and pages). This is connected to Control and Getting Done, and Optimal Production.

B. Project Management

What is required for getting the assignment done which is strongly focused on time but includes energy, organisation, personal resources and generic information literacy skills. This is connected to Control and Getting Done, and Optimal Production.

C. Academic Expectations

The implicit expectations of rigour and criteria of the tutor, lecturer, course level and institution as well as the more general and intangible expectations of peers, family and friends. This is connected to Control and Getting Done, Optimal Production, and Completion and Satisfaction.

D. Professional Portfolio

Proof of technical and conceptual professional competencies for employers, professional associations, accreditation and oneself. This is connected to Understanding and Engagement, and Completion and Satisfaction.

E. Evolving Content

The evolving requirements of the content as they 'follow the thread', answer questions or make an argument. This includes the subject as a whole and the discipline or area (refer to Table 8.2 for more details on how the topic evolves). The main point for these postgraduates was grappling with the ideas during AIP. This is connected to Understanding and Engagement, and Completion and Satisfaction.

F. Personal Resonance

The very personal criteria that are fundamental to the reason for doing the postgraduate course and how the students prioritise, judge and shape all aspects of the task. Incorporates elements of identity, meaning and expectations of oneself. This is connected to Completion and Satisfaction, and Generation and Creation.

6.4.1   Relationship of the Types to the Categories of Enough

The types of Enough described above were quite clearly articulated by the postgraduates, both explicitly and implicitly. When the postgraduates discussed the meaning that Enough had for them, they moved continuously between the different types of Enough. They were constantly balanced, negotiated and returned to throughout the entire AIP. Consequently, when thinking about Enough for successful assignment information products and processes, we need to first consider: 'Enough for what?' This question also needs to be asked when looking at the meaning of Enough in other information seeking situations.

Different types of Enough are linked to different categories of Enough as illustrated in Figure 6.2 below. The fact that these types are connected to particular categories of postgraduates' experiences of Enough is interesting. The more complex ways of experiencing Enough seem to be connected to the types of Enough for: Academic Expectations, Evolving Content and Personal Resonance, on the other hand, the least complex experiences of Enough are connected to Assignment Task, Project Management and Professional Portfolio.

The variation in postgraduates' experiences of Enough is related to the different types of Enough the postgraduates talk about throughout the transcripts. Each different experience of Enough is associated with between two and four types and these are clustered. For example, the least complex category of Enough (Control and Getting Done) is linked by postgraduates to Assignment Task and Project Management, whereas the most complex category (Generation and Creation) is linked to Evolving Content and Personal Resonance, and is linked negatively to Academic Expectations. The links are also from less complex experience to concrete and extrinsic types of Enough and from more complex experiences to intrinsic and types.

Figure 6.2 Links Between Categories and Types of Enough

Types

Assignment Task
The assignment itself as a complete object or 'thing' including the written outline and assessment criteria, structure, format (words and pages).

Project Management
What is required for getting the assignment done which is strongly focussed on time but includes energy, organisation, personal resources and generic information literacy skills.

Academic Expectations
The implicit expectations of rigor and criteria of the tutor, lecturer, course level and institution as well as the more general and intangible expectations of peers, family and friends.

Professional Portfolio
Proof of technical and conceptual professional competencies for employers, professional associations, accreditation and oneself.

Evolving Content
The evolving requirements of the content as they 'follow the thread', answer questions, make an argument. This includes the subject as a whole and the discipline or area.

Personal Resonance
The very personal criteria that are fundamental to the reason for doing the course and how they prioritise and judge all aspects of the greater task. Incorporates elements of identity, meaning, understanding and expectations of oneself.

A   B   C   D   E   F

Categories

I   Control and Getting Done
Enough is experienced as the right amount of essential elements of acceptable standard in place, in order to keep (or regain) control, get the task done and avoid disaster.

II   Optimal Production
Enough is experienced as what enables optimal physical production in order to get it right and create a high quality report.

III Understanding and Engagement
Enough is experienced as what allows engagement and enjoyment of a process of discovery and 'working out' in order to understand and successfully produce.

IV   Completion and Satisfaction
Enough is experienced as an internalised qualitative sense of completeness and coverage in order to satisfy curiosity and make sense to oneself of the topic and the assignment.

V   Generation and Creation
Enough is experienced as a generative driver of the content, vision and development process and of risk taking in order to engage in discovery and create a unique, ideal product of value in its own right.

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6.5 Conclusion

Postgraduates' experiences of Enough within AIP reveal that it is a complex and intrinsic part of not only information seeking but also of information use. The pervasive influence of evaluations of Enough on AIP and the variety of ways it is utilised both moderate and drive learning and production of an assignment is significant.

This chapter has shown that postgraduates experience Enough in five qualitatively different and hierarchically related ways (categories). It has also demonstrated the relationship between the categories in an 'outcome space' for Enough. In addition, the chapter has described six different types of Enough and how these are connected to different experiences of Enough and in conclusion identified some elements of Enough.

The diversity of Enough in the experiences of postgraduates 'doing' an assignment that is described in the way Enough was expressed and in the categories, types and elements of Enough (see Appendix 7) are an indication of the complexity, diversity and richness of the process of evaluating Enough that emerged from this study. In the current study the use of extensive audio analysis and interviews where the postgraduates shared in the wide ranging conversations, may have facilitated the communication of these subtle elements of postgraduates' information interactions.

In brief, the phenomenon of Enough that emerged in this study is multidimensional and combines many elements. The components used to describe the variation in the ways that postgraduates experienced Enough (categories) are associated with types and elements, and are described along a scale of degrees of Enough.

The next chapter will use case studies (as discussed in Chapter 4) to tell the stories of two individual postgraduates. These individual stories will investigate the meaning of AIP and Enough for each individual in contrast to the pooled experiences used to constitute the categories.

Chapter 7

Cases in Point:
The Individual Perspective

"A single leaf, even a single toothpick, has unique complexities - but rarely will we care enough to submit it to case study. We study a case when it itself is of very special interest. We look for the detail of interaction with its contexts...the particularity and complexity....coming to understand its activity within important circumstances."
(Stake 1995, p. xi)

This chapter presents case studies for Laura and Caroline, two of the postgraduate participants in the phenomenographic study. It addresses the third and fourth research questions of the study:

> Do changes occur in postgraduates' experiences of information, learning and Enough over the timeframe of an assignment?

> What are the affective dimensions in the experiences of postgraduates over the timeframe of an assignment?

The aim of the case studies is to show how experiences of Assignment Information Processes (AIP) and Enough evolved over the lifetime of the assignment task. The case studies are also intended to show the dynamism of the categories and how different ways of experiencing AIP and Enough co-exist while a postgraduate is completing the task of preparing a written research based assignment. These particular postgraduates were chosen for case study because their experiences of AIP and Enough were widely spread across the categories described in Chapters 5 and 6. The examples of AIP and Enough given in this chapter are briefly described rather than fully reiterated, as the focus of the chapter is on showing how an individual experiences AIP and Enough.

The methods used to explore aspects of the experiences of Laura and Caroline were outlined in Chapter 4. The case studies in this chapter are based on descriptive accounts (Process Descriptions, Appendices 5 and 6) which convey Laura's and Caroline's experiences over the timeframe of the assignment and the stages or phases of the process. This is done through a series of what are effectively snapshots taken at the three different times each postgraduate was interviewed ('before', 'during' and 'after' the assignment).

This chapter firstly looks at the case of Laura, starting with a brief description of her background. Laura's experiences within selected categories of AIP and then Enough are presented, demonstrating the way the nuances of the categories of AIP and Enough interact in the experiences of individuals. One example of the affective dimensions of 'doing' an assignment for Laura is selected and discussed. As described in Chapter 4, this takes the form of a vignette (Figure 7.1). Secondly, the same pattern is followed for Caroline, looking at selected categories of her experiences and following with a vignette (Figure 7.2) and discussion of an example of

Affect. Thirdly, the intersections of AIP and Enough, and the two cases are discussed more broadly. Finally, the role of Affect is summarised and the chapter is concluded.

The case studies show the substantial differences between Laura and Caroline in the ways they experienced AIP and Enough, demonstrating individual differences that were masked through the pooling of transcripts for the purposes of establishing the categories. The Process Descriptions that were the foundation for this chapter are located in Appendices 5 and 6.

The case studies are drawn together in this chapter with a discussion and reflection on intersections and the changing perspectives of postgraduates' experiences. The role that Affect played for Laura and Caroline is summarised before concluding the chapter.

7.1 The Case of Laura

I would want to know where I was going with it before I started doing any research because I can't stand just accumulating information~~~and then it's such a waste of time~~~so I'd want to make pretty well sure what I was after before I started....I'd love to have the time to do that global wandering~~~but there's not that many hours in a day. Laura 1:53

Laura, a highly articulate and confident postgraduate was working full-time as a public relations and executive assistant for the chief executive in a large public sector organisation. By the time we first meet Laura had been in the course, studying part-time in the evenings, for six weeks. She had previously completed assignments, and had written reports and done other literature research as part of her job. Her undergraduate degree was in English Literature. This assignment was her sixth at postgraduate level. Laura made many wry and frank comments about her experiences and seemed happy to be critical of herself as well as others.

Before our first recorded conversation we had discussions in class and some email correspondence as well as a short topic consultation about the assignment, as Laura tried to decide what direction she should take. At every interview session she also took the opportunity to have a quick consultation to clarify assignment requirements and explore what she wanted to achieve. These discussions were initially conducted separately before our interview conversations and were unrecorded for privacy reasons. However, by the third interview the two conversations were integrated and Laura was very comfortable with everything being recorded.

Laura worked not far from campus and preferred to meet mid-morning for half an hour in my tiny research office. Consequently these uninterrupted sessions were shorter (no sipping coffee or interruptions), and more focused than with other participants. Our conversations had a collusive feel as we were tucked away from the bustle of the world and the university. We were uninterrupted as Laura reflected on her assignment experiences.

7.1.1　Laura's Experiences of Assignment Information Processes

This case study continues with an overview of four of the ways that Laura experienced AIP and three of the ways she experienced Enough while 'doing' the assignment. Although Laura experienced AIP and Enough in all of the different ways described in Chapters 5 and 6, a selection has been made for this case study. This includes the least and the most, complex categories of each phenomenon, and those of the categories that Laura most vividly described.

Assignment Information Processes as Shaping the Task (Category 1)

AIP were experienced as completing a substantial but straightforward assessment task by using personal strategies to shape and manage the task (Shaping the Task). This was Laura's most frequent experience of AIP across all phases of the assignment, particularly during the first two (that is 'before' and 'during').

At the beginning of the assignment Laura experienced Shaping the Task as *"plotting it out"* and wanting *"to know where I was going with it"*. She described the straightforward filtering process she adopted. She also had *"a clear idea in my own head of what the argument is going to be"* and she underlined this clarity by saying *"I rarely go back to the information...once I know where I am heading with it"*. Laura said she made notes from her readings and then found *"it's in there, then it just comes out in an argument"*. After this procedure Laura reported that she did a quick citation check. Laura responded to my probing about her concerns that she would find Enough information by saying *"you just do it... And then it starts to link in"*. She found this always worked for her and equally for starting her writing. Her strategy was to just *"ignore"* the uncertainty and everything fell into place for her.

In the middle of the assignment timeframe Laura was one of the postgraduates who talked about the assignment being *"straightforward"*. She had no problems deciding what material to use despite her frequent references to her *"over-collecting"*. She decided easily *"just by reading through each...highlighting"* or eliminated things as necessary. She read what she had collected and then said it all came together in her head. She knew how to proceed and could *"sit down and plot it all out"*. In many ways Laura's reports of her experiences of Shaping the Task at this point were like those in the early phase of the assignment. She went on to say that she *"over collects"* information so she doesn't *"have to...go racing back [to relocate sources] all the time"*. She finished the interview by mentioning *"pulling all the bits and pieces"* together and checking her bibliography as tasks still to be tackled.

After the assignment had been completed and returned to her Laura experienced Shaping the Task mainly as reflections on techniques learnt and her information use. She *"had some fairly clear ideas at the outset about what I'd find"* so she just had to locate these *"and there weren't a lot of surprises"*. Laura reported that she summarised her reading by highlighting, making notes and looking at the summaries to determine *"I can use this, this is going to fit in with where I want to go with it"*. She prepared an outline in order to *"jot down what I am, how I am going to*

approach actually writing it" and then slotted her material into the outline. She put aside what hasn't been used. Laura used the word *"compiling"* which emphasises her experiences of AIP as shaping the task at hand.

Assignment Information Processes as Discovery and Engagement (Category 3)

AIP were experienced as an engaging journey to discover and understand interesting things, by hunting down leads and having the opportunity to focus and reflect on what they find (Discovery and Engagement). This was experienced by Laura mainly in the first and final phases of the assignment timeframe ('before' and 'after').

At the beginning of the assignment Laura remarked *"I'd love to have the time to do that global wandering"*. She gave examples of having been *"really interested"* in finding out how to put together a Web site and of having *"a genuine interest in what happens"* in education. The reason she was doing the subject she said was *"because I was brain-dead. I mean, I'm busy as all hell in my job but I don't have to think about it"*. Later on in relation to establishing the goal of the assignment she stated *"I love researching"* (see Section 5.1). This passion was independent of the topic, it just had to keep changing because Laura said she gets bored easily. She added that she simply enjoyed *"finding out about things"* and that was the important thing for her. What she was finding out about didn't really matter. She often talked about being *"stimulated"* intellectually *"I love reading...it is much an escape for me"*.

In the middle of AIP Laura experienced Discovery and Engagement in relation to selecting and utilising information. She had been aiming for *"understanding"* and she kept reading *"until... It just sort of goes like that [bangs her head with one hand] in your head"*. Laura described that part of the assignment requiring exploration of professional associations as *"really interesting"* especially in terms of ethics and standards. She was surprised by what she found: *"I had **no** idea"* how many different associations there were until she started her exploration.

After the assignment Laura experienced Discovery and Engagement mainly in relation to information use, reading and collecting information. Her topic involved research on the information behaviour of senior managers and she was fascinated *"Oh, it was **really** interesting"*. She spent a lot of time talking about this part of her research and reiterated her fascination with the topic throughout this and the other phases. She was vehement in her disapproval of what she had found out about managers from the literature. *"And it's **appalling**, their practices, you know. And you do see it **every** single day in an office"*. Laura referred to *"being smacked in the head with all this research"*, and was surprised by the extent of the research although it *"backs up what I've seen on a daily basis"*. Her personal work experiences were confirmed and extended by the research she did for the assignment so she was deeply engaged by her assignment experiences.

Assignment Information Processes as Perception and Understanding (Category 4)

AIP were experienced as a process of growing awareness, learning and understanding about different facets of the profession and oneself through activity and thought (Perception and Understanding). This was Laura's main experience and was particularly strong in her reflections in the final phase of the assignment.

At the beginning of the assignment task Laura experienced Perception and Understanding in relation to what she had learnt from other assignments she had done. What she found out in her research on the information behaviour of senior managers in the current assignment led her to realise not only that this behaviour *"is so flawed"* (as stated in Chapter 6), but also exclaims that *"I carry on that behaviour here"*. She described how senior managers *"accumulate information, they suffer from information overload, they can never find enough of the right information, they make decisions first and then justify them"*. Laura then exclaimed *"that's what I do too"*. She referred to this again later when she talked about interest being paramount for her. And emphasised that *"just the actual documentation of all this stuff and how appalling we are at managing information~~~I mean the solutions are out there but no one is doing much about it"*. Laura's learning made her aware not only of the information practices of senior managers but also her own practices.

In the middle phase of the assignment Laura experienced Perception and Understanding in relation to the most challenging part of the assignment, and also in utilising information. She stated that the most difficult aspect was to understand the difference between what the assignment required of her and the way she was accustomed to dealing with research based tasks for her job. She realised *"that was something that I definitely did when I was writing that research report~~. Not bringing it back to the information professional [perspective] which is what the assignment was asking for"*. She went on to talk about her old work habits and said she still over collects information, *"with a couple of trees"* with the things she won't use. So she was aware of what she did but had not yet changed her practice. She reiterated this in relation to her approaches to selecting and utilising information.

After the assignment had been submitted Laura's Perception and Understanding came through again, *"I didn't know how to leave that out and I, I guess in my own head have it make sense"* despite going *"through it and through it and through it"* . She realised this was a dilemma she could not resolve. Laura referred again to her problem with adjusting from her work perspective. She recognised but couldn't seem to change what she did. Laura repeated her insights many times in this phase of AIP *"I just couldn't get my head around it"* and *"I think in hindsight I would have done it differently"*. She also said *"it was hard to get away from the way I would do a report for the industry [her type of public sector organisation]"*. In relation to techniques she had learnt she said *"I thought about it [her topic] a lot more. I mean I guess it was all stuff that I really intrinsically knew but I thought about a lot more than I had in the past. And I thought about how, how much of [my work role] is just an information role"*. She also referred back to her new awareness of the research on information behaviour from the literature but still said *"Oh, I still go*

about it [research] the same way". In other words, Laura had learnt new ways to carry out research tasks, but had not been able to transfer the skills to the workplace.

Assignment Information Processes as Changing Views (Category 6)

AIP were experienced as radically changing one's way of seeing a familiar part of the world and personal values as the result of an extended engagement with information about a topic (Changing Views). This was expressed by Laura in a fragmentary way which was evident only in the final phase of the assignment in relation to the techniques she had learnt.

When asked if she believed she had learnt anything from the assignment which she based on a topic about her area of work she emphasised *"I thought about that a lot more than I had done"* and said that this gave her a completely different perspective on previously familiar ground. Laura emphasised that she had had to adopt a radically different perspective on what, and how, she thought about information and its role in a workplace. This also required her to change the way she was presenting the information in her assignment which she had initially approached from the same perspective she had taken in her work role. Once she was able to change her perspective she was able, for example, to cut out large quantities of extraneous background material. Laura experienced AIP as *"a new way of looking at things"* changing her view of her work and giving her fresh insights into the familiar.

7.1.2   Laura's Experiences of Enough

Laura experienced Enough in all of the five different ways described in this study. This section describes Laura's experiences of three categories of Enough and illustrates her experiences of the second category which was Laura's most common way of experiencing Enough in each phase of the assignment timeframe.

Enough as Control and Getting Done (Category I)

At the beginning of the assignment Laura experienced Enough as the right amount of essential elements of acceptable standard in place, in order to keep (or regain) control, get the task done and avoid disaster (Getting Done). This included her firm determination, particularly when discussing topic selection, to keep control of the AIP. She decided early on what she would focus upon because *"if I don't know where I am going with something and I am just all over the place!"*. When searching in the library she said she was *"highly focused"* and that she didn't *"stuff around"*. However, Laura also talked about her difficulties in getting started and described *"some apprehension going into it"*. She noted that this was a common occurrence for her when starting assignments *"Am I going to find the information I am after? Oh God where do I start?"*. For Laura there was a complex interplay of positive and negative feelings.

In the middle phase of the assignment Laura most frequently experienced Enough as Control and Getting Done, particularly when she was selecting and utilising information. She talked about serendipitous finds being both *"brilliant"* and *"convenient"* and speeding up the process. A difficult aspect included the fact that Laura was completing another assignment concurrently and this other assignment was similar enough to cause confusion. This hindered her Control and Getting Done. She went on to complain about having too much information, or negative Enough: *"I still collect... Probably double what I did use".* In this way of experiencing Enough Laura said she got to the stage of *"burnout"* and knocked up against *"the time limits",* she also had to juggle the *"amount of time I was prepared to dedicate"* to the task. Laura repeated that she got as much material as she could *"and it's always too much".* She was very aware of Enough as Control and Getting Done in this phase of the work on her assignment.

After the assignment Laura experienced Enough as Control and Getting Done particularly in connection to reading the material she collected. However, when she talked about managing information use she referred again to her habit of over-collecting *"Accumulate, accumulate, accumulate and reject.~~~I am really bad for information overload".* When she talked about reading, which Laura considered the most time-consuming part of the assignment, she described reading voraciously until she hit *"the boredom factor".* She then moved to skimming, searching for anything worth highlighting: *"where's the highlight bits in this"* in order to get done. In brief, Laura continuously experienced Enough as what was required to get done.

Enough as Optimal Production (Category II)

For Laura, Enough was experienced as what enabled optimal physical production in order to get it right and create a high quality report (Optimal Production). This was the most frequent way that she experienced Enough in all three phases of the assignment.

At the outset Laura talked about another assignment she had just completed on the information behaviour of senior managers. She exclaimed that managers' information use *"is so flawed"* and that she *"knows that I carry on the behaviour here".* She went on to explain that she realised what she did while searching was flawed in one sense, but at the same time it was *"optimal"* because she thought it represented the best use of her limited time. Laura was focused throughout the assignment on effective use of her time and energy and on strategies to optimise her production process and end product. This was the focus of Laura's experience of Enough directed to Optimal Production, or producing the best possible assignment.

In the middle of the assignment timeframe Laura talked about a smooth searching process and continually emphasised her experience of Enough as being what was productive for her. She talked about doing *"a lot of web searching"* because of *"time and convenience"* and not needing to supplement this too much as there was a lot of suitable research on her topic available online. She serendipitously found material that was *"just brilliant"* which led on to other things. This was all *"convenient"* and meant that subsequently Laura experienced a *"fairly fast process".* She went

on to talk about judging the information she had located by using her knowledge of the authors from her work role. She was able to rapidly evaluate the quality of the information *"I knew they were reliable sources"*. She also quickly noted that the information included different points of view, trends and issues in her work field and so *"it was exactly what I was looking for"*. Laura was consistently conscious of the quality of what she found, but reiterated her dissatisfaction with her tendency *"to over collect and discard"*. She was aware of the need to limit her time, but also to balance this with having *"felt like I had enough information to...be able to sit down and write something that would be good"*. She finished off this phase of her work on the assignment by talking about ensuring the accuracy of the bibliography as another key task to be completed.

After the assignment had been submitted and marked Laura experienced Enough as Optimal Production during our feedback discussion at the beginning of the interview when I was acting as her tutor. She also reflected on what stood out for her and the techniques she had learnt. Laura sought to clarify written comments I had made in the assignment feedback sheet, particularly how she could enhance her referencing of material. She wanted to be able to handle this more effectively the next time.

An interesting example of a conflict between this category of Optimal Production and other ways Laura experienced Enough was demonstrated when she commented *"It was pretty full on. I felt sorry for you having to read it"*. When I responded that I thought it was beautifully written and thorough although there was a bit too much background, Laura said she had struggled to leave out what she realised was too much material, because no matter how many times she tried, it didn't make sense for her without it (see full example in Section 6.1). This was a frequent comment from postgraduates. Laura knew that collecting so much background information was impeding her productivity and compilation of an effective product, or report. She knew that Optimal Production required discarding, or not writing, a lot of what she had included in that section. She struggled to eliminate the extraneous material, but couldn't because her Understanding and Engagement (Category III) and thus her struggle for a sense of satisfaction with Completion and Satisfaction (Category IV) needed that material.

Enough as Completion and Satisfaction (Category IV)

Laura experienced Enough as an internalised qualitative sense of completeness and coverage in order to satisfy curiosity and make sense to oneself of the topic and the assignment (Completion and Satisfaction) in a predominantly negative way. This conflict was also evident in Laura's comments a little later when she was asked what stood out for her about the assignment. She replied that she had never got to the point of feeling confident and satisfied at *"having captured"* what the assignment required. She realised that this partly stemmed from her immersion through her job in the area she chose to focus on for her report. She struggled to distance herself sufficiently and look at the area in another way. Yet despite, or perhaps because of, all these conflicts and interactions her assignment was of an exceptional standard. When she was asked how she decided whether to collect something or not, she mentioned evaluation strategies she

used to ensure the quality of what she collected and how she moved forward by using references from these items. Laura's final comments were about how much of herself she put into an assignment. She exclaimed *"You know you spend so much time!"*. But despite putting in so much time and effort Laura seemed wistful that she hadn't done Enough, or found Enough information to create something that satisfied her and she felt was an intrinsically 'good' assignment. At the start of this final phase her comments (as described above) were revealing *"you know I went through it and I went through it and through it~~~it was pretty full on. I felt sorry for you having to read it"*. She was very aware at this stage of the amount of effort and time she expended, but she was equally conscious of all the flaws in the resulting report. These comments were made even though she had received a High Distinction mark for this report. Laura remained dissatisfied with her work and the end product, despite having enjoyed the research process (see AIP Category 3 above).

Laura experienced the most complex category of Enough (V Generation and Creation) in only a fragmentary way in the final phase of the assignment, after she had finished her report and received her mark and feedback.

7.1.3 Summary of Laura's Experiences of AIP and Enough

Laura, an English literature graduate, held a demanding and responsible position in a large public sector organisation. She was already practised in researching and writing reports on a wide diversity of topics and tackling AIP in a confident and efficient way as simply another task to be completed. She experienced AIP in all of the six different ways described in the study. At the outset, Laura's activities were focused on her clarifying and defining a topic and her desire to feel engaged with the assignment. In the middle phase she placed a lot of emphasis on the experience of Enough as Optimal Production and searching for information in a focused and efficient way to ensure she found high-quality material. At the end of the assignment Laura, despite her apparent self-confidence was also prepared to be very self-critical and to reflect on the barriers she had encountered in completing the assignment to the standard she expected of herself (Generation and Creation).

