Blended Learning in a Higher Education Multicultural Environment

by

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I am the author of the thesis entitled

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List of Acronyms

AARE: Australian Association for Research in Education
ACM: Association for Computing Machinery
BAM: Business Analysis and Modelling
CS: Computer Sciences
DEEWR: Department of Education, Employment and Workplace Relations
DFD: Data Flow Diagram
FOIS: Fundamentals of Information Systems
ICT: Information and Communication Technology
IEEE: Institute of Electrical and Electronics Engineers
IELTS: The International English Language Testing System
IT: Information Technology
LabSim: Laboratory Simulator
LMS: Learning Management System
NESB: Non-English speaking background
SAD: Systems Analysis and Design
SDLC: Systems Development Life Cycle
SecNet: Security in the Network
TLA: Teaching and Learning Activities
TOEFL: Teaching of English as a Foreign Language
Abstract

The growth in international education has created new opportunities for Australian universities and is seen by institutions as a move to improve pedagogical practices and for further professional development of academic staff. Along with this growth, learning designers and teachers face new challenges owing to the greater diversity and wider array of students’ learning needs. Universities have developed a range of strategies in response to these challenges, including the use of online technologies, with the aim of enhancing the possibilities for conceptualising, designing, facilitating, monitoring and assessing student learning activities and outcomes. However, this thesis argues that for international students, certain conditions need to be met for the effective blending of online technologies with conventional face-to-face teaching and learning.

This ethnographic research used empirical data drawn from participants in two postgraduate computing courses to determine the type of behaviours, attitudes, perceptions and conceptions of teaching and learning found within learning environments that blend both online and face-to-face pedagogies; and what can be inferred about effective teaching practice in such environments. The purposive sample comprised 18 international students from nine countries and four academics at two Australian universities. Data collection methods included semi-structured interviews, content analysis of electronic data, and classroom observations.

This thesis has two outcomes. First, it provides a detailed analysis of how international computing students experience a blended learning environment, identifying their perceptions of the new environment, perceptions of the use of ICT in their studies, preparedness and experiences in using ICT tools, and
effective participation in ICT-mediated activities as critical aspects of teaching and learning environments that warrant particular attention by teachers of these students.

With reference to students' perceptions of the multicultural aspect of the blended learning environment, this study found that students vary in terms of their awareness of cultural differences and their knowledge of different cultures; their attitudes towards cultural diversity and the extent to which they value such an environment; and, their own intentions, convictions, and skills in relation to cultural adaptation. Importantly, students’ knowledge, skills and orientation in relation to the multicultural environment can affect their engagement with blended learning environments.

International computing students’ views also vary in relation to the way they perceive the use of ICT in their studies, with most favouring its use but some being highly critical and questioning its value to ameliorate learning. Designs that were perceived as incorporating an excessive number of online activities were linked to students’ experience of stress in relation to their studies and appear to be detrimental to deep learning.

This study also found that many students lacked preparedness and experience in using ICT tools for learning purposes, and that this had a negative impact on their engagement and the effectiveness of their learning. It is notable that this was the case for this study, where student participants were engaged in postgraduate studies in computing science, so might be assumed to have high level ICT skills and knowledge.

A number of issues were shown to impact on students’ effective participation in ICT-mediated activities. Some types of ICT-based learning
activities appear to be a better fit with the expectations and behaviours of these computer science students. Specifically, the use of interactive and adaptive media appeared to be preferred to communicative media.

The second outcome of this thesis is a set of pedagogical principles for the design and development of blended learning, contextualised in local and broader educational challenges typical of a multicultural student body, consistent with a globalised world.
Chapter 2 Origins of the Research

1.1 Introduction

In this thesis, I explore the behaviours, attitudes, and reported experiences of international computing students studying within multicultural blended learning environments as part of their postgraduate studies in Australian universities. The study is timely and significant, drawing on two major developments occurring in the last decade in the Australian higher education sector: the internationalisation of education and the emergence of an innovative teaching approach known as blended learning. In the first section of this chapter, I examine the context of the study from national, international, personal and institutional perspectives, drawing on my own concerns and reflections on a series of key issues affecting the learning of international computing students. I also provide a personal background of my beliefs and assumptions about teaching and learning, and about research and knowledge that are instrumental in the justification of my methodological approach to this research. This background and the key issues provide the foundation for the purpose and goals of the study I address later in the chapter.

1.2 Background and Key issues

This study addresses three current higher education concerns: international education, computing education practices and the effective use of learning technologies.

1.2.1 International Education

According to government figures published by the Department of Education, Employment and Workplace Relations (DEEWR), the international education industry was Australia’s largest service export industry and third largest export industry behind coal and iron ore in 2008 (Department of Education, Employment and Workplace Relations, 2011). In this respect, the national interest is to continue supporting Australia’s international education growth and secure the benefits from it. Such growth in international education has also
created new opportunities for Australian universities and is seen as a vehicle to improve teaching practices and for further professional development for academics (Ballard & Clanchy, 1997). However, there is also a perception amongst some academics that this commercialisation of education is compromising Australia’s academic reputation with issues such as students’ language difficulties, plagiarism, the quality of students’ results and their lack of critical thinking, amongst others (Arkoudis, n.d.; Ballard & Clanchy, 1997; Biggs, 2003). A number of studies have identified that most of these perceived problems stem from a lack of understanding of international education and its associated challenges (Chalmers & Volet, 1997; Johnson & Kumar, 2010). In that regard, Morris and Hudson (1995) argued that Australian universities had to move towards a more internationalised curriculum and Ballard and Clanchy (1997) advocated for a greater understanding of international education as a primary prerequisite to practice within that context. In a study prepared for the International Association of Universities, Knight (2006) identified the importance of adapting academic practices to keep pace with the competitiveness and commercialisation in international education:

> Universities need to adapt their academic practices in order to keep up with the new trends of competitiveness and commercialisation in internationalisation of education and with this message the challenges and opportunities for all stakeholders in the global educational market (Knight, 2006).

More recently, there have been worldwide calls for more internationalised curricula and effective pedagogical practices which would acknowledge the great diversity of cultures international students bring to multicultural classrooms (Guo & Chase, 2011; Marginson & Eijkman, 2007; Sawir et al., 2009; Sawir, 2011). This call was reinforced in 2008 at the Australian International Education Conference where a common concern was for the provision of more learning-oriented services that will genuinely augment international students’ learning experiences.
Within this line of reasoning, it appears there is a need for more research on how teachers could improve their understanding of, and adapt their teaching to, a diverse body of students consistent with emergent demands driven by the internationalisation of education (Ballard & Clanchy, 1997; Hofstede, 1986; Kember, 2000; Knight, 2006).

1.2.2 Computing Education Practices

In terms of computing education, for over ten years as a tertiary education practitioner in the field of information and communication technology — **ICT education** (used in this thesis interchangeably with the term **computing education**), I have seen how some computing students face difficulties in conceptualising computing subject matter with grave implications in students’ academic performance. This concern is not just personal for it appears to resonate across computing education faculties, nationally and globally. Discourses that dominate in the popular media on computing education (McBride, 2007; Timson, 2007) include the failure of computing students’ learning outcomes to meet industry or faculties’ expectations, with low enrolments, low retention rates and high failure rates considered as problematic and as even more aggravated in the context of international computing students (Berglund, 2005; Bruce et al., 2004). In this regard, the task for computing education practitioners is challenging since the teaching of highly abstraction principles, typical of computing, is not straightforward. Contributing to that challenge, there are external forces such as the development of computing curricula highly dependent on computing industry demands and the need to keep up with rapidly changing technologies. To address these concerns, computing education faculties have implemented a wide range of approaches including the use of learning technologies, discussed next.
1.2.3 Effective Use of Learning Technologies

For the last couple of decades, higher education institutions have been engaged in the use of educational technologies to enhance the possibilities for conceptualising, designing, facilitating, monitoring and assessing student learning and educational activities (Coates, James & Baldwin, 2005). The dominant approach in universities has been to conceptualise educational technologies merely as a supplement or an add-on to face-to-face teaching rather than as an integral component (Garrison & Kanuka, 2004). It has been argued that this approach is the source of many of the problems associated with technology use, and with the failure to realise fully the potential of technologies put to work in response to educational challenges (Garrison & Kanuka, 2004; Laurillard, 2002). *Blended learning*, which can integrate the strengths of face-to-face interactions with ICT-mediated learning, is an innovative educational approach that has emerged as an alternative to more supplemental approaches, and which has been described as having the potential to support deep and meaningful learning (Boyle, Clare, Chalk, Jones & Pickard, 2003; Garrison & Kanuka, 2004; Kerres & De Witt, 2003; Lanham & Zhou, 2003).

Garrison and Kanuka (2004) argue that for blended learning to be effective within higher education, the two key components, face-to-face teaching and asynchronous learning activities, should be integral to the learning experience. It is only through the effective blend of these two components that universities are likely to be able to leverage the transformative potential of blended learning (Garrison & Kanuka, 2004; Stacey & Gerbic, 2006). Research on blended learning also reports on the potential effect teachers’ perceptions of blended learning might have in their teaching approaches (Bain & McNaught, 2006; Ellis, Steed, & Applebee, 2006) and similarly students’ perceptions of blended learning on their approaches to learning (Jelfs & Colbourn, 2002). According to these authors, more work is needed to have a greater understanding of teachers’
perceptions of, and students’ approaches to, blended learning to optimise its effectiveness (Bain & McNaught, 2006; Ellis et al., 2006). They also recommend that to leverage blended learning innovations and practice, it is essential that there is an exploration of more appropriate pedagogical theories that enrich the learning experience of students in multicultural environments, typical of Australian universities.

1.3 Personal Background

Denzin and Lincoln (2000) state that all researchers are philosophers whose beliefs and assumptions exert a great influence in the way they perceive the world and how they act upon it. In this line of reasoning, the following is a brief description of my cultural background, worldview of teaching and learning, as well as my professional experience that later I will draw upon to justify my methodological approach to this inquiry.

Having migrated from a third world Latin-American country plagued by many socio-political problems, it took me a while to integrate to the new climate. In my homeland, I grew up seeing the decomposition of a society at the mercy of blatant governments whose interests revolved around the sponsorship of corrupt practices to increase the capital and power of the elite classes. Social injustice was clearly the focus of our deliberations as university students. Along with my fellow students, I was engaged in endless sessions, discussing and arguing about what constituted a decent chance to the least protected classes.

That critical view of the political situation of my homeland had been influenced by the ideas and acts of great thinkers who, through their powerful works, were able to catalyse people’s discontent. I still keep fresh memories of those illustrious people who through masterpieces sent worldwide shockwaves to let others know what happened on their battered lands. My non-English speaking background (NESB) also gave me the opportunity of experiencing the Latin-American boom in literature lead by prominent
writers like Gabriel Garcia Marquez (Nobel Prize in literature 1982) and Mario Vargas Llosa (Nobel Prize in literature 2010).

I am very fond of Garcia Marquez and his fictional work about fantasy, history and love, picturing a Macondo of Hundred Years of Solitude (original title: Cien Años de Soledad) where time appeared to have stopped. I have read this book over and over again and in each reading I have managed to find new elements of guidance. It is like an endless source of knowledge that still remains influential in my thoughts. Also in my memory is Vargas Llosa’s The Time of the Hero (original title: La ciudad y los Perros) whose compelling narrative shaped the political panorama of the region. Reading this novel I came to learn and understand many fundamental ideas that otherwise I would have overlooked. It was like a spark that ignited my interest to investigate the nature of a reality as told by great writers like Dostoyevsky, Kafka, Hemingway, Marx, and others.

I lived in the times when the elements of good teaching practice were compiled in Paulo Freire’s Pedagogy of the Oppressed (original title: La Pedagogía del Oprimido). That time when Ivan Illich advocated for a de-schooled society, claiming that people’s knowledge and understanding of life came from friendship, or “… through the apprenticeship ritual for admission to a street gang, or the initiation to a hospital, newspaper city room, plumber’s shop or insurance office” (Illich, 1988, p.29).

Before engaging with teaching as a profession, I was dedicated to other matters encompassing different ways of reasoning. My background as an electronics engineer and expert in ICT constituted a world of hard sciences where research was fundamentally conducted to prove or disprove hypotheses. This approach contrasts with educational research that, as a soft science, is undertaken to explore and interpret phenomena. Probably it was the harsh times I went through in my home land and the exposure to those
great thinkers’ ideas that paved the road towards my determination of embracing teaching as my ultimate career.

In the last year of my bachelor of electronics engineering, the university’s physics department was looking for sessional associate lecturers in the field of Electromagnetism and Waves. Having successfully completed those courses as part of my engineering degree and being in need of an extra income to pay for the final stage of my studies, I decided to apply for the job. I was lucky to get it and since then, I must admit I started to have strong feelings for the art of teaching.

After finishing my engineering degree, I could have continued pursuing a career in higher education teaching; however, I knew that as a teacher, it would take me longer to pay the government’s study loan and start requiting parents, brothers and sisters’ unconditional economical and moral support I received during my time at the university. The prospects of making good money to satisfy all those immediate needs were augmented for my discipline of expertise was in high demand. I opted to work for a multinational company, designing, installing and managing telecommunication systems. This was a great job for it was my first experience with the real world of computer technology for which I was determined to become an expert. Unfortunately, owing to the global deregulation of the telecommunications industry, the market became more competitive and as a result, the company lost its prominence and ground in the national and international arena. The company’s working conditions deteriorated radically, so I did not have any other option than searching for another job.

I was fortunate enough to quickly obtain another appointment but in a different field. I went to work for the engineering department of a prestigious recording company. There, I learned to appreciate the art of music, its means of production, challenges and complexities and for the first time, I worked in a place with synergy. For over ten years,
rather than working with colleagues, I worked with friends. Indeed, the goodness of that working place was the origin of a long lasting fellowship that still remains today despite the time and distance that keep us apart. I remember the times when a problem at work such as the malfunctioning of a critical piece of equipment was not a problem at all, since there was a predisposition from everyone to work for long hours in search of a sound solution to that problem. That company valued its staff and rewarded its intellectual capital, not necessarily with money but with simple things such as public recognition, appreciation for the job well done, family time, and even the opportunity to have wives, husbands and children working together under the same roof. It was a small community of practice where, like in Alexander Dumas’ *The Three Musketeers*, all worked for one and one worked for all.