7.1.4 Relationship Between AIP and Enough

Early in the analysis when using the pooled interview transcripts to constitute the categories, it was clear that there was an important relationship between the experiences of AIP and the concept of Enough. Postgraduates' experiences were very dynamic: so that a comment made by a postgraduate often shifted between the categories describing different ways of experiencing the two phenomena. It was decided that this relationship needed to be mapped somehow to demonstrate the constant negotiation between the macro process (AIP) and what was understood to be a sub-process of calibration and evaluation (Enough) happening throughout the task process. This movement might perhaps help explain why 'doing' the assignment was being

described as quite taxing not only cognitively and physically but also emotionally.

Table 7.1 is a visual summary of how Laura's experiences of AIP and Enough were dynamic over the timeframe of the assignment. It also illustrates the pattern of occurrences which assisted in selection of Laura's experiences to describe in this case study. The table shows the pattern of Laura's experiences of AIP and Enough, as established during each of the three interviews conducted with her. The rows, labelled on the left side of the table correspond with the categories for AIP and Enough derived from analysis of the pool of transcripts. The labels on the numbered columns which are grouped as Phase One (before), Phase Two (during) or Phase Three 'after' interviews correspond to specific ways that Laura experienced each of the 11 topic chunks established. These are described in the Process Descriptions of experiences and topics discussed by Laura in the interviews (Appendix 5). Each occurrence within these chunks is marked with a star.

Table 7.1 Dynamic Movement of AIP and Enough Across Phases of the Assignment: Laura

Phases of the Assignment

Topic Chunks / Categories	One: Before — 1. Doing Research	2. This Assignment	3. Other Assignments	4. Topic Focusing	5. Strategic Searching	6. What's the Point?	7. Interest Paramount	8. Starting Difficulties	Sub-Total	Two: During — 1. Smooth Searching	2. Most Difficult Aspect	3. New Aspects and Old Habits	4. Selecting & Utilising Info	5. The Final Bits	Sub-Total	Three: After — 1. Feedback Discussion	2. What Stands Out	3. Techniques Learnt	4. Manager's Info Use	5. Learning	6. Information Use	7. Reading	8. Collecting	Sub-Total	Category
AIP																									AIP
1. Shaping the Task	••	•	•	•••	•	•		••	13	•••	••		•••	•••	16		•	•			•••	•			8	1
2. Finding Out		•••	•	••	••	•••	•		10	••• •		•	•		7			••• •	•		•				7	2
3. Discovery and Engagement		•	••••	••		•••	•		9	•		•	•••		5			•	•	•		••••	•••	15	3
4. Perception and Understanding			•••••			•••			6		••	•••	••		8	•	••	•	•••	••••				17	4
5. Growing and Changing									0		•				1	•		•						3	5
6. Changing Views									0						0	•		•						1	6
ENOUGH																									E
1. Control and Getting Done		•		•••	•	••		•	7	•	•	•	•••	••	10	•••	•	•	••			•••		6	1
2. Optimal Production	••	•••	•	•		••		•	12	•••••	•	•	••	•	13		•	•••••	•	•	•	•	•	15	2
3. Understanding and Engagement	•	•			•	•		•	9	••	•	•	•••		9	•	••	•••••	•	•		•••	•	15	3
4. Completion and Satisfaction				•		•	••	•	5				••• •		4	•	•	•		•		•		3	4
5. Generation and Creation									0						0								••	2	5

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The mapping of the categories, or experiences, to the contexts in Table 7.1 where they occurred in each interview gives some indication of the 'micro contextual' variation in Laura's experiences. For example it shows that, from Laura's perspective, experiencing AIP as Shaping the Task was part of seven out of the eight identified topic chunks (see Appendix 5.) in the first Phase and that she did not report experiencing AIP as Growing and Changing (Category 5), or Changing Views (Category 6). Overall it could be observed that:

1. The patterns of contextual variation in Laura's experiences of AIP and Enough mirrored each other across the three phases of the assignment.

2. Laura experienced AIP most significantly in Categories 1 to 4 and Enough most significantly in Categories I to III. In the middle of the assignment less complex levels of AIP and Enough were to the fore in Laura's experience.

3. AIP as Growing and Changing was relatively rare and occurred mainly in the third phase, after the assignment. Changing Views was only experienced in a fragmentary way, again after the assignment.

4. Laura experienced Enough mainly as Optimal Production (Category II) and Understanding and Engagement (Category III). Her experiences of Generation and Creation (Category V) appeared only in the last chunk of the third phase, after the assignment, and were only fragmentary.

5. In the last phase the experience of AIP and Enough included the most complex categories but only in a fragmentary way.

6. Laura's experiences in the last phase were more reflective and wide ranging.

This case study ends with a discussion of the affective dimensions of Laura's experiences in the following section.

7.1.5   Laura and the Role of Affect

When listening to the audiotapes of the interviews with Laura there were many examples of the affective dimensions of 'doing' an assignment. As described in Chapter 4, the embedded nature of Affect could be heard, rather than read in the text of the interviews and it was difficult to report. It was also very difficult to separate out for analytical purposes because it was part of whole experiences. Nonetheless it was very clear that Affect was significant. The evidence presented in this section was gathered from repeatedly listening to the audiotapes.

Laura's experiences of the assignment and how they entwined Affect was demonstrated in three major ways:

- She had a strongly felt passion for her research and consequent discoveries. This passion was an important driver.

- Laura demonstrated firm management of herself and her emotions in optimising her productivity and maintaining control.

- Persistent and harsh self-criticism was evident throughout the process and contrasted with Laura's seemingly confident manner.

In brief, Laura demonstrated an ongoing and persistent threading of a productive handling of Affect which was contrasted with extreme self-doubt and questioning that may have acted as a constraint at times.

A few examples of Laura's emotions and feelings as part of 'doing' the assignment which were easily recognisable and clearly articulated by Laura herself were:

- Apprehension - about 'starting' an assignment every time *"there's some apprehension... Oh God, where do I start?"* (Phase 1).

- Self-criticism and lack of confidence - Laura made strongly expressed and repeated references to her self-perceived shortcomings (in contradiction to her confident manner) *"their information behaviour is flawed. And so is mine!"* (Phase 1 - before); *"I just couldn't get it through my thick skull (laughs)"* (Phase 2 - during); *"I felt sorry for you having to read it (sounds embarrassed)"* and *"God! I think those brain cells are dead too!"* (both Phase 3 — after).

The following examples contrast markedly Laura's enthusiasm for the assignment tasks and her equal dislike of being bored:

- Her passion, interest and love of research which she pursued to help escape other boring bits of her life *"It's as much an escape for me"*.

- She disliked being bored *"you know if I'm bored by something then I, I just can't get into it."* (Phase 3).

- Her passion and love of reading and her intense dislike of dissecting literature, *"hate tearing it apart"* (see also in following example vignette from Phase 1).

There were many less obvious demonstrations of the intertwining of Affect in the assignment for Laura. A few examples follow:

- Maintaining a sense of control through strong planning and focus of the project in order to counteract feeling overwhelmed *"I can't stand just accumulating information."* (Phase 1) and "I *am really, really focused. I know* **exactly** *where I'm going. I don't stuff around."* (Phase 1)

- Surprise and fascination such as her discoveries about managers' information behaviour, she found these enthralling and exciting. Laura repeated at length *"the interesting thing is~~. To have it pointed out time and time again in the research."* (Phase 1) and "*Oh, it was* **really** *interesting~~. It was really interesting."* (Phase 3).

- Frustration and anxiety were for Laura the most difficult part of the assignment as she

was changing her perspective on a very familiar field. She felt continually frustrated when trying to make that cognitive leap because she found it so hard but did not think it should be. She noted even after the assignment was marked that she had constantly wondered if she had done what the assignment was asking for, *"God, have I done the right thing?"* (Phase 3).

Some of these examples are illustrated in more detail in the following vignette, Figure 7.1, where Laura described her interests and motivations in relation to the assignment.

Figure 7.1 Vignette Example for Laura

Interview Extract	Affective Response
What's the point of doing it (the assignment). I mean..? Learning. Umm~~. It's~~~it's, do you mean why am I doing postgraduate stuff?~~ OK, well there were a couple of reasons why I started doing it. First was because **I was brain dead.** I mean I'm busy as all hell in my job but I don't have to_think about it. So I needed something there! I also wanted to do something that was more vocational than what I have done in the past um~~and, and I just stumbled across information management. I've always been interested in the way that information gets out. I started off in marketing so the communication side of it is **really of interest. But I'm also really interested in research. I love researching**, it doesn't matter what it is as long as it changes fairly regularly. **I get bored** doing the same thing over and over again. Umm, so it was just a combination of those things that made me do this. **Fortunately it's been_exactly_what I was after!**	Sounds unsure and then talks in a firm, rapid voice about her motivation. Becomes intense but in the last sentence voice softens. (1 Boredom) (2 Interest, Passion) (3 Boredom) (4 Happy, Pleased, Sure)
Oh good and what, do you know why you like really doing research or..? Umm, **I like useless, useless information** (laughs)~~no umm~~ **I like finding out about things** it doesn't matter really what it is. But **I just, I like discovering new information so~~**	Sounds happy and excited as she explains her enjoyment of the research process. (1 Slightly embarrassed, Amused) (1, 2 & 3 Pleasure, Interest)
OK so then the assignment is really a chance to do what? The major assignments that I have done have been a chance to take it back to the work place. I **feel like I should be doing something, some sort of justification** as to why I am doing the course. And it's also, it does help me in my job in terms of understanding the way that things work or improving efficiencies [name of workplace] and coming up with possible solutions for various things.	Sounds hesitant and then adamant as she justifies her participation and enjoyment. (1 Self-doubt, Uncertainty, Justifying)
So I guess another really, easy question. How do you know when you have learnt something (laugh)? Um, I guess **if I feel like I have been stimulated by it.** Like even though I said that with the information behaviour of managers I was sitting there thinking I know this, I know this. **It was really, really interesting** to find that there are all these characteristics that are **so appalling!** I mean my boss actually wants a copy of the report and I said to him that I am going to put a disclaimer on it saying I do actually like you and I want my job. But just the, the actual documentation of all of this stuff and **how appalling we are at managing information** ~~umm I mean the solutions are out there but nobody's doing much about it. So, I am learning something even though it is something that I already knew. I guess, yeah, **the stimulation, knowing or just feeling like it's, um it's interesting to know about this stuff** rather than thinking that **'Oh God I've got to drag myself through** and, and finish this off'. Um, you know I'm finding that **I am enjoying this one**...Which is **such a shock!**	Sounds serious as she describes learning as stimulating, then emphasis and pace change indicating surprise. Voice softens and slows as she reflects on what she has found and her interest in this. (1 – Stimulation) (2 – Interest, Excitement) (3 – Shock, Surprise) (4 – Shock, Surprise) (5 – Stimulation, Interest) (6 – Boredom) (7 – Enjoyment) (8 – Strong surprise) *(cont. next page*

Figure 7.1   Vignette Example for Laura (cont.)

Interview Extract	Affective Response
Is it? Oh **I hated my undergraduate degree**~~. Oh **I just loathed it.** I mean I **love reading** which is why I did it but **I hated tearing it apart, dissecting it**~~. Yeah, **tedious!**~~~ It's not what I want out of this though. *No, no.* It's as much an **escape for me** (mutters in low voice). **Get out** (under breath), **away!** (almost unintelligible whisper) .	Sounds very emphatic about her dislike and her great love. Then switches to muttering and sounding frustrated. Drops voice so low that tape doesn't register several words. Sounded upset and angry, talking to herself. Finishes with an escape wish. (1& 2 – Hate) (3 – Love) (4 – Hate) (5 – Boredom) (6 – Frustration, Anger pent-up?)

Note: Phrases highlighted in bold are word level indicators of an emotional response. Numbers in the right hand column refer to the different passages in bold in each section

Discussion of Laura's Vignette

Laura's experiences recorded in the vignette revealed many different emotions in play. Laura explained why she was 'doing' the assignment and linked this to her course, expounding at length about her love of research and reading, and need for stimulation and avoiding boredom, as well as her fascination with what she found in the research. She repeated (from earlier in the interview) her need to justify doing the course to others and perhaps to herself. Laura also muttered in a barely audible voice about *"escape"* and then angrily whispered to herself the words *"get out"*. For Laura Affect was demonstrably entwined with her assignment. This vignette example also demonstrated the interweaving of Affect and AIP.

Laura was aware of three different ways of experiencing AIP in this vignette and Affect as part of these experiences. In this passage Laura focused on why she was 'doing' the assignment rather than the task itself and therefore the examples of AIP were in the middle categories of the 'hierarchy'. There was evidence of Finding Out (Category 2) as Laura explained her need to do something vocational and her particular interest in one aspect of information flow. There was abundant evidence of Discovery and Engagement with the Research Process (Category 3) as Laura articulated enjoyment of 'research' for its own sake several times, as well as her excitement about a specific discovery she made as a result. A growing Perception and Understanding (Category 4) could also be heard in Laura's surprise and excited interest in learning about managers' information practices, which she also recognised in herself.

In this vignette Laura also articulated Affect in three different experiences of Enough: Optimal Production (Category II) for the assignment was evident in Laura's requirement for her topics to link to her work in order to produce a good assignment. Enough also meant understanding how to improve efficiency in her job. Enough for Understanding and Engagement (Category III) was

articulated several times in this example when Laura stressed that what she researched had to change so that she didn't get bored. Enough for understanding (and therefore learning) required feeling interested in what she found. Finally, Enough as a sense of Completion and Satisfaction (Category IV) was expressed by Laura when she said she felt pleased to know what she had learnt as a result of her reading and research. It was also present in a negative way when she talked about her lack of satisfaction with her whole undergraduate course using strong words (for example hate, loathe, tedious).

7.1.6   Summary of Laura's Case Study

Building on her undergraduate work, Laura had done professional writing in her area of specialisation early in her career and was working in a job that required research and writing at the time of the study. As a postgraduate Laura's experiences of information, learning and Enough varied continuously throughout the assignment. Completing the assignment had clear affective dimensions for her. Overall, Laura:

- carefully targeted her searching to maintain tight control of AIP and this was important to her

- balanced her intense interest in research and her topic with her dislike of being bored

- used her skills and experience to complete her assignment to a meticulous standard despite doubts about her whole approach being appropriate

- felt dissatisfied with her assignment, despite her high mark, even well after the assignment was over.

Laura thrived on these contradictions and was a high achieving postgraduate despite, or perhaps because of them.

7.2 The Case of Caroline

> *"I'm getting back on track this week, and researching 'Information Services Listed in the Sydney Area'. So far so good - the 60 or so listings are diverse enough to be interesting. One part of me is concerned that I'm planning something bigger than Ben Hur, but it will get honed down as the week progresses?"* Caroline: e-mail between Phase 1 and Phase 2 interviews.

Caroline chose to meet for the first of the three interviews before class in a campus café. There, amongst numerous other chatting and laughing students, we talked informally between coffee and occasional interruptions for three-quarters of an hour. Caroline completed her Bachelor of Arts degree in English and Fine Arts in 1994. She drew on this artistic background and her own creativity in many ways (for example she was always quirkily dressed and chic; she drew artistic mind maps to make notes). Initially nervous of the microphone, after a few brief replies about her background she began to vividly describe her diverse prior background with *"research projects"* including those similar to the one required for the class assignment. Caroline had prior experience in research and tertiary level teaching ranging across writing research reports as a

tutor of creative writing and for community arts projects. She had also been a researcher for a private investigations company and for a scenario planning consultancy. Caroline had excellent verbal communication skills and was highly articulate with a vivacious and confident personality. It also became clear that she had high level writing skills.

In her first semester of postgraduate part-time study Caroline had already completed three earlier assignments in this and the other subject she was taking concurrently that also required research presented in a report. Consequently Caroline felt she had plenty of practice on which to draw. The reason she had decided to study information science at postgraduate level was to explore the links between the different levels of her knowledge work she had undertaken to date. From a rural background she carefully chose her course from those available Australia wide, for what she saw as its innovative orientation. Her interest in AIP and the links between research and industry were what drew Caroline to the subject. Caroline demonstrated an excellent understanding of people and their interactions with information and had an expansive approach to life, career and information with a wide frame of reference for our discussions. Caroline was very thoughtful and careful about what she said but was also often very spontaneous and there was a lot of laughter during the interviews.

7.2.1   Caroline's Experiences of Assignment Information Processes

The pattern used to describe Laura is repeated for the case study of Caroline. Her experiences of AIP and the concept of Enough are described in terms of how they interact in the life of one individual. Appendix 6 likewise contains the Process Description of experiences and the topics discussed by Caroline in the interviews.

This case study continues with an overview of four of the ways that Caroline experienced AIP and three of the ways she experienced Enough while 'doing' the assignment. Although Caroline experienced AIP and Enough in all of the different ways described in Chapters 5 and 6, only some of her experiences have been selected for description here. These are the least and most complex categories of each phenomenon, and those of the central categories that Caroline often described, which have not been presented in Laura's case study.

Assignment Information Processes as Shaping the Task (Category 1)

AIP were experienced as completing a substantial but straightforward assessment task by using personal strategies to shape and manage this task (Shaping the Task). This is the least complex category and was a useful starting point and one of the most frequently occurring categories across the pool of transcripts.

Caroline experienced AIP as Shaping the Task in all three phases of the assignment, but her experience was constantly shifting. At the beginning of the assignment Shaping the Task was linked to structuring and shaping what she saw as a 'balanced' end product for submission. For

example, Caroline habitually sketched restructured interpretations of the assignment requirements into a black notebook that she took everywhere. Her information searching was planned in order to fill in the physical structure with an aim for a 'balanced' look. This visual balance was important because it gave Caroline confidence that what she was doing, and therefore what she would end up with, would be balanced too. Shaping the Task in the early phase also meant maintaining momentum by making the best of any problems she encountered in her early information searches. It meant adjusting her ideal AIP and final report in the face of time and other constraints.

When Caroline was in the middle stage of the assignment she talked more frequently about Shaping the Task than at any other time. She also linked this experience to more of the other topics of discussion in this phase. The idea of a 'balanced' product was still important to her, but now Caroline was focused on the ups and downs of 'doing' the work needed to drive her project forward, rather than tossing around ideas and plans as she had been in the first phase. For example, Caroline linked this way of experiencing AIP to how she went about searching for the information she needed. An error that had a serendipitous outcome had shaped the entire research task and report by taking her down a particular path that led her to an unusual topic choice for the assignment. Caroline also experienced an acute problem of information overload in this phase of the work, but how she chose to respond to this varied at different times. For example, having too much information when she first searched meant she changed her topic. This was another part of Caroline's experiences of Shaping the Task in the middle phase of the assignment.

Several weeks after the assignment was finished Shaping the Task was a less important part of Caroline's experiences, as might be expected. It was still relevant however, in terms of her reflections about having chosen to shape the assignment task in a particular way for quite specific reasons. Looking back, she linked some of her decisions about the information sources she chose and how she incorporated them in the shape of her outline and report structures to her broader awareness of *"the speed of change"*, and to the meaning the information science and other disciplinary literature had for her. This influenced the particular literature and quotations she utilised in her assignment.

Assignment Information Processes as Finding Out (Category 2)

AIP were experienced as a means of finding out more about something of current interest about her chosen professional field (Finding Out) occurred frequently for Caroline especially in the early and middle phases of completing the assignment. Initially she spoke about this experience as one of wanting to find out about an area of the industry that she was completely unfamiliar with (see Section 5.1). She said she did not want to pursue something *"standard"*. Caroline decided that choosing something *"cutting-edge"* meant that for her the *"definition of the industry area"* would be perhaps *"the most challenging part of this assignment"*. So part of Caroline's experience of Finding Out was defining exactly what she wanted to explore by defining the

industry first. She also explicitly linked this process to her own then current job hunting activities.

When she was interviewed during the middle of the assignment timeframe, Caroline talked about the different industry sectors she had looked at both for the assignment and as potential job hunting targets. She went on to say that the assignment was being experienced as Finding Out about an area of interest to her, *"I'm interested in that point between systems and information"*. Caroline wanted to explore very specific and quite complex areas of the information industry. Many of the comments in this phase of her research related to conceptualising and implementing her process of Finding Out, suggesting that information seeking was a major component of the middle phase.

After the assignment had been submitted, marked and returned, Caroline talked about the literature in a more general way. The assignment had given her a *"perspective"* that she felt was important for her in the current job she had taken up and it enabled her to take *"bigger risks"*. The new knowledge she had acquired led to Caroline experiencing Growing and Changing (see below). In addition, her learning and personal growth allowed her to take more risks then she might have otherwise.

Assignment Information Processes as Growing and Changing (Category 5)

AIP were experienced as personal growth and change by expanding ideas and skills through communication and reflection while investigating a topic and completing the task (Growing and Changing). This was the way of experiencing AIP that Caroline most frequently referred to. At the beginning of the assignment she experienced Growing and Changing in terms of understanding, and then implementing, a focus on a *"learning process rather than a product"*. Caroline saw one purpose of the assignment as learning how to work within academic conventions or *"in a specialised mode"* and she went on to give an example of academic referencing. Caroline emphasised that she was well aware of what she did, and did not know, from the start of an assignment process.

In the middle of the assignment timeframe Caroline made several points about actively developing her repertoire such as *"honing Web searching techniques"* and working electronically with information that she collected. She reported learning new information handling techniques that changed the way she worked. This came *"through a relationship with the content I am looking at"* .

After submission and marking of the assignment Caroline talked during the third phase about her experiences of Growing and Changing, including how she had learnt to take risks. This also had an impact on her approach to job seeking as well as *"my life"*, with good results she thought. Learning to take risks was a constant theme in Caroline's reports of her experiences.

Assignment Information Processes as Changing Views (Category 6)

AIP were experienced as radically changing one's way of seeing a familiar part of the world and personal values as the result of an extended engagement with information about a topic (Changing Views). This was the most complex way of experiencing AIP found in the study. It was a useful way to conclude the illustration of an individual and their experiences of AIP. This category, perhaps because it was the most complex way of experiencing AIP, had the least occurrences across the pool of transcripts used to build up the categories. Caroline experienced AIP as Changing Views before she started the assignment and in several fragmentary bits in the phase after the assignment, but not at all in the middle phase during the assignment.

In the final phase (discussed in the third interview) Caroline experienced Changing Views on a few occasions. She talked about problem-solving in her job where there was *"no systems documentation"*. She said she had come to recognise the power of text, as opposed to numbers, for dealing with such problems. This was a complete turnaround for Caroline *"I thought 'Hang on! Maybe text isn't dead! It's still as a classification system the most powerful tool that we have got!"*. Learning from the assignment combined with her current work challenges produced a complete change in her perspective *"again I feel the experience of doing that assignment has kind of helped that perspective"*.

Caroline made an interesting reflection in this final phase by linking back to our first conversations when she talked about why she chose the information science course in the first place. This was connected to the unique perspective she thought was offered by the particular course, *"It was the whole reason why I chose the course, I think"*. In this way she believed she was setting out to Change her own Views quite explicitly by selecting the course which she perceived to be innovative and to embody, in her own words a *"new perspective"*. In that context, the assignment provided her opportunities to work towards her goal.

7.2.2   Caroline's Experiences of Enough

Enough as Control and Getting Done (Category I)

For Caroline, Enough was often experienced as the right amount of essential elements of acceptable standard in place in order to keep (or regain) control, get the task done and avoid disaster (Control and Getting Done). This way of experiencing Enough was especially frequent in the middle phase of the assignment. Although she also experienced Enough in this way before, and to a lesser extent after the assignment was submitted and marked.

At the beginning of her preparation Enough was experienced as Control and Getting the assignment Done in a prospective way. For example, she talked about how she intended to overcome obstacles with her problem solving approach. Caroline stated that she found it necessary when doing research to turn problems to her advantage. When things were *"breaking down"* it was about *"getting over those broken down bits in order to keep going"*. She also talked

about constraints, for example, *"timeframes"* and *"toeing the line"*, at this phase of the assignment.

In the middle phase Control and Getting Done was a particularly frequent experience of Enough for Caroline. She was busy trying to get full text articles online, searching for information for two assignments at the same time and looking for different types of information. She commented that *"there's not much"* of a particular sort of information that she was seeking. She was very focused on getting the 'right' bits to complete the gaps and therefore get the assignment done and ready for submission. She selected the topic based on a search that provided her a manageable amount of information to work with. Caroline also altered her work habits in response to what she was reading and implemented electronic ways of working to Get it Done faster by *"honing the Web searching techniques"*, emailing material from searches to herself and jettisoning her notebooks. She was very happy about this exclaiming at one point *"Ahh~~. Lovely!"* When searching she was not finding information on narrowed down topics, but was browsing and pulling books off shelves. Her aim was to simply fill the gaps and generate material.

During the weeks after the assignment had been submitted and returned Caroline had rarely experienced Enough as Control and Getting Done, although this focus re-emerged from time to time and was still seen as important. She reflected that overall she took a *"snapshot approach"* to the literature and *"was plucking certain quotes out"*. She equated 'doing' the assignment to doing *"a collage"* in this final phase.

Enough as Understanding and Engagement (Category III)

Enough was experienced as what allows engagement and enjoyment of a process of discovery and 'working out' in order to understand and successfully produce (Understanding and Engagement). This was the most frequent experience of Enough for Caroline in the middle phase of her work. It was also quite frequent at the beginning but was predictably considerably less so after the assignment had been completed and returned.

During our first interview Caroline said that for her the purpose of the assignment was the *"learning process"* involved and *"knowledge"* of the field which she described as *"I guess it's that sense of past, present and future in the context of information studies and deepening my understanding of that"*. She experienced Enough to achieve this as Understanding and Engagement with the learning process. She went on to say that she was very aware of what she wanted to get out of the process (and therefore what Enough meant at this level) from the beginning.