It is fair to say; that working environment within that company did not mirror the country’s socio-political and security problems of the time. The country was engulfed in a climate of distress and uncertainty. The decision to migrate was not that easy, and I was faced with two options to weigh up. On the one side there were the relatives, friends, a promising job and good economic position, culture and its values; whereas on the other side there were the future of my family and children in a safer country and the factors associated with migration including stress, anxiety and cultural adjustment.

We came to Australia as part of the *Skilled Migration Program* and with the sponsorship of relatives already living in the country. I must recognise that without their unconditional support, the adjustment process to the host culture would have been more difficult. Through them, I learned to appreciate Australia: a true democracy, serious about social justice and human rights, fully developed, plenty of opportunities including further education, the conduct of research and development, and the best of all its multiculturalism.
I was not able to obtain employment immediately for the country was recovering from a terrible recession. As a result, without an immediate prospect of obtaining a job, I explored the option of enrolling in a postgraduate course in the field of information technology with the support of the Commonwealth government. I was accepted into a three year part-time Master of Engineering in Information Technology at a local university.

Since I was a permanent resident, I was not considered an international student; however with a NESB and coming from a different culture, I also experienced the same sort of learning problems affecting my fellow overseas classmates. I came from an environment where teaching was purely information imparting and transmission rather than conceptual change. It was particularly hard for me to become accustomed to the Western teaching style, with a lecturer standing on the stage of a big lecture theatre delivering a talk in a foreign academic language to a crowd of two to three hundred students. It took a while to adjust to lecturers’ accents, jargon, and the management of the learning activities or tasks. For instance, in my country, I had never had the experience of writing an essay with the critical and rigorous analysis typical of Western universities. I had never been introduced into the goodness of being part of a team project and the degree of responsibility it involved.

However, rather than taking these new aspects of teaching and learning as problematic, I set up my mind to consider them as a great opportunity in the smooth adjustment to the host culture. My Masters kept me busy and with the government’s family allowance I was able to satisfy the basic needs. However, my priority was to get a full-time job and six months after having started my Masters, I was appointed as a multimedia specialist in the faculty of education’s teaching and learning research unit of a local university.
I was aware of the challenges imposed ahead: to work in a full-time highly demanding job, concurrently with the study of a high calibre postgraduate course, coupled with my obligations as a father and husband. My first thought was to defer the Master course but my wife convinced me that we could work together smartly dedicating time to my studies without compromising my family responsibilities. I must admit that arrangement worked really well, mainly because of her unconditional support.

Soon after I finished the Masters, I took over various home duties so that my wife could conduct postgraduate studies as well. Needless to say she faced the same problems I did as a NESB student but with perseverance and a good attitude to the studies, she graduated successfully two years after.

Once things settled down, I had enough time to reflect on my career aspirations. All of a sudden, I was internally compelled to reconsider the possibility of changing my career path into something closer to my new ways of seeing the world. This impulse had been influenced by my experiences as a migrant and the further knowledge I gained in studying my Masters.

Of all the alternatives, I opted for teaching in higher education, for which I had already experienced strong feelings as my ultimate profession; therefore it was not a difficult choice. Since I did not have any Australian teaching experience, initially I started to apply for sessional teaching appointments with the intention of gaining experience in the Australian higher education sector. Thanks to my strong industry experience in the field of information systems and technology, I managed to obtain casual work in a medium-sized regional university. This was a good experience since I was able to expose my students to real world learning scenarios based on my daily practice as an engineer.

After three years of working as a sessional teacher, this regional university offered me a full time tenure as a lecturer in information systems. I accepted and saw this as the
long awaited opportunity of enrolling into a PhD program. Initially, I thought to pursue my PhD in a technical discipline consistent with my information systems and technology background; however, through a second thought, I envisaged to research something which encompassed my two passions; i.e. teaching and technology. I have not been disappointed whatsoever with this choice, since through this PhD research I have been able to understand that teaching resembles an information system: a group of stakeholders consisting of students, teachers, institutions and their external interfaces, interacting together with the intention of making learning possible (Ramsden, 2003). The challenge these days is to maintain this system in perfect balance under the pressure of external and powerful forces like globalisation, internationalisation of education, the rapidly changing technology and government reforms.

1.4 The Purpose and Goals of the Study

In this section, I outline the purpose and goals of this study which aims to shed some light on how international computing students learn in a blended learning environment. In doing so, I draw on concerns, issues and my own reflections that affect the learning experience of international students who have chosen Australia as the destination to conduct further studies. This section is divided in three parts. The first part introduces Reeves’ (2000) framework for the establishment of relevant research goals consistent with the issues raised in the previous section, my stance as a researcher and research interests amongst the educational research community. The second part explains the rationale for the study, followed by an overview of the structure of this thesis.

1.4.1 Research Goals of the Study

Reeves (2000) highlights the importance of clear goals in educational research. In his opinion, many researchers fall into the trap of conducting research without specifying the type or research goals behind the research project. Reeves (2000) identifies six major
types of research goals pursued by the educational researcher and which reflect the research background, research interests and philosophical stance of the researcher. With theoretical goals, researchers are interested in analysing and synthesising theories and principles to explain phenomena and the outcomes of other forms of research. Educational researchers set empirical goals when they want to test conclusions drawn from theories of teaching and learning. With this type of goal the researcher uses experimental or quasi-experimental methods to determine how a specific aspect of education works under control conditions. Contrary to empirical goals, interpretivist goals are mainly concerned with the fundamental issue of portraying how education works. In doing so, the researcher draws on naturalistic research to describe and interpret phenomena related to teaching and learning. Postmodern goals are concerned in questioning the political and social systems in which current educational practices and programs operate. Development goals have two main focuses: developing creative mechanisms to tackle teaching, learning and performance problems; and constructing design principles, models and theories to guide future development practice. In Reeves’ opinion, action goals are similar to development goals with the difference that there is not much effort to construct a body of design principles or theory to guide future development practices. They are used in applied settings with the intention of describing, improving or estimating the effectiveness of a particular program, product or method.

The research design and methodology will not be discussed until Chapter 4, but based on that discussion and in the spirit of Reeves, I adopted the interpretivist and developmental approaches to describe the types of behaviours, attitudes, perceptions and conceptions of teaching and learning reported by and observed in computer science university students as they encounter a multicultural blended learning environment. Specifically, I pursued the two following goals:
To gain a greater understanding of how international computing students perceive and experience blended learning (interpretivist goal)

To recommend a set of pedagogical principles that might support higher education computing teachers’ design and implementation of a blended learning environment to improve the learning experience for international computing students (developmental goal).

1.4.2 Research Propositions

Three major concerns raised in the previous section led to this study being conducted:

1. The growth of international education, and a perception that its exploitation and commercialisation is undermining Australia’s excellent academic reputation.

2. Growing concerns about the academic performance of computing students, coupled with pressure to meet industry needs.

3. The conceptualisation of educational technologies merely as a supplement or an add-on to face-to-face teaching rather than as an integral component of teaching and learning.

Based on these three concerns and recommendations for further research found in previous research projects, the main research question is:

*How do international computing students learn in a blended learning environment?*

The central question was broken down into five research sub-questions listed below:

1. How do international computing students perceive the multicultural aspect of the new environment?

2. How do international computing students perceive the use of ICT in the learning process?

3. What issues arise from the use of blended learning within the context of international computing students?
4. How can blended learning be supportive of the diverse abilities and needs of international computing students?

5. What are the conditions that promote effective blended learning for international computing students?

The nature of questions one to three is mainly descriptive: they seek answers about the way things are and are consistent with Reeves’ interpretivist goals. To answer these questions I draw on international computing students’ reported perceptions and experience of blended learning environments and on my observations of their behaviours in both face-to-face and online learning environments. In contrast, questions four and five are recommending in nature, seeking to apply knowledge about the way things are to the practice of blended pedagogies. In this way, these questions are consistent with Reeves’ developing goals. To answer these questions, I examine the implications of the findings in relation to the first three questions.

1.4.3 Structure and Overview of the Thesis

In this section, an overview of the chapters is presented, followed by Figure 1.1 which details the structure of the thesis.

Chapter 1 examines the context of the study from national, international, personal and institutional perspectives, drawing on my own concerns and reflections on a series of key issues affecting the learning of international computing students. The chapter also outlines the research goals and the research propositions that guided the study.

Chapters 2 and 3 discuss the literature on theoretical perspectives and prior research findings that helped to conceptualise, and provide a rationale for, this study.

Chapter 4 describes the research rationale, conceptualises the research design, justifies the methodological paradigm, and provides a detailed account of the methods of data collection and analysis used.
### Origins of the Research

| 1.2 Background and Key Issues | 1.3 The Purpose and Goals of the Study |

### Literature Review

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| 12. 4 Part 3 Discussion of the Research Project |
Chapter 4 also provides a description of the steps taken to maximise the validity of results, and the credibility and trustworthiness of the research.

Chapter 5 presents the two university settings where the study was conducted, and describes the subjects and the profile of student and teacher participants. The descriptions are based on data collected during the project and therefore represent a first step in the reduction and presentation of data.

Chapter 6 describes the processes used to analyse the data and generate findings. This includes a full account of the research framework that guided the data analysis, and of the pattern coding process that led to the generation of the following five themes: *Adapting to a new learning environment, Preparing to learn, ICT integration, Keeping pace with the learning activities and Perception of pedagogical practices.*

The findings are presented in five chapters (Chapters 7 – 11), with each of these chapters elaborating on and illustrating one of the five themes. The first of these (Chapter 7) introduces the organisational framework for the presentation of the findings, as well as detailing the first theme.

Chapter 12 is organised into three main parts. Part 1 provides an overview of the research questions and a discussion of the findings in relation to the first three research sub-questions. In doing so, this section presents the conclusions of the study. Part 2 addresses research sub-questions four and five by discussing the practical implications of the findings. This section identifies five pedagogical principles for blended learning. Part 3 discusses the significance and limitations of the study and makes recommendations for further research.

1.4 Summary

In this chapter I have discussed the background and key issues that led to this study. The internationalisation of education in Australia has yielded benefits for the economy of the
nation but not without challenges. Many academics perceive the growing trend in international education as a good opportunity to improve teaching practices; however, some have also expressed their concerns that such a commercialisation and the need to respond to diversity is compromising the quality of Australian higher education. Central to the problem are the stereotypes held by many academics considering overseas students as passive learners, plagiarists, with poor English, and lacking critical thinking skills. Research in the field, however, claims that most of the problems are related to the lack of understanding of what constitutes international education. In terms of computing education, there are concerns amongst academics about the quality outcomes of computing students with some efforts already implemented by computing faculties to tackle the problem, including the use of learning technologies. Unfortunately, such implementations around learning technologies have had limited success owing to them having been used merely as a supplement or complement to conventional teaching and learning. Research suggests that learning technologies should be used as an integral component to the system as in the blended approach. This approach, however, is still in its infancy and more research is needed to unleash its full potential, particularly in the context of international students.

Using Reeves’ (2000) framework for the establishment of relevant research goals, I outlined the purpose and goals of the study. Two goals were established: a) an interpretivist goal that seeks to gain a greater understanding of how international computing students perceive and experience blended learning and b) a developmental goal that aims to recommend a set of pedagogical principles that might support higher education computing teachers’ design and implementation of a blended learning environment. The chapter also introduced the main research proposition: How do international computing students learn in a blended learning environment?, which was
further broken down into five research sub-questions. The first three research sub-questions have a descriptive nature and in contrast the last two are mainly recommending in nature.

In the next two chapters, I provide a review of the literature about theoretical perspectives of teaching and learning in higher education and previous research in the field of blended learning that helped to conceptualise and frame the rationale for this study on blended learning.
Chapter 3 Perspectives on Learning: Theories and Principles

2.1 Introduction

This chapter is the first of two chapters that discuss the literature about theoretical perspectives and prior research findings that assisted to conceptualise, and provide a rationale for, this study. The chapter particularly reviews previous research about the type of behaviours, attitudes, perceptions and conceptions of teaching and learning that are anticipated of the participants in the study — students from many cultural backgrounds and their respective teachers — within a blended learning environment. The literature about teaching and learning is influenced by broader perspectives from a number of disciplines, particularly philosophy, psychology, and sociology. I describe here some of these perspectives which contributed to the context of this specific study, from the fields of international education, adult learning, and an emerging field identified here as blended learning.

For many years, the understanding and investigation of learning and teaching in higher education has been framed within competing approaches from the positivist or scientific paradigm to the interpretive and critical paradigms. According to Foley (2000), since the late 1960s, the positivist or scientific approach to studying education in Western education has changed to an interpretive paradigm that emphasises the individual’s construction of meaning, shaped by culture and social structures. In the chapter, I explain how our understanding of this interpretive paradigm (defined here as constructivism) is influenced by the theory and research on adult learning in higher education, and discuss the work of two significant writers in the field — Biggs’ (2003) 3P model of teaching and learning and Laurillard’s (2002) conversational framework — in order to theoretically frame the study. Then, I discuss the Australian higher education panorama through three
lenses: international education, computing education and the effective use of ICT in teaching and learning, in line with the aims of this study. This background provides the foundation for the next chapter, where I review the nature of blended learning and research on the field, as well as the identification of topics and unanswered questions that provided a point of departure for the study described in this thesis.

2.2 Learning and Teaching in Higher Education

Figure 2.1 illustrates a literature map of some of the research conducted in learning and teaching in higher education. I use this map to provide a visual summary of the central points concerning the nature of this study.

![Diagram of Learning and Teaching in Higher Education]

Figure 3.1. Some influential literature in learning and teaching in higher education.
From the figure, a major influence on understandings of learning and teaching in higher education is constructivist psychology through which learning is viewed as a process where students learn through interactions between their conceptions of phenomena and the real world rather than a process of knowledge acquisition (Biggs, 2003). Students construct their understanding by reflecting on prior personal experiences. The role of a teacher is to design and implement a teaching strategy so students are supported to develop more accurate or more sophisticated conceptions of phenomena and to develop more effective or more sophisticated processes for interacting with the world (Laurillard, 2002).

Constructivist psychology has several forms, some of them contradictory rather than complementary (Duffy & Cunningham, 1996) but all of them have in common the concept that the most important element in knowledge creation is the learner’s enactment of the knowledge. While acknowledging a wide range of constructivist approaches, the following discussion will focus on three perspectives of constructivism: cognitive constructivism, social constructivism and socio-cultural theory, highly influential in the educational research community and which I found to be vital in the provision of guidance for the conduct of this study.