In the middle phase of the assignment Enough was experienced as Understanding and Engagement by searching the literature and bounding that searching. Search results influenced Caroline's topic choice as she grappled with what she found and actively synthesised the topic. In addition, as Caroline talked of her interest in boundaries and the intersection of phenomena *"that point between systems and information"* she needed Enough to pursue that interest. She was

also getting very involved in reading the work and tips of well-known information professionals, then implementing ideas she came across. For example, using e-mail for record management and note taking. Caroline said *"it's actually through a relationship with the content"* that she felt she was learning these things too. As noted in Chapter 5, this relationship with 'the content' was a catalyst for many of Caroline's (and other postgraduates') experiences of AIP and Enough.

In the time after the assignment had been completed Understanding and Engagement was a relatively rare experience of Enough for Caroline. She reflected that although she had learnt from engaging with what she was doing, Caroline also thought a lot about what she didn't end up doing. She also stated that *"learning is an information search process"* requiring Understanding and Engagement with the process of searching, not just the literature. The desire to do this had led her to this course.

Enough as Completion and Satisfaction (Category IV)

Enough was experienced as an internalised qualitative sense of completeness and coverage in order to satisfy curiosity and make sense to oneself of the topic and the assignment (Completion and Satisfaction). This complex experience of Enough is, not surprisingly, the least commonly found across all the interviewees. Caroline, however, experienced Enough in this way relatively often at the beginning and then after the assignment, although not at all in the middle stage.

Before the assignment Caroline experienced Enough as Completion and Satisfaction as she thought ahead to what she wanted to produce. She wanted it to be something that would be *"useful"* and have *"benefit"* for anyone who might read it. She was actually trying to suppress her desire to do something that would *"stand on its own"* or be judged *"artworks"*, as she was also sufficiently pragmatic to realise the constraints of the assignment exercise.

In the middle of the assignment Enough as Control and Getting Done (Category I) and Understanding and Engagement (Category III) was the main experience. Enough as Completion and Satisfaction (Category IV) was completely absent from Caroline's reported experiences.

After the assignment Caroline experienced Enough as Completion and Satisfaction when she reflected on the ways she took big risks with the type of information she gathered and the ways she structured the assignment to pursue her desire to create something significant (see extended example in Chapter 5). She was determined to do what was important to her and prepared to push herself hard to accomplish this. She described the anxiety that this caused as going through *"awful angst"* and even ascribed getting the flu to her anxiety, *"I stood (stuck) there in this awful sort of, thing for about a week~~~. Thinking about it!"* Caroline returned to the theme of risk-taking as she talked about her current job. While she admitted that she became ill and experienced her *"darkest hours"* in the process of completing the assignment, this *"helped"* her and was an inevitable part of her quest for Enough in the context.

7.2.3 Summary of Caroline's Experiences of AIP and Enough

Caroline, was between careers at the start of our interviews, by the end of them she was working in the information sector. She had previous experience of researching and writing reports and tutoring others. She was confident and creative in her approach. Caroline also experienced AIP in all of the six different ways described in the study. From the outset, she had used very distinctive ways of looking for information and she was willing to take risks to do what she wanted for the assignment. In the middle phase, Caroline was struggling to deal with the information she found and became ill. At the end of the assignment, she reflected on the power that taking risks had on what she had achieved.

7.2.4 Relationship Between AIP and Enough

As in Laura's case, Table 7.2 is a visual summary of how Caroline's experiences of AIP and Enough were dynamic over the timeframe of the assignment. It illustrates the pattern of occurrences which assisted in selection of Caroline's experiences described in this case study. The table, like that of Laura, shows the pattern of occurrence of Caroline's experiences of AIP and Enough as established during each of the three interviews conducted with her. The rows, labelled on the left side of the table correspond with the categories for AIP and Enough derived from analysis of the pool of transcripts. The labels on the numbered columns which are grouped as Phase One (before), Phase Two (during) or Phase Three (after) interviews, correspond to a specific ways that Caroline experienced each of the 11 topic chunks established. These are described in the Process Descriptions of experiences and topics discussed by Caroline in the interviews (Appendix 6). Again each occurrence within these chunks is marked with a star.

Table 7.2 Dynamic Movement of AIP and Enough Across Phases of the Assignment: Caroline

Topic Chunks / Categories	One: Before								Two: During							Three: After						Category
	1 Background	2 Starting this Assignment	3 Role of the Product	4 Do Next	5 Searching in the Library	6 Shelf Tactics	7 Purpose	Sub-Total	1 Looking for Information	2 Specific Sections	3 Finding Interest	4 Search Process	5 Honing New Skills	6 Online/Shelf Browsing	Sub-Total	1 Impact	2 Philosophy	3 Risk Taking	4 Time to Think	5 Learning	Sub-Total	
AIP																						AIP
1. Shaping the Task	•		•	•		•	•	5	••	••		••		••••	9				•	••	3	1
2. Finding Out		•		•			•••	5		••	•			•••	6	•	•			•	2	2
3. Discovery and Engagement	•				•	•	•	3		•	•		•	•	5	•			•	••••	6	3
4. Perception and Understanding					•		••••	5			•		••		2	•	••	•		•	4	4
5. Growing and Changing			•		•		••	4					••• •		5	••		••	•••	••	9	5
6. Changing Views								0	•						0	•		•		•	4	6
ENOUGH																						**E**
1. Control and Getting Done	••		••	••	•		••	7	•••••	••	•	•••	•••••	••••••••	23	••		••	••	••	6	1
2. Optimal Production	•		••• ••		•••	••		15	•••	••• ••		•		•	15	•		•	•	•	6	2
3. Understanding and Engagement	•	••	•••	••	•••	•	••• ••	15	•	••• ••	••• ••• •		•• ••		25	•	•	•	•	••••	7	3
4. Completion and Satisfaction		•			•••		••	6							1		•			•	2	4
5. Generation and Creation			•• ••		•			6							0	•		••	•••	•	7	5

The mapping of the categories, or experiences, to the contexts in Table 7.2 where they occurred in each phase shows, for example, that Shaping the Task (AIP Category 1) from Caroline's perspective involved five out of the seven identified subcategories of experience of AIP in the first phase but no reports of her experiencing a category or subcategories of Changing Views (Category 6). Overall it could be seen that:

- Caroline's experiences in the first, and particularly the last, interviews were more reflective and wide ranging than in the middle of the assignment.

- In the middle of the assignment less complex levels of AIP and Enough were more in evidence. For example, the more complex categories of Enough (Categories IV and V) were not mentioned at all, unlike in phase 1.

- In the last phase Caroline's experiences of AIP included the most complex category, while her experiences of Enough were more balanced across all of the categories, in comparison to Laura.

Caroline seemed to express 'micro contextual' variation in her experiences more than Laura, although this was possibly an artifact of Caroline's interviews lasting longer than those with Laura.

7.2.5 Caroline and the Role of Affect

There were many examples of Affect in the tapes of Caroline's interviews of the way her emotions came into play. A few examples of Affect (from the more detailed Process Description, Appendix 6) are listed below.

Caroline's emotions and feelings embedded in AIP were very clearly demonstrated, for example in the following:

- Frustration when she lost a whole day's search results *"initially when I saw that it was all gone I just thought Argghh!"*.

- Anxiety and seriousness were apparent in her comments that combining her research with a job hunt (Phase 2 - during) gave the assignment a *"more emotional side"* and *"I'm concerned"*.

- Tension and uncertainty from requiring herself to produce something creative and aesthetically valuable (Phase 1 - before) was evident in the way she hedged around the issue and in her voice which sounded embarrassed and apologetic: *"I think it's a mistake I make"* when she talked about wanting to create something *"that will stand on its own"*.

- Getting stressed by the uncertainty involved in her approach to the assignment took a physical toll, in her interpretation *"my darkest hour"* because she *"was taking bigger risks"* (Phase 3 — after).

These were balanced by coexisting positive emotions and feelings that were an equally important part of Caroline's experiences:

- Excitement and satisfaction in her voice when she talked about making the move to an online personal information management system (Phase 2). She laughed happily and commented that her new skill was *"ah~~~lovely"*.

- Satisfaction from good crisis management *"turning your failures to best advantage"*.

- Joy from rising to the challenge of *"taking bigger risks"*.

- Pleasure in working in with her assignment in a creative way and inspiration from an aesthetic vision.

- Increasing her enjoyment of the task by manipulating her mood and feelings to set the scene for her searching (Phase 1) through a specific strategy.

The final example above is now described in more detail. It combined an unusual interaction of Affect with an interweaving with different experiences of AIP and Enough and demonstrated well how the different ways of experiencing the phenomena occurred simultaneously.

A vignette example from the transcripts in Figure 7.2 shows Caroline in our first interview describing how she dedicated a day to spend in the library which she started by browsing through the New Journal shelves close to the main entrance of the library.

Figure 7.2 Vignette Example for Caroline

Interview Extract	Affective Response
A pattern is starting to develop now.~~~And I am realising that it can't be done in a week. There's that kind of~~there's the online search, the general questions and then there's the set, I like to set a day aside, or at least a day **where there are no constraints either side of the search** where I just go and grab~~~whatever! Guided by my initial search. But umm, there might be one or two key texts that I'm looking for but~~~the rest of the process is browsing, umm. Also I find looking at the, just on walking in going straight to the journal shelf, scanning that, it's also **a gentle way (laugh) of getting into the whole thing**. Umm, yeah and, and looking at the most up to date things there.	Postgraduate sounds dreamy and a bit embarrassed at first but enthusiastically describes her strategic approach to searching (1 – Sense of Freedom, Anticipation, Exploratory Pleasure,) (2 – Pleasure, Confidence, Warmth, Intuitive)
OK and when you are looking at that what are you actually looking for? It's a scan. It's umm~~~~Oh, to use a metaphor? Rather than~~~going to Paris to look at the Eiffel Tower, or going to Paris and going straight to the Eiffel Tower. **It's like going to Paris** and going and have a coffee first. (Laughs) It's kind of umm~~~it's **getting a feel for the environment in which this topic sits**. And you might find a gem that will be a direct lead.	Wants to feel unconstrained and to enjoy the task by easing into it. She wants to get a feel for the area (1 – Enthusiasm, Amusement, Enjoyment) (2 – Aesthetic immersion, Hope) *(cont. next page)*

Figure 7.2   Vignette Example for Caroline (cont.)

Interview Extract	Affective Response
Yep. And so how do you decide when you've have got the feel that you want. What would be your criteria for saying "right I'll do the next thing now"? It's just a scanning. Grab a couple of journals, or probably look through - **if there's something I like** I'll photocopy it.	Hunts for something that she 'likes' at this stage rather than specific things. (1 – Interest, Excitement, Curiosity)
It's a really useful metaphor that one of sitting down having a coffee~~but what does that give you that if you didn't do it~~if you walked out cold~~you wouldn't get? Yeah~~well~~umm~~. I wonder whether it's got something to do with kind of ~~well OK~~oh **an identification thing**. So I'm researching that thing but sat down and read some of the journals out of **pure interest**~~I am (laugh)~~~not I am an information professional but like this is the field which is what I am in. **It's as much a feeling as information (laugh) collecting.**	Tries on the identity of the profession she is learning about and relates this to "a feeling". (1 – Explanatory) (2 – Interest) (3 – Excitement)
Is it a feeling of feeling comfortable? Also umm you get an idea of the range of people involved in, in the area. Sometimes going straight to books or articles on line it's umm, it all **seems a bit distant – or it looks like mountains of words**. Whereas something in the journal has a kind of a social umm **a social feel to it** as well~~	Gives the information a "social feel" in this way makes it less intimidating. (1 – Anxiety, Wariness) (2 – Happiness, Confidence

Discussion of Caroline's Vignette

Looking at this part of Caroline's experiences it was clear that many emotions were in play. Caroline talked about the atmosphere she created for herself when she started her search in the library. She used this as a technique to manage her motivation and her mood and to start her search. She sounded dreamy and a bit embarrassed at first but then enthusiastically described her approach.

She wanted to get a feel for the area and hunt for something that she 'liked' at this stage rather than specific things. She tried on the identity of the profession she was learning about and related this to *"a feeling"*. Giving the information a *"social feel"* in this way made it less intimidating. The online environment was harder for her to deal with because she found she encountered *"more freaks"* and *"kookier sources"*. Caroline therefore found online searching distracting early on in her research for the assignment and the browsing through journals a lot more comfortable.

This example for Caroline also demonstrated the interweaving of Affect, AIP and Enough. There was evidence of Shaping the Task (AIP Category 1) because Caroline was shaping and managing part of the assignment task here as the familiarising and gathering of information. Finding Out (AIP Category 2) required reflection about the information profession and what the profession talked about in print which was something Caroline explicitly mentioned as one of her goals in doing this subject. We could see Discovery and Engagement (AIP Category 3) in this extract was early in developing the process of discovery and becoming engaged with the literature in the field (which progressed to engagement with the topic and discovery of sub-topic). Growing and Changing (AIP Category 5) could also be seen as Caroline deliberately set out to grow and learn by expanding her ideas about the information professions in literature.

Four of the five categories of Enough were also evident in this vignette to varying degrees. The example above described Caroline's earlier library visit to gather information and what came before that for her and how this contrasted with online searching. Affect was embedded in Caroline's experience of Enough in the following ways: she described Enough as Control and Getting Done (Category I) in talks about the distraction of online searching and that for her Enough meant what was required to give her a feeling of control, avoid distraction and getting off track and to get it done. This was not Caroline's main focus, but it was only present in a fragmentary way. Enough was also what would enable Caroline Optimal Production (Category II) for her AIP and end product and was present when she pointed out that what she wanted at this point was what would enhance her visiting and searching and gave her the (most up-to-date) information for she would be able to fashion a 'good assignment'. She herself set out to trigger an affective response of pleasure.

Enough and what was required for Caroline to be interested and engaged was revealed when she was looking for something she liked and sat down to read journals out of sheer interest, indicating her interaction and engagement with the literature and professional identity of the field. How she arranged for these interactions for herself triggered interest and pleasure. This was Enough for Caroline's Understanding and Engagement (Category III) with the literature and professional identity of the field. Enough as a sense of Completion and Satisfaction (Category IV) could be seen in a fragmentary way when Caroline said she had a feeling that she had Enough to capture a sense of what it meant to be an information professional. This triggered a feeling of satisfaction and pleasure. Although Enough as Generation and Creation (Category V) was not explicitly focused on in this vignette, it was evident in the broad thrust of Caroline's manipulation of her early searching here. Enough was what would creatively drive her vision and the process for achieving that. This way of experiencing Enough brought feelings of excitement and anticipation but also anxiety and disappointment because of the unattainable nature.

It is important to note that although the affective dimension of experiences may be separated conceptually from an holistic experience of information seeking, it cannot be separated in the lived experience of the participants. These high achieving postgraduates' differing experiences of Enough as they managed their whole research and assessment process were part of holistic, integrated information behaviour (Given 2000), in students' daily lived experiences during AIP.

Looking in detail at a small part of the interviews with Caroline enabled us to see the interweaving of Affect into all elements of Caroline's assignment experiences. Affect could be seen in Caroline's experiences when she took risks in an adventurous way. She described feeling stressed and getting sick during the process of doing the assignment. She also described the assignment as an emotional journey and was able to articulate affective elements of her experiences during the interviews (as seen in the extracts). Affect seemed to infuse everything Caroline did. This will be discussed further in Section 7.4.

7.2.6 Summary of Caroline's Case Study

Caroline was well prepared for 'doing' the assignment. She came to her postgraduate study with extensive skills and was very interested in choosing a personally significant topic for the assignment. Early on in the task she had a very clear idea of what she did **not** want to do and had focused on choosing a topic that would simultaneously engage her specific interests and inform her about jobs in the information industries. Overall, for Caroline the early phase was a free wheeling, exploratory time which included extensive searching and scanning to find an area that really interested her. She was upbeat and curious at this point in the task.

By the middle phases of the assignment timeframe Caroline had gone off on something of a tangent and was finding it difficult to confirm the topic of her report. She was still searching the literature and casting around for ways to structure her work to fit her interests with the requirements for the assignment. At the same time she was conscious that she was acquiring new skills and techniques and was comparing these to what she had learnt while meeting the requirements of other assignments.

Looking back on her experiences of preparing the assignment, Caroline reflected on her learning from the exercise, which she saw as an information search process. She also spoke of her departure from strict project management principles and the importance of having allowed her intuition and creativity to play a major part in the process.

As a postgraduate Caroline was an experienced project researcher and writer as well as an experienced student. Caroline's experiences of information, learning and Enough also varied continuously throughout the assignment. 'Doing' the assignment had strong affective dimensions for Caroline. As the result of 'doing' the assignment overall Caroline:

- Dealt with information overload using effective strategies and tolerated great uncertainty when it arose.

- Approached all aspects of the task highly flexibly, but stayed within the task boundaries, although she saw this as risky and having a cost.

- Integrated her personal skills development into the assignment task as part of an ongoing process of looking for better ways of doing things. For example, Caroline's integration and rapid expansion of technological learning.

- Balanced the level of restrictions and challenges in the task with her level of skills and expertise (or improved these).

Caroline's ability to juggle all these complex elements within an assignment perhaps contributed to another level of challenge for her, creating an interesting and highly productive state called 'flow' (Csikszentmihalyi 1996). Caroline's final comment was about her need and that of others in 'this business' of information work for: *"deliberate strategies for updating and shaping growth in order to survive."*

7.3 Intersections

The selection of case study material (along with the Process Descriptions in Appendices 5 and 6) describes Laura's and Caroline's experiences as they moved through the tasks of preparing a research-based assignment. However, some important features of the experiences of AIP and Enough, from the perspectives of the postgraduates that were discussed in the material selected for the case studies are outlined below.

7.3.1　Changing Perspectives

Choosing to ask postgraduates about their experiences at three different phases of an assignment task ('before', 'during' and 'after') provided several opportunities to ask about their experiences. More importantly it allowed each postgraduate to describe her different experiences when completing different parts of the task. The opportunity to gain a perspective over time, and to revisit conversations, provided a form of reflection for the postgraduates on their practice. As the task progressed (or seemed not to progress) the postgraduates described 'what' they were doing and 'why', as well as 'how' they felt over a period of time.

As soon as the analysis of the interviews began, contradictory statements by many of the postgraduates stood out as rather a puzzle. This was particularly obvious in Laura's and Caroline's descriptions. Why were these articulate and seemingly well-organised postgraduates outlining with apparent certainty a particular aspect of how they were 'doing' the assignment only to make completely contrary statements later? These contradictions happened between phases as well as within an interview, often only moments later. By looking at the 'sweep' of their experiences as a whole in more detail in the two cases, I found many examples of the highly dynamic and 'micro contextual' nature of the process and tasks involved in 'doing' an assignment.

For example, in phase 1 Laura strongly made the point, more than once, about what she called her *"over collecting"* of useless information. However, she just as strongly emphasised how *"focused"* she was and that she didn't *"stuff around"* and had to know *"exactly"* where she was going whenever she was searching for information for a writing task (Phase 1). This was a good example of the apparent clash of 'micro contexts' that was apparent when they were removed from their wider context and compared. However, Laura's statements were very consistent when re-examined in context. She was very focused and prepared extensively for her information search sessions, particularly in the library. She also planned to collect almost double what she ended up using because she perceived this to be the best use of her overall project time allowance. She could more easily do large amounts of her more focused searching in the sessions she set aside for this, than find time to add another whole search and collection session into her activity plans. She expected to do additional searches as well, only to fill any gaps, but she needed to minimise these.

Looking at the two case studies highlighted the role of context and 'micro contextual' shifts over the course of one assignment. It became clear that there was a constant movement or 'oscillation'

not only between the three broad assignment phases with which the interviews were timed to coincide, but also within a single interview as postgraduates chose to talk about particular aspects or even one aspect of the assignment as a topic of the interview. These postgraduates' experiences of the same assignment were shifting and transforming many, many times for one assignment depending on their individual context (in their mind) at a given time.

In essence, it was clear that a postgraduate's experiences depended on context and that context was not continuous or even cohesive. It was part of the relationship between the postgraduate and the phenomena of AIP and Enough and was constantly shifting. The same postgraduate moved between categories many times over the course of an assignment. Individuals experience AIP in different ways for the same task at different times. In effect there are subcategories of experience and in many cases further nuances within and between the subcategories.

Themes that Laura and Caroline talked about many times over the three phases highlighted that they both found the most difficult thing to understand was what the assignment was asking them to do. This was made more difficult for them because they were also 'doing' another assignment at the same time. Overall, they described a desire for strong individualisation of the assignment, or 'making it their own', and an equally strong desire for conforming to the tasks' requirements by checking, defining and monitoring their progress. In fact, they achieved both goals and were able to fulfill institutional, learning and professional requirements (to the standard of High Distinction). This involved 'toeing the academic line', as Caroline put it, in terms of framing and presenting their work. At the extremes this balancing of competing priorities was problematic and internalised. In the case of Caroline it was high risk and she described it as causing her stress and illness. For Laura it was never feeling sure despite continual checking with me as her subject tutor. Yet both postgraduates managed to create something unique that was an artefact of a personally meaningful process. They achieved this using strategies to organise the project for themselves and personalise the task. These two postgraduates were also able to link their intellectual, personal (feeling bored, loving reading) and professional (needing a job, justify studying via job, wanting to know more) needs and interests.

7.3.2   Reflecting on Laura's and Caroline's Case Studies

As indicated earlier, Tables 7.1 and 7.2 were used to identify areas on which to base the Process Descriptions in the case studies (Appendices 5 and 6). So the most frequently occurring experiences of Caroline or Laura were selected for inclusion. Tables 7.1 and 7.2 also provide an insight into the changes over time that occurred in Laura's and Caroline's experiences of AIP and Enough as they worked on the requirements for the assignment and a series of 'micro contexts'.

The mapping within and across phases of the two phenomena illustrated several things. The movement between the categories of experiences of AIP across the three interviews, and within each phase was considerable. But there was also a shift to dominance of the least complex to the most complex category over the course of the interviews. Approaches and attitudes to the substantive content of the assignment and the process evolved as the balance between self and

task (and its criteria) was sought. This was a continuous juggling process towards reducing the level of uncertainty and stress that was involved in completing assignment tasks successfully.

Reaching the point of having Enough was (at least in part) a judgement or decision (although not always a decision to stop). These decisions about Enough occurred frequently and at all phases of the assignment. Table 7.2, for example, shows patterns in the movement between the ways of experiencing Enough in all three of Caroline's interviews. The level of prominence of Enough was somewhat mirrored in the shifts between AIP categories. The movement in the first phase (before) was from least to most complex categories. The second phase (during) moved nearly entirely through AIP Categories 1 to 3 only, while the third phase (after) flowed across all the AIP categories. This might have been because the first and last interviews were more broadly focused by the postgraduates and the interviewer. The postgraduates talked about previous experiences, what they liked to do and why, and what they had got out of the assignment or expected to. On the other hand, in the second phase there was a strong focus on 'doing' the tasks for the assignment and the problems arising from this. This pattern was mirrored to a great extent in the category shifts for AIP.

Finally, it could be said that despite the seeming conceptual clarity of the categories, AIP and Enough are interlinked so tightly that they are often difficult to disentangle. Transcripts and tapes show that in every successfully completed task there was a constant series of judgements of Enough that led to decisions and actions and that these also bound and delimit AIP. On the other hand, AIP frames all of the very diverse Enough decisions that were made. These are made in the context of the way AIP was being experienced at that point, which was itself highly volatile and 'micro context' dependent.

Although the mapping of the interactions described in this section are an attempt to see what was happening more precisely than could be observed in the transcripts alone, the exact relationship of the two phenomena was difficult to pin down. Hopefully, this exploration has gone some way towards highlighting some of the dynamic aspects of completing an assignment.

7.4 The Role of Affect in Assignment Experiences

As indicated above, it was clear from the earliest stages of analysis, as I listened to the audiotapes of the interviews and before the written transcripts were available, that Affect played a very big role in the assignment experience for the postgraduates in this study. Emotions could be heard both in what the postgraduates said explicitly and in their tone of voice. Emotions were an important part of their experiences of assignments and consequently the decisions and actions the postgraduates were taking. These emotions were complex, often subtle, subjective experiences with many components including physical, cognitive, organisational, expressive and personal meaning.

This section focuses directly on these emotions, or affective factors, which were found to be an integral part of the postgraduates' experiences of both AIP and Enough. Emotions were reflected

in the descriptions of the categories in Chapters 5 and 6 but are examined here in more detail and in their own right, rather than simply as aspects of the categories of AIP and Enough. This is achieved with reference to the cases of Laura and Caroline.

As mentioned in Section 4.2.3 I took a fresh set of transcripts and listened to the audio taped interviews with Laura and Caroline once more when I began the task of identifying affective elements of the postgraduates' experiences. On the basis of my work with the material over several years and listening to very familiar material but with a different purpose it meant that I was able to highlight the parts that, to me, revealed affective dimensions in what Laura and Caroline had conveyed during the interviews. The clean transcripts were marked with descriptors that captured the feelings and emotions I heard as I listened for indicators of emotional responses (Damasio 2004). Attention was paid not only to words but also to subtle variations in pauses, tone, pitch, speed, delivery and the many other ways meaning was conveyed through the voice. These audible variations indicated to me as the researcher that something was engaging an emotional response from Laura and Caroline.

Many of the emotions that I heard and wanted to capture were extremely difficult to put into words. Labelling and describing these was not a simple task. They included variation in the tones of voice that were very noticeable and important in context but were very hard to verbalise in a systematic way. Examples included sounding: pleased, surprised, matter-of-fact, uncertain, resigned, overwhelmed or very interested in something specific. Some of the others included finding something funny or making a joke of something, taking a quick gasp or going very quiet, thinking hard while speaking very slowly, or in silence, emphasising words to varying extents and even using language to do things such as animating inanimate objects.

What I heard defied categorisation in terms of existing taxonomies or frameworks in the literature (see Section 3.2). The current literature on Affect, feeling and emotions is overburdened with taxonomies of 'basic' emotions that are highly contested and too narrow and constraining. Often the focus is on aspects of Affect that are not relevant to this study (for example, affective learning rather than the role of Affect in learning). Therefore, on the basis of what I was hearing, I jotted down my responses (my interpretation). These were a mix of words chosen from my own repertoire that, for me, best articulated the feelings being conveyed by the participants' voices. These responses have been assembled into a loose list of Affective Descriptors in Table 7.3 below. They give some indication of the range of feelings I encountered when analysing the audiotapes of the interviews.

Table 7.3   Affective Descriptors

Confident	Intense	Anger
Certain	Emphatic	Sadness
Adamant	Controlled	Anxiety
Confirmatory	Ironic	Distaste
Confiding	Explanatory	Disapproving
Thoughtful	Exploratory	Wary
Joking	Striving	Confused
Amused	Amazed	Overwhelmed
Fondly	Acceptance	Boredom
Hopeful	Resolved	Unsure/Uncertain
Happy	Exploratory	Hesitant
Interested	Matter-of-fact (flat)	Embarrassed
Curious	Surprised	Self Doubting
Enjoying	Incredulous	Impatience
Stimulating	Wistful	Disappointment
Enthusiastic	Serious	Resigned
Keen	Striving	Impatience
Excited	Questioning	Distracted
Pleased	Wondering	Frustrated
Satisfied	Justifying	Cross
Creative		Annoyance
Intuitive		Shocked
Passionate		

It is also important to note that it was through a process of listening to the audio tapes of the interviews that the affective dimensions of the postgraduates' experiences became apparent. The transcripts were used, not as the primary source of data for the analysis, but as a tool for recording in context the emotions heard through listening to the tapes. The transcripts also allowed location of relevant quotes. Notwithstanding the paucity of methodologies for discovering and analysing the role of Affect in postgraduate learning, it is possible to provide evidence of how Affect impacted on the experiences of Laura and Caroline as they moved through the process of preparing a report for submission as part of subject requirements. Descriptions of these cases follow.

7.4.1   Summary of Affect Section

Affect was entwined inextricably in Laura's and Caroline's experience of this assignment. This section has highlighted some examples of the affective components of 'doing' an assignment for individuals.

A variety of 'emotional strategies' emerged from this exploratory analysis and some of those strategies implemented by Laura and Caroline over the timeframe of the assignment are:

- Emotional engagement, awareness and monitoring (all experiences of AIP and Enough)

- Competitive testing and pushing oneself (perfectionism, personal best) for one's standing in the world in one's own and others' eyes (AIP 1, 2, 4, and Enough I, II)

- Mood and atmosphere awareness, regulation and management to optimise experience and outcome (AIP 3 and Enough I to V)

- Utilisation of circumstances, resilience and persistence to optimise self, performance and the whole experience (AIP 1, 3, 4 , 5 and Enough I to V)

- Passion used to drive and explore and achieve and enjoy (AIP 1, 3 and Enough I to V)

- Creating something new and special (AIP 5 and Enough I, II, IV, V)

- Harness self and changes to grow and progress through a series of challenges in order to create something better and better (AIP 3, 4, 5, 6 and Enough I to V).

The way both these postgraduates moved through this complex task seemed to be modulated and shaped by the varied but quite sustained feelings, moods, and emotions expressed by the participants as part of their relationship with the information and learning process of assignment creation. Affect was particularly strongly linked to Laura's and Caroline's experiences of Enough.

Affect interacts in complex ways with cognitive and physical components of AIP, but Affect can be easy to miss. The affective elements described in this chapter only became accessible through intensive and extensive interaction with the voices of the participants on the audiotapes. Impressions gained from the interactions with the postgraduates throughout the semester of study of the subject informed and strengthened evidence of the importance of affective elements that have been difficult to include in this analysis. Tools and methods for mapping, analysing and describing the role of emotions in information seeking and use and assessment need to be developed. More work needs to be done to develop understanding of the role of Affect with tertiary student learning, including: postgraduate learning.

7.5 Conclusion

In this chapter two case studies were developed which were a way to revisit to the individual in context, reintegrating each postgraduate's whole, (real), longitudinal, experience of 'doing' an assignment by describing their navigation of AIP as a broad experience of Enough and the creation of meaning over the course of the actual task.

The chapter used the two cases in order to address some issues that had arisen from the two previous findings chapters. These issues were:

- How AIP unfolded longitudinally over the course of the assignment and any changes between the three interviews that took place 'before', 'during' and 'after' the task

- How AIP and the concept of Enough (described in Chapters 5 and 6) intersected in the lived experiences of an individual

- The broader implications of affective factors during assessment tasks for individuals and Personal Significance factors.

These have been addressed by showing:

- Two examples of high achieving postgraduates

- How phenomenographic analysis categories of AIP and Enough play out in an individual case

- Linkages between AIP movement and Enough judgements

- Changes across the three interview stages.

The two case studies chosen, Laura and Caroline, both experienced a range of categories of AIP and Enough and also provided useful examples of the key themes outlined in this chapter. The first and last categories of AIP and Enough for Laura and Caroline have outlined the 'boundaries' of these two phenomena in my study. The categories discussed in this chapter relating to both phenomena 'flesh out' actual individual experiences of AIP and Enough.

The case studies also demonstrate how important 'affective factors' are in postgraduates' experiences of information, learning and assessment during assignments. All of these interact with and impact on actions, thoughts and feelings.

In summary, this chapter demonstrates:

- A qualitative and longitudinal perspective on assessment and Affect in an everyday university activity

- A real life contextualised interaction of Affect, learning and assessment for eventual professional accreditation

- That affective dimensions of assessment are important to learning and succeeding despite having been undervalued.

How Affect is understood and managed by Laura and Caroline is central to their learning and high achievement. Affect is a driver for their completion of an academic task for assessment and for learning from information.

The following chapter will review and discuss the findings from Chapters 5, 6 and 7.

Chapter 8

Discussion: Information, Learning, Enough and Affect During an Assignment

This thesis has explored postgraduates' experiences of traditional report style assignments. This chapter revisits the research questions that were introduced in Chapter 1 to demonstrate how the findings relate to the questions:

1. How do postgraduates experience information and learning processes in the context of preparing and completing an assignment?

2. How do postgraduates experience Enough (and not Enough) in the context of preparing and completing an assignment?

3. Do changes occur in postgraduates' experiences of information, learning and Enough over the timeframe of an assignment?

4. What are the affective dimensions of the experiences of postgraduates over the timeframe of an assignment?

The chapter also discusses the implications and limitations of the study and potential areas of further research.

8.1 Postgraduates' Experiences of Assignment Information Processes and Learning

This section addresses the question:

> How do postgraduates experience information and learning processes in the context of preparing and completing an assignment?

A central part of an assignment for the postgraduates in this study was the set of information intensive processes they are required to successfully engage in to complete the task. Labelled Assignment Information Processes (AIP), these include information seeking, using the information they find and writing. The postgraduates' experiences of AIP when completing assignments varied in quite distinctive ways, in relation to how they go about this assignment and the intentions they are seeking to realise as they do so. A wide range of variation was found despite all of the postgraduates being high achievers. The categories describing the variation in postgraduates' ways of experiencing AIP are hierarchically related through the change in meaning of each category. They are also related in their changing structure or focus across the categories. This focus expands in scope from a task with a blueprint in Category 1, to a change in the way the postgraduates see themselves and the topic in relation to the world in Category 6.

8.1.1   Category 1 Shaping the Task Towards Completion

In this category postgraduates experience AIP as completing a substantial but straightforward assessment task by using personal strategies to shape and manage the task. This category shows evidence (see Section 4.1) of postgraduates experiencing an assignment in a pragmatic, concrete and productive way. They concentrate on external guidelines and components such as word length and timeframes. The assignment is 'objectified' (they talk about 'bits', 'gaps' and 'holes') in order to make the task manageable, and they form the product to suit the parameters they have been given, including the timeframe.

Postgraduates are also defining their own task parameters and topic focus in a conscious way, whilst closely monitoring the guidelines they have been given (both written and in discussions with tutors about the assignment), to stay 'on task'. They are keeping task specifications in mind, in order to end up with a product (assignment) and perhaps more importantly a research and learning process that they are interested in, and which suits their learning needs. A sense of control is achieved through framing the task as very *"straightforward"*, knowing that they can work through any obstacles they encounter, and make the task and assignment suit their needs as well.

The postgraduates in this study experienced an interweaving of the externally imposed assignment requirements, the demands of the task that will produce the actual assignment, and their construction and personalisation of the task. They had to keep all these things in mind and to balance the attention they give to them. This way of experiencing an assignment is interesting in that it combines a focus on what might be considered surface and extrinsically imposed elements of an assignment (for example, word length), with personal and intrinsic elements (defining the topic to suit interests) that could be considered indicative of taking a deep approach to the assignment. The emphasis postgraduates place on the manageability of the task and their own problem-solving abilities also contrasts markedly with the uncertainty that is part of the more complex categories and the self doubt in Category 4. This indicates that they focus on the task, but in a way that also enables them to take a 'deep approach' to the assignment (Marton, Hounsell & Entwistle 1997, p. 32).

This experience of AIP differs from Kuhlthau's first Task Initiation stage of the Information Search Process (ISP) (Kuhlthau 2004). In this study, although the postgraduates do focus on the task and its definition, they do not express the uncertainty and apprehension that Kuhlthau notes for this stage. The clarity that postgraduates expressed appears in the ISP in Stage 4 as *"clarity"* and in Stage 5 as *"sense of direction"* and *"confidence"*. Also whilst in the overall ISP *"contemplating the task, comprehending the task and considering possible topics"* (Kuhlthau 2004, p. 44) are associated with the first stage of the process, for the postgraduates in this study experiencing AIP as Shaping the Task occurred throughout the timeframe of the assignment. Examples can be found in the 'before', 'during' and 'after' phases of the assignment (see Chapter 5).

The postgraduates' shaping of the task and definition of their topic has some similarities to Kuhlthau's Stage 2 (Topic Selection) where students are *"weighing prospective topics against*

criteria of personal interest, assignment requirements, information available and time allotted" (Kuhlthau 2004, p. 44). However, the postgraduates here seemed to personalise what they are doing rather than 'weighing up' the topic for instance. They are also not considering possible topics (as in Topic Selection) because they have already thought about the topic for some time (often from when they first receive Subject and Assignment Outlines). Postgraduates are *"relating prior experiences and learning"* (Kuhlthau 2004, p. 44), as they focus on their usual ways of working on similar tasks, and a sense of clarity and purpose about how to proceed. Kuhlthau's description of the use of criteria, assignment requirements, optimism, confidence and ability to complete work at the Focus Formulation stage seemed very similar (see Section 2.2). However, the ISP strategies related to choosing the focus are more specific and the moment of insight Kulthau notes is not a feature of experiencing AIP as Shaping the Task for the postgraduates.

Kirk's (2002) information packaging conception is similar to this category in that it too is instrumental, with the focus of using information being to package the information for others. The process of information use is linear and finite, although in Shaping the Task there is also a strong personalising flavour and the information is only presented to one person (the assessor).

This category also shares similarities with McDowell's (2004) Pinpointing pathway which is similarly task centred. She highlights her undergraduates' use of *"a structured, well-defined process of producing an assignment and meeting academic requirements...centred on the requirements of the study context and the active role played by the student in managing them"* (McDowell 2004, p. 114-115). Additionally, the Minimalist pathway she described is similarly task centred with *"a minimalist approach to assignment production"* (McDowell 2004, p. 114) and what she has labelled 'a cut-and-paste' approach which is comparable to the postgraduates' structural emphasis and objectification of components. Lupton's (2004) findings are also relevant as her Seeking Evidence (Category 1) of essay writing has a similar focus on a product (in the dimension of the Essay Task) and on course requirements. However, for postgraduates the main focus is on shaping the imposed task to their own interests, rather than on a mark as she suggests.

This category also has elements of Hounsell's (2005a, p. 114) Arrangement conception with a similar quantitative focus on material. The lack of integration that Hounsell emphasises is not, however, part of the postgraduates' experience. McCune's hierarchy of categories related to structure in essay writing also has some partial similarities (McCune 2004). Postgraduates talk about developing a structure for themselves and relating their structuring of the report to parts of the assignment question and these elements appear as part of the two more complex of McCune's three structural categories. Although considered less than appropriate for essay writing, this type of structuring could be considered appropriate for report assignments.

8.1.2 Category 2 Finding Out More About the Profession

AIP are experienced by postgraduates as a means of finding out more about something of current interest about their chosen professional field. This way of experiencing AIP is as a quest for information, not just a task to manage. It is an instrumental process that is no longer principally about completing the assignment but has expanded to include postgraduates wanting, or needing, to know about something in particular to move forward in their life. To accomplish this, multiple strategies and patterns of working are implemented as in Category 1. In the context of this research, in a subject leading to professional accreditation and an assignment based on the profession, this Finding Out is career or job related. This expansion has made AIP more taxing, but also more useful and meaningful, because at a personal level potentially more important answers are sought.

This way of experiencing AIP is interesting in its specific professional focus although this focus is not surprising in a postgraduate professional course. Other studies of postgraduates' experiences of information and learning have not found this. Edwards (Edwards 2006) mixed graduates with undergraduates, focused on online searching and did not find a professional emphasis. However, this could be attributed to the nature of the subject and assignments in her study as well as the two groups of participants.

Thorstéinsdóttir found that her postgraduate library and information science students' interest and motivation increased in an assignment where they had more choice. Choice gave her postgraduates opportunities to explore topics they *"want to master in their future employment"* (Thórsteinsdóttir 2005, p. 243). This is somewhat similar to the postgraduates' focus in the current study on Finding Out something they want to know about the profession. However, the emphasis in the current study went beyond mastering a topic, to include answering questions about potential fields of professional practice. Learning about new areas of information management to enhance current job performance (that could be classified as knowledge work but not specifically information work), is also part of this experience of AIP not reported by Thorstéinsdóttir.

Interestingly, in Lupton's (2004) study of environmental science undergraduates she found in her dimension of variation 'use of information in the course' that students experiencing "*researching an essay as using background information to develop an argument*" (Lupton 2004, p. 61) focused on the topic rather than the task, and that they were very interested in the environmental field itself. They followed their own interests and pursued answers to their own questions about environmental matters. In the most complex category, 'Learning as social responsibility', Lupton's students used information to go further than the course. They linked the topic with other fields and disciplines to solve environmental problems of interest and concern to them. This is somewhat similar to the postgraduates' focus in this study on pursuing something of personal concern related to the information profession through the assignment. Perhaps the students in Lupton's study who experienced research essays in this way also had (environmental) ambitions beyond their inter-faculty course.

8.1.3   Category 3 Discovery and Engagement with the Research Process

In this category AIP are experienced by postgraduates as an engaging journey to discover and understand interesting things, by 'hunting down leads' and having the opportunity to focus and reflect on what they find. The focus on finding out something quite specific in Category 2 in this experience of AIP has expanded to become finding out for its own sake and a process of discovery. Learning about whatever they find interesting along the way is now the goal. The postgraduates become engrossed in 'hunting down leads' and 'following the threads' they are discovering despite the considerable time and commitment required to do this. Time and space to think, reflect and immerse themselves is emphasised, because the process has become more important than an end product or an answer. Finding new information and the joy of discovery and learning keeps life interesting and generates new challenges for them. The enjoyment and 'mental challenge' makes this way of experiencing AIP intrinsically worthwhile.

This category is interesting because it seems to be a central experience of AIP for postgraduates. All the postgraduates in this study frequently experienced AIP in this way. This experience of Discovery and Engagement has some commonality with elements of Kuhlthau's Information Collection (stage 5 of the ISP), in terms of thoughts, feelings, actions and strategies. However the aim or 'tasks' at that stage of gathering: *"information that defines, extends and supports the focus"* (Kuhlthau 2004, p. 49) differs from the present study, which focused on the overall assignment experience rather than the information search as such. The postgraduates focused in that work on the pleasure and interest they found in doing research: finding, reading and reflecting on absorbing and interesting information, with assignment parameters very much in the background. They also seemed very open to whatever they encountered in contrast to the indicative and invitational mood combination Kuhlthau described (Kuhlthau 2004, p. 49).

Limberg's (1999) aggregated conception of information seeking and use as 'Analysing and Scrutinising' (Conception C) also has similarities to postgraduates' experience of AIP as Discovery and Engagement. There is a focus in both studies on the experiences of seeking and using information for understanding, and on placing it in a wider context. Additionally Littler's (2004, p. 134) findings related to undergraduates' 'concepts of learning' also have some similarity with the current study. His third category, 'Gaining insight or understanding' is a part of, or a result of, the experience of Discovery and Engagement.

Kirk's (2002) 'New knowledge and insights' conception is similar to this category. It too is about developing new knowledge, understanding and insights through a process. Information is seen as internal in Kirk's conception, whereas in Discovery and Engagement it is more a process of internalisation. Both have what Kirk termed a 'forward looking orientation' and affective aspects. Kirk found Affect was 'mixed' in her study, but Discovery and Engagement was overwhelmingly positive.

Students following their own interests and developing understanding and knowledge about their topic have been described by McDowell (2004, p. 115) in her Connecting pathway. This seems strongly linked to postgraduates' experience of AIP as Discovery and Engagement as the same

emphasis on learning for its own sake, personal meaning and *"connecting, following trails of ideas and links from one source to another"* (McDowell 2004, p. 115) can be recognised.

This way of experiencing AIP is also somewhat related to the conception of 'Learning As Understanding'. Marton, Dall'Alba and Beaty's study explored different conceptions of learning and *"progress generally"* (Marton, Dall'Alba & Beaty 1993, p. 291) over a six year Open University undergraduate program, a very different context to that of the current study which focused on only one assignment of several weeks. However, the focus in this category on moving and learning, which is not limited to the assessment situation, is similar to the Learning As Understanding conception they found amongst the mature undergraduate participants.

8.1.4 Category 4 Professional and Personal Perception and Understanding

AIP were also experienced by the postgraduates in the study as a process of growing perception, learning and understanding about different facets of the profession and oneself through activity and thought. In this category the postgraduates have moved beyond the joy of discovery, to a process of clarification and a reconsideration of themselves, their skills and the profession. In this way of experiencing AIP postgraduates emphasise discovering and clarifying how and what they think and do. They also realise the need to adopt new ways of thinking about information and the information profession. The focus on self, skills and other ways of thinking, with its inherent challenges, also includes some painful self doubts and negativity (feeling they 'should know how' to do things or that they have inadequate information seeking skills). Although there is great interest, the level of challenge is high. This contrasts sharply with the pleasure of discovery found in the previous category.

Thórsteinsdóttir's (2005) postgraduate students' information seeking behaviours and approaches to study were related to their employment or plans. How they *"viewed their studies was influenced by their present employment or by their future employment plans"* (Thórsteinsdóttir 2005, p. 231). Her more complex Conceptual Approach to developing *"expertise on varying dimensions of working with information in a wider sense"* (p. 231) has some congruence with the variation in ways that postgraduates in the current study experienced AIP as Finding Out More About the Profession (Category 2), in that the focus is the profession, but also perception and understanding. Thórsteinsdóttir's students likewise aimed to independently *"widen their horizons and gain knowledge of dealing with information..... to acquire understanding of information systems, how information was organised and retrieve"* (p. 229). They too found information seeking for a specific task challenging.

The self doubt of this category was also apparent in Thórsteinsdóttir's students, many of whom felt *"that they were not good enough at information seeking...(which was) an activity that would require revision and renewal throughout their whole lives"* (Thórsteinsdóttir 2005, p. 214). They felt they needed to continually learn more seeing this as an ongoing process. In her more longitudinal study (over 18 months and several assignments), most of the postgraduates felt that they were enhancing their 'information seeking competence' in many ways. This aspect can be

seen in the postgraduates in this study with regard to one specific assignment.

By describing her postgraduates' information seeking behaviour changing and *"gradually becoming similar"* to information professionals, in line with their emphasis on acquiring information expertise Thórsteinsdóttir (2005, p. 246), seems to imply a limited focus on technical proficiency. In the current study this seems to be part of the experience of AIP as perception and understanding of the postgraduates. However, the postgraduates in the current study also experienced perception and understanding as becoming aware of the way they think, as well as act, for example, how they conceptualised information work and the role of information and even themselves. This experience was closely tied to their own personal expertise, information handling and management and they were reflecting on their practices, or ways of thinking, in connection to the assignment and more widely (rather than just in regard to professional information work per se).

Littler's (2004, p. 134) concept of learning as 'challenging and questioning ideas' describes part of postgraduates' ways of experiencing AIP as perception and understanding in this study. However, in this category the postgraduates focused on questioning themselves and their own ideas, rather than questioning external ideas.

8.1.5   Category 5 Growing and Changing

AIP are experienced by postgraduate as personal growth and change by expanding ideas and skills through communication and reflection while investigating a topic and completing the task. In this category postgraduates go beyond learning about themselves to experience AIP as a process of actually changing the way they think and act. Their skills are honed through 'doing' and reflection and so they constantly seek ways to improve their information techniques and to find ways of doing things. These include, for example, the integration of computer technology into their information process or consciously building a personal store of tools to draw upon as required (see Chapter 5). In this professionally-oriented IS subject, skills are also enhanced through the content they encounter. Professionals' information management strategies they are encountering in the literature are used to expand ideas and skills through their communication with texts, research activities and self reflection. This experience is one of change through growth, while focusing on a topic and 'doing' an assignment.

There are similarities in this category to Marton's (1993) fifth conception of learning: Learning to See Something a Different Way. In the experience of AIP as growing and changing postgraduates are also 'changing' their way of thinking about, as well as doing information related tasks ('what' and 'how'). They too broaden their learning beyond the particular assignment to incorporate techniques and ways of thinking and working that they will be able to use for future assignments, research projects, and jobs.

Littler's (2004) concept of learning as *"appreciating others' ideas or points of view"* (p. 134) has some similarity to postgraduates' experiences in this category. However, rather than just

appreciating others' ideas or viewpoints postgraduates actually reflect on their own ideas and ways of working based on their appreciation of ideas they encounter in their research.

8.1.6   Category 6 Changing Views about Information in the World

In this category, AIP are experienced as radically changing one's way of seeing a familiar part of the world and personal values as the result of an extended engagement with information about a topic. This is a result of extended engagement with the topic. In this most complex of the categories postgraduates experience AIP as bringing about a radical shift in their thinking. This change in their relationship to the world can be to the extent that a shift in personal values occurs and comes as a result of moving through a focused engagement with a topic during the assignment information seeking, finding and generating processes. In brief, the end result of this way of experiencing AIP is a completely different perspective on information in the world and a radical shift in the postgraduates' way of thinking.

This category of AIP is especially interesting because it indicates that the result of 'doing' an assignment can be as far-reaching as the reversal of long and firmly held beliefs and values.

There do not appear to be any findings of this type in the information behaviour literature. Even in Thórsteinsdóttir's (2005) longitudinal study of LIS postgraduates there is no evidence of a shift in values or beliefs.

Some parallels can, however, be found in the student learning literature. Marton's (1993) sixth conception of learning: Learning As Changing As a Person has some similarity to the experience of Changing Views without however, the same existential aspect. There is a similar clear link to *"phenomena in the world around us and their meanings for the learner"* (Marton, Dall'Alba & Beaty 1993, p.293), although for the current study this means information in the world. Here it is the radical shift in previously strongly held views and values about issues in areas of long familiarity and experience that is the focus, rather the much broader 'changing oneself as a person' in other ways. While these aspects may be implicit, it is not drawn out in the current study. This is possibly due to the much shorter timeframes and tighter focus on a single assessment task.

8.1.7   Overview of Assignment Information Processes

Looking at the AIP as a whole, several observations can be made. One striking difference is that although the postgraduates in the current study may have followed through stages in a similar way to those depicted in the ISP (Kuhlthau 2004), they did not describe themselves as doing this in the interviews. Iterative stages are the basis of Kuhlthau's ISP and have been supported in many different research settings, most pertinently (Thórsteinsdóttir 2005, pp. 199-200). As the case study Process Descriptions (Appendices 5 and 6) illustrate, the postgraduates discussed aspects of 'doing' an assignment relating to the three broad phases ('before', 'during' and 'after' the assignment) that the interviews were timed to coincide with. Within these phases, no clear stages

were evident when the postgraduates were asked about what was important to them about 'doing' an assignment. However, it is very clear that they varied in what was important to them about the processes involved in 'doing' this assignment that required substantial use of the literature.

In addition, although the postgraduates in the current study were all studying information science, they themselves made no reference at any time to Kuhlthau's ISP or the stages therein, again unlike Thórsteinsdóttir's study (Thórsteinsdóttir 2005, p. 201). They may or may not have been familiar with this model which is taught in the degree course overall but not in this (usually) first subject. Some of the postgraduates were quite familiar with other concepts from the information science literature and prior professional practice. However, interestingly none of them referred to Kuhlthau's ISP, or its 'stages' despite interviews being conducted at three points over the assignment timeframe.