Cognitive constructivism, also referred to as individual constructivism, recognises that knowing is active, individual, personal and rooted in prior knowledge. Cognitive constructivism is based on Piaget’s (1969) influential work on child development and learning. In this theory, the developing child constructs cognitive structures or mental schemes for understanding as a response to experiences of the world they live. According to McInerney and McInerney (2006) these mental schemes become more elaborated through the assimilation of new to old information and accommodation of prior knowledge to new facts.
Social constructivism derives from Vygotsky’s (1978) work on the individual development of knowledge through social and cultural interactions with language and dialogue which he saw as central to cognitive development. Vygotsky (1978) believed that learning was affected by the social and cultural context where the learner was embedded. Based on this premise, Vygotsky introduced the concept of a “zone of proximal development” as the distance between the learner’s actual developmental level and the developmental level the learner can potentially achieve through expert assistance or interaction with other learners (p.86). The notion of a “zone of proximal development” also laid the foundation for scaffolding, where the teacher provides initial support to the learners and encouragement so that they become more independent and responsible problem solvers.

In the context of international education, the concepts of scaffolding (Vygotsky, 1978) and prior knowledge (Piaget, 1969), have been instrumental to explain the adjustment process of international students. In fact, according to Pascale (2006), there is a strong correlation between the adjustment to a new environment and the social distance that separates both host country and the student’s culture. She reports that international students whose prior knowledge had been gained through social and cultural relationships similar to the host culture experienced an enjoyable sojourn, with less stress and more confidence to learn compared to those students whose cultures were different to the host culture.

Bonk and Cunningham (1998) undertook a comparative analysis between cognitive constructivism and social constructivism. In social constructivism the important factor is the social interaction occurring in a community of practice (Wenger, 1999) whereas in cognitive constructivism the focus is on active cognitive reorganisation. Cognitive constructivism emphasises the active construction of meanings by the
individual, whereas social constructivism emphasises the social negotiation of meanings. They concluded that these perspectives are complementary rather than contradictory (Bonk & Cunningham, 1998).

In terms of educational technologies, much of the recent research into learning uses socio-cultural theory as the foundation of communication and interaction in online collaborative learning environments. In fact, Kanuka and Anderson (1998) suggest this theory as “the most accepted epistemological position associated with online learning” (p.60). They developed a constructivist interaction analysis model to assess collaborative work in online learning. They found that the social-cognitive process was emphasised in participants’ interactions with occasional “social discords that served as a catalyst to the knowledge construction process observed” (p.60). Similarly, Gunawardena, Lowe and Anderson (1997) developed a set of interaction-content-analysis techniques for examining the effectiveness of collaborative learning in the negotiation of meaning and co-construction of knowledge in the online learning environment. McLoughlin and Oliver (1998) also observed social, collaborative and dialogic interactions amongst students when supported and facilitated by computers. In a more recent study, on an evaluation of students’ learning processes and outcomes, Stacey and Rice (2002) also identified the use of social and cognitive strategies in postgraduate students’ interactions within an online learning environment.

In short, the strength of constructivist psychology is the suggestion of socio-cultural interactions to explain how individuals build their understanding (Gunawardena, Lowe, & Anderson, 1997; Kanuka & Anderson, 1998; McLoughlin & Oliver, 1998; Stacey, 1999; Vygotsky, 1978). Following this line of reasoning, Biggs (2003) proposes a student learning research model that is used here to frame the discussion around how
international computing students construct their learning in a face-to-face environment facilitated by technology.

In his student learning research model, Biggs promotes the concept of constructive alignment: “a marriage between a constructivist understanding of the nature of learning, and an aligned design for teaching” (Biggs 2003, p.27). The following section elaborates on that idea within the context of this study.

2.3 Biggs’ 3P Model of Learning and Teaching and the Learning Experience

In this study, I argue that students have difficulties in learning and teachers in teaching in a multicultural environment using blended learning. Such difficulties are linked to stakeholders’ backgrounds and perceptions. For example the multicultural student body might bring to learning a wide range of perceptions connected to issues such as language, culture, learning style, prior learning, and previous experience amongst others. Similarly, teachers bring to teaching a particular teaching approach, professional experience, personal beliefs, attitudes, misconceptions and so on. When the two parties interact in a teacher-student relationship, there is a potential clash in the way they perceive teaching and learning which is exacerbated by their different cultural backgrounds. The crucial aspect here is how teachers can influence students’ perceptions so that they change their approach to learning and similarly students influence teacher’s perceptions so that they change their teaching strategy (Prosser & Trigwell, 1999). This model of teaching and learning that looks into students’ and teachers’ perceptions of, and approaches to, learning is what Biggs (2003) calls the 3P model and the following is a pre-analysis of the elements and components of the model.

Amongst the many writings on learning in higher education, one of the most influential concepts is the distinction between surface and deep approaches to learning
(Biggs, 2003; Marton & Säljö, 1976; Ramsden, 2003). Biggs (2003) argues that research into student university learning was initially focused on developing a theory of learning with no effort to explain the actual nature of how students went about learning. More recently, in the last three decades, a field of study called “student learning” research has emerged (p.11). This field draws on phenomenography as a learning research approach.

This approach is derived from phenomenological psychology where the most influential factor to consider in the learning process is not the teacher’s intentions for learning but the student’s perceptions of the surrounding world. As Biggs (2003) explains it: “Teaching is a matter of changing the learner’s perspective, the way the learner sees the world” (p.12).

Phenomenography focuses on the interpretation of students’ variations in conceptions and their approaches to learning, rather than on explanations of learning. This learning research approach originated with Marton and Säljö’s (1976) experiments at Gothenburg University where students were given the task of answering some questions based on the reading of academic texts. As described by Ramsden (2003), one of the experiments was to read “an article about pass rates and educational reforms” (p.41). A group of students read the texts within an atomistic view in search of facts to answer the questions. They segmented the texts with the intention of relating the parts to its whole; therefore their understanding of the subject matter was not actually achieved. This attitude to learning constitutes what is known as a “surface-atomistic” approach to learning. In contrast, a second group approached the task with a holistic view. They preserved the structure of the texts by focusing on the whole in relation to the parts achieving a thorough understanding of the subject matter. This attitude to learning constitutes what is known as a “deep-holistic” approach to learning (Ramsden, 2003, p.43). Approaches to learning are not characteristics or features a learner has; on the contrary, they represent what a learning activity is for the learner. Biggs (2003, p.17) argues that deep and surface
approaches are “academic personalities” a student possesses. In other words, depending on the learning context, a learner can adopt a surface or a deep approach to learning. It is in the interest of the teacher to promote the deep approach by teaching students in a way that can change their perceptions of something (Ramsden 2003, p.45).

Another influential topic in learning is conceptions of learning which centres on describing how students see the act of learning (holistic or atomistic) and the nature of what actually is seen (deep or surface). Marton and Ramsden (1988) identify six implications for the generating of an effective teaching strategy, as a result of this student-centric view:

- present the learner with new ways of seeing;
- focus on a few critical issues and show how they relate;
- integrate substantive and syntactic structures;
- make the learners’ conceptions explicit to them;
- highlight the inconsistencies within and the consequences of learner’s conceptions; and,
- create situations where learners centre attention on relevant aspects (Marton & Ramsden, 1988).

The first implication gives the opportunity to teachers to use a repertoire of learning activities that enables the student to see the world from different perspectives. The second implication suggests that teachers should focus their learning activities on the nuts and bolts of the subject matter and how they are interrelated. This needs to be clearly articulated to students, for example, during the lecture or tutorial time, teachers could use knowledge maps to establish signposts or links between new and previously taught material.
The third implication focuses on the use of structures to help students interpret various forms of representation. This is a very powerful aspect of learning where students have to integrate and interpret the structures to succeed in understanding concepts. The fourth implication is crucial in a teaching strategy where the teacher should thoroughly understand students’ conceptions and then exert his or her influence to help students develop their understanding of the subject matter, in line with the learning objectives. The fourth and fifth implications are somewhat connected in the sense that teachers should teach in a very subtle manner so that students change their perspectives only according to their ways of perceiving the surrounding world. The sixth and last implication refers to the use of teaching materials that actually nurture students on their road towards an imaginative acquisition of knowledge. The lack of relevant aspects to focus on produces students’ exasperation with a final result of poor motivation and indifference for the learning process (Marton & Ramsden, 1988).

As discussed, the concept that learning is constructed as a result of learners’ activities, in conjunction with the distinction between learners’ surface and deep approaches to learning, led to the formulation of the 3P model of teaching and learning (Biggs 2003, p.18). The 3P model proposes a set of learning-related factors localised in three points in time: presage, process and product. The presage is the phase that happens before the actual learning occurs. There are two kinds of presage factors: student-based and teaching context-based. The student-based factors relate to what students bring to learning such as prior knowledge, interest, motivation and curiosity, whereas the teaching context-based factors relate to the teacher’s intentions, learning objectives, and assessment, and the teacher’s beliefs and attitudes. At the process level of the model, student-based and teaching context-based factors interact to produce the learning activities in accord with the approaches to learning. Students adopt either deep or surface
approaches in response to the climate created around them. The product learning-related factors relate to students’ learning outcomes which are successfully achieved with appropriate learning activities at the process level of the model. For Biggs (2003), the challenge is to bring the 3P model to a state of stability for meaningful learning. This can be done through the fundamental principle that “learning is the result of students’ learning-focused activities which are engaged by students as a result both of their own perceptions and inputs, and of the total teaching context” (p. 20).

Figure 3.2. Modified 3P model in the context of this study (Adapted from Biggs, 2003, p. 19).

Figure 2.2 conceptualises the 3P model in the context of international students, the focus of this study. In the figure, the dotted lines show the connections between approaches and perceptions of both teachers and students. For example, in higher
education it is common practice to distribute class handouts, to post lecture notes online
and more recently to podcast lectures to facilitate access of information to students who
cannot attend or who want to later reinforce their understanding of the content discussed
in class. However, this practice may be seen by some students as a pretext for not
attending the class, believing that attending the class is a waste of time and the revision of
the notes and podcasts in their own time suffices for mastery of the content (Clump,
Bauer & Whiteleather, 2003; Fjortoft, 2005). When such students have the opportunity to
experience a class from a teacher who fosters the deep approach through students’
learning-focused activities, their perceptions and approaches to learning may change.
Taking the teacher perspective, there may be perceptions amongst Western teachers that
students from Asian countries rely on rote learning and are passive learners (Kember,
2000). When these teachers gain a better understanding of the wider learning strategies of
their international students, they have the opportunity to design teaching, curricula and
assessment so that students adopt a deep approach (Biggs, 2003; Kember, 2000). The
multiple factors encountered in the environment affect teachers’ approaches to teaching
and students’ approaches to learning and there is evidence showing that students whose
teachers adopted a student-focused approach to teaching are more likely to adopt a deep
approach to learning (Trigwell, Prosser & Waterhouse, 1999). Applying these theories to
the context of this study suggest that the challenge is to adopt student-focused approaches
when teaching international students.

The line of inquiry also suggests that in order to establish a teaching strategy that
effectively responds to the challenges and demands imposed by the internationalisation of
education and to subsequent student diversity, a greater understanding of the logical link
between teaching and learning is essential (Laurillard, 2002). In that regard, Laurillard’s
conversational framework for learning throws some light.
2.4 Laurillard’s Conversational Framework for Learning

Laurillard (2002) uses phenomenographic studies to describe the link between teaching, student activity and interaction with the subject matter. Her analysis culminated with the development of the influential *conversational framework* grounded in the premise that the best empirical teaching strategy can only be derived through an iterative dialogue between teachers and students.

![Diagram of Laurillard's Conversational Framework](image)

*Figure 3.3. The Conversational Framework identifying the activities necessary to complete the learning process (Laurillard, 2002, p. 87).*

The framework, outlined in Figure 2.3, encompasses four different aspects of the teacher-student dialogue as part of the learning process: discursive, adaptive, interactive and reflective. From the figure, the discursive aspect of the learning process (1 – 4) elaborates on the student’s continuous accessibility of teacher’s conceptions and vice versa. There are two implications derived from this view. On the one hand, the learning goals for the topic are to be negotiated between the two parties; i.e. teacher and student and; on the other hand it is the teacher’s responsibility to promote discussions about the
topic goal. In doing so, the student is provided with timely feedback in relation to the subject matter. The adaptive aspect of the learning process (5 and 10) looks into the discrepancies that could exist between teachers’ and students’ conceptions. The focus of the continuing dialogue is determined by the adaptation of these conceptions. The interactive aspect of the learning process (6 – 9) provides mechanisms for the students to be proactive in achieving learning goals. The teacher should create an authentic climate of learning activities where the student can act on and receive timely feedback. Finally, the reflective aspect of the learning process (11 and 12) allows both teacher and student to reflect on the learning activity. This aspect of the learning process allows teachers to act as reflective practitioners and create an improved teaching environment for effective learning. Teachers should also be aware of how students apply the given feedback on their actions. Similarly, students are responsible for applying and linking the given feedback to their own perceptions of the subject matter. It is important to recognise the dual factor of the reflective aspect of the learning process, that is to say, both teachers’ and students’ reflections need to take place (Laurillard, 2002).

The communicative feature of the model is structured around the subject matter or content and it is in this respect Laurillard’s model is well regarded, with media technology playing a central role. In fact, the establishment of the dialogue is supported not only by traditional media such as face-to-face lectures, tutorials and text but also by communication technologies such as email, discussion forums, blogs and e-portfolios and most recently by social networking systems like Facebook™, MySpace™ and Twitter™. Like Laurillard, Ramsden (2003) emphasises the importance of dialogue to encourage a deep approach to learning. Teaching is essentially perceived as a conversation where both listening and talking are equally important. In this approach to teaching, the teacher listens to students carefully and uses that information to facilitate their understanding.
Ramsden (2003) suggests that there are occasions where there is no need for the teacher to intervene, with the student’s understanding being elicited through “time and reflection, or discussion with peers” (p.160).

Oliver and Trigwell (2005) argue that the conversational framework exploits the mixing of media to improve teaching by classifying the characteristics of different media in terms of their fixed qualities and then mapping them onto the conversational framework. However, they believe this may be problematic owing to the fact that such a classification portrays media as if they had fixed qualities. For example, in the conversational framework the term lecture as a pedagogical medium is presented exclusively as a transmissive medium; however, for teachers the term lecture could mean many different things depending on teachers’ perceptions. They conclude that media qualities cannot be fixed since “teaching is a form of practice – a socially constructed experience – rather than an inherent quality of media” (p.19). In terms of its relevance and usefulness for the context of this study, I use Laurillard’s model to analyse and understand the affordances of the media as used by teacher and student participants in the study.