Kuhlthau's ISP is user-centred, derived from a learning context and focuses on a process of making meaning. She has described the stages of what a student does, thinks and feels in the process of making meaning for themselves in a learning context. In this study AIP differ from the ISP in the following ways:

- Broad phases were apparent, but identifiable stages were not discernible.

- The focus in this study was broader than searching for information, information sources or systems for a specific task. It encompassed information use and how postgraduates experience information (that is, how people view information as a means to an end).

- The current study originates from what the postgraduates considered important (user driven), rather than from the starting point of students using a library.

- It explicitly included information use for a purpose, and had more of a focus on learning (interwoven in the type of assignment examined).

However, some parallels with the process approach to information seeking and the focus on information users seeking meaning and learning from information (Kuhlthau 2004, p. 189), have been pointed out in the experiences of the postgraduates in this study. The importance of Enough indicated by Kuhlthau was found to be integral to the AIP (see discussion in Section 8.2 below). The AIP describe the variation in what was meaningful about 'doing' an assignment for the postgraduates, that is, the variation in their 'relationship' with the assignment.

Thórsteinsdóttir's (2005, pp. 280-286) focus on searching, sources of information, access (and in the second interview on personal background) in the context of a subject of 18 months' duration contrasts with the current study's narrower focus on one assignment.

Heinström (2006) has emphasised the role of individual personality and approaches to studying on information seeking and she has acknowledged these exist alongside cognitive, situational and affective factors. The current study has focused on information behaviour over the timeframe of 'doing' an assignment including the use of this information. Her statement of the complexity of information seeking and the need for this to be recognised is supported by the current study. The

patterns of Broad Scanning and Deep Diving that Heinström found could be considered to correspond to, but are much narrower than, all the ways that all of the postgraduates experienced AIP.

In Limberg's research on approaches to information seeking and use of content she found that her students' conceptions of information seeking and subject content overlapped. Limberg's Balancing and her Scrutinising and Analysing conceptions are all found in AIP. Her crucial conclusion that *"information seeking is not independent of the content of information"* (Limberg 1999, p. 13) is supported by the variation in postgraduates' experiences of AIP.

All the ways of experiencing AIP could be seen as part of Littler's (2004) seventh category of learning processes: Learning through Study Activities (in this case an assignment). However, the AIP enumerate many different ways that postgraduates in this study experienced just one specific activity. Elements of Littler's (2004) categories of Interest (Category 6) and Making Connections (Category 5) are part of AIP Categories 2 to 6. Similarly the phases of information use and learning that Littler found which described stages of information use can be part of any of the ways of experiencing AIP (Littler 2004, p. 139). The focus in this study was however on variation in postgraduates' experiences of (or relationship with) a particular information and learning phenomenon, in this case AIP in the context of 'doing' a particular assignment.

McDowell's (2004) focus on some other aspects of assignments with her undergraduate participants may account for the overlap in findings between the current studies. However, important differences between her undergraduate study and this postgraduate study seem to highlight the differences between these groups. For example, McDowell did not find some of the more complex ways of experiencing an assignment found in this study.

The AIP also mirror Kirk's (2002) conceptions of information use in managerial work (tasks) although in the current study there is a more personal and developmental focus, to be expected in educational situations. In this study the changing and influencing element that Kirk found relates to oneself, rather than to others.

There are similarities in the postgraduates' experiences of coursework assessment and the experiences reported in previous research of undergraduate and postgraduate research students' information and learning (for example, Bruce 1994; McCune 2004).

The student learning literature points out that in their three most complex conceptions of learning, meaning is central (Marton, Dall'Alba & Beaty 1993). In the current study meaning is part of all the ways of experiencing AIP, including the least complex. For example, meaning and learning are implicit in Shaping the Task (Category 1) and learning about a topic and something specific in Finding Out (also see Table 8.3). In all the experiences of AIP the postgraduates appear to see themselves as the *"agent of what is happening"* (Marton, Dall'Alba & Beaty 1993, p. 293). The sense of agency and 'being in charge' described in their most complex sixth category is a feature of all the ways the postgraduates in the study experience AIP. For the postgraduates in this study, for example, it is particularly strong in Shaping the Task where managing the

project, planning and control are very important. Shaping the Task is where the need to 'operationalise' (or use tools) to re-exert one's sense of agency is realised and implemented.

In the current study there was not only variation in the ways postgraduates experienced AIP but also 'micro contextual' variation within individual postgraduate's experiences. They moved very quickly, for example, from experiencing the need for control and organisation (Shaping the Task), and switched to an experience of being engrossed with what they could explore, the development of their topic and what they might find next (Discovery and Engagement) and back again. This movement of experiences depended on what they were getting from the process and decided to focus on at any particular point.

The process of 'doing' an assignment as described by postgraduates over the three interviews starts on the first day of class when they receive subject and assignment outlines and due dates. They start thinking about how they might shape their version of the task at this point. Weeks after the assignment has been completed and returned with feedback and a mark it still has a presence in their lives and they report that they think and do things differently now.

8.1.8 Assignment Information Processes: Conclusions

This investigation of the variation in postgraduates' experiences while completing an assignment has enabled a broad focus on more than just the information search process (for example, Kuhlthau 2004) or learning (for example, McCune 2004). It has provided a comprehensive picture of how experiences are integrated with each other over time, in a similar way to Limberg's research (Limberg 1999), but in this case for postgraduates at an advanced university level. Postgraduates experienced information and learning in AIP as:

- Physically, cognitively and affectively demanding even though they were high achieving students

- Extremely time-intensive

- Requiring a constantly shifting focus between controllable objectives (for example, Shaping the Task), and intrinsic processes (for example, Understanding and Engagement).

Some similarities in the postgraduates' experiences of coursework assessment and the experiences reported in previous research of undergraduate and postgraduate research students' experiences have been noted (for example, Bruce 1994; McCune 2004).

However, there are also some interesting differences from other studies which have emerged and are important. Differences found in the experiences of AIP include:

- Great variation in the experiences of a relatively homogenous group of high achievers

- Great variation across the range of experiences within an individual

- At different points, different elements of AIP are in focus for an individual. Being able to

balance information seeking and use, learning and task management may account in part for their success

- AIP are structured and underpinned by evaluations about whether or not an individual has Enough (discussed in the next section)

- The inclusion of personal and affective elements is shown to be part of postgraduates 'doing' an assignment (that is, their focus is larger than just the task).

In summary, considerable variation is apparent even in high achieving postgraduates' experiences of AIP. Their experiences also varied dynamically at different points in the process, depending on what was important to them at that point (for example, time and deadlines). This 'micro contextual' variation goes beyond contextual or 'situational' variation and is also apparent in postgraduates' experiences of having and doing Enough for the assignment which will be described in the next section.

8.2 Postgraduates' Experiences of Enough for an Assignment

This section addresses the question:

> How do postgraduates experience Enough (and not Enough) in the context of preparing and completing an assignment?

Enough is an everyday concept that is a phenomenon of study in many fields as well as an important issue in these times of 'information overload'. It is a key concept for the discipline of information science, an important part of AIP and learning and turned out to be extremely important for the postgraduates in this study. As postgraduates complete an assignment they have to negotiate what Enough is for different purposes in the context of 'doing' an assignment. Being able to reevaluate Enough in terms of information and a range of other criteria, is essential to successfully move through and ultimately complete the task. Interestingly, high achieving postgraduates experienced Enough during the assignment in five qualitatively different ways. These different ways collectively represent the way the common concept of Enough was manifested in the experiences of the postgraduates and is labelled 'Enough' or 'not Enough' as appropriate in the context of this thesis.

8.2.1 Category I Control and Getting Done

Enough is experienced as having the right amount of essential elements of an acceptable standard in place, in order to keep (or regain) control, get the task done and avoid disaster. This category is characterised by experiencing Enough as just what is necessary to get the assignment done. Aiming to properly complete the requirements to their own minimum standards (which are quite high) and accommodating prevailing academic requirements and resource parameters, to avoid personal embarrassment, Enough is experienced as a risk avoidance strategy. In order to

control and produce what is required for the assessment and to meet the deadline, a focus on quantification of assignment components, construction and composition is required.

Postgraduates strongly emphasise physical elements of the assignment. They make the task concrete by: breaking the assignment down into bits; quickly structuring sections under headings; managing information primarily to complete that structure; filling in *"dot points"*, putting *"stuff"* in and filling knowledge gaps. Enough is used to anchor and limit postgraduates' information seeking and writing activities and for gauging their own accomplishment in the final product. This category enables 'stopping' judgements (Zach 2002). It is linked to feeling organised and in control. The intention is to cope with overload, pressure and uncertainty. This category represents how the postgraduates experience Enough when a task seems straightforward, or they need to make it so at the end of AIP, when they feel overloaded with other assignments or matters.

Search closure due to time limits and deadlines has been a common finding in the literature (Kuhlthau 2004, p. 50; Thórsteinsdóttir 2005) & (Agosto 2002, p. 21). This is part of the experience of Control and Getting Done for postgraduates too. The Pragmatic information seeking style identified by (Zach 2002, p. 164) amongst arts administrators is strongly reminiscent of postgraduates' experiences of Control and Getting Done. Enough to exert control over a complex task, and to get tasks completed within the time available were kept in mind by the postgraduates in this study. This experience, rather than just a one-time decision to stop, was a way to maintain a management focus throughout the project. Thórsteinsdóttir's (2005) postgraduates' second criteria for feeling they had Enough information on making the decision to stop seeking information for the assignment (Assignment specifications) is also a part of the experience of Control and Getting Done for the postgraduates in the study. It is linked to the Type of Enough: Academic Expectations (see Chapter 6). The postgraduates used the criteria of Academic Expectations, including the deadline and their own internal deadlines, to move through sub-tasks within the assignment. This also supports the finding that time constraints of two types (imposed or self generated) match the two types of task generation identified by Gross (1999 in Agosto 2002, p. 22). Both of these are part of the way of experiencing Enough as Control and Getting Done.

Although the often reported sense of information overload is not a specific finding of the current study, overload in general seems to periodically trigger an experience of Enough as Control and Getting Done. However, details such as textual overload, outcome overload and other physical constraints (Agosto 2002, p. 22) are not described by the postgraduates. Perhaps this is because the focus of the study was not on searching, but rather the experiences of information seeking and use over the course of the whole assignment.

'Satisficing' was apparent in postgraduates' experience of Enough as Control and Getting Done. Time, cognitive and physical constraints were found to be factors in 'satisficing' by Agosto. Although 'satisficing' behaviours such as reduction (Agosto 2002, p. 23) were not a focus, they can be seen as one of the ways postgraduates experience Enough as Control and Getting Done.

The aspects of information seeking and use that Limberg (1999) labelled 'Information Overload' and 'Enough Information' in her study, are interrelated in this thesis, and are both part of the concept of Enough (see Chapter 6). Postgraduates' experience of Enough for Control and Getting Done intersects with all three of Limberg's conceptions of Information Overload'. 'Mechanical reduction' has a similar quantitative focus, and also aims to limit and bound the assignment components. Enough to Cope has a similar focus on deadlines (time) and resources (energy) and visual judgements. There are also similarities with Selection Through Structuring and Analysing, with a common focus on structure as a way of dealing with too much Information. Analysis and careful scrutiny in light of all the parameters, including structure is a feature of postgraduates' way of experiencing Enough in this category.

Kuhlthau has pointed out that people often stop collecting information to allow themselves time to focus on producing what they need for the task, in this instance an assignment (Kuhlthau 2004, p. 50). This echoes in part the intention postgraduates have in this category of Enough. Berryman's (2006) findings parallel the central role of Focus Formulation for information searching in the ISP. She discovered a strong *"need for a framework against which to make the assessment of enough information"* (Berryman 2006, p. 4) and as a focus for information seeking amongst policy workers. This is interesting in regards to postgraduates' experiences in the current study as Control and Getting Done is a way of experiencing Enough that they often return to.

8.2.2   Category II Optimal Production

In this category, Enough is experienced as what enables optimal physical production in order to get it right and create a high quality report. This way of experiencing Enough is focused on being effective, in order to create a coherent piece of work that will satisfy external and personal criteria. As in the previous category the emphasis is on the product, but now incorporates qualitative dimensions: the Optimal Production of a quality thing (report) without wasting time. In this category there is a concern with making sense which is not a major priority in Category I. The emphasis on optimisation of the process and product makes it a key mechanism for high achieving postgraduates' successful assignment outcomes.

The Topic Selection stage of Kuhlthau's ISP has some elements showing postgraduates' experience of Enough as Optimal Production, especially *"Weighing topics against criteria"* and *"Choosing topics with potential success"* (Kuhlthau 2004, p. 46). But in this study postgraduates focused more broadly than just on the topic. This way of experiencing Enough is also linked to Limberg's (1999) students' conceptions of enough information. Her conception of enough information as Material to Cover the Topic has a similar emphasis on quality of material in order to provide a balanced presentation, and thus a good assignment. Limberg's most complex conception of enough: Enough to Analyse and Discuss the Topic is also similar to postgraduates' experience as Optimal Production. In this study Optimal Production includes the intention to have Enough for a comprehensive treatment of the topic and to create a report of quality.

(Thórsteinsdóttir 2005) found four criteria were used by her postgraduates to know when they

had *"enough material"* (pp. 201-203), or make the decision to stop seeking information. Meeting assignment specifications or teachers' expectations and completing requirements are also part of the first two categories of ways postgraduates in this study experienced Enough. Along with the Type of Enough identified as Academic Expectations (see Section 4.4) these first two categories are where the postgraduates focus is on the external requirements of, and for, the assignment task. Enough in these experiences is what will fulfill these requirements, or produce a very high standard of report.

8.2.3   Category III Understanding and Engagement

In this category, Enough is experienced as what allows engagement and enjoyment of a process of discovery and 'working out' in order to understand and successfully produce. Enough is experienced as engagement and interest in the content and process of learning. This category focuses on the quality of the process and interest in the topic rather than the product and on whatever it takes to enjoy that process. This can include: understanding; finding out; clarifying and learning more about an area; enhancing skills and learning more about oneself. The explicit focus is on what is Enough for a useful and enjoyable learning process. This interest can be part of the impetus for the topic choice, or part of a process of engagement that emerges during the assignment and is also linked to avoiding boredom. The pursuit of personal understanding is paramount.

Kuhlthau states that *"the concept of enough may be applied to each stage in the information search process"* (Kuhlthau 2004, p. 136) and she emphasised that the ISP regards the concept of

Enough as *"what is enough to make meaning to oneself"* (Kuhlthau 2004, p. 136). Making meaning for themselves is what the postgraduates in the current study focus on in this way of experiencing Enough. What was meaningful to them included interesting and engaging content and enjoying the process of discovery, detective work and reflection.

Agosto's (2002) study of teenagers evaluating and preferring online sites based on interest in the subject content supports the postgraduates' experiences of Enough in this category as what is of interest and engaging. Agosto also found the teenagers did not simply use 'satisficing' as a *"stop rule"* (Agosto 2002). Because the web delivered so much information that they did not get as far as satisficing, It was clear that they decided to stop *"before a satisficing option appeared"* (Agosto 2002, p. 240). The postgraduates in the current study tended to go beyond satisficing, particularly when they experienced Enough as Understanding and Engagement in this category and in the Category V Generation and Creation.

8.2.4   Category IV Completion and Satisfaction

Enough is experienced as an internalised qualitative sense of completeness and coverage in order to satisfy curiosity and make sense to oneself of the topic and the assignment. Although this category is similar to Category III in that Enough is strongly focused on what is needed for

learning, in this category it has changed to a state or feeling of satisfaction, rather than a dynamic part of AIP. By making sense and coming to know what, why or how, postgraduates satisfy their innate curiosity and experience an internal sense of feeling complete. There is unsurprisingly more evidence of this meaning of Enough at the closing stages of AIP, when it has all come together. This is the most satisfying but least frequent way of experiencing Enough for high achieving postgraduates. This sense of closure and feeling of completion is absent in all of the other categories. In addition it is noticeable that this way of experiencing Enough is characterised by its primarily affective focus, to a greater degree than in any other category of AIP or Enough.

The experience of Completion and Satisfaction found in this study links strongly to Thórsteinsdóttir's (2005) criteria for Enough of perception, feeling and intuition. She described Enough for her postgraduates as *"simply a matter of feeling...a mixture of logic, analytic ability and intuition"* (p. 202). She noted that this criterion was not found in other literature.

Kuhlthau has noted that Stage 6 of the ISP (Search Closure) often occurs when people *"feel they have to put forth 'sufficient' effort"* (Kuhlthau 2004, p. 50). This may be similar, but it is a less developed finding than the postgraduates' feelings described as part of this category. Completion and Satisfaction relates to the whole AIP, not just the search process. The diminishing relevance or redundancy she notes as other factors of influence for Search Closure were not found. Having Enough to present for an assignment was not just meeting the original information need but *"the students had personal standards that they consistently used to determine closure"* (Kuhlthau 2004, p. 83).

In this context the most interesting information seeking style identified amongst arts administrators by (Zach 2002, p. 164) is what she labelled *"inexplicit"*. She described this as being instinctive or intuitive in decision making and information seeking. This characterises the way postgraduates in this study experience Enough as Completion and Satisfaction. It is interesting to note that all of the arts administrators in Zach's study were highly experienced in their field and had one or more advanced degrees or PhD's. The use of intuition and instinct along with a postgraduate level of education and years of experience of the job at hand can be parallelled with the postgraduates in this study. The postgraduates also have many years of experience of the 'job' of being a student through their school and undergraduate years, as well as other research experience from their working lives.

Kuhlthau found that lawyers closing the research process *"consistently described a definite sense of closure"* (Kuhlthau 2004, p. 181), that they internally 'knew' when they had Enough to complete their task. This is another interesting indication that feelings and intuition may play an increasingly important role in evaluating Enough for complex tasks as familiarity, practice, levels of education, professional training and increase in expertise.

8.2.5 Category V Generation and Creation

In this category Enough is experienced as a generative driver of the content vision and development process of risk taking in order to engage in discovery and create a unique, ideal product of value in its own right. Postgraduates' experience of Enough is distinctly different from all the previous categories because an aesthetic requirement has emerged. This category goes far beyond production, engagement and satisfaction and includes a creative need. The experience incorporates an idealised vision of something intrinsically worthwhile, valuable and useful beyond the learning and assessment process. There is willingness at this level to go beyond not only what they know, but also across perceived boundaries and to take risks. This conception drives a deep level of exploration and the need to balance multiple sets of criteria is recognised.

In the same way that Agosto (2002, p. 22) found self generated time constraints, and illustrated that decision making constraints can be internally as well as externally imposed, self generated expectations of themselves and their ideals for the task intersect with time for postgraduates in this category.

Time is often not seen as a constraint by students as Heinström (2006) demonstrated in her Broad Scanning and Deep Diving patterns of information seeking. Students taking a deep approach to a task dealt with time more flexibly, viewing time expenditure as a choice of how they actually use their time. The time limits that Thórsteinsdóttir (2005, p. 201) found also come up in this way of experiencing Enough. There is a sense that there can never be Enough time to create the ideal.

The importance of aesthetics found in this category has been recognised in design education where fostering its development is part of the teachers' task (Miller & Reid 2005). In science education Wickman & Jakobson (Wickman & Jakobson 2003) argued that the role of aesthetics which transforms experience should be as an integral part of a subject curriculum. They found close links between *"the cognitive and aesthetic content of experience"* (p. 4). This support the value of notions of aesthetic qualities for postgraduate products for assessment found in this way of experiencing Enough.

In her longitudinal study of students from high school into their undergraduate years and beyond, Kulthau found *"personal ownership"* of the topics they had explored, increased as they matured, along with *"a frequent need to know more and to go further with the research/after the assignment was completed"* (Kuhlthau 2004, p. 84). This parallels the findings of the current study in the way postgraduates experienced Enough as part of Creation and Generation in this category.

8.2.6 Overview of Enough

The postgraduates' experiences of Enough were multi faceted and varied in five qualitatively different ways that shifted dynamically over the course of completing an assignment. A major influence on the experiences of Enough at any one time was what type of Enough the postgraduates were thinking about, or 'Enough for what?', at that point (see Chapter 6). The more

tangible, extrinsic types of Enough identified (for example, Assignment Task) were linked to less complex experiences of Enough. The more intangible, intrinsic types (for example, Personal Resonance) were linked to more complex categories (see also Table 6.2). It was clear that the type of Enough being considered at any point in time affected the criteria a postgraduate used to judge the situation, move forward and maintain a balanced approach over the assignment as a whole.

Of the five categories of information seeking styles Zach (2002) identified, the Opportunistic style she described can be seen in all of the postgraduates' experiences of Enough. Kuhlthau's description of 'exhausting resources' in Search Closure (Stage 6) (Kuhlthau 2004, p. 50) and Thórsteinsdóttir's (2005, p. 201) exhaustion of resources criteria for deciding to stop seeking information were not articulated by the postgraduates in the current study. These postgraduates seemed to experience an abundance of sources and to evaluate Enough based on other factors or criteria. This difference may be due to the fact that Thórsteinsdóttir's postgraduate students were studying in distance or on-campus mode whereas, the postgraduates in the current study had access to a large on-site academic library, other libraries in the city and a good interlibrary lending service.

It could be argued that the experience and expertise noted by (Kuhlthau 2004) and (Zach 2002) that enabled their respondents to just 'know' when they had Enough is part of being a successful professional (lawyer or arts administrator). It could equally be argued that it is also part of the 'job' of being a successful student. Feeling one has Enough for a complex task involves an ongoing series of evaluations being made against many different criteria. For the postgraduates in this study, balancing these extrinsic and intrinsic (or personally important) criteria seemed to be a driver for moving from one way of experiencing Enough to another.

The central role of Enough has been emphasised by the postgraduates to an extent not found in related studies (Agosto 2002; Kirk 2002; Kuhlthau 2004; Limberg 1999; Zach 2002). Enough is part of making decisions, but it is also part of ongoing evaluations, re-evaluations or reviews, and is central to maintaining, or even generating, forward movement in the task. This is quite different to earlier findings focused on 'satisficing' or stopping rules (Agosto 2002; Zach 2002). The present study shows that postgraduates' experiences of Enough were highly dynamic with evaluations about Enough being multidimensional along at least six different strands (see Figure 6.1). The postgraduates use the concept of Enough to structure and manage the task and to integrate it with the rest of their lives. The balancing of what are often conflicting needs is a key way that these postgraduates achieved to a very high level.

Evaluations about Enough featured in postgraduates' daily lived experiences throughout the assignment process (Given 2000). High achieving postgraduates' differing experiences of Enough as they manage their whole research and assessment process are part of holistic, integrated information behaviour. Enough can be seen not just as part of the postgraduates' searching and seeking but also as part of their information utilisation (Kirk 2002). Enough also plays a role in skills enhancement, meaning creation, writing and learning, as described by Limberg (Limberg 1999).

Postgraduates' Experiences of the Role of Enough

This section describes some interesting aspects of the ways that postgraduates experienced Enough as part of the dynamics of 'doing' an assignment. These descriptions are based on the intensive analysis of Enough undertaken for the phenomenographic and case studies.

Bounding

Postgraduates' experiences of Enough for different purposes and at different points over the life cycle of an assignment act as boundaries to that task, in terms of postgraduates' information seeking and how far they develop the content and take their ideas. The Enough judgements they make in 'micro contexts' form boundaries based on the multiple criteria that are associated with the differing types of Enough they take into account throughout AIP. These include information utilisation (thinking through, writing and rewriting, presenting, getting feedback, reflecting and so on). Using Enough to integrate different aspects of a task through the types of Enough pulls all these factors into the task so there is coherence and forward energy. This energy is managed within the realities of any constraints which inform the 'where to stop' decisions, but not only as stopping but also directional and shaping judgements and evaluations. The idea of stopping is part of their experience but is less important than choosing and shaping, pushing or turning. On the other hand the more overt task barriers bring the stopping element of Enough into sharp focus and cause a change in focus to other aspects of Enough and other criteria.

Exploring boundaries is a way of exploring the world and an inherent part of how we continue to learn in a subtle way throughout life. Boundary negotiations through evaluations of Enough are closely linked to relevance. Anderson's (2003, pp. 201, 227) findings of the decision processes taking place at boundaries and impacts at the margins of understanding and on workload are echoed in the current study. The relationships between Enough, creating boundaries and decision making are difficult to disentangle but need to be considered as part of information behaviour and learning. The element of bounding leads to the following element of the creativity and generative power of Enough.

Doing and Creating

By working within boundaries, evaluations of Enough allow the journey of discovery to be shaped and contained. Enough and creativity are strongly intertwined. The search for Enough in human information gathering spurred postgraduates onwards. Because they were engaged with the assignment task and the content to such an extent, their goal became an elusive, idealised vision of something that may be unachievable and could always be improved upon. This is the generative power of Enough.

The case of not Enough is a concept of deficit that paradoxically increased the positive, generative drive in the successful postgraduates in this study. How were they able to capitalise on this negativity rather than become stalled? Enough was able to ignite and actualise creativity within real world constraints, allowing goals to be achieved and thus 'enabling' realistic creativity.

Enough is part of what makes the AIP so dynamic.

Balancing

The experiences of postgraduates in this research are interesting in the way that they expand and balance the competing costs and benefits of going further, getting more, or taking longer in the differing experiences of Enough. They also balance the competing and complex range of criteria that are linked to each of the different types of Enough which all have to be considered in order to complete the task successfully. One of the factors in balancing is risk management. Balancing Enough spurs on and motivates postgraduates as well as keeping the task manageable and doable. It allows them to forge ahead without getting carried away. This balancing of all the Enough factors seems to be a key part of their success.

Succeeding

Postgraduates need to be able to harness and manage the power of Enough in order to complete any task successfully. In this study they were not daunted by the complexity of the things that needed to be kept in mind and were able to keep sight of the bigger picture without becoming totally overwhelmed. Balancing was a key part of their success.

8.2.7   Enough: Conclusions

The role Enough played in the experiences of postgraduates in this study was central to completion of the assignment task. Their sophisticated use of 'Enough for their purposes' goes beyond information seeking to become an integral part of information use, learning and success. Enough drove the successful experiences of assessment for these postgraduates in several key ways by:

- The creation of boundaries or closure
- A generative force encouraging creativity and pushing oneself to greater things
- An alternating focus on product and processes
- Their relationship to time.

The variation in the postgraduates' experiences of Enough was, moreover, interwoven with the different types of Enough.

In summary, as a group of high achieving postgraduates, the participants' experiences of Enough were an important part of their success in that they are a group of high achieving postgraduates. The criteria that the postgraduates used to make decisions altered over time and depended on which type of Enough was being considered at that moment and altered over time. Enough is a human behaviour characteristic that is essential to acting and being successful in the world. The variation and dynamism underpinning the experiences of Enough and the changes

that occur over the lifetime of an assignment task are a driver, regulator and mechanism of success. Evaluating Enough is a human behaviour that is essential to acting and being successful in the world. Because Enough is such an influential part of information behaviour improving our understanding of Enough is important in order to better understand information behaviour. The role of Affect in Enough was also found to be important and will be discussed in Section 8.4.

8.3 Changes in Postgraduates' Experiences of an Assignment

This section addresses the question:

> Do changes occur in postgraduates' experiences of information, learning and Enough over the timeframe of an assignment?

This study took up Kuhlthau's suggestion that longitudinality is a way to *"open up the holistic process for examination"* (Kuhlthau 2004, p. 190), in order to explore information questions that defy a once off approach. In the information behaviour literature investigation at one point in time, or of one part of a larger task is still a dominant approach, for example, in research on information seeking. Some notable exceptions include Limberg's (1999) three phases of interviews with high school groups and Anderson's (2003) in-depth exploration of the research process of two academics for more than two years.

In this study although the postgraduates were interviewed at three different points in the process no distinct stages were found in their experiences of the process of 'doing' an assignment. This contrasts with Kuhlthau's research which, using a single interview approach, showed movement through recognisable stages of the ISP among high school and undergraduate students (2004). On the other hand, the present work has shown that the postgraduates experienced what can be described as three quite loose and indistinct 'phases' that had different foci, with variation within phases as well as across phases. For example, each postgraduate differed in terms of their concept of what constituted 'the middle' of the assignment process, and differed also in terms of what they were doing during these three phases of the task. For each of them starting, being in the middle and finishing the assignment, related to different things. Tables 7.1 and 7.2 and Appendices 5 and 6 illustrate some of this diversity. This is an interesting finding and whilst some aspects are described below, further research is warranted.

In this study longitudinality has: allowed the dynamism of AIP and Enough to be described, as well as the evolution of a topic and the content of an assignment. It has also highlighted the dynamic interplay of postgraduates' experiences and 'micro contexts'. These aspects of change are outlined in this section.

In the AIP, for example, Shaping the Task may occur at the beginning and the end of the assignment, but also at any time a sense of control and management is required. Finding Out permeates the whole assignment but is probably strongest at the early stages because as the assignment progresses the content and interest of the postgraduates evolves and may shift. Discovery and Engagement feature strongly in the middle phase of the assignment but can occur

throughout. The experience of Perception and Understanding can be experienced any time after the very initial stage, likewise Growing and Changing. Changing Views is an experience that occurs at the end of the assignment task when analysis, synthesis and reflection are a feature, but it can sometimes be seen earlier.

In this study Enough has been shown to have several aspects (the way it is experienced, the associated types and elements, see Chapter 6) The postgraduates moved between one way of experiencing Enough and another, continuously balancing different criteria and experiences and this seems to be a key part of their success. When the topic and its breadth, depth or direction and the finding of more information becomes the focus Enough is experienced as Understanding and Engagement. When they regain a greater priority on activities they may move back to a focus on time, or on a sense of the number of sources or sections they need (Control and Getting Done). Or they may focus on the quality of what they have written, the scope and authority of their sources and points they can make in their report (Optimal Production). When some part, or the whole, of the task or AIP 'comes together' for them the focus is on the feeling of contentment and closure (Completion and Satisfaction). The resurgence of the desire for an ideal assignment product, or to go further in pursuing the research can come with the realisation that perfection is impossible and that they may never have Enough (Generation and Creation). This spurs them on throughout but ultimately they can never be satisfied that they have created the best possible outcome.

The following sections discuss in more detail the impact of changes in experiences of the postgraduate in seven different areas of significance:

- Information and Information Use
- Subject or Content Learning
- Browsing
- Time
- Complexity/ Changes in Tasks
- Learning and Change
- Micro Contextual Variation.

8.3.1 Information and Information Use

One example of the changes across categories is in terms of how the postgraduates, a group of aspiring or currently practising information professionals, perceive information and information use. The ways they think about these two central concepts are as dynamic as their experiences of AIP and Enough (see Chapters 4 and 5). Table 8.1 shows some interesting patterns of the different ways postgraduates perceived information and information use within each category of AIP and Enough. Labels used are those chosen by the researcher to describe the postgraduates' perceptions and are drawn from analysis of the interviews and transcripts.

For example, the postgraduates moved from a relatively unsophisticated notion of information as tangible, objective and controllable in Shaping the Task (AIP Category 1), to thinking about

information in terms of its impact on them and how it can confront and challenge their personal views of the world in Changing Views (AIP Category 6). In terms of information use for completing an assignment the spectrum moves from information use being an achievable challenge in Shaping the Task, to information and information use bringing about irreversible changes to their ways of working and personal values in Changing Views.

In Categories I to III of Enough the ways that information and information use are perceived is similar to the way they are seen in Categories 1 to 3 of AIP. However, in the more complex categories of Enough there are clear differences. For example, Completion and Satisfaction (Enough Category IV) has led to a perspective of information and information use that affects oneself, the topic, knowledge and skills, but it also focuses on feelings about what has been done and achieved. Generation and Creation (Enough Category V) has a similar perspective to Changing Views (AIP Category 6) in terms of the confronting nature of information and information use but emphasises the creative power of information and information use when 'doing' an assignment which both motivates and requires taking risks.

Table 8.1   How Information and Information Use are Perceived in the Categories of Assignment Information Processes and Enough

Categories of AIP	Information	Information Use	Information	Information Use	Categories of Enough
1 Shaping the Task	Objective Controllable	A comfortable challenge to manage	Same as for AIP	Same as for AIP	I Control and Getting Done
2 Finding Out	Objective Instrumental	A means to a useful end	Same as for AIP	Same as for AIP	II Optimal Production
3 Discovery and Engagement	Objective & Subjective Intrinsically Valuable & Interesting	Has its own intrinsic worth & reward	Same as for AIP	Same as for AIP	III Understanding and Engagement
4 Perception and Understanding	Subjective Useful	Expands awareness of oneself & the topic			
5 Growing and Changing	Personal Vitally important	A way to enhance knowledge & skills	Nucleus for process	Brings a sense of achievement	IV Completion and Satisfaction
6 Changing Views	Personal Confronting (Key to how we relate to the world) Vital	A catalyst that changes personal values. Irreversible.	Material that feeds their 'content vision'	Motivates & propels. Can require risk taking	V Generation and Creation

In summary, information and information use are viewed similarly in the less complex categories of AIP with the differences emerging in the more complex categories. This may be due to the more divergent nature of the postgraduates' experiences in the more complex categories of

AIP and Enough. Just as the focus of Growing and Changing, and Changing Views is quite personal, so too are the postgraduates' perceptions of information and information use in these ways of experiencing AIP. On the other hand the focus of Completion and Satisfaction, and Generation and Creation is on the accomplishment and the feelings and excitement this brings.

8.3.2   Subject or Content Learning

In the assignment, information and learning are overtly directed toward content. Information is sought in order to learn about content as the postgraduates are learning about something: a topic, issue or subject. The postgraduates in this study had a framework within which they chose their own topic (see Appendix 3), the subject or content or their topic changes over the course of the assignment. Initially it is seen as some interesting ideas, associations, and leads. These influence actions and ideas. Then 'bits' and threads start to coalesce. Information is used and shapes, and is shaped by, that use: content shapes what the postgraduates do. As the final product is built up the content continues to evolve. What is delivered, or left out, is afterwards reflected on by the postgraduate, or reconsidered from a different perspective. A different form of the content may be internalised and 'taken away' for future use.

Table 8.2   Evolution of Postgraduates' Experience of Assignment Content over the AIP/ Assignment Process

Content is Hazy ➡	Content of Crystallising Topic Vision & Trajectory ➡	Content of Encounters or Findings & Experiences ➡	Content Shaped & Utilised ➡	Content Communicated, Delivered & Evaluated ➡	Content Evolved & Ultimately Retained ➡
Freewheeling loose ideas & starting points, associations, leads	This influences and shapes perceptions and activities	The bits of 'their' puzzle they find or come across and notice	Use of the information through thinking, changing, writing	See differently throughout production, delivery and evaluation processes, ie the content for individuals continues to be dynamic	Ideas and concepts they crystallise, internalise or work with subsequently and what they 'take away' in the long term, continuing to reshape and incorporate into their thinking

In summary, changes in students' experiences of 'doing' an assignment are highly complex. The changes described above are important for our understanding of information use and assignments. However, this aspect has not been fully explored within the thesis and merits further analysis and research.

8.3.3 Browsing

The browsing behaviour that Kuhlthau found as an action only in Task Initiation (Stage 1 of the ISP) was part of postgraduates' strategies throughout the two early phases of the assignment. Browsing is a strong feature of experiencing Enough as Understanding and Engagement. However, browsing was an activity that was also part of Finding Out, Discovery and Engagement and Perception and Understanding (AIP Categories 2 to 5). It was also a feature of Optimal Production and Understanding and Engagement (Categories II and III of Enough). Browsing was an important part of the postgraduates' information seeking and use and seems to be linked to the affective aspects of information behaviour (see for example, Figure 7.2). This is an aspect of the study that needs further investigation.

8.3.4 Time

For the postgraduates the concept of time acted as either a break, or a driver, very much dependent on the current 'micro context', in a similar way to Enough. For example, a feeling of pressing time is linked to experiencing Enough as Control and Getting Done (Category I of Enough), whereas a feeling of plenty of time was linked to Understanding and Engagement (Category III of Enough). Importantly although the perception of plenty of time is more common earlier in the assignment life cycle, and of time pressure later, as has been discussed. These different perceptions of time and associated experiences of Enough shift dynamically throughout the assignment. Different types of time and action links can be seen, for example, actions that take place at a point in time, versus time-driven or time-bound activities. While interest is framed in terms of the 'self' interacting with the task, availability is framed more broadly as the postgraduates' relationship with information. Availability is not just in terms of the availability of information, but also its content, pertinence, timing, context and level, and is in addition how this is, or is not, what is needed at the time. This aspect of the study also warrants further investigation.

8.3.5 Complexity and Changes in Tasks

In terms of 'doing' an assignment, which can be considered as a complex task, Kuhlthau states that *"the information search process is a task model.....There is a discrete beginning when the task is announced and a definite end to the task, a deadline, when time runs out and the task is finished"* (Kuhlthau 2004, pp. 196-197). The assignment in the current study is not only a task but also a personalised learning experience. Therefore, the end of the task for postgraduates is not the end in terms of activity, although physical searching activity may cease. Cognitive activity regarding aspects of the topic, the product (report) or process of 'doing' the assignment may continue in a professional work context, or when postgraduates have been particularly engaged in any aspect of the task. Because the postgraduates have been changed by what they have learnt (thought through, or done) they go forward with a changed perspective. They may, for example, simply notice a particular thing more as a consequence (for example: *"I see it everywhere now"* Meredith).

Kuhlthau found complexity in the four criteria for relevance judgements of: task, time, interest and ability (Kuhlthau 2004, p. 195). Postgraduates in this study described instead three main components: the task, the information and themselves. It is the experience, or perception of complexity that is important, *"it is the individual's perception of the complexity of a task that determines his or her experience of the process and degree of uncertainty. Since it is the perception of complexity, not the complexity inherent in the task, tasks cannot be labelled (sic) in advance as complex or simple"* (Kuhlthau 2004, p. 197). For the postgraduates in this study that changed as the task progressed or time elapsed. At one point an assignment task may seem straightforward, and at another impossible. Even if a learning task is designed at a certain level of complexity for a group of students, that complexity is not external or objective, but an internal relationship with the task, or the individuals' perception of the task's complexity (Bystrom & Hansen 2005). Task complexity is a part of the way postgraduates experience AIP. In Category 1, for example, the task is recognised as complex in the sense of having a number of bits, the essential role of a structure to keep it under control, the possibility of drifting and the subsequent need to check back continuously to structures. Complexity also grows as engagement does (that is, the more you know the more you realise there is to know), leading to a more complex experience of the task. An assignment as a complex task is a strong focus of the less complex categories of AIP and Enough.

Time was a part of the contextualised task and part of the ways individuals experienced AIP and Enough, and consequently changed considerably. For instance, at the earliest point of the assignment, time was not an issue so it was not preventing actions. Nor was it driving them because there seemed to be endless time at that point. Actions were spontaneous (for example, when they came across something of interest) and free floating, or not anchored in time. Information was encountered or noted and thoughts were pondered as they arose in a whole of life context, with a heightened awareness of the task and its possibilities in mind, but even though it's not in focus. In this study the role of time changed across the categories and the assignment life cycle.

8.3.6 Learning and Change

This study started *"from a perspective of learning as changes in understanding"* (Ramsden 2003, p. 37). How this change relates to the differing ways postgraduates experienced AIP is shown in Table 8.3 below. In Shaping the Task (AIP Category 1) they are learning more about what they need to know and do to complete the task. In Finding Out (AIP Category 2) subject or topic content, its wider context and answers to their questions are learnt. In Discovery and Engagement (AIP Category 3) they learn more about the process of research in the topic. In Perception and Understanding (AIP Category 4) they learn about what challenges they need to deal with in their learning. In Growing and Changing (AIP Category 5) learning is changing through increasing their knowledge and skills. In Changing Views (AIP Category 6) the overturning of their strong prior beliefs and values is learning as a radical reversal.

Table 8.3   How Learning is Perceived in the Categories of Assignment Information Processes and Enough

Category of AIP	Learning More About:		Category of Enough
1 Shaping the Task	*What is needed and how to complete task*	*What is needed and how to complete task*	*I Control and Getting Done*
2 Finding Out	*Topic content, context and personal answers*	*What is needed and how to complete task well*	*II Optimal Production*
3 Discovery and Engagement	*More about the process developing interest & knowledge in topic*	*More about the process developing interest & knowledge in topic*	*III Understanding and Engagement*
4 Perception and Understanding	*Challenges of knowledge and skills*	*The sense of satisfaction and achievement that can be found even in difficult tasks*	*IV Completion and Satisfaction*
5 Growing and Changing	*As changing by growth of knowledge & skills*	*That all learning can be continued infinitely*	*V Generation and Creation*
6 Changing Views	*As a radical reversal of beliefs that overturns strong prior beliefs and values*		

This study indicates that high achieving postgraduates cannot be categorised as taking either a 'deep' or a 'surface approach to learning' in the context of this assignment. Deep and surface approaches (or strategic approaches) to learning are mixed as required by the postgraduates in order to get what they want during the process, and get what is wanted from the assignment. In order to manage the task, the information and themselves, each of the postgraduates appeared to move between atomistic, less complex intentions and strategies, and more holistic and complex intentions and strategies. Their success may be linked to this flexibility, as well as their ability to balance often directly competing priorities. On one hand they aim for closure of the task, on the other exploration so as to enjoy an interesting and engaging learning process. It is the exploration that enables postgraduates to create a product that clearly demonstrates their learning and fulfills their criteria. It is the need for closure that fulfils other criteria and ensures an assignment is actually produced to meet the deadline.

8.3.7   Micro Contextual Variation

The descriptions of highly dynamic individual experiences suggest that postgraduates' experiences incorporate continuous movement between contexts and experiences. These experiences were not only situational (Prosser & Trigwell 1999), but also 'micro contextual'. The fine grained exploration of the variation in approaches to assessment amongst high achieving postgraduates in this research opens up another way to understand the diversity of student learning and assessment.

An important issue is thus raised by the fact that each of these high achieving postgraduates moved through the categories outlined above, including the least complex, many times. In other

words a significant part of their assignment experiences was at a level usually associated with a surface approach to learning. At the same time they were engaging with their work in meaningful ways and achieving success. Therefore we should probably not assume, for example, that when high achieving postgraduates complete a questionnaire, they are necessarily always engaged in 'deep approaches' to learning.

The nature of variation itself needs to be considered in light of the diversity in high achieving postgraduates' experiences of one assignment. The variation in this group in terms of their experiences of the AIP and Enough indicates that variation can exist even amongst postgraduates who seem similar. Exploring this 'variation in variation' may also have implications for maximising inclusivity for students.

8.4 Affect, Postgraduates and Assignments

In the course of the research the importance of Affect in the experiences of the postgraduates became apparent, consequently a further research question was added to provide a basis of exploring this aspect:

> What are the affective dimensions of the experiences of postgraduates over the timeframe of an assignment?

Affect, like cognition and action is embedded in information behaviour and learning, but is not always acknowledged as such. As noted in the literature review (Chapter 3), Kuhlthau has noted that typically, *"Affective experience continues to be overlooked in the literature"* (Kuhlthau 2004, p. 6). In the 20 years since the user-centred shift in information science some researchers have referred to Affect but rarely made its contribution explicit. However, Affect is pervasive and emerges even when researchers are not looking for it, as in this study for example.

Affective Aspects of Information Behaviour

The affective aspects of experience described in Chapter 7 highlight what was an integral part of 'doing' an assignment for postgraduates. It could be argued that because Affect is central to all human behaviour (Damasio 2004), it will apply also in information behaviour. And while there is a move to recognise the importance of Affect in information behaviour (see for example, Nahl and Bilal in press), there are relatively few detailed empirical findings in the information behaviour or student learning literature to draw upon for this study.

Kuhlthau has acknowledged the involvement of physical, cognitive and affective elements in information searching, particularly, the *"disruption"* caused by new information early in the construction phase. She emphasised the disruption caused by new information to an individuals established constructs (Kuhlthau 2004, p. 18). Kuhlthau makes the point that students are helped by knowing that they are normal in feeling uncertain and anxious, emphasising the importance of feelings and the process of construction to move beyond the threat of the unknown and negative

feelings. But, she does not expand on Affect much beyond this and the introduction of the Invitational and Indicative moods that are also highlighted by Kelly (1963; Kuhlthau 2004, p. 98).

In the ISP Kuhlthau's use of the Invitational mood is linked to an open attitude and risk taking, and the Indicative mood, to closing down options (Kuhlthau 2004, pp. 98-100). Both of these echo aspects of engagement and control that can be seen in postgraduates' experiences in this study, particularly in the experiences of Enough. In the less complex categories (AIP 1 and 2), there was a focus on closure of the task itself, a focus which evolved into a force for generation in the more complex categories (AIP 3 to 5). This seemed to be an important part of balancing competing priorities. Kuhlthau notes that *"In information seeking, these moods may be envisioned either as styles and traits that are habitually followed or as strategies and states that arise from a particular problem or stage of the process"* (Kuhlthau 2004, p. 20). She found that they were related in that there is a loop: not only do thoughts influence feelings but feelings also influence thoughts, confusion and anxiety for example affect actions. However, in this study it seems that postgraduates used the balance and interplay between feelings and thoughts to enjoy deep engagement but were equally able to harness feelings successfully, and complete their assignment.

Interestingly, Lupton (2004) also found some use of intuition and feeling by a mature aged student with personal experience in the topic area, echoing the current study. She described her most complex category of information literacy when researching an essay (Learning as a Social Responsibility) as being *"characterised by strong affective elements"* (Lupton 2004, p. 67). These included passion for their topic and the joy of writing well, in addition to regret and feeling daunted by their task.

Library anxiety (Mellon 1986) does not seem relevant to postgraduates. Although they experience anxiety this is in relation to their information skills and assessment anxiety rather than library anxiety itself. Today information overload and accompanying anxiety often happen in front of a computer terminal. Even adolescents, with their technological familiarity have to cope with such anxiety (Agosto 2001). The anxiety experienced by the postgraduates in this study is related to Enough, in that their anxiety is about their individual ability to negotiate a path through the maze and get what they need to do what they have to, and want to do. They are here to do something quite specific, expected to be able to do it, and therefore feel they 'should' be able to do it. These expectations are connected to Enough through the notions of measuring and evaluating something which reflects on oneself. Anxiety seemed linked to doubts associated with 'measuring up'. The postgraduates were not anxious about the library per se, but sometimes with their ability to use it 'properly'. They know they will be assessed on how well they do the assignment task and marked accordingly, at the same time they are building their knowledge to progress in the subject, their course and their career. As well as their success in the course, their self concept is also at stake as their academic 'performance' seemed to relate strongly to their self image, or academic self concept. This study has shown that even the strongest academic performers' self concept can become shaky, leading to strong negative feelings. The postgraduates achieved highly because they managed their negative feelings throughout the AIP.

Uncertainty

Uncertainty is used to describe thoughts at the beginning of an ISP and feelings of uncertainty are experienced at the Exploration Stage as has already been described (Kuhlthau 2004). This did not reflect the experiences of the postgraduates in this study who did not seem to experience the stages suggested and did not move forward through them in any clear way. Certainly there was a start and an arrival at the destination but the route in between was very circuitous and hard to map. Although feelings were always central they did not move through stages of uncertainty, and the other feelings suggested by Kuhlthau. It was much messier than the ordered logic suggested by the idea of stages.

The uncertainty in the current study seemed to come from a level of concern about coping with the threat of the unknown. In other words anxiety does not simply come from the uncertainty regarding new information being *" incompatible with new constructs"* (Kuhlthau 2004, p. 18). It can also arise from the postgraduates' broader uncertainty: *"Will this work for the task, and thereby for me?"* (as in the individual). That is, how will they manage any particular aspect or issue of the assignment, and consequently the task as a whole. Within that task how will they manage the explicit and implicit expectations and requirements of themselves and of others? Uncertainty comes from the level of concern about coping with the threat of the unknown, yet without some uncertainty there is no meaningful learning.

The uncertainty that Kuhlthau notes in her Task Initiation and Pre-focus Exploration stages of the ISP can be part of all of the ways of experiencing AIP except perhaps for Shaping the Task (AIP Category 1). It is most apparent in the Perception and Understanding category. The particular uncertainty articulated by Thórsteinsdóttir's (2005) postgraduates about having *"fully explored the literature sources"* (p. 202) was however similar to the findings of the current study.

Enough and Affect

The role of Affect in Enough is also important and the findings reported in Chapters 6 and 7 demonstrate the complex and fluid nature of evaluations of Enough. They highlight the integral role of Affect, showing that Enough is a much more complex concept than has been recognised. Although Affect can be seen throughout the postgraduates' experiences of Enough, variations in the meaning of Enough are also accompanied by shifts between the physical, cognitive and affective domains. Nonetheless affective elements were linked to this (feeding a passion for discovery and keeping boredom at bay). The emotions described by postgraduates in their experiences of Enough are complex and subjective, with many components. These include physical, cognitive, organisational, expressive and highly subjective personal meaning. For example, in Control and Getting Done (Category I of Enough) there was a focus on physical production to make the task concrete and maintain a sense of control. In Completion and Satisfaction (Category IV of Enough), the focus was principally affective, on internalised feelings of Enough. The strongest affective (or aesthetic) aspect was apparent in Generation and Creation (Category V of Enough) where postgraduates went beyond internal feelings resulting from the

assignment process itself. The focus expanded to creating the right atmosphere and thus the appropriate feelings for oneself, and included a shift to ideals of creativity, artistry and the ideal of perfection in research. Importantly the components of Enough all include affective elements, demonstrating Affect at work in human information behaviour (Parker & Berryman in press 2007)

Personal Significance

An integral part of the assignment for the postgraduates was its personal significance in their lives beyond the assignment itself. The postgraduates continuously made links from what they were doing and thinking to both how they see themselves (I just like reading), and to the goals they were hoping to reach (jobs, careers, etc). For the period when the postgraduates are working through an assignment they expend a great deal of time, mental and personal resources and it becomes important to them in many different ways. It is closely linked to who they are, what they are doing and what they are working towards so they invest effort accordingly.

The postgraduates talked frequently about the professional and personal significance of their activities as they completed their assessment work. Prior and ongoing personal and professional goals and aspirations were particularly apparent in their early comments about how they came to be doing the course and why they had chosen this particular program and again when reflecting back on what the assignment had left them with. These postgraduates variously described:

- Finding stimulation and interest to enhance a job that has become stale and lacks challenge, by engaging in structured chunks of research and learning (Laura)

- Learning how to develop as a professional and to work at that level in a recently chosen field (Rebecca)

- Expanding their knowledge of a field they had worked in for many years (Meredith)

- Learning more about their chosen field and particular aspects of it, and to understand the work of their associates (Sonia)

- Learning how to operate in their job more effectively by really understanding the links between information and management (Anne)

- Wanting to know how information works in the world in more depth and breadth in order to work out how they wanted to position themselves in that world (Caroline).