It is worth noting that the conversational framework and the 3P model of teaching and learning were developed from a learning perspective with emphasis on the student activity, where the teacher has the intention of encouraging knowledge creation and the facilitation of the way students interpret the world (Samuelowicz & Bain, 2001). Trigwell and Prosser (1996) suggest this approach promotes conceptual change and according to Ramsden (2003) it results in high quality learning.

In the context of higher education, teaching for conceptual change has been the focus of many leading scholars who support the idea that knowledge can be learned best through the experience of the world (Marton & Booth, 1997) and that quality teaching is about understanding what the learners have to do to create knowledge (Biggs, 2003).
More recent research on teachers’ conceptions of teaching has extended this understanding of effective teaching, stressing the importance of the context, particularly from a social perspective (Carnell, 2007). Carnell (2007) states that university contexts require richer conceptions that prepare students to be critical thinkers and problem solvers in an environment where knowledge is negotiated socially.

Conversely, there are also leading educators and discipline strategists who support the idea that the imparting or transmitting of knowledge through direct guidance may be superior to constructivist-driven and phenomenologically-driven teaching (Kirschner, Sweller & Clark, 2006). This view of teaching supports the direct instruction of information and knowledge that fully explains the concepts and procedures, in line with students’ learning approaches compatible with human cognitive architecture. Supporters of this perspective of teaching appear to overlook the empirical evidence that teachers’ intentions and teachers’ approaches to teaching are context dependent (Trigwell & Prosser, 1996) and, accordingly, promote teaching for conceptual change to facilitate student learning (Biggs, 2003; Gow & Kember, 1993).

In the next section I discuss the importance of the nature of the context where this study was conducted. I specifically highlight the teaching and learning challenges faced by stakeholders owing to a lack of understanding of the context itself.

2.5 Australian Higher Education: Three Lenses

The intention of this research is to investigate the way international computing students approach learning in a multicultural blended learning environment. Three lenses emerge from this task: international education, computing education and the effective use of ICT in learning. In the following section of this chapter, I provide a review of these lenses within the context of the Australian Higher Education sector.
2.5.1 International Education

Figure 2.4 provides a literature map of some of the research conducted about international education. As previously, I use this map to provide a visual summary of the central points concerning the nature of this study.

Figure 3.4. Some literature review on international education.

In the last decade, international student enrolments in Australia have been increasing and they continue to do so, with forecasts predicting further expansion of this educational market (Department of Education, Employment and Workplace Relations, 2011). This growth in international education has critical implications in the quality of teaching and learning within the higher education sector. In this regard, much of the literature available reports this growth as problematic with issues such as language difficulties, study skills, plagiarism, soft marking and socio-cultural adaptation gaining a lot of attention (Arkoudis, n.d.; Ballard & Clanchy, 1997; Chang, 2005; Harris, 1995;
Morrison, Merrick, Samantha, & Le Metais, 2005). The debate is timely with growing dissatisfaction amongst academics who see the phenomenon of the internationalisation of higher education as a threat to Australian academic standards (McInnis, 2008). There is, however, evidence reporting the opposite, with international students amongst the highest achievers, outperforming local students (Arkoudis, n.d.; Morrison et al., 2005).

It is worth noting that the term international students can vary from country to country and the definition of the term depends on the context in which it is used. Morrison et al. (2005), in a research study to identify the performance of international students in the United Kingdom (UK), define the term international students as “students not domiciled in the UK”. Similarly, Arkoudis (n.d.), in the context of Australian higher education, opts for the definition of the term as “… those who have the majority of their previous study in countries where English is not the main medium of instruction in education”. For this study, the term international student refers to individuals who have come to Australia from another country to enrol full-time in a campus-based higher education program and with the sole purpose of obtaining a higher education degree.

Ballard and Clanchy (1997) believe that most of the problems reportedly associated with international students’ learning are rooted in an educational cultural shock. Coming from different backgrounds, they find it difficult to adapt to the teaching and learning environment of the country of destination (Tran, 2011). In this respect, in his fourfold theory of intercultural relations in plural societies, Berry (1999) explains the resulting cultural change when two different cultures come into contact. This theory revolves around two main issues: cultural maintenance and contact-participation. Cultural maintenance refers to individuals’ psychological drive or desire to maintain their own cultural identity and behaviours; whereas, contact-participation is individuals’ compelling desire to participate with those outside of their own culture. Based on the dimensions of
these two tendencies, Berry defines four strategies of intercultural relations (or generic outcomes of adaptation): Assimilation, Separation, Integration and Marginalisation (see Figure 2.5). In the Assimilation strategy, the other groups are favoured, that is to say, individuals do not wish to maintain their own identity and seek daily interaction with other cultures. When the opposite occurs, that is to say, individuals wish to maintain their own identity and avoid daily interactions with other groups, then the original culture is favoured and the Separation strategy is defined. In the Integration strategy, both cultural groups coexist, with individuals valuing their own culture while simultaneously interacting with other cultural groups. Marginalisation occurs when individuals are neither interested in maintaining their own culture nor having relations with others.

![Fourfold strategy of intercultural relations in plural societies](image)

**Figure 3.5.** Fourfold strategy of intercultural relations in plural societies (Berry, 1999).

According to some educational commentators, crucial to intercultural problems are international students’ lack of critical thinking skills, teacher-dependency, reluctance to
talk in class and their employment of rote learning strategies (Ballard & Clanchy, 1997).

However, recent research demonstrates that these deficits are based upon stereotypes (Arkoudis, n.d.; Biggs, 2003; Chalmers & Volet, 1997). For instance, Chang (2005) argues that problems, rather than deriving from student deficiencies, stem from a lack of understanding of students’ expectations, teachers’ role in a student-teacher relationship, assessment, and intercultural relations. Similarly, Biggs (2003) and Arkoudis (n.d.) coincide in their views stating that the traditional approach to teaching international students is based on a “deficit approach”, where international students are the “them” and local students are the “us”. This blame-the-student thinking is focused on how international students differ from local students, leading to misconceptions or stereotypes (Arkoudis, n.d.; Biggs, 2003). According to Biggs (2003), much of these problems may be remedied through the incorporation of cultural inclusivity in teaching, based on three propositions:

- persistent teaching problems lie not in the student but in the teaching;
- to avoid stereotypes, teaching should focus on the similarities between students and not in the differences; and,
- allowance to address the needs of all students not only international students (inclusively).

Moreover, according to Smith and Smith (1999), failure to consider cultural inclusivity in instruction and learning design runs the risk of being neo-colonialist, based on an ill-informed assumption that Western curricula can be transferred across cultures without any adaptation.

Hofstede’s (2005) seminal work on business-focused cross-cultural values can be used to understand the concept of cultural inclusivity in teaching and learning. He identified four cultural dimensions of individualism versus collectivism, large versus
small power distance, strong versus weak uncertainty avoidance and masculinity versus femininity (Hofstede, 2005). Individualistic cultures tend to have an interest in satisfying only individual needs. They are primarily interested in protecting themselves and their families. Conversely, collectivist cultures tend to favour group goals against individuals. In these cultures, the group primarily protects the interests of their members with the expectation they are loyal to the group. For Hofstede, a collectivist society is tightly integrated, whereas an individualist society is loosely integrated (Hofstede, 1986). Power distance is the extent to which power, prestige and wealth is distributed in a society. He found that all cultures experience inequality but in some societies this inequality is larger than in others. Uncertainty avoidance refers to the extent to which the members of a society “are made nervous by situations which they perceive as unstructured, unclear, or unpredictable” (p.308). Finally, the masculinity versus femininity dimension is gender related. Cultures labelled as masculine, expect men to be assertive, ambitious, strong, competitive; and women to care for children, and the weak. In cultures labelled as feminine, there is an overlap of social roles for the sexes. For instance, it is culturally acceptable for men to pursue a life which is not ambitious or competitive and to respect whatever is weak, small and slow. In feminine cultures there is more emphasis on affection, compassion, nurturance and emotionality (Hofstede, 2005). In the context of teaching and learning, Hofstede (1986) argues that the consideration of cultural differences is essential, and that the “burden of adaptation in cross-cultural learning situations should be primarily on the teachers” (p.301).

Cultural inclusivity has also been part of the research agenda in the design of online learning environments for higher education (Gunawardena et al., 2001; McLoughlin, 2001; Pincas, 2001; Wilson, 2001). McLoughlin (2001) claims that it is a mistake to assume that there is no difference in the way a diverse audience perceives
online learning. She suggests that it is imperative for teachers to adapt their teaching methods to a multicultural group of learners using ICT. Similarly, Gunawardena et al. (2001) found that there are differences in perception of online group process and development between participants in Mexico and the United States of America. They concluded that, consistent with the widespread of the Internet, there is a need for more research that examine cultural issues in the online learning.

Universities are moving away from finding the roots of the problems in the students themselves towards more institutionalized approaches of adaptation to the needs of diverse student populations (Harris, 1995; Morrison et al. 2005). This is in line with the key message from the 2005 survey of the International Association of Universities (Knight, 2006):

> Universities need to adapt their academic practices in order to keep up with the new trends of competitiveness and commercialization in internationalisation of education and with this message the challenges and opportunities for all stakeholders in the global educational market (Knight, 2006).

Problems associated with multicultural student cohorts are very complex in nature. Further research is needed to gain a greater understanding of the situation and to address international students’ needs, in particular, if these needs are actually different from those of local students (Harris, 1995). In 2008, in a teaching and learning seminar conducted by the faculty at the university I work for, there was a debate about best teaching practices in a multicultural environment. The debate was attended by a group of academics and scholars from an overseas university and local academic staff. One of the overseas academic colleagues made a timely remark about international students, comparing them to Campbell’s heroes. In his seminal work on comparative mythology, *The hero with a thousand faces*, Joseph Campbell (1993) writes about the heroes’ journey found in world mythologies and religions. The journey starts with a “Departure” or “Separation”, where
our heroes decide to leave their country to face the venture of studying abroad (Brown & Aktas, 2011), continuing with an “Initiation” to overcome hurdles and battles they face during their studies and finishing with a “Return”, where our heroes graduate and come back home triumphantly (Campbell, 1993). This comparison is an applicable and useful analogy when considering the various barriers and challenges that the recent research literature documents as facing international students (Brown & Aktas, 2011; Copland & Garton, 2011; Karuppan, 2011; Kim, 2011; Tran, 2011; Yakunina et al., 2011). The research literature on international students suggests that the task is challenging due to a series of academic issues associated with international students including plagiarism, lack of English proficiency, non-critical attitude, rote learning, passive and dependent learning amongst others (Arkoudis, n.d.; Biggs, 2003; Chalmers & Volet, 1997). The following sections discuss the literature pertaining to some of these issues.

2.5.1.1 Plagiarism

University institutions have the responsibility of remaining vigilant against practices attempting to undermine the integrity of academic principles underpinning teaching and learning. Plagiarism is an academic misconduct practice universities are highly sensitive about and it is currently perceived as problematic. The growing research in this area suggests that the problem mostly stems from academics’ and students’ lack of clear understanding about what constitutes plagiarism (Anyawu, 2004; Biggs, 2003; Devlin & Gray, 2007; Dick et. al., 2002; Sheard, Markham & Dick, 2003; Yeo, 2007).

In a recent study, Yeo (2007) defines plagiarism as: “knowingly presenting the work or property of another person as one’s own, without appropriate acknowledgement or referencing” (p.200); however, Yeo’s definition suits the context where that research took place. For example, in a different context, Devlin and Gray (2007) report various
studies where plagiarism is defined as: “the act of using another’s work without appropriate acknowledgement” (p.182). According to Devlin and Gray (2007), the problem arises in the interpretation of the definition and how to differentiate it from cheating behaviour such as taking notes into an exam or lying to get special considerations. Although the practice of plagiarism is considered unacceptable by all educational institutions, the actual meaning may not be universally understood (Pincus & Schmelkin, 2003). In addition to that, the problem is aggravated in the context of international students due to a wide range of cultural issues. According to Ballard and Clanchy (1997), in some Asian cultures it is disrespectful to modify the canonical text of someone who is considered as an expert. Once in Australia, students struggle to establish critical views on their presented work and are consequently charged with plagiarism. This cultural issue also appeared in a study conducted by Dick et al. (2002) as part of a working group on innovation and technology in computer science education (WGR-ITiCSE). Using the responses to an exploratory survey with open-ended questions about plagiarism issues, this working group developed a framework for understanding plagiarism from a computing academic perspective. The survey was responded by 62 academics from Australian, New Zealand, UK and USA and about 11% of the responses made specific references of plagiarism linked to cultural differences.

Research also suggests that plagiarism affecting both local and international students could be linked to the lack of clear policies in referencing and assessment. In relation to referencing, Anyanwu (2004) argues that: “it is not reasonable for a university to punish students for breaches of a plagiarism policy if the skills required for understanding that policy have not been taught explicitly to all students” (p.186). By the same token, there is evidence that students experience anxiety and frustration over assessment tasks which are neither clearly nor explicitly delineated. The situation is
aggravated when students opt for reproducing another person’s work as their own (Alam, 2004; Yeo, 2007).

Plagiarism is becoming a major issue in universities for both teachers and students, to some extent due to the explosive growth of the digital revolution that makes it easy to copy and paste, and to a greater extent due to the lack of understanding of the issue from a culturally sensitive standpoint. Besides, international students are multilingual students, and some of them are not fully confident with the English academic register, finding it difficult to express their opinions in their own words. According to Biggs (2003, p.129), this might lead to ‘patchy work’, which is not their own but a collection of bits and pieces from different original sources. The English language proficiency issue affecting international students is discussed next.

2.5.1.2 English Proficiency

In the context of Australian higher education, teachers report a tendency for non-English speaking background (NESB) international students to have English language difficulties that impact on their effectiveness as Australian university students (Bradley et al., 2008; Birrell, 2006).

The lack of fluency and proficiency in the language of instruction is a major concern that needs attention in particular in the development of academic strategies to cope with the problems it produces. It is worth noting that even though inadequacies in English language skills have a broader relevance, affecting both international and local students, the focus of this research project will be on NESB international students only. English is the universal language used in business and politics and it is also the preferred language medium of instruction in Australian universities. To gain entry into higher education, international students must demonstrate their English language competency
through internationally recognised English proficiency tests. The International English Language Testing System (IELTS) is the preferred proficiency test accepted by Australian universities. The IELTS is jointly managed by IDP Education Australia, the British Council and University of Cambridge ESOL assessing for all four language skills — reading, speaking, writing and listening — with nine band scores for each macro skill (IELTS, n.d.).