In this study the expected links for postgraduates studying a professional course with job aspirations, upgrading skills and qualifications went beyond simply retraining or qualifying for a professional role. Their aims were highly personalised and developmentally oriented. Personally significant goals and aspirations formed part of the rationale or intrinsic motivation for these postgraduates to undertake the assessment task and the subject itself. These personal elements are also part of their reason for postgraduate study at this point in their lives. They are an important part of the relationship between the postgraduates and the context, or situation as noted, and may contribute to the 'micro contextual' variation in these postgraduates' experiences (see Section 8.3.7).

Flow theory, as noted in Chapter 3, also contains the notion of balance between the knowledge and skills of the individual and the challenges of the situation or task which are also significant in the experiences of the postgraduates in this research. However, the postgraduates also seem to balance the control, or closing down elements with the involvement, or opening up elements of their work, as noted above. Their ability to balance skills and challenges may be an important contributor to their success (Csikszentmihalyi 1990, p. 74).

It is important to remember that in analysis the affective dimension of experience is separated conceptually from a holistic experience of information seeking. However, these high achieving postgraduates' differing experiences of Enough as they managed their whole research and assessment process are part of holistic, integrated information behaviour (Given 2002) in their daily lived experiences during the assignment process.

In summary, the affective aspects that are apparent in these postgraduates' experiences of AIP and Enough mean that we cannot assume that any student is exempt from having to deal with fears (Parker 2003; Parker & Berryman in press 2007). In extreme cases potentially high achieving postgraduates may not complete their assignments and courses. How they could be supported in their learning and to succeed needs to be considered with this in mind. Even confident, articulate, educated and experienced postgraduates who are interested in learning more about how information works can at times be 'thrown' by the overwhelming nature of the task. In this study, for example, even established information practitioners can get lost, feel uncertain and anxious and not know what to do. This begs the question of what undergraduates might suffer and underlines Kuhlthau's and Limberg's arguments for a more holistic approach to information use that embraces its affective as much as its cognitive dimensions (Kuhlthau 2004; Limberg 1999)
.

8.5 Implications and Conclusions

This study has extended previous research into information, learning and assessment (Kuhlthau 2004; Limberg 1999; Littler 2004; Lupton 2004; McDowell 2004). It asked postgraduates completing an assignment what was important to them. The postgraduates talked about:

- The meaning of the overall assignment process for them

- The challenges of working to establish Enough for their purposes

- The personal significance the assignment held for them and their feelings.

The variation in the experiences of the phenomena of AIP and Enough that have been found in such a similar group of high achievers was surprising and has emphasised the remarkable complexity of 'doing' an assignment.

The study also used a case study approach to look longitudinally at how individual postgraduates

use information, achieve high academic grades and learn in an assignment. The case studies allowed the interplay of the overall process (or AIP) and the concept of Enough to be more fully explored. The longitudinal focus on the whole experience of students who are working individually at a postgraduate degree level, differentiates this study from other research on school and undergraduate students' information seeking processes, and experiences in groups (Kuhlthau 2004; Limberg 1999; Lupton 2004; McDowell 2004).

Research Implications

The research has provided a new perspective on the experiences of high achieving postgraduates and shown that considerable variation exists amongst them. This variation has implications beyond the links between learning, information and evaluating and establishing Enough for an assignment. Key findings for future research are:

- Information and learning processes in the course of 'doing' an assignment are not in any way linear. Broad phases ('before', 'during' and 'after' the assignment) can be seen but are not separable one from the other. The postgraduates moved back and forth and up and down and this is very different to current models of information behaviour.

- The highly dynamic individual experiences of postgraduates in this study between contexts and experiences, which has been labelled 'micro contextual' variation, indicates a different way to understand student learning and assessment.

- The issue that a significant part of high achieving students' experiences of the assignment was at a level usually associated with a surface approach to learning. We cannot assume that students adopting surface approaches during an assignment will not also be experiencing 'doing' an assignment in a meaningful way and achieving highly.

- The nature of variation itself needs further consideration in light of the 'variation in variation' found in this study in a relatively homogenous group.

- The affective aspects of postgraduates' experiences of AIP and Enough, mean we cannot assume that any student, postgraduate or undergraduate, does not deal with fears and anxieties.

- Although the traditional research report style of assessment investigated here is often considered out of date, the postgraduates in this study were highly engaged in the assignment task. This indicates that traditional assignments can still play a useful part in providing complex and enriching learning experiences. However, the issues postgraduates encounter need further exploration.

Implications for Practice

Some practical implications of assignments as complex tasks requiring considerable skills and application include:

- Traditional assignments should continue to be valued in postgraduate education and not swept away in a drive towards innovation.

- Information skills, information literacy and information management and work practices are needed by everybody, including high achieving postgraduates. Information literacy education should, therefore, be integrated into all students' learning experiences and not only reserved for first-year undergraduates or remedial situations.

- Postgraduates also have a 'first-year experience' (see Krause 2005) although this is a different sort of adjustment than for undergraduates. This transition needs to be recognised and facilitated.

- High achievers need support in learning. We should not assume that 'doing' an assignment is easy for high achievers and that everything is 'rosy' just because they do engage with the task and achieve high marks. Therefore, we need to consider how best to support all students with this important aspect of learning and achievement.

- Academics teaching in the classroom need to recognise just how deeply and personally invested in the task postgraduates may be, even though it is 'just an assignment'. High levels of emotions surround the assessment task for them, which go beyond postgraduates transposing expectations of success at work to their learning. We need to recognise that academic work and assessment is different for postgraduates as opposed to undergraduates who do not have their whole identity as a competent professional at stake.

- It is important for higher educators to recognise that surface approaches to learning (information, learning and Enough in this study) do not necessarily imply that deep approaches are not occurring in relation to parts of the task. Even high achieving postgraduates experience phenomena associated with assessment and learning in less complex ways (taking a surface approach to learning) for a substantial proportion of time. When measuring the level of skills at the end of the course using instruments such as Course Experience Questionnaires this needs to be kept in mind.

- Academics, librarians, study skills staff and academic developers need to take account of the finding that surface approaches are actually essential for completing tasks. A student who only experiences AIP, for example, in complex ways would have difficulty completing and submitting their work for assessment.

- The postgraduates in this study were able to move between and balance both less, and also more, complex experiences. They knew what they needed to do to move forward.

- The postgraduates in this study were information professionals 'in training' and this study provides a useful exploration of professional information and knowledge management education from a postgraduate perspective for higher educators.

We also need to recognise that high achievers too can feel insecure and that they suffer tortures of anxiety that we often associate with weaker students. This understanding needs to be reflected in postgraduate education and information provision.

In summary, the variation in learning from assessment tasks, even for high achieving postgraduates, points to the extent of the diversity in these experiences in broader student populations. This variation has implications for assessing achievement and supporting learning in traditional assignment tasks, lifelong learning and postgraduate education. It also helps to broaden the perspective of the possibilities of traditional forms of assessment for all students and to help them experience learning satisfaction and success (Ramsden 2003). In addition the work offers alternative perspectives on postgraduate experiences as 'micro contextual' and, the extent of 'variation within variation' that can exist even in a single assignment exercise. These perspectives can help our understanding of how to optimise assessment for all students.

8.6 Recognising the Limitations of this Study

The limitations of this study are principally an outcome of its small scale and number of participants. Inclusion of more postgraduates might have brought about different outcomes, but relying on volunteers amongst a busy postgraduate population meant that, over three different semesters and cohorts, only six postgraduates volunteered. The demands of interviewing these volunteers at a time that would coincide with the phases of the research ('before', 'during' and 'after' the assignment) and fit around their available and preferred times and places, meant that having any more than three postgraduates from one class in any one semester would have been impractical. Against this limitation is the fact that a vast amount of very rich data was obtained from the in-depth, longitudinal interviews with each participant.

The fact that all the volunteers were females, of a similar age group and turned out to be high achievers means that they are in one obvious sense a relatively homogenous group. This could be considered as a major limitation in a phenomenographic study of variation. The inclusion of, or a focus on, low achievers could be expected to yield less complex categories of AIP and Enough than were found. But, despite this, substantial variation was found to exist in the ways this group experienced different aspects of 'doing' an assignment, and this has been a particularly interesting finding of the study.

The participants in the study were, intentionally, from one discipline which was selected because they would be learning about, and have an interest in information. This means that the results of this study are discipline-specific and would potentially be very different with participants with less of an interest in information and information management skills.

The qualitative nature of the study means that the findings reported here are my interpretation and other researchers may well have done things differently, for example, the foci of the case studies might have been somewhat different. However, the findings have been reviewed by

peers, supervisors, and at conference and workshop presentations and have been supported as logical and as reasonable interpretations of the evidence. Publications have also been accepted (see list before Appendices).

A further aspect to be considered is that the involvement in the study, being interviewed about their assignment and asked to describe their perceptions during the interviews, meant that the postgraduates in this study probably ended up reflecting more about what they were doing and why, than they otherwise might have. The study therefore could have changed their experiences of the assignment to some degree. However, as has also been observed, the postgraduates who volunteered to be interviewed about their assignment were those that were more interested and open to this type of engagement in any case. This is an inevitable consequence of a volunteer interview study, but was evaluated and considered less detrimental than alternative sampling options. Because I took the approach that it was not necessary to ask them specific questions about their background, the only information available was what they volunteered during interviews. In retrospect it would be useful, to have had more background information about the participants, for example, to have known more about their prior work experiences.

The major role of audiotape analysis was not planned and evolved with the study. The result was a phenomenographic style of iterative analysis of audiotapes rather than more specialised speech protocol analyses (for example, Conversation Analysis (see Silverman 2000)). By the time the data were being analysed it was not feasible, nor considered desirable, to change the approach for this project. However, through intensive and careful listening to the audio tapes, coupled with the researcher's familiarity with the postgraduates, subject and teaching and learning context the data obtained were extremely rich.

Finally, the scale of the project was determined by the practicalities of doctoral degree requirements, timeframes and the limitations of one researcher's capacity to conduct a significant project.

8.7 Areas for Further Research

This study has explored AIP and Enough with one specific group of postgraduates. There are many different directions in which this research could be extended. Some of these are outlined in this section.

Firstly, further analysis and investigation of the changes experienced by postgraduates over the lifetime of an assignment would be worthwhile. A clearer picture of this aspect of information use for assignments would be a valuable contribution to information behaviour research, and would be helpful also for library and academic staff who work with postgraduates doing assignments.

Investigating postgraduates 'doing' assignments at different universities and in different subject areas would indicate how different environments may impact upon postgraduates' ways of experiencing AIP and Enough in their assignment work. In particular, the study of these phenomena in different disciplines would allow the differences between postgraduates who are

aspiring information professionals, and those from disciplines that do not have information at their core (for example, Engineering, Nursing, Architecture) to be explored. In conjunction with, or separately from these investigations, postgraduates' transition to study should be further explored.

Further pursuing the findings about Enough, by asking more direct questions about it, in other postgraduate courses (as above) and in studies that focus on Enough in other information intensive contexts (for example, Berryman 2006) is an area where research needs to be expanded. This is an important issue for the future.

There are many indications, not only from this research but also building in the literature of information behaviour and student learning, of the central role of Affect in student information behaviour and learning. This aspect of the current study needs further investigation than was possible within the scope of this thesis. The links between browsing and Affect for example is one area that the current study has not fully explored.

Analysis used in lie detection research of micro expressions points to the value of analysing easily visible and recognisable expressions (for example, surprise). The face is the major organ of, and site for observing Affect (Tomkins & Karon 1962, p. 224). Because Affect is particularly highly visible on the face, one way to explore this could be through the use of video cameras to capture emotions displayed on the face and supplement an audio soundtrack. Research utilising facial expression analysis could be a valuable way to extend the analysis of emotions that are part of learning and all other human experiences. Trialling the use of Conversation Analysis to determine its value for exploring Affect in information behaviour and learning could also be worthwhile.

Repeating the study with a larger group of postgraduates and including male participants would give some useful insights into the impact of gender on information behaviour and learning. It would also be interesting to investigate the impact of gender in information use, learning and assessment more thoroughly by exploring the variation in experiences in separate studies of female and male participants. Following up this study with postgraduates seeking help with their assignments, perhaps those visiting a writing or study centre, would allow experiences of students who are seeking help to be explored. Use of Narrative Analysis could be interesting to pursue for these issues.

Finally, it would also be beneficial to investigate postgraduate research students' experiences of AIP and Enough over an extended period of time. Following them throughout their research project (similar to Anderson's (2003) study of academics), would provide a fine grained analysis of an extended research and assessment project. This would be a valuable addition to the growing body of research and knowledge about research students. The results would be interesting to compare to those of postgraduate coursework students so that we could understand more specifically the needs of these groups.

8.8 Significance of this Study

In conclusion, this study has explored the experiences of postgraduates as they complete a research based assignment. In terms of a contribution to knowledge the thesis has contributed to a better understanding of:

- Six qualitatively different ways that the overall process of completing an assignment is experienced in Assignment Information Processes, and of the links between information seeking and information use, learning and meaning for postgraduates, over the whole timeframe of an assignment. It was also evident that postgraduates' experiences of assignments were highly dynamic and 'micro contextual'. That is, rather than any experience being dominant, they are constantly shifting depending on the requirements of the moment. While students' approaches to learning are acknowledged to be relational, this usually refers to whole tasks or subjects. It is not usually described in relation to the more micro variation found in this study. The findings also indicated that surface approaches to learning do not necessarily imply that deep approaches are not also occurring in relating to parts of the same task. The high achieving postgraduates in this study spent significant amounts of time using AIP which showed features of a surface approach to their assignment, while also frequently using AIP which would relate to a deep approach.

- The way Enough is experienced through the articulation of the five qualitatively different ways postgraduates experienced Enough in this study. The complexity, diversity and richness of postgraduates' experiences of Enough that has emerged is not only a useful step towards clarifying this key concept, but also shows it can be generative and exploratory, as opposed to the difficulties, gaps, problems and 'stops' usually associated with the idea of Enough. This study has enhanced our understanding of Enough in information seeking and use.

- The affective impact of assignments on postgraduates completing what might be seen as routine assessment tasks. These practised and successful information seekers who have been 'doing' assignments and handing them in all through their school and undergraduate years still encounter enormous challenges.

- An important but rather neglected group of students, that is, postgraduates studying by coursework. Interesting aspects of their information seeking and use and of their learning have been highlighted.

- High achievers in a university setting, about whom we seem to know very little, and who can give us useful and important insights into information seeking and use for learning 'done well'.

Methodologically the study has:

- Integrated perspectives and a number of theoretical frameworks and concepts from two different fields of study. It has built on the subject bodies of literature in the fields of

information behaviour and student learning to enhance our understanding of learning through information.

- Undertaken phenomenographic research in the disciplinary field of information science.

- Demonstrated the significance of the experiences described in the categories of AIP and Enough in the lives of two individuals by construction of the case studies. These encapsulate and humanise the established phenomenographic findings and take the focus from the group back to the individual, putting 'flesh and bones' on the theoretical findings.

- Demonstrated the value of evidence in audio form from interviews through a focus on the audio taped data, rather than simply the textual rendition of the interviews. The primary focus on use of audio tapes added an important dimension to the study and gave additional richness to the phenomenographic analysis. In particular it allowed the identification of the role of Affect in the postgraduates' experiences.

Finally, this study has started to explore the variation that can occur in postgraduates' experiences of assignments and has found remarkable complexity. Postgraduates' assignment experiences were found to be strongly affective. Their experiences varied both in terms of AIP and Enough. Experiences also varied within the same task for the same student (micro variation). Postgraduates are an important part of higher education in Australia and they collectively complete many assignments in the course of their studies. This thesis has demonstrated the need for significantly more research to continue this exploration of postgraduates' experiences of assignments, information and learning.

Appendices

Appendix 1: Glossary

Affect is defined as the combination of the complex of emotions which reside in the body and the feelings in the mind which derive from these (see Damasio 2004).

Assignment Information Processes (AIP) refers to the ways that postgraduates experienced the overall assignment and all the various processes therein (see Chapter 5).

Assignments in this thesis refer to individual reports of 2000 to 3000 words that require use of diverse literature to investigate a chosen topic within parameters set out in an assignment outline, given to the postgraduates on the first day of class. These are assessed by subject coordinators or tutors. In combination with two other assignments they made up the total marks for a subject and contributed to the final grade.

Enough is the sense of having a sufficient or adequate amount for a particular purpose. In the information behaviour literature it usually refers to having an adequate quantity of information for a given task. In his thesis Enough (with a capital) refers to the broader experience of Enough in a group of postgraduates while completing an assignment. In this thesis, Enough is a subset of AIP.

Postgraduates is the term used throughout the thesis to designate the research participants. It refers to postgraduate by coursework students, not research students who are writing theses (see explanation in Chapter 1).

Appendix 2:   Kuhlthau's Information Search Process Diagram

Stages	First	Second	Third	Fourth	Fifth	Sixth	Seventh
	Task Initiation	Topic Selection	Prefocus Exploration	Focus Formulation	Information Collection	Search Closure	Starting Writing
Feelings	uncertainty	optimism	confusion frustration doubt	clarity	sense of direction/ confidence	relief	satisfaction or dissatisfaction
Thoughts		ambiguity ------------------------------------> specificity					
				increase interest			
Actions		seeking relevant information ------------------------------------> seeking pertinent information					

Initial Model of the Information Search Process adapted from Kuhlthau 2004

Appendix 3: Assessment Guidelines

ASSESSMENT
Detailed assignment guidelines are attached. Further briefings will be given by your tutor.

Assignment 2: Industry report
Due date: Wednesday 11th June
Value: 60%

GRADES
This is a graded subject. Active involvement in the subject and a satisfactory performance in each aspect of assessment are required to pass the subject. Assessment grades and final grades in the subject will be High Distinction / Distinction / Credit / Pass / Fail.

Grading Descriptors

High Distinction: Work of outstanding quality on all objectives, broadly speaking, as may be demonstrated in areas such as criticism, logical argument, interpretation of materials or use of methodology. This grade may also be given to recognise particular originality or creativity.

Distinction: Work of superior quality on all objectives, demonstrating a sound grasp of content, together with efficient organisation and selectivity.

Credit: Work of good quality showing more than satisfactory achievement on all objectives, or work of superior quality on most of the objectives of the subject.

Pass: Work showing a satisfactory achievement on all objectives.

Fail: Work showing an unsatisfactory achievement on one or more components of the subject.

On some individual assignments you may receive an indication of your relative level within these grades (e.g. credit-, pass+). These intermediate grades are not used when reporting your final grade.

ASSESSMENT GUIDELINES

Assignment 2:	**Industry Report**
Due Date:	**Week 14, Wednesday, 11th June**
Value:	**60% (Individual work)**
Length:	**8-10 pages plus bibliography**

Task:
In this assignment you will explore a specific area of the information industry in Australia and prepare a report on current aspects of the area including trends, issues, policies and opportunities for information professionals. The area to be explored will be chosen in consultation with your tutor. This is an individual assignment. A further briefing will be provided in class in Week 8.

Report Content:
You will undertake a range of activities (see below) to research the area then analyse and synthesise the information gathered to prepare your report. The report should include:

(a) a short description of the area being explored including information on aspects such as history, size, main functions, markets, clients and other factors considered relevant.
(b) an analysis of the internal and external environment of the area to identify current trends and issues affecting the area; changes in technology, market trends, government and industry policies, opportunities for employment in the area and so on.
(c) a description of industry and professional associations relevant to the area; what they do, what services they provide.
(d) a discussion of the work of information professionals in the area including current ethical issues and the development of standards.
(e) your conclusion about the future directions of the area.

Activities that could be undertaken to gather information include:
- monitoring of print and electronic media;
- analysing relevant industry and professional literature;
- analysing relevant government reports and discussion papers;
- analysing scholarly literature and research reports;
- interviewing practitioners and other relevant people in the area

Your findings should be submitted in report format and include a bibliography of your reading. Remember to reference sources correctly in your report.

Additional material not included in your bibliography should be attached in a resource folder, e.g. media clippings, pamphlets and brochures, information from professional associations.

Assessment criteria
Your report should include the content indicated above and will be assessed on the following
- range and relevance of research activities undertaken
- clarity of description of industry area and information work
- ability to analyse and synthesise material gathered
- demonstrated understanding of factors affecting the area
- structure and coherence of report and clarity of written expression
- correct acknowledgment of sources.

Appendix 4:   Participant Information

Research Project Information Sheet for Participants

Information and Change: Quality Learning and Higher Education Assessment
<div align="right">Nicola Parker</div>

Aim of the Research Project
To Explore Postgraduate Coursework Students' Experiences of Information Seeking and Use for Assessment and Learning.

Participants Sought
Any Postgraduate Coursework student studying an issues based Information Studies subject (in this case Information Environments and Networks).

What Taking Part will Involve
In order for me to understand how students think about and experience the process of completing assignments in this subject I needed to interview participants at three different stages: 1. When the assignment is in its early stages
2. While the assignment is being written
3. Any time after the assignment is completed

In order to make this as convenient as possible interviews will be of about 30 minutes (unless you want to keep going!) at a time and place that suits each individual. For example my office, coffee shop or anywhere!

Example of Possible Questions:

What do you do first when you have an assignment to do?
What do you do then?
Do you always do it like that? Why?
Can you explain how do you will go about researching the assignment?
Describe your picture of an effectively completed assignment?
How will you know when you have learnt something?

Please also see the attached consent form for additional information.

If you might be interested in helping you can see me at any time before or after class or contact me in any of the following ways:

EMAIL: Nicola.J.Parker@uts.edu.au
PHONE: 0403 200 438
MY OFFICE: Wednesdays
Room 7023 C (near the Faculty Research Office)
Office Phone 9514 2735

Many thanks for taking the time to consider this.
Nicola Parker

PO Box 123
Broadway NSW 2007
Australia

Tel. +61 2 9514 2000
Fax +61 2 9514 1551

UNIVERSITY OF TECHNOLOGY, SYDNEY
CONSENT FORM - STUDENT RESEARCH

I _____ *(participant's name)* agree to participate in the research project
Information and Change: Quality Learning and Higher Education Assessment being conducted
by Nicola Parker a doctoral student in the Faculty of Humanities and Social Sciences (Telephone 02
9514 2735 or Email Nicola.J.Parker@uts.edu.au) of the University of Technology, Sydney.

I understand that the purpose of this study is to explore Post-graduate Information Science coursework students own
experiences of information use for learning and assessment. Improving understanding of this interaction will help all
teachers using this type of assessment to make them more meaningful.

I understand that my participation in this research will involve:
- A series of three interviews conducted at a place of my choosing of between thirty and sixty minutes,
  exploring my experiences of information seeking and use for assessment.
- Interviews will be taped (audio) then transcribed. All records will be labelled anonymously and stored
  securely.
- The interviews will be planned to take place at my convenience but need to be conducted within the
  following time frames:

1. After the first assignment is discussed in class but before any information seeking has taken place;
2. During the Information Search Process;
3. Any time after assignment completion to suit the participant.

I am aware that I can contact Nicola Parker or her supervisor Professor Mairead Browne (Email
mairead.browne@1uts.edu.au) if I have any concerns about the research. I also understand that I am free to withdraw
my participation from this research project at any time I wish and without giving a reason. I am also aware that
withdrawal from the research at any time will in no way affect my academic progress or the care and attention I will
receive from Nicola Parker.

I agree that Nicola Parker has answered all my questions fully and clearly.

I agree that the research data gathered from this project may be published in a form that does not identify me in any
way.

_____   ____/____/____
Signed by

_____   ____/____/____
Witnessed by

NOTE:

This study has been approved by the University of Technology, Sydney Human Research Ethics Committee. If you
have any complaints or reservations about any aspect of your participation in this research which you cannot resolve
with the researcher, you may contact the Ethics Committee through the Research Ethics Officer, Ms Susanna Davis
(ph: 02 - 9514 1279). Any complaint you make will be treated in confidence and investigated and you will be
informed of the outcome.

Appendix 5: Laura: Process Descriptions

The Process Descriptions in this appendix served as the basis for the analysis undertaken in the case studies. The descriptions follow the 'before', 'during' and 'after' the assignment phases of the study (interview). Each begins with a table which elaborates upon the topic chunks depicted in Table 7.1 by showing further subdivisions of subtopics that Laura talked about in each. They each contain several 'speech intervals' or comments'.

Phase 1: Before the Assignment

TOPIC CHUNKS	SUB TOPICS
1. Doing Research	Undergraduate Degree Work Is a Basis Know Where Heading
2. This Assignment	Think till Clear Picture Pragmatic Searching Techniques Time Verses Exploration Intellectual Access to Technologies Personal Collection Ongoing
3. Other Assignments	Work Solution Versus Academic Requirements: Information Behaviour Research and Self Universality of Information Use
4. Topic Focusing	Deciding Filtering Topics Election Write When Clear Argument Emerges
5. Strategic Searching	Very Focused Collect and Scan till Understand
6. What's the Point	Top Marks in Learning Stimulation and Vocation Interest and Love of Research Justify for Work
7. Interest Paramount	Stimulation and Learning Topic Frustration New Perspectives
8. Starting Difficulties	Apprehension at the Start Information Apprehension Just do it

1. **Doing Research:** After introductory comments about her undergraduate experiences Laura says she starts looking at assignments *"from my work experience"*. She stresses that before she begins doing her research she has to know where she is heading.