Table 2.1 outlines the IELTS nine band scores and what it means in the context of English proficiency.

Table 3.1 *IELTS Nine Band Scores*

<table>
<thead>
<tr>
<th>Band</th>
<th>Level of proficiency</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>Expert user</td>
<td>Has fully operational command of the language with only occasional and unsystematic inaccuracies. Misunderstandings may occur in unfamiliar situations. Handles complex detailed argumentation well.</td>
</tr>
<tr>
<td>8</td>
<td>Very good user</td>
<td>Has fully operational command of the language, though with occasional inaccuracies and misunderstandings in some situations. Generally handles complex language well and understands detailed reasoning.</td>
</tr>
<tr>
<td>7</td>
<td>Good user</td>
<td>Has generally effective command of the language despite some inaccuracies and misunderstandings. Can use and understand fairly complex language, particularly in familiar situations.</td>
</tr>
<tr>
<td>6</td>
<td>Competent user</td>
<td>Has generally effective command of the language despite some inaccuracies and misunderstandings. Can use and understand fairly complex language, particularly in familiar situations.</td>
</tr>
</tbody>
</table>
## Chapter 2: Perspectives on Learning: Theories and Principles

<table>
<thead>
<tr>
<th>Level</th>
<th>Description</th>
<th>Language Proficiency</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>Modest user</td>
<td>Partial command of the language, coping with overall meaning in most situations, though is likely to make many mistakes. Should be able to handle basic communication in own field.</td>
</tr>
<tr>
<td>4</td>
<td>Limited user</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Extremely limited user</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Intermittent user</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Non-user</td>
<td></td>
</tr>
</tbody>
</table>

*Note.* (Adapted from IELTS, n.d.)

English language entry requirements for students of NESB vary depending on the Australian university and the academic programmes. For example, some universities demand an overall score of 7 or more in the IELTS, whereas for others an overall score of 6 is enough. Another test, not as popular as the IELTS but accepted by Australian universities, is the Teaching of English as a Foreign Language (TOEFL) test. According to the Educational Testing Service, (Coley, 1999) a TOEFL score of 600 or above is to be considered appropriate for academic purposes and is the score accepted by most Australian universities. In Coley’s (1999) view, the problem with these proficiency tests is that they only provide a measure of ability to communicate in the four language macro skills. They do not test individuals’ ability to study academically or knowledge on a specific topic (Coley, 1999). In a study undertaken about the English language entry requirements of Australian universities for students of NESB, Coley (1999) argues that the confusion is rooted in the actual proficiency tested which is giving the opportunity to NESB students to enrol in higher education degrees without the essential literacy skills. For example, the study found that an entry requirement labelled as “English medium of instruction” is not indicative of proficiency to undertake university studies (Coley, 1999). One of the impacts of these inconsistencies is that universities are obliged to provide extra
post-admissions language support services to this cohort of students through either specialised learning skills units or English courses which are embedded into the academic program. In some cases universities have addressed the issue by creating an integrated bridging program before students commence their studies (Cargill, 1996; Copland & Garton, 2011). However, even with the support from these bridging programs, students still face enormous English language proficiency challenges. Coplan & Garton (2011) state that for these programs to be effective and produce students’ satisfaction with their study abroad experience, they should be focused on developing students’ linguistic and socio-cultural skills that encourage students’ interactions outside the classrooms.

In the context of international students the debate on English language proficiency still continues, with some commentators like Benzie (2010) suggesting that unless wider perspectives on the issue are considered, higher education institutions are running the risk of losing the many benefits that international education brings to our classrooms.

2.5.1.3 Rote Learning

Prior research on international students suggests that international students from the Pacific Rim are rote learners who adopt a surface approach to learning (Samuelowicz, 1987). This issue has been widely investigated in the context of Australian higher education (Biggs 2003, Chalmers & Volet 1997). The Cambridge Online Dictionary defines rote learning as: “learning something in order to be able to repeat it from memory, rather than in order to understand it” (Rote learning, n.d.). However, there is evidence from empirical studies that what NESB students intend to do in memorising the text is to reduce the cognitive load (Chandler & Sweller, 1991) since they are learning in a language different from their native language (Chalmers & Volet, 1997). In doing so, they can concentrate on the subject content to gain a deep understanding. Tang (1994) calls
this repetitive process "deep memorising" or "understanding through memorisation" and not simply a surface approach to learning as it is incorrectly assumed by some educators. Therefore, memorisation should not be seen as an inferior learning practice (Tang, 1994). On the contrary, in a study conducted on Asian students, Marton, Dall'Alba and Tse (1996) found that memorisation was used by students to develop the deep approach to learning or understanding.

2.5.1.4 Non-Critical Attitude

The graduate attributes promoted by university courses position critical thinking as quintessential for learning to take place. This is consistent with Marzano's (1998) and Marzano et al. (1990) dimensions of learning and thinking. Marzano and his colleagues identified four principles of human learning:

1) Attitudes and perception affect learning;

2) Learning involves acquisition of two kinds of information - declarative knowledge and procedural knowledge;

3) Once acquired, knowledge undergoes changes; and,

4) Effective learners exhibit dispositions associated with critical, creative and self-regulated thinking.

Based on these principles, they identified a further five types of student thinking needed for learning to take place and what they called the *dimensions of learning*:

1) Thinking needed to develop a positive attitude;

2) Thinking needed to acquire and integrate knowledge;

3) Thinking needed to extend and refine knowledge;

4) Thinking needed to make meaningful use of knowledge; and,

5) Thinking needed to develop desirable habits of mind.
In their view these five types of student thinking are needed for learning to occur and critical thinking is at the core of the fifth dimension of learning, the highest thinking order. Through critical thinking students should be able to question and challenge the status quo, being clear and seeking clarity, open minded, sensitive to the level of knowledge and feelings of others and avoid impulsivity (Marzano et al., 1990).

In the context of international students all these graduate attributes associated with critical thinking appeared to be problematic. It is often reported in the research literature that international students lack the skills to critical reflect, raise their own opinions, analyse and question (Ballard & Clanchy, 1997; Chalmers & Volet, 1997; Samuelowicz, 1987). However, studies conducted by Chalmers and Volet (1997) on international students from the Asia Pacific Rim report a high level of awareness of the need to critically analyse and question in Australian universities. In relation to assessment criteria the evidence is even more overwhelming with Asian students outperforming Western students in subjects such as mathematics and sciences (Biggs 2003, p. 126).

2.5.1.5 Passive and Dependent Learning

Australian teachers also report and see as problematic the passiveness and lack of participation in class of some internationals students. Chalmers and Volet (1997) suggest that such a passiveness can be associated with quietness but not to mental activities. There are also cultural and language factors that inhibit Asian students’ interaction with people of different status. For some Singaporean students, for example, tutorials and lectures are commodities that cannot be wasted in discussions. They prefer to deal with the discussion points outside the classrooms and at their own pace (Chalmers & Volet, 1997, Biggs, 2003).
In summary, the discussion above identified some educational issues regarding teaching international students that require further investigation. It is essential to gain a greater understanding of how overseas students learn to counter current teachers' misconceptions and assumptions, affecting the development of the internationalisation of education in Australia.

2.5.2 Computing Education

Having provided a review of influential literature on international education, I now do the same for the literature on computing education. Figure 2.6 illustrates a literature map of the research conducted about computing education which has influenced the design of this study. As previously, this map provides a visual summary of the central points concerning the nature of this study, specifically in the context of computing education.

![Computing Education Diagram](image)

*Figure 3.6. Some literature review in computing education.*

As discussed in Chapter 1, some computing teachers report difficulties in teaching students and in students' learning outcomes not meeting teachers' expectations, with high failure rates considered as problematic. In addition to the issues raised above, there is evidence that these difficulties could be partly associated with external factors affecting teachers (Berglund, 2005; Bruce et al., 2004). For example, Hagan (2004) reports on the pressure that the Australian computing industry exerts on universities to continue
fostering industry alliances to produce computing professionals with a broad knowledge and understanding (regardless what universities are teaching to their students) that will give them the flexibility to learn new technologies as needed (Hagan, 2004).

From the student perspective, there is limited research directly addressing the specific needs of computing students in building their knowledge and understanding. Most of the research has focused primarily on teaching approaches for computing teachers usually in an attempt to improve pass rates (Bruce et al., 2004).

Examples of an emerging international agenda to investigate computing students’ approach to learning can be seen in Bruce et al. (2004) and Berglund (2005). Both studies aim to investigate how computer science students go about learning using phenomenographic approaches (Berglund, 2005; Bruce et al., 2004).

Bruce et al. (2004) studied specifically the ways of experiencing the act of learning to write software. Using in-depth semi structure interviews, they collected data from 13 students from first year Java programming language courses. Based on this, they categorised five approaches by which computer programming students’ approach their learning. In the first category, students’ approach to learning is experienced as “getting through the unit”. They label this category following. In the second category, labelled coding, students’ approach to learning to program is experienced as learning code. In the third category, understanding and integrating, there is a richer approach to learning where students seek to understand and integrate concepts involved in programming. Students in category four problem solving, approach learning by seeing programming as a process for solving problems. The final category involves participating and enculturation. Here students understand thoroughly what it means to program and more importantly they are aware of what they do.
Similarly, Berglund (2005) as part of an internationally distributed project in computer systems interviewed a group of senior students, ten students in the United States and nine in Sweden, to investigate their learning experience and the way they approached learning. The study encompassed four aspects of the act of learning to understand networking protocols:

- how computing students approach the learning process;
- what needs to be learned, to meet the objectives;
- students’ motives for learning; and,
- students’ experience of their learning environments.

This study found that computing students differ in their learning approaches in seven different ways. In the first category are those students who learn computing by learning to use application programs. In this category, there is no actual engagement with computing as a science except for deploying applications. In the second category, students learn computer science by learning about isolated concepts. It differs from the first category in that it shows some instances of learning in computing as an academic discipline. The third category is the learning of computer science through consolidating what is already known, producing a richer context with different ways in which computing can be understood. The fourth category focuses on whole-parts relationships where students go about learning through the analysis of systems. In the fifth category, students approach to learning is through integrating or transforming systems. The aspect of the sixth category is searching for personal meaning and constitutes a richer but not optimum approach when compared to the seventh category where students go about learning through developing as a professional.

The two previous studies mainly focus on students’ approaches to learn or how they go about learning computing. In a recent longitudinal study, Corney and Teague
(2011) report on the development of novice programmers in their first term of programming in an Australian university. They collected data from 227 students who took an introductory course using Python programming language. They found that a high percentage of students did not tend to think relationally about code, in other words they could neither understand nor reason about code. They were concerned that current pedagogical computing practices do not help novice programmers to develop the cognitive skills of thinking relationally required to write code.

Another relevant aspect of computing education is university computing curriculum design and its connection with the ICT industry. The trend for universities is to use the industry as a benchmark to develop their computing academic programmes (Hagan, 2004). At the same time, the ICT industry is informed by international organisation bodies such as the IEEE-CS (Institute of Electrical and Electronic Engineering – Computer Sciences) and the ACM (Association for Computer Machinery). It is important to note that most worldwide universities develop their computing curricula based on the research on the field conducted by these bodies (ACM-IEEE, 2005; ACM-IEEE, 2001). At the ACM Computer Science Conference in February 1989, the Dutch eminent professor and computer scientist Edsger Dijkstra gave an invited talk called On the Cruelty of Really Teaching Computing Science (Dijkstra et al., 1989). His talk was highly provocative, challenging the core principles adopted by the ACM regarding computing curricula. When computers were invented, he argued, the growth of computer sciences was devoted to supporting scientists to perform complex mathematical calculations and simulate physical phenomena. Once computers began to be used to support business applications, the vocational aspect of computing emerged (Dijkstra et al., 1989). This vocational aspect of computing has a very strong bond to the ICT industry and, in my opinion regretfully; business organisations see more value in investing in
computing technicians rather than in higher education graduates (Lynch et al., 2001). In the past, organisations were willing to train computing graduates to gain the required technical experience, but this is no longer common. Giant IT organisations like Microsoft™ and Cisco™ are reaping the benefits of this employment climate, creating the so-called Microsoft or Cisco Universities to prepare computing graduates with the purpose of supporting their commercial products (Lynch et al., 2001). Our graduates are facing, not only difficulties in learning the complex aspects of computing, but also in professionally developing themselves in a very competitive environment.

Another aspect central to this study is the way learners perceive ICT to enhance knowledge development in a blended learning environment. This can be problematic particularly in the context of the latest developments in social networking and Web 2.0. This is timely because a high percentage of the universities’ student cohort belongs to a generation who have been regarded as digital natives (Prensky, 2001) and for whom technology is an integral part of their lives. In the next chapter I elaborate on this relevant issue as a preamble to the literature review about the nature of blended learning and research on the field, as well as specific issues that provide a point of departure for the study described in this thesis.

2.6 Summary
In this chapter I have reviewed the theories and principles related to the way international students learn in a higher education multicultural environment. The review is framed by the work of two influential authors in the field of learning research: Biggs’ (2003) 3P model of teaching and learning and Laurillard’s (2002) conversational framework. In line with the nature of this study, three aspects of Australian higher education emerge: the internationalisation of education, computing education and the effective use of ICT in learning. The first two aspects – the internationalisation of education and computing
education – were reviewed in this chapter, and the review of the effective use of ICT in learning is given in the next chapter.
Chapter 4 Blended learning: Theoretical Frameworks and Perspectives

3.1 Introduction

This is the second of two chapters that discuss the literature about theoretical perspectives and prior research findings that helped to conceptualise and provide a rationale for this study. This chapter is divided into two main sections. The first section contains three parts that explore influential ideas and explanations surrounding the use of ICT in learning: 1) the nature and purpose of online networks, 2) generational understanding of ICT use and 3) online literacies. This background lays the foundation for the second part of the chapter, where I introduce and define the concept of blended learning, the visions of the potential of blended learning, its benefits compared to face-to-face and online learning and teaching, and issues and challenges involved; followed by a review of current research in the field of blended learning.

3.2 ICT in Learning

Figure 3.1 illustrates a literature map of some of the research conducted on ICT in learning which influenced this study. This map provides a visual summary of the central points concerning the nature of this study.