2. **This Assignment:** She consults with her tutor and when she has a *"clear picture of what I want to do with it"* she starts some pragmatic *"searching around"* on the web first and then among the resources available from her desk and at her university library. She generates a list of references in the library for a quick collection visit. Then she will often use bibliographies to chain forward her search. Although she would love more time to explore there are not enough hours in her day. Intellectual access to the many different technologies can be a problem. She has also *"obviously"* been building her personal collection of work related material which she will scan for anything relevant to this assignment.

3. **Other Assignments:** She describes another assignment and tensions between a work report where *"you just have to come up with a solution"* and an academic report that requires her to *"cite where you are getting things"*. But she has discovered literature on the information behaviour of managers that has really fascinated her: *"you're sitting there reading and you're going oh yeah I know that. I know that. I know that! But God isn't it awful!"* Perhaps because she can see empirical research confirming something she battles with constantly, both in her boss and in her own information management.

4. **Topic Focusing:** Laura spends at least a week reading *"just sifting through"* until she is sure everything she has is taking her down one path that she is happy with. She collects *"quite a bit of information"* and will end up with two piles: useable and not. Laura goes on to describe a two stage highlighting and note making process. Once she has 'filtered' her information in this way she still doesn't start writing until she has a very *"clear idea in my own head of what my argument was going to be"*. The way things become clear is *"not a tangible thing"* but *"it just comes out in an argument"*.

5. **Strategic Searching:** Laura's searching is highly focused. She collects her information and scans, highlights and collects more progressively for anything she has not understood. Over collecting is a feature.

6. **What's the Point:** After saying the end result she aims for is a High Distinction Laura laughs and goes onto say the real point is to learn. She has an ongoing interest *"in the way that information gets out"* and cited vocational reasons and hopes to enhance her work performance. The most important reason for doing the subject seemed to be Laura's passion for reading and researching *"I love researching, it doesn't matter what it is as long as it changes fairly regularly. I get bored doing the same thing over and over again"*. She says *"I like finding out about things it doesn't matter really what it is. But I just, I like discovering new information"*. However, she goes on to state *"I feel as though I need some sort of justification as to why I am doing the course"* and this is reiterated at other points. She feels she has to justify her study time to herself as well as her employer and perhaps to the rest of the world too.

7. **Interest Paramount:** Laura states that she knows if she has learnt something if *"I feel like I have been stimulated by it~~~knowing or just feeling like it's interesting to know about this stuff rather than thinking 'Oh God!' "*. She uses the example of managers' information behaviour once again and repeats *"It was really, really interesting~~. So I am learning something even though it is something that I already knew"*. She says this *"is such a shock!"* as she hated her undergraduate degree in literature despite loving to read. She comments softly but vehemently that the course is *"an escape for me"*.

8. **Starting Difficulties**: a new project is always difficult and *"there's some apprehension"* every time about finding information and where to start. Her tactics are *"you just do it"* and then *"it does start to come together"*. Laura does not stay overwhelmed for very long.

Phase 2: During the Assignment

1. Smooth Searching	Online Sources Own Material Serendipity Productive Evaluate Known Authors Straightforward
2. Most Difficult Aspect	Understanding What Is Expected Confused with Another Assignment Addressed by Scheduling Hard to Get IP Perspective
3. New Aspects and Old Habits	Consider Work Implications Ethics and Standards Interesting Over Collected Useless Information Always Overcollects
4. Selecting and Utilising Information	Relevant Issues Enough Time Budgeted Felt Able to Write Just Goes Boom Understanding Requires Redundancy Makes Sense Suddenly See How to Plot Then Write Overcollects to Save Time
5. The Final Bits	Collating Bits Finalising Bibliography Organising Paper Flow

This interview was also preceded by a consultation session about the assignment progress that was not taped. Laura had raced through the work and this interview planned for the middle of her project took place towards the end of her intensive collecting, filtering and writing. She brought an extensive and detailed draft along and we went through it together. She was very unsure that she had done what was asked for and whether the report was informative. We discussed how she could address these concerns.

1. **Smooth Searching:** Our recorded conversation about her assignment experiences started off with how Laura felt about being *"in the middle"*. She had used a lot more online sources and material from her personal files than usual. In the past the web had been unsatisfactory *"I usually feel that I haven't got enough off the web and need to go and supplement it"*. Her perception of Enough changed her habitual practice. She discovered the best online sources through a serendipitous error while looking for something else, but is not surprised, this is a familiar experience. Linking her topic with her work based knowledge served her well when gathering sources, as she knew the relevant authors and if they were authoritative. She also could quickly recognise when *"it was exactly what I was looking for~~~trends and issues"*.

2. **Most Difficult Aspect:** Laura has found, like Caroline, that the most difficult part of the assignment is understanding what is expected *"focusing on what I have to write. Actually understanding what the, the question is asking or understanding what is expected"*. In this case it has been particularly difficult because she is concurrently doing another IKM assignment. They prove difficult to separate. She has had to clear mental and physical space for each one by scheduling separate weeks for each very. She says this is not because the assignment wasn't clear, saying: *"No – I just couldn't get it through my thick skull (laugh)"* quite cheerfully. The close links to her job are also making it harder for Laura to adopt a new 'information' perspective in familiar territory.

3. **New Aspects and Old Habits:** By examining the 'knowledge sector' she works in from a different perspective, she has found out things she never knew. These include: implications, issues, trends and the nature of the information profession, professional associations, ethics and standards. She talks about collecting and **then** processing and ending up *"with a couple of trees"* of material with *"nothing really that I can use"*. She always collects far too much.

4. **Selecting and Utilising:** Laura decides she has collected Enough when she reaches *"burnout"*. This is the time budget she is *"prepared to dedicate to it"*. But Enough is also when she feels that she has Enough information to be able to write something. Her process is to read: *"until~~~it just sort of goes like that in your head~~ OK I know here I am going now with this"* then sit and plot out how she is going to tackle the assignment. She reads and things just start to *"make sense~~~all of the information is starting to fall into place"*. She mentions that the reason she over collects is so she doesn't have to go backwards and forwards. She is very time conscious.

5. **The Final Bits:** At this stage she feels most of the work is done. She has some redrafting to do, but finishes the interview thinking about tying together the loose ends.

Phase 3: After the Assignment

1. Feedback Discussion	Referencing Subtleties Structure and Attribution Editing down Hard
2. What Stands Out	Not Sure Got It To Embedded Separating from Work Hard
3. Techniques Learnt	Online Search Methods Learnt Because Hard to Find Web World Surprised by Work-Related Content Four-Week Project Focus New Topic Perspective Information's Role Preconceptions without Surprises Learning How to Step Back
4. Managers' Information Use	Really Interested Same Process for All Assignments Collects till Overload Way of Working
5. Learning	Material and Process Most from Doing Research Needs to Be Alone Work Through
6. Information Use	Collect and Summarise Highlight and Notes Outline Approach Discards Almost Half
7. Reading	Spends Most Time Vital Basis Writing Just Formulation Reads Thoroughly Unless Bored Scans for Essence
8. Collecting	Chaining from Reading List Huge Investment

1. **Feedback Discussion:** This time we start straight into Laura's questions about the assignment feedback, which she has had for a few weeks. Now she is happy to have everything recorded. We discuss the subtleties of referencing, structure and attribution. Laura remarked that she had difficulty cutting down her report *"I didn't know how to leave that out and…I, I guess in my own head have it make sense. You know I went through it and through it and through it"*.

2. **What Stands Out:** I started the interview by asking Laura to say whatever she liked about what stood out for her about the assignment overall. She immediately talked about her ongoing difficultly in knowing if she had taken the 'right' approach even when she had finished the report. She was anxious, despite diligent efforts to be sure of what she was doing through extensive consultations, emails and thought: "'God', have I done the right thing. Like, I guess I didn't ever really feel confident about having captured what the assignment was asking for~~~. I just couldn't get my head around it". She had difficulty in separating herself from her ingrained work perspective.

3. **Techniques Learnt:** Laura has learnt to use new search engines and methods to locate information because her previous methods didn't work for this assignment. She also had to explore government agency websites in depth which she had never done before and was surprised at what she found. Although she knew about a lot of the material she found she was able to think about it differently: "I thought about it a lot more. I mean I guess it was all stuff that I really, intrinsically knew but I thought about it a lot more than I had in the past and I thought about how, how much of the university is just an information role~~~. But it wasn't new information as such. Just a new way of looking at things". Over the four weeks focus on this assignment she changed her perspective on the role of information in her work. She had clear preconceptions about what she expected to find and although there were no surprises she was still grappling with how to step back even further.

4. **Managers' Information Use:** Interest was highlighted as crucial and Laura found the research she did: "really interesting" and she "learnt a lot, umm... in terms of being smacked in the head with all this research that backs up what I've seen on a daily basis. That you don't really think about". The theme of information overload and 'over-collecting' came up again "I still go about it the same way~~accumulate, accumulate, accumulate". She moved away from her original statement that this was a pet hate to saying it was just her way of working.

5. **Learning:** from the material she finds and from the process Laura is sure that: "I learn most from doing my own research". This gives her the necessary chance to focus and to think in depth, which she doesn't feel she can do in class. She needs solitude to be able to work things through for herself.

6. **Information Use:** for Laura this is collecting, reading, summarising her material, highlighting and making notes. She is able to outline an approach to the topic, discarding perhaps half her notes in this process.

7. **Reading:** Reading is emphasised as the most time consuming but vital part of an assignment and the way Laura creates her understanding. Writing she says now is a matter of: "just formulating it into words". Her interest in reading structures how she proceeds. She will read everything unless she gets bored when she resorts to scanning.

8. **Collecting:** Laura chains her searching to expand on class references readings. Her final comment is an emphatic statement about how much she puts into an assignment: "*you know you spend so much time*". This reiterates a comment she made earlier, that four weeks of her life had been consumed by one single assignment.

Appendix 6:   Caroline: Process Descriptions

The Process Descriptions in this appendix served as the basis for the analysis undertaken in the case studies. The descriptions follow the 'before', 'during' and 'after' the assignment phases of the study (interview). Each begins with a table which elaborates upon the topic chunks depicted in Table 7.2 by showing further subdivisions of subtopics that Caroline talked about in each. They each contain several 'speech intervals' or comments'.

Phase 1:   Before the Assignment

1. Background	Personal Significance Serendipity Problem Solving
2. Starting the Assignment	Topic Selection Life / Job Implications
3. Role of the Product	Worthiness Creativity
4. Do Next	Searching Mood Regulation
5. Searching in the Library	Scanning Online
6. Shelf Tactics	Creative Browsing
7. Purpose	Learning

1.   **Background:** To start off our first conversation I asked general questions about Caroline's background by asking her about her previous report writing. This led her into a discussion about electronic delivery and how her *"research techniques"* which she had developed earlier and was still adapting to an online environment, were impeding her access to information. A discussion of the important role of serendipity sprang from a discovery in the course of her highly structured browsing routines. Caroline who is a conscious 'serendipity seeker' thinks: *"Chance plays a huge role"*. Although Caroline had used electronic search tools, she commented that her search technique is shelf derived and *"it is not as good as it could be"*. Her orientation is to finding books on shelves rather than online searches.

When asked how she thinks about doing assignments in general Caroline immediately said that the fundamental process was of *"getting over"* the numerous problems encountered along the way because fixing things up is what is required *"in order to keep going"* and complete a *"research project"*. She gave an example of having to labouriously reconstruct a whole days searching and retrieval results emailed to an incorrect address and the extreme frustration this caused but she was not discouraged for very long.

2. **Starting the Assignment:** Asked how she was thinking about the assignment she was just starting, Caroline talked about understanding the question and defining what you really want to look at as a fundamental first task *"perhaps the most challenging part of the assignment"* based on her tutoring experience. She is becoming more technologically adept. This assignment incorporates a career exploration imperative and this personal significance means it has *"a more emotional side"*.

3. **Role of the Product:** Caroline draws a clear differential between process and product saying she has often been very happy with 'the process' but not with what she has produced. She emphasises format or 'shape' and describes a clear personalising and structuring process of translating the assignment into her own words, in a notebook and her restructuring of the required end product. This serves as an anchor throughout the process. For example, she uses her note book structure to start her search and then builds upon the structure with what she discovers. Her aim is to achieve a 'balanced' end product, but this in turn requires balancing constraints and what she finds. Caroline is also very concerned that her report will be worthwhile: *"how useful is it?"* in terms of *"a learning process"* to whoever might read it. She used to think of her academic work *"as artworks~~ think it's a mistake I make~~. That's something I'm learning"*.

4. **Do Next:** Asked what she would Do Next and if other people played any role Caroline talked about searching to continue to clarify her task. Caroline thinks of what she does as highly individual and personal, creating a process that fits her needs. Other people play minor signposting and scoping roles. There is a clear cognisance of academic expectations and a process of checking back on these in order to keep the final product on track. After initial orienting other people may be useful to phone as contacts. Librarians are not part of her search unless to answer a *"quick request about a specific database"*. She feels the 'magnificent machines' are the library and people are rarely required.

5. **Searching in the Library:** Asked how she thinks about things once she is in the library Caroline emphasises the way she does things as a process of evolving habits: *"A pattern is starting to develop now"*. An important early step is setting the scene for herself. Learning how to best mesh this approach with very real time constraints in order to make the project doable: *"And I am realising that it can't be done in a week"*. This is part of the definition process which is an abstract exercise of constituting a representation of the future end product. This is done using the checks and balances of written and verbalised criteria and scope. This definition process continues through interactions with material in the library. Caroline places strong emphasis on the physical aspects of immersion in the texts in the library and their contents to prime herself and locating material by browsing along shelves. The information search process is described as *"getting a feel for the environment in which this topic sits"* and searching is *"as much a feeling as information (laugh) collecting"*. Caroline locates herself in relation to the field, the topic and the physical (or virtual) space, the resources and the situation as a prelude to information location.

6. **Shelf Tactics:** Caroline uses physically walking up and down the shelves to clarify boundaries and structures of the topic, within disciplines and Dewey Classification numbers. She browses, pops up to the 600's, grabs a key text, rejecting others and clarifying her task in this process.

    Caroline also collects other interesting material *"not necessarily (laugh) related to the assignment"*. She chains her browsing using indexes, bibliographies and classification numbers to expand her search.

7. **Purpose:** for Caroline the purpose of 'doing' an assignment is *"the learning process involved"* in which she includes *"discovering content* [and] *developing research techniques"*, but framed and constrained by learning about *"working to deadlines"* and how to work in an academic mode. Content is described as knowledge about the field: *"I guess it's that sense of past, present and future in the context of information studies and deepening my understanding of that"*. Caroline thought she had learnt something from her past assignment experiences because she learnt all the different things she had nominated, but also because she considered herself self aware: *"Because I am aware of what I don't know or what I want to learn at the beginning of the process (laugh)"*.

Phase 2: During the Assignment

1. Looking for Information	Currency Link from Class Online access Another Assignment Bounding Satisfied & Gap
2. Specific Section Information	Nature of Information Services
3. Finding Interest	Interest Flitting Information & System Defining Information
4. Search Process	Serendipitous Mistake Managing Overload Balance
5. Honing New Skills	Becoming Online Content Driven Equipment Access
6. Online Shelf Browsing	Discipline Differences Overload Fill Gap

This interview and my questions centred on 'being in the middle' of an assignment and being immersed in both the assignment and the 'doing' of the assignment. Caroline is still at a relatively tentative, formative stage with a lot of searching and structuring left to do before she can begin writing. This conversation started with Caroline asking lots of questions about what she had done so far in talking about what she would do next.

1. **Looking for Information:** Seems a bit perplexed because the only sources she has found on her initial search on a particular aspect of the assignment *"seem to be a little bit old"*. Caroline has still not selected her topic. Physical access to online sources was proving problematic *"So these things that are apparently available in full text on line I haven't been able to get to yet"*. Another assignment is having an impact at the moment because she is searching for both assignments at the same time. Bounding her searching is becoming important so that she can move on *"I am also getting to the stage where I have to go 'OK I've got, I'm comfortable with that chunk of stuff. So"*. However, she is still conscious of another *"gap that I've got~~~.but there's not much"* on yet another aspect of the assignment.

2. **Specific Section Information:** She comes back to this issue yet again saying that she is struggling to gather another part of the information she wants. She has ideas of what she would like to do, but is unsure how she will locate what she wants and how to incorporate it. She wonders if a structuring tool like *"a table"* might help her to clarify what she needs and organise what she hopes to find.

3. **Finding Interest:** Caroline then got quite carried away talking about all the different things she had found. She pointed to a name on her print out exclaiming *"That's a fascinating one, a fascinating! I find this really interesting!"* Her searching had been wide-ranging and she flits around aspects and implications of what she has found in both her activities and her conversation. This gets closer to what will become her topic. Relating the task to her interests in light of what she found. She is also highly conscious of 'information flow' (a key concept in the subject) and she wrestles with these issues and the conceptual boundaries (eg what is information versus advice).

4. **Search Process:** Caroline pointed out that her search for information and the 'results' of that were crucial in determining the rest of the process and its final product (her report). Her example of a minor transposition of terms between discussing her proposed topic in class and search sessions meant she started heading in quite another direction. The results of this search and an overload of hits caused her to shift her topic again. *"In fact the search results shaped my project"* to make things manageable. She is very consciously aiming for *"some kind of balance"*. This idea comes up several times.

5. **Honing New Skills:** One of the things Caroline is most excited about is that she has found some literature that specifically deals with searching in an electronic environment. She is finding topic selection problematic at this point. This has enabled her to hone and change her personal information handling practices. She's extremely pleased that since our last meeting her recording of information (the bits that will become her report) has been

transformed. Her constant use of a beautiful black covered notebook to elegantly map out 'structures' and thoughts in a bold hand has been superseded by less personalised electronic tools. *"It is ridiculous writing these things down, I have always hated doing that"*. She continues to hone these online skills and now successfully emails herself searches from the library, plays with spreadsheets and databases for manipulating information she has gathered, and has just learnt to cut and paste with nifty keystrokes. She is thrilled and the notebook won't be used again.

6. **Online Shelf Browsing:** In contrast to her literature searching at our first interview she is relying more on online, rather than catalogue searches or browsing, for this assignment because *"I haven't found stuff related to this~~~in my shelf browsing"*. Another assignment she is also working on simultaneously has remained a very physical searching process reliant on Dewey familiarisation of the area she is exploring. Prowling the aisles and finding *"shelves and shelves"* of *"dog-eared texts"* (she has a contrasting problem in this case of information overload). Using the book indexes and chapter headings to sift the volumes at her chosen area she nonetheless has to stack these on her desk at home and then decide where to start. For our assignments she knows there is still lots to find and is sounding uncertain and discouraged. Then she pulls herself together and finishes by saying she will be *"just polishing this and talking to people and there'll probably be another sort of book, journal, on line search a bit later in the week just to fill in more gaps"*.

Phase 3: After the Assignment

1. Impact	Who I Am Role of Research
2. Philosophy	Credibility Personal Philosophy
3. Risk Taking	In Life Consequences Value of Convictions
4. Time to Think	Importance Toll of Risks Intuitions Angst
5. Learning	Information Search Process Fresh Discipline Connection to Life Why taking Course Literature Collage Inspiration / Interest Being Strategic

By the time Caroline could fit in a third interview the assignment, with her busy new full time job, had been completed, marked and returned with feedback and marks for several weeks. My wish to see what is 'left behind' after 'doing' an assignment was extended further than I had anticipated. Our conversation over a dinner squeezed in at the end of her long work day was wide ranging and intertwined with Caroline's comments about the demands of her work.

1. **Impact:** Asked to talk about anything that came to mind about the overall experience of 'doing' the assignment the first thing that Caroline nominated was risk. *"I think for me the biggest thing about the assignment was deciding to take the risk to use non traditional sources~~~I felt that I was being pretty radical in doing that"*. (The assignment outline in fact required interviews as additional source. The risk-taking that was involved in the very different way she chose to tackle the assignment she thought was probably *"close to how, I, work in a business environment"*. It is the way she tackles all research projects. She goes on to comment that she had to *"think up"* new ways of doing things and expand her techniques to handle the types of information she was collecting and think about the things she would *"choose to include and how would I hold it all together?"*

2. **Philosophy:** Caroline says she questions the *"dependency on the text"* and questions the authority of sources every time she picks up a piece of academic writing. She is ambivalent about using 'the literature'. She also questions what this means about *"experts and information"*, whilst recognising the role of the literature in the communication of where the discipline is at. Caroline links information and her handling of life in general quite explicitly.

3. **Risk Taking:** Caroline returns to this theme of the value of risk again, pointing out that this is how she has come to see life more generally: *"You need to be able to manage that situation, for me my life is very much the anything and anywhere thing but it actually seems to be working~~~it is risky, but~~~ so is not following those lines"*. Her risk taking and questioning, but determination to do what she felt needed doing, rather than what she thought might have been appropriate had a huge physical impact. After a week completely stalled mentally and physically (she took to her bed with the flu which she attributes to this dilemma). She allowed herself to follow her intuition. Taking risks had a cost even though it did pay off.

4. **Time to Think:** One consequence of risk taking and its consequences was the forced thinking time which Caroline considers essential for any successful project. A lot of her learning comes from what she doesn't end up doing 'physically' at all but feels as if she has already done by 'thinking it through'. The assignment is just a fragment of the learning? *"But in the meantime I always think of the complete opposite of what I could be doing too and so a lot of the experience was in what I didn't do"*. Intuition also comes into play, she thinks. The reinforcement of the benefits of trusting her intuition in the assignment has helped her to work through a highly problematic project at work.

5. **Learning:** Caroline felt that her learning was not just from taking risks. She explicitly talked of learning is as an 'information search process' that she moulded to fit not just the task but what she wanted to get out of it. It was shaped into something personally interesting because it was a huge challenge and was linked to her career and (deeper level) self-discovery quest.

Caroline finished our set of conversations by linking the learning processes she was consciously engaging in and juggling to other types of life choices. She gave examples of choosing to study the information science course specifically because she perceived that *"there is not that backlog so there is room to move"*. She felt she could adapt accordingly. This was also the reason she gave for choosing to live in Australia rather than the UK and She also chose to come to our university because it was offering *"exactly what I want to look at...Because there is not that backlog, it is the reason I am in Australia because I found the cultural backlog in the UK annoying. It's lovely but it is restrictive"*. She likes the idea of working new ground and considers being strategic to be *"very very carefully positioned"*.

A questioning everything theme is apparent. The type of information used influenced her process of information handling, what she learnt along the way, as well as the final product. In this particular situation a variety of information sources were demanded by the Subject Outline. However in Caroline's final product (report) there was a 'dilution of the depth' of information drawn from the literature.

Once underway everything was 'alright'. From adjusting rapidly and enthusiastically when she typed in an unintentionally general search term the first time she sat at the computer; to her solution to a lack of literature that she found worthwhile and interesting for her highly personal exploration, everything was subsumed by her drive to find out what she wanted to know. This did battle often with the overt assignment requirements and *"toeing the academic line"* as she called it and had intense consequences.

Appendix 7: The Elements of Enough in Postgraduates' Experiences

In the current study it was found that experiences of Enough during an assignment were rich and complex (see Chapter 6). Enough for postgraduates does not just encompass 'information'. Evaluating 'Enough of what?' is another component of the ways of experiencing Enough in AIP. This component has been labelled 'Elements' of Enough and incorporates Resource Elements as well as Information Use and Production Elements which are less tangible.

Table A.1 Elements of Enough

Resource Elements	
Information	This includes sources and their quality, range, depth, type (specialist or overview) and quantity.
Time	This includes the deadline, length of time, time available, structure of time, timing, physical and emotional resources and their relationship to time, (time flying, time dragging).
Conceptual Space	For working out and reflection, which is linked to time (information use needs 'space' at a complex level).
Effort	Motivation, planned allocation of effort that will be required and prepared to expand (this may shift throughout an assignment).
Individual Resources	Physical (stamina, energy, fatigue which may change across the assignment timeframe), financial, other sources of support.
Individual Skills	Postgraduates' abilities to analyse, synthesise, write and produce.
Instruction Available	Information provided, links to sources, context, expectations, communication and explanation (including feedback) available from teachers, librarians and others.
Information Use and Production Elements	
Use of Information	Manipulation and use of content, their interpretation structuring and presenting of the content.
Level of Understanding	Understanding of the field, topic, assignment.
Production	A product embodying these, that is, the report as a product (for example, words, presentation).
Communication	Their communication of ideas through the end product (report).
Interest	Prior interest and interest generated by 'doing' the assignment.
Quality	What they have done and presented as viewed and evaluated by the postgraduate.
Sense of Self	Sense of self and self presentation (for example, not being good Enough).

Some of these Resource Elements have been noted in previous literature (see for example, Kuhlthau 2004; Thorstéinsdóttir 2005), but many have not been previously associated with decisions about Enough. None of the Information Use and Production Elements has been previously linked to Enough.

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Publications Related to this Thesis

Several publications have arisen from this thesis. Papers have been presented at international conferences in the course of completing this research and an electronic journal article reporting the early part of the study published. A book chapter is in press for publication late 2006 or 2007.

Book Chapter

Parker, N.J. & Berryman, J. in press 2007, 'The Role of Affect in Judging What is Enough?' in D. Nahl & D. Bilal (eds), *Working title (Information and Emotion or The Emotional Information Environment)*, Information Today, Inc., Medford, New Jersey, USA

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