3.2.1 Nature and Purpose of Online Networks

In his book, Weaving the Web, Berners-Lee (1999), the inventor of the Web, originally envisaged the Web as a semantic space for learning: “My vision was a system in which sharing what you knew or thought should be as easy as learning what someone else knew” (p.36). He also conceived of the Web as a strong vehicle to augment the social interactions amongst participants:

The web is more a social creation than a technical one. I designed it for a social effect—to help people work together—and not as a technical toy. The ultimate goal of the Web is to support and improve our web-like existence in the world (p.133).
The first generation of online networks, also known as Web 1.0, were mainly passive networks dedicated to content transmission that failed to realise early visions of how the general population might make use of the Web.

![Diagram of Learning Technologies]

**Figure 4.1.** Some research literature on learning technologies.

However, the Web has now evolved into a more flexible and dynamic system that can be embedded effectively into a learning process fully controlled by the learner.

Thanks to this, innovative educators have found another paradigm at their disposal to
explore new avenues and possibilities in the development of educational environments that foster the learning perspective. The new Web paradigm has been called Web 2.0 or the Semantic Web, and accordingly a new learning paradigm called E-learning 2.0 has emerged; a paradigm where content is actively constructed, syndicated and aggregated by learners, rather than being passively composed, organised, packaged and made available for consumption (Downes, 2005; Wheeler, 2009). Anderson (2007) argues that these paradigms are underpinned by the emergence of a new generation of Web-related technologies and standards such as Ajax—a group of technologies that relies heavily on Asynchronous JavaScript and XML; Flash—a graphics plug-in from Macromedia\textsuperscript{TM}; Simple Object Access Protocol (SOAP)—a message interchange standard to support the communication between Web services in a service-oriented architecture; microformats—a mechanism to embed semi-structured semantic information within XHTML web pages; and, open APIs (Application programming interfaces)—calling interface procedures to interconnect modules. These technologies are the product of recent advances in ICT research and development including the sophistication of software development methodologies, intelligent systems, cloud computing, real-time streaming protocols and high speed computer networks amongst others.

The concept of Web 2.0 has manifested in popular Web services and social software, such as, Google\textsuperscript{TM} AdSense, Flickr\textsuperscript{TM}, Wikipedia\textsuperscript{TM}, Napster\textsuperscript{TM}, Facebook\textsuperscript{TM}, Twitter\textsuperscript{TM}, MySpace\textsuperscript{TM}, eBay\textsuperscript{TM}, Amazon\textsuperscript{TM}, and YouTube\textsuperscript{TM} amongst others. According to MacManus and Porter (2005), in Web 2.0:

The Web of documents has morphed into a Web of data. We are no longer just looking to the same old sources for information. Now we’re looking to a new set of tools to aggregate and remix microcontent in new and useful ways.
Here we are dealing with complex data that are created, merged with other forms of data, remixed and presented dynamically. In this new conceptualisation of the Web, the users interact as part of a social network. In fact, Downes (2005) sees Web 2.0, not as a technological breakthrough, but as an attitude conveying a social revolution where a very complex knowledge network is possible as articulated in Wenger’s communities of practice (Wenger, 1999). According to Wenger (1999), the concept of communities of practice is a useful perspective on knowing and learning that informs groups of people willing to share a domain of interest and interact together with the intention of learning how to do it better. Wenger (1999) argues that the development of new technologies has expanded the possibilities for new kinds of communities based on shared practice. A clear example of these new possibilities is the online educational revolution seen in the use of non-conventional tools such as blogging, e-Portfolios and podcasting for the exploration of new teaching and learning dimensions never imagined before (Lorenzo & Ittelson, 2005; Williams & Jacob, 2005).

In a research project about learning management systems governance, Wise and Quealy (2006) conducted structured interviews with a wide range of educational stakeholders from the University of Melbourne and Monash University. The report emphasises the importance of Web 2.0 and E-learning 2.0 to create a rich, innovative and genuine higher education environment in accordance with the latest techno-social developments (Wise & Quealy, 2006). The online world has changed from a “very large multimedia content repository” to a truly interactive environment (p. 7). Here is a new world of pervasive computing exemplified by Web 2.0 where, rather than passively consume content, people have the opportunity of actually creating it. These technological changes have clear implications in the designing of university courses. Drawing on Prensky’s (2001) ideas, Wise and Quealy (2006) state that educational designers are
facing the challenge of *digital native* students — students who have grown up with digital technology (Prensky, 2001) — with a huge range of available tools to interact with the subject matter. According to Prensky (2001), it is the task of teachers to understand where and how these emerging technologies can add value to the learning of the current and future generations of students.

### 3.2.2 Generational Understanding of ICT Use

One of the most influential writers about generation theory has been Karl Mannhein, who refers to a generation as a group of individuals born and living at about the same time and who have similar characteristics shaped by socio-cultural, economic and technological developments within that historical location (Mannheim, 1952; Donnison, 2009). Although there is no consensus, sociologists and demographers have traditionally considered about twenty years as the spanning time of a generation. Based on that, it is reasonable to say that five of the most widely accepted generations around us are:

- Veterans or Builders, born 1926-1945
- Baby boomers, born 1946-1965
- Generation Z / Generation I, born 2000 onwards (Sweeney, 2005)

In Western contexts, Generation Y is the largest generation since the baby boomers, with some of them already highly influential in current worldwide social and economic matters. Generation Y is ethnically diverse, extremely independent and empowered and for some people they might be perceived as impatient, sceptical, blunt and image-driven. Conversely, from a positive perspective, they are considered adaptable, growing up digital, learning-oriented, multi-takers, increasingly diverse, tolerant and growing part-time enrolment (Black, 2010).
In the context of teaching and learning, Generation Y is considered as one of the most educated generations and most importantly committed to learn (Black, 2010; Oblinger, 2005). Generation Y contributes with a big slice in universities classrooms and one of the greatest concerns amongst academics is how to provide high quality education to this special cohort of students with such a diverse range of characteristics (Black, 2010). Some people call Generation Y, the Net Generation (Oblinger, 2005; Tapscott, 2008; Tapscott, 1998) for their advanced knowledge of the practical applications of emerging technologies like social networking. Educational technology researchers debate that if social networking is what these students do well, the potential of these emerging technologies to improve teaching and learning is enormous (Oblinger, 2005; Trentin & Wheeler, 2009).

Social networking is underpinned by a wide range of ICT tools, known as social software, bonded by a set of common protocols and application programming interfaces (API). With reference to this, in a research report written for the British Educational Communications and Technology Agency (Becta) about emerging technologies for learning, Bryant (2007) states that what is new and exciting in the growing adoption of social software for education is, not the technology itself, but it is the social affordances (Bryant, 2007). Bryant argues that technology comes and goes and the focus should be more on the way people use it to collaborate, share ideas, create and innovate than on the tools themselves. Learning is by and large a social activity and historically there has not been a better time to enhance it. Social software enables the construction of the learning webs envisaged by Ivan Illich in his controversial view of a de-schooled society (Illich, 1988). He argued that people’s knowledge and understanding of life came from friendship, or “... through the apprenticeship ritual for admission to a street gang, or the
initiation to a hospital, newspaper city room, plumber’s shop or insurance office” (Illich, 1988).

I raised above the impact of using weblogs in higher education promoting dialogue, debate and networking skills (Lorenzo & Ittelson, 2005; Williams & Jacob, 2005). Bryant (2007) elaborates further on this theme arguing that “the conversational sense-making and social networking aspect of blogging are what maintain people engaged beyond the motivation simply to write and reflect for personal benefit” (p.11). Like weblogs, wikis — software that facilitates the creation, editing, and linking of web pages together — have begun to attract considerable attention within the universities owing to their potential in the co-production and editing of students group work (Bryant, 2007; Wheeler, 2009). For example, a teacher can ask students to become contributors of a wiki by writing on a specific topic, and then students along with the teacher assess those contributions for effectiveness, thoroughness, comprehensibility and reliability (Prensky, 2007). Anderson (2007) contends that social software is enabling people to use a more novel way of gathering, sorting and organising information. He says that through social bookmarking or tagging, people can organise and categorise knowledge according to popularity and usage, rather than based on passive methods of classification. Enhanced podcasting is another popular tool used to distribute material over the Internet. In podcasting, students subscribe to a website with the purpose of downloading new digital media automatically which later they can reproduce on portable media players and personal computers.

For Prensky (2007) the explosion of social software and its popularity amongst Generation Y has enormous implications in tertiary education. He talks about the technical clash that has emerged between the so called digital native generation (Generation Y) and the digital immigrants (teachers) (Prensky, 2001). It is worth noting
that Prensky’s metaphor on digital natives and digital immigrants has been criticised by some academics (McKenzie, 2007; VanSlyke, 2003) because of its lack of substantiation on empirical studies; however, the metaphor has been influential in providing a better understanding of the differences between those generations who are comfortable with technology and those who are not.

According to Jenkins (2009) another implication of the use of social software in tertiary education is what he calls the hidden curriculum. In his research report written for the MacArthur Foundation about participatory cultures, he says that the use of social software is a form of participatory culture and that the access to this participatory culture functions as a new form to the hidden curriculum. He suggests that there is a need to redefine the concept of education for a high percentage of what our students learn is through that hidden curriculum. In terms of this concept, in the same research report written for Becta mentioned earlier about emerging technologies for learning, Twist and Withers (2007) refer to the hidden curriculum as one of the challenges of new digital literacies. They describe this new way of learning as the “learning young people are encountering through the everyday use of digital media and technological spaces” (p.28) and the major concern is our lack of understanding about what students are actually learning through it (Twist & Withers, 2007).

In terms of using social software, the challenge is how to use it in practical ways to improve learning. Prensky (2007) makes some suggestions about what can be done. He suggests the involvement of students in the development of learning activities using social software they have already mastered. This way the teacher does not have to be at the forefront on how to use technology rather the teacher “should be able to understand and teach where and how new technologies can add value in learning” (p.42) and guide the
students to develop the cultural and critical literacies they may not have when using these tools.

3.2.3 Online Literacies

From a socio-cultural perspective, Green (1988) says that literacy has three interlocking dimensions: the operational, the cultural, and the critical; which according to Lankshear and Knobel (1998) bring together language, meaning and context. In terms of learning technologies, Goodfellow’s (2004) three-dimensional framework, relating operational, cultural and critical aspects of text-based interaction online is a useful framework to understand students’ skills when using online learning. With reference to the operational dimension with online learning systems, students are competent with the medium itself; they know how to operate it and know the techniques, procedures and tools involved to make or interpret the text (Goodfellow, 2004). In terms of the cultural dimension of text-based interaction online, students’ competencies go beyond a simple operational literacy with the tools. It involves what may be called the meaning aspect of literacy (Lankshear & Knobel, 1998) that is to say, students’ abilities of using these competencies “in an authentic social or occupational context, enhancing the learner’s ability to participate in the discourses of the social world” (Goodfellow, 2004, p.381). The critical dimension of text-based interaction online is the highest layer of literacy. It involves the transformational aspect of literacy, where students are not simply participants in a social practice and making meanings within that practice but also act upon those meanings with the intention of conceptually changing, critiquing and redesigning that practice (Lankshear & Knobel, 1998). One of the main implications of this three-dimensional framework is that literacy is contextual. As mentioned, Generation Y students may have the ability to learn to be competent with the media, but that literacy does not necessarily translate into cultural literacy. If the tools are to be used to empower learning, students
have to learn to make meaning and extract value from specific cultural contexts, for example, within an online tutorial or social networking contexts like Facebook\textsuperscript{TM} or Twitter\textsuperscript{TM}.

The multicultural aspect of higher education, the emergence of a new generation of Web-related technologies and standards driven by Web 2.0, new learning paradigms such as E-learning 2.0 and current IT industry demands are some examples of the 21\textsuperscript{st} century challenges facing universities. Advocates for the transformation of higher education through the use of ICT see the task upon academic teachers as the seamless creation of online communities of learning where members interact and learn together within a shared domain of interest (Wenger, 1999), and many see blended learning as having the potential to deliver this promise (Garrison & Kanuka, 2004). However, the application of these systems in the context of teaching and learning is in its earlier stages and the impact in future higher education practices is hard to predict, with more lessons to be learned in this complex and intricate field (Lam, McNaught & Cheng, 2008; Lam & McNaught, 2006).

In the following section I introduce the concept of blended learning, what it means for teaching and learning, its benefits compared to face-to-face and online learning and teaching and how potentially it can be used to improve teaching and learning in a multicultural student body in higher education, and the issues and challenges involved.

3.3 Blended Learning

In the early 1990s, the explosive growth of the Web and emerging technologies introduced the concept of e-learning (electronic learning) (Downes, 2005; Laurillard, 2006). The idea of replacing the traditional face-to-face teaching and learning paradigm with a complete virtual environment using educational technologies resulted in many embattled higher education institutions adopting learning technologies and learning
management systems with no clear objectives (Coaldrake & Stedman, 1999). In a report written for the Australian Department of Education, Training and Youth Affairs, about academic work in the 21st century, Coaldrake and Stedman (1999) state that universities saw educational technologies as the panacea for all their problems, from cost-effective undergraduate and postgraduate programmes to operations streamlining, to greater audience and, interestingly, as a response to government pressures with the introduction of educational reforms, workload, morale, accountability, performance, and a more specialised and demanding work (Coaldrake & Stedman, 1999). It was difficult for educational stakeholders to accept that such an approach was a fallacy (Ramsden, 2003). Critics argue that the core business of higher education is teaching and learning and that it is from this standpoint that the use of educational technologies should be addressed, rather than focus on technology, there should be a strong focus on how to use it effectively to improve face-to-face academic practices (Garrison, 2000; Kanuka & Rourke, 2008). It is in this regard that the concept of a blended approach supporting deep and meaningful learning has emerged (Boyle et al., 2003; Garrison & Kanuka, 2004; Garrison & Vaughn, 2008). Unfortunately, the term blended learning has created mixed responses and definitions within the educational research community with no consensus on its philosophical value and potential. In the next section I review the literature about blended learning in terms of what it means and the affordances of the approach as an alternative to teaching and learning in higher education. The section is followed by a compressive review of recent and current empirical studies on blended learning.

3.3.1 Definitions and Visions of the Potential of Blended Learning
Blended learning has been defined in a variety of ways (Stacey & Gerbic, 2006), but most commonly the term is used to describe a wide range of forms of teaching and learning that integrate the use of ICT with face-to-face learning (Driscoll, 2002). The term was initially
used in corporate training and distance education and most recently in higher education (Bonk, Olson, Wisher, & Orvis, 2002; Bonk & Graham, 2006; Oliver & Trigwell, 2005; Stacey & Gerbic, 2006). Oliver and Trigwell (2005) identified seven forms of blended learning based on the notion that the term encompasses the combination of two or more different modes:

1. traditional face-to-face learning with e-learning, where e-learning is the use of any form of ICT in the learning process;
2. online learning mixed with traditional face-to-face learning, where online learning is mostly web-based learning;
3. mixed media, including any form of narrative, communicative, or iterative media amongst others;
4. mixing contexts like work and study, appropriate of flexible learning;
5. mixing theories of learning;
6. mixing learning objectives; and,
7. mixing teaching approaches like distance and campus based (Oliver & Trigwell, 2005).

The first combination, traditional face-to-face learning with e-learning, where e-learning is the use of any form of ICT in the learning process is the form that best describes the focus of my study.

There is a considerable body of literature about the visions of the potential of blended learning compared to either just face-to-face or just ICT-based learning environments (Aspden & Helm, 2004; Chen & Looi, 2007; Jelfs, Nathan, & Barrett, 2004; Osguthorpe & Graham, 2003).

In a study conducted to investigate the dimensions of incorporating online discussion in-classroom settings in a professional development course, Chen and Looi
(2007) analysed data from 16 heads of departments of information technology from Singapore schools. They found that within that setting, learners engaged in a wider spectrum of discussion perspectives, had equal participation in discussion and in-depth information processing. However, they also found that within that setting, the lack of face-to-face interactions and the need for sufficient time to do online postings was perceived as problematic.

In a UK blended learning study at Sheffield Hallam University, Aspden and Helm (2004) used qualitative data from the evaluation of a large-scale virtual learning environment implementation to examine whether the specifics of the blended approach contributed to an enhanced sense of connections amongst students, tutors and the institution. Based on the findings, they concluded that the blended approach itself enabled students to be connected in a flexible environment that suited their particular needs. More recently they highlighted the potential of blended learning in the implementation of innovative assessment strategies that encourage higher level learning (Purvis, Aspden, Bannister & Helm, 2011).

With reference to the benefits of blended learning, Osguthorpe and Graham (2003) emphasise that the potential is in the integration of the strengths of face-to-face interactions with the strengths of online learning. For instance, distance learners can experience time flexibility in online learning; however they cannot experience the spontaneous nature of face-to-face interactions. They say that “the important consideration is to ensure that the blend involves the strengths of each type of learning environment and none of the weaknesses” (Osguthorpe & Graham, 2003, p.228).

The strengths of blended environments can be better understood through the work of Donald Norman in human computer interaction (HCI) and interaction design. Norman (1990) argues that the affordances (or action possibilities) of an environment as perceived
by an actor depend not only on the physical capabilities of the actor but also on their intentions, plans, values, beliefs and previous experience (Norman, 1990). In other words, to examine the effectiveness of blended learning, we need to understand the capabilities of the environment as perceived by teachers and students. In this respect, Osguthorpe and Graham (2003) identify six benefits teachers might achieve when designing for blended learning:

- pedagogical richness, allowing teachers to change the way they use class time;
- increased access to multiple resource materials for students on a timely and flexible manner;
- social interaction;
- personal agency, enabling students to take ownership of the learning with less dependence from teachers;
- increased cost effectiveness; and,
- ease of revision and update, through a learning environment flexible, responsive and spontaneous.

Jelfs, Nathan and Barrett’s (2004) results confirm these benefits in a research they conducted for the Open University, UK, to find the necessary study skills for studying in a blended learning environment. They provided the students with a toolkit aimed to support students on essay writing, note taking, content revision, the use of computing and information technology and self-management skills. Based on their empirical finding, they suggest that blended learning is ideal for students’ own study support. However, they claim that for that help to be effective it should be structured around students’ actual and not assumed needs. They also suggest that blended learning has the advantage of
providing the students with a wide range of resources in different formats to support their different approaches to learning and on a flexible fashion.

There is also a body of literature about the problems associated with the implementation of blended learning environments. Oliver and Trigwell (2005, p24) argue that most of the research on blended learning has focused on addressing various forms of instruction rather than on the analysis of the experience of the learning in the blended learning context (Oliver & Trigwell, 2005). They suggest that “what is needed in future research is a shift away from manipulating the blend as seen by the teacher, to an in-depth analysis of the variation in the experience of the learning of the student in the blended learning context” (p.24).

In a study of the impact of blended learning on 72 final-year undergraduate teacher education within an Australian university, O’Toole and Absalom (2003) found that ICT access formats are of limited benefit in achieving students’ outcomes and in some cases it was seen as counterproductive due to the lack of students’ confidence in using the media. They warned about the complexities of incorporating new technologies into traditional teaching and suggest that success is in the careful combination of the two approaches: face-to-face and online (O’Toole & Absalom, 2003).

Similarly, Keller and Cernerud (2002) examined students’ perceptions of ICT in a blended approach at a Swedish university. They examined the responses of 150 students and the results were discouraging with more than 66% of the students disagreeing that online learning “had facilitated their studies, improved the communication with other students and teacher, improved the pedagogic value of the courses or improved their possibilities to solve problems related to the courses” (Keller & Cernerud, 2002). They concluded that future studies in the field should consider the student perspective as well as
the identification of key factors influencing the students’ perceptions of ICT in higher education.

Finally, Garrison and Kanuka (2004) argue that for blended learning to be effective within higher education, the two key components, face-to-face teaching and asynchronous learning activities, should be integral to the learning experience. It is only through the effective blend of these two components that universities are likely to be able to leverage the transformative potential of blended learning (Garrison & Kanuka, 2004; Stacey & Gerbic, 2006). In line with this premise, they use a conceptual framework of a community of inquiry (CoI) “grounded in a critical, collaborative learning community consistent with the ideals of higher education” (Garrison & Vaughan, 2008; p. 9), to propose a blended learning model for higher education. Such a model consists of three core elements — Cognitive, Social and Teaching presence — for a successful higher education experience. This model is illustrated in figure 3.2.

Garrison, Anderson and Archer (1999) consider Cognitive presence as the basic element in this conceptual framework. They define the term Cognitive presence as: “the extent to which the participants in any particular configuration of a community of inquiry are able to construct meaning through sustained communication” (p. 89). Cognitive presence encompasses the critical thinking ingredient in the context of higher education in the form of sense of puzzlement, curiosity, information exchange, idea connection, and innovation amongst others (Garrison & Kanuka, 2004; Kanuka et al., 2007).
Figure 4.2. Blended learning model (Garrison & Kanuka, 2004).

*Social presence* can be considered as part of the socio-cultural aspect of teaching and learning. In the context of this model, the authors define *social presence* as: “the ability of participants in the Community of Inquiry to project their personal characteristics into the community thereby presenting themselves to the other participants as real people” (Garrison, Anderson & Archer, 1999, p.89). They argue that *social presence* is essential to indirectly support the critical thinking responsibility of the *cognitive presence*; however, it can directly contribute to the learning experience when there are affective or emotional goals involved in the process.

The *Teaching presence* element is concerned with the functions typical of a teacher such as the design of the educational experience and the facilitation of learning. It is meant to support the *cognitive* and *social presence* in the realisation of all educational outcomes. The community of inquiry model recognises that meaningful learning is
socially and culturally constructed and can only occur provided there is an intervention of a teacher to facilitate the learner’s experience (Garrison & Kanuka, 2004).

Another useful theoretical blended learning model is the one proposed by Kerres and De Witt (2003). Their interpretation of blended learning is the mix of different delivery formats. They claimed that as a pedagogical method, any blended learning arrangement should include three components, named 3C- didactical components:

- **Content** – the subject matter available to the learner;
- **Communication** – the interpersonal exchange between students and teachers and amongst students; and,
- **Construction** – active engagement with learning activities with different levels of complexity (Kerres & De Witt, 2003).

The challenge in this pedagogical method is to find a suitable mixture of these three components and in the selection of the delivery format, either face-to-face or over the Internet using both synchronous and asynchronous communication technologies. According to this method, the learning activities should be rich, include scope for student choice, and include the possibility of integrating a wide range of communication tools with a variable degree of synchronicity. According to the authors, the selection of an appropriate learning design is not easy and should be based on specific criteria. For example, one criterion could be to relate the choice of media to cost-effectiveness (Kerres & De Witt, 2003). The authors state that this pedagogical framework for the design of blended learning arrangements is in response to the lack of theoretical concepts defining the nature of blended learning. They conclude that it still remains difficult to provide a set of general guidelines to implement blended learning arrangements (Kerres & De Witt 2003).
In this section I have provided definitions and visions of the benefits of blended learning and its potential in a diverse educational environment similar to that which is the focus of this study. However, there are also challenges and difficulties that can hinder the design and implementation of these environments. In the next section, I elaborate further by examining reported empirical studies from the research literature similar to the field of research with the intention of uncovering more gaps and deficiencies that need further clarification or research, and thereby situating this study and its contribution to new knowledge.

3.3.2 Research Studies of Blended Learning

Over the last decade, a number of empirical studies have been undertaken that explore the potential of blended learning as an alternative approach to teaching and learning in higher education (Bonk & Graham, 2006; Garrison & Vaughan, 2008; Geer, 2009; Stacey & Gerbic, 2009).

The *Quarterly Review of Distance Education*, Volume 4(3), 2003 dedicated the issue to report on several blended learning case studies at Brigham Young University. In one of the case studies, Christensen (2003) used a blended introductory instructional design course to determine the balance between face-to-face and online components. The study found that despite the rich affordances of the online components to stand on their own as a distance course, students preferred to meet twice face-to-face rather than only once per week. The author also concluded that the blended approach appeared to be effective when implemented in a constructivist way and when there was teacher support to alleviate the extra burden associated with the design and implementation of the teaching and learning tasks (Christensen, 2003). Whereas the focus of Christensen's (2003) case study was primarily to help students improve their learning through the use of a blended approach, in another case study conducted by Cottrell and Robinson (2003),
faculty intention was primarily the use of a blended approach to reduce faculty time, to re-focus students’ time and as a mechanism to admit more students to a given academic program. The question raised at the end of this specific study was on the applicability of a blended approach used in a particular course like accounting into other disciplines or courses of different nature like art and history (Cottrell & Robison, 2003).

A blended learning study focused on teachers’ conceptions has been reported by Ellis, Steed and Applebee (2006). In a qualitative study undertaken in two Australian universities, twenty-two teachers were interviewed individually for 45 to 60 minutes. The purpose of the study was to investigate teachers’ conceptions of blended teaching, blended learning and their approach to designing blended learning experiences. Three dimensions of blended learning were identified, within which individual teachers varied in their conceptions. The first dimension summarised teachers’ responses when they were asked what they meant by blended learning. This dimension included the following themes:

- blended learning as critically investigating changes in the world around us;
- blended learning as actively building understanding;
- blended learning as replicating ways of learning using different media; and,
- blended learning as using all the different media (pp. 312-335)

The second dimension summarises teachers’ responses when they were asked what they meant by blended teaching. This dimension included the following themes:

- blended teaching as helping students develop and apply new concepts;
- blended teaching as developing student understanding through aligning media to intended learning outcomes;
- blended teaching as providing students with information; and,
• blended teaching as replacing part of the responsibility of being a teacher (pp. 312-335).

The third dimension summarises teachers’ responses when they were asked how they approached designing blended learning experiences. This dimension produced the following four themes:

• design reshapes approaches to teaching;
• design influences approaches to teaching;
• design overwhelms relationships to teaching; and,
• design is unrelated to teaching (pp. 312-335).

In this study, the authors reported that technology was the central point in teachers’ conceptions. Some teachers saw the embedding of technology in their learning design as associated with good learning and teaching whereas others saw it as a way of exacerbating their already teacher-centric perspective. They concluded that we are at the early stages of understanding the complexity of teachers’ conceptions of blended teaching and learning in higher education. More research is needed to understand how these teachers’ conceptions are linked to course design where students experience meaningful learning and achieve the intended learning outcomes (Ellis et al., 2006).

Another prominent blended learning study, in the field of computing education, was conducted by Boyle, Clare, Chalk, Jones and Pickard (2003). They specifically designed, developed and implemented a blended learning approach to improve students’ success rate in the act of learning to program Java at university level. The authors commented that the challenge faced by higher education computing teachers is the design of effective teaching and learning activities in accord with ICT industry demands that not only enriches students’ learning experience but also give them the ability to excel in achieving their learning outcomes (Boyle et al., 2003). This study was conducted at
London Metropolitan University with a combined number of 600 students from three different modular courses. The initial focus was on the analysis of the problems encountered by the computing students in their learning process. Once students’ needs were identified, the study continued with the planning and development of changes in the face-to-face and online facilities. These changes were then integrated in the delivery of the courses using a blend of conventional teaching with e-learning resources. The impact of the changes was then evaluated through the analysis of success rates and students’ responses to three questionnaires supplemented with 36 short structured interviews. The overall outcome of this study was that the blended learning arrangement worked well with improvements in pass rates and positive student evaluations. The authors commented that there is a potential problem in the implementation of blended learning environments due to resistance from staff and students in the transition process from one methodology to another (Boyle et al., 2003).

Some educational researchers have investigated the potential of blended learning in international education. For example, Lanham and Zhou (2003) conducted a study to investigate the effectiveness of a blended learning approach in a learning environment consisting of local and international students. They argued that the emergence of cross-cultural classrooms demands more research into students’ learning styles to ensure all students are able to achieve their learning outcomes successfully regardless their cultural background. They promoted blended learning as having the potential to alleviate the problems encountered with cross-cultural learning (Lanham & Zhou, 2003).

Using data from 177 vocational students studying an introductory course in database management systems of a Taiwanese university, Shen, Lee and Tsai (2011) conducted two separate cases studies to compare blended learning with conventional face-to-face. In the first case, ninety-four students participated in a conventional face-to-face
class in the first semester; and in the second case, 83 students participated in the second semester but applying blended learning with web-mediated self-regulated learning. The study found that students who participated in the second case study had a positive attitude towards the blended learning approach and statistically performed better than those students who participated in the traditional class (Shen, Lee & Tsai, 2011).

In an exploratory and descriptive study about blended learning, Pombo, Loureiro and Moreira (2010) used data collected from reflections, postings and an online questionnaire administered to 22 students enrolled in a postgraduate multimedia course at a Portuguese university. The purpose of the study was to examine students' perspectives of the assessment of collaborative work using self- and peer-formative assessment. They found that students expressed concerns in using the wiki tool, assessing collaborative work and in engaging in peer assessment activities (Pombo, Loureiro & Moreira, 2010).

In a study conducted at a Spanish university to investigate students' learning outcomes and students' perceptions of a blended learning environment, Lopez-Perez, Perez-Lopez and Rodriguez-Ariza (2011) analysed data from 1431 student participant and found that the use of blended learning had a positive influence in students retention and in students final marks. They found a correlation between students' perception and the teaching and learning activities as facilitated by learning technologies (Lopez-Perez, Perez-Lopez & Rodriguez-Ariza, 2011).

In a UK education continuing professional development programme, Levy, Dickerson and Teague (2011) used a study learner-centred approach to develop blended learning resources for a postgraduate course. One of the education students joined the development team to develop resources and strategies to support academic reading to meet a need which had been identified by tutors and previous students. Such a learner-centric approach to curriculum development was seen positively by the developers,
particularly as an early intervention to identify students’ learning problems and to create blended learning resources consistent with students’ learning needs (Levy, Dickerson & Teague, 2011).

As discussed in this section, the notion of blended learning has received considerable attention within the higher education sector, with some theoretical developments forwarded. However, there is less empirical evidence about the learning benefits of these models, particularly, in the context of a multicultural student body and from the learner’s perspective. In addition, the implications of the existing research about blended learning are not easy to determine owing to the many interpretations that the term blended learning has in educational research.

3.4 Summary

In this chapter I have reviewed the theoretical perspectives and prior research findings of blended learning that have informed the current study.

Central to this research is the investigation of the ways computing learners perceive the use of ICT in blended learning environments. With reference to this, three perspectives were reviewed: 1) the nature and purpose of online networks, that highlights the transformative potential emerging technologies might have in student learning experience; 2) the generational understanding of ICT use, stressing the importance of knowing how such emerging technologies can add value to the learning of current and future generation of students, and 3) online literacies, that discusses students’ competencies with online learning systems from the point of view of three interlocking dimensions: operational, cultural and critical.

In terms of blended learning, the definition of the term has created mixed responses and there is not agreement on the philosophical value of this approach compared to either just face-to-face or just ICT-based learning environments. Drawing on
these issues and the multiple perspectives on teaching and learning reviewed, in the next chapter I present the rationale for the research design and the methods used for the analysis of the data.
Chapter 5 Research Design and Methodology

4.1 Introduction

A research design is a blueprint or a road map for conducting a research project, encompassing all research processes from conceptualising the problem, raising the research questions and research rationale, to data collection, analysis and interpretation, report writing, and drawing conclusions (Creswell, 2007; Fetterman, 1998; Schensul and LeCompte, 1999). Accordingly, in this chapter, I describe the research rationale, conceptualise the research design, justify the methodological paradigm, and provide a detailed account of methods of data collection and analysis and a description of the steps taken to maximise the validity of results and the credibility and trustworthiness of the research. In the final part of the chapter, I discuss the ethical issues considered in the realisation of this study.

4.2 Research Rationale

The body of research literature on how students learn and approach learning in higher education is huge and still growing; however, in terms of international education supported by blended learning research is scarce. Marginson and Eijkman (2007) suggest that, consistent with recent challenges and trends of a globalised world, further research in international education is needed. Similarly, researchers in the field of blended learning express concerns about the lack of empirical research on maintaining and establishing Cognitive presence in blended communities (Garrison & Vaughn, 2008). Thus, my research mission incorporates two aspects: on the one hand, international education and, on the other hand, the organic integration of ICT in students’ learning process, known as blended learning. Accordingly, through this study, I address the following main research question: “How do international computing students learn in a blended learning environment?”
I have broken down this main research questions into five research sub-questions:

1. How do international computing students perceive the multicultural aspect of the new environment?

2. How do international computing students perceive the use of ICT in the learning process?

3. What issues arise from the use of blended learning within the context of international students?

4. How can blended learning be supportive of the diverse abilities and needs of international students?

5. What are the conditions that promote effective blended learning for international computing students?

In the remainder of this chapter I first map out briefly the various decisions made in the development of the research design. I then describe in detail and discuss each decision, from the broad methodological approach taken to details about the data collection methods used. Finally, issues of research quality and ethical research are discussed.

4.3 Conceptualising the Research Design

This research was designed to answer the following question: ‘How do international computing students learn in a blended learning environment?’ and through the discussion I will state and conceptualise the two aims of this study:

- To gain a greater understanding of how international computing students perceive and experience blended learning
- To recommend a set of pedagogical principles that might support higher education computing teachers’ design and implementation of a blended learning environment to improve the learning experience for international computing students

Figure 4.1 is an attempt to conceptualise the research design in terms of a philosophical and theoretical framework. The figure maps the design decisions
undertaken at various levels of methodology, from my initial philosophical assumptions through to the type of approach taken, the methods used and the type of data collected.

I decided to embrace a subjectivist philosophical stance as a reflection of my own assumptions developed through my years of teaching international students. I am a true believer that international students have the capacity to develop their full potential in a foreign teaching and learning environment provided that institutions and teachers recognise the importance of the prior knowledge they bring to their learning, as well as their own beliefs and cultural values. Failure to do so may result in the fostering of reductionist approaches to teaching and learning that, as discussed later in the chapter, are not consistent with the context of teaching and learning of today's world. I am also a believer that the effective use of information and communication technology in educational institutions may have the potential to ameliorate international students' learning. My assumption of seeing learning as a social and dialogical activity may be in contention with leading educators, discipline strategists and researchers' beliefs, that as realists support the idea that learning is measurable and that the imparting or transmission of knowledge through direct guidance may be superior to socio-cultural based approaches to teaching (Kirschner, Sweller, & Clark, 2006). This study aims to gain a greater understanding of the act of learning of a cohort of international computing students, their experiences, perceptions and behaviours in a natural setting defined as a blended learning environment. On those grounds, I adopted a philosophical stance rooted in a subjectivist worldview which, not only matched my own beliefs about this field, but that appeared appropriate for learners and teachers engaged in a friendly knowledge-sharing blended learning environment. Such a worldview laid the foundation for a social-constructivist inquiry paradigm to inform the practice of this qualitative research. Given the nature of the problem articulated in the research questions and framed within a socio-cultural
climate, I also justified ethnography as the qualitative approach to provide practical guidance in the conduct of this study. My decisions around inquiry paradigm and the approach taken to the inquiry are discussed in more detail later in this chapter.

![Conceptualising the research design](image)

*Figure 5.1. Conceptualising the research design.*

Any approach to inquiry uses methods and tools for the collection, processing and interpretation of data. For this qualitative study, I selected a group of data gathering techniques to investigate the learning approach adopted by international computing
students within a blended learning framework. They include semi-structured interviews, classroom observations, my own research journal, and the collection of courses’ outlines and synopses, content and accreditation documents, and students’ assignments, and electronically generated text produced by teacher and student participants. My choice of data sources is discussed in more detail later in this chapter.

Figure 4.1 also depicts the research participants that form the community of learners that are the focus of this research. The criteria used for selecting the sites and participants for the study were derived based upon, first, the study’s focus on international education which necessitated the choice of sites conducting international education, and, secondly, pragmatic issues around access to the sites which was facilitated through my acquaintances with fellow lecturers at local universities. Australia is a multicultural country and many universities’ academic programs attract international students. I work for an international campus of a regional university where most of the students’ enrolments are from overseas. Therefore, my own workplace provided me with an accessible and familiar location at which to conduct this study. However, in the interest of producing more comprehensive and unbiased data, I decided to include a second site. The second site was chosen based upon its proximity to my workplace and contrasting characteristics compared to the first site: a large metropolitan Australian university that catered mainly for domestic students with a relatively smaller population of international students. The selection of the courses at each site was dependent upon two factors: teachers’ availability and willingness to participate in the research, and courses’ appropriateness in terms of their delivery using blended learning. This process resulted in the selection of three courses from two universities, from which ethical approvals were sought. In Chapter 5–The Settings, I provide a full account on the challenges faced in choosing the appropriate sites, courses and participants including issues I confronted in
making my decision as well the advantages and disadvantages associated with that. The
selection of the participants at each site was dependent upon a combination of
practicalities including consent to participate and qualities possessed by the students. The
characteristics of participating students are discussed below under the data collection
methods section and later in Chapter 5--The Settings.

4.4 Methodological Approach
The selection of the methodological approach to inquiry was carefully determined based
on many factors like the nature of the problem, the formulated research questions, the
research outcomes and my own assumptions as a researcher amongst others. The chosen
methodological approach draws on social constructivism which, as argued below, is the
most appropriate interpretive paradigm to understand and investigate the object of inquiry.

4.4.1 Inquiry Paradigms
According to Creswell (2007), researchers should be aware that the conduct of inquiry is
influenced by five philosophical assumptions: ontology, epistemology, axiology, rhetoric
and methodology. In Table 4.1, I define the philosophical assumptions in the conduct of
this study.

Ontology relates to the nature of reality as seen by the participants in the study, in
this case, both international computing students and their teachers. This reality is
subjective and relates to the type of learning and behaviour experienced within a blended
learning environment. Kincheloe and McLaren (As cited in Denzin & Lincoln, 2005,
p.319) contend that when researchers conduct research to observe and interpret the world
around them, they should understand that the object of inquiry is ontologically complex,
inscribed in culture and situated in history. This complexity gives rise to many different
perspectives of the world under investigation, i.e. no two interpretations are identical to
each other. Failure to recognise this has the potential of a reductionist interpretation of the phenomenon.

Table 5.1 Assumptions for this Study (Adapted from Creswell, 2007)

<table>
<thead>
<tr>
<th>Assumption</th>
<th>Description</th>
<th>For this study</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ontology</td>
<td>Nature of reality</td>
<td>Type of learning and behaviour experienced by international students in a blended learning environment</td>
</tr>
<tr>
<td>Epistemology</td>
<td>The nature of the researcher’s access to what the participants know</td>
<td>Hearing participant voices and observing behaviours</td>
</tr>
<tr>
<td>Axiology</td>
<td>Explicit values of a study and the values the researcher brings to that study</td>
<td>Cultural sensitivity, empathy, sympathy, reflective practice</td>
</tr>
<tr>
<td>Rhetoric</td>
<td>Language of research that identifies the researcher both literary and personally</td>
<td>Shaped by NESB, research writing or writing as research</td>
</tr>
<tr>
<td>Methodology</td>
<td>Process of research</td>
<td>Interpretive, socio-constructive</td>
</tr>
</tbody>
</table>

Accordingly, for this study, I heard multiple voices and opinions that helped me answer the research question: How do international computing students learn in a blended learning environment? For example, for some student participants the nature of learning within this environment was a beautiful journey that changed their lives. Having no prior learning experience with such an ecosystem, they were able to build their knowledge through complex and rich scenarios that once initiated face-to-face transcended smoothly to a less conventional and familiar online system. The learning experience was so rich that for one of these students, the use of ICT was perceived as “indispensable” to the learning process. For others, the nature of reality was as a way of getting a more meaningful learning with the expectation of securing a good job in their professional lives. As
expressed by one of the student participants, the use of ICT in this context “helped me become a self-regulated and self-independent learner, typical of today’s professional”.

Epistemology refers to how the researcher knows what the participants know. Guba and Lincoln (as cited in Creswell, 2007, p.18) argue that through this philosophical assumption “the researcher tries to minimise the distance or objective separateness between himself or herself and those being researched”. My extensive teaching experience in international education has granted me the opportunity of getting to know international computing students, their strengths, weaknesses, learning needs, attitudes and to some extent their approaches to learning. However, these are mere presuppositions or assumptions based on my anecdotal observations and encounters. Through this research, for example, I might know how international computing students perceive the multicultural aspect of the environment and the challenges they face in their journey. I might also know the level of awareness they have in using ICT to support their learning abilities and needs. Only the setting of a holistic approach designed to observe their behaviours within the classrooms, analyse their in-class and virtual interactions, and hear their voices, might throw some light to minimise that objective separateness and get a greater understanding of the way they learn in a blended learning framework.

The aim of axiology is to identify the explicit values of a study as well as the values the researcher brings to that study. Denzin and Lincoln (2005) argue that in the context of this philosophical assumption; ethical, aesthetical and spiritual values “feed into the inquiry process” (p.197) biasing the researcher’s standpoint. I have always believed that teaching is perhaps one of the most rewarding and spiritual activities but at the same time very challenging, particularly these days when the norm is to teach to a diverse group of learners with different cultural backgrounds and learning needs. In this regard, we as teachers should conduct our practices with the duty of care of being
culturally sensible and recognise the wide range of spiritual values international students bring to their learning. We should teach them with empathy and sympathy to ease their journey and make their learning experience enjoyable. When things go according to an established plan with students successfully achieving the desired learning outcomes, I feel happy and rewarded. When things do not go really well, there is an uneasy feeling and I reflect on the situation: How can I improve my teaching approach for the betterment of students’ learning? Take for instance the plagiarism issue, described in the literature review, affecting international students’ academic performance. Apart from the cultural background and the students’ prior teaching and learning factors, it is my belief that this problem is also rooted in the way we design our assignments: Western-centric, lengthy, without clear guidelines and oftentimes not relevant to the learning objectives. I must admit this was one of the many motivations leading me to undertake this research; the search for more appropriate teaching practices for the improvement of students’ learning outcomes within the context defined in this thesis.

With the rhetorical assumption, the aim is to choose a language of research that identifies the researcher both literally and personally (Creswell, 2007). In this respect, Kamler and Thomson (2006) claim that researchers’ literary work is shaped by academic genres and power relations. The concern is not only in the structure of a thesis in terms of academic standards but also in the use of a rhetoric that engages the attention of those who have been selected to examine the researcher’s work. They need to be convinced that what researchers say about their research is valuable and makes a contribution to the object of inquiry. It is worth noting that the production of this literary work may result in a daunting and overwhelming task for researchers with native languages other than the language of research. Take for example my non-English speaking background. Despite all my years writing and arguing in the English language, I am still aware of my writing
limitations which to some extent may be problematic in establishing and supporting my arguments. I also recognise my propensity to make strong statements which may be rooted in my background as an information technology practitioner. I am used to arguing and discussing issues related to the elicitation of concrete and objective propositions for the sound solutions of information systems problems.

However, there is more to the language of the qualitative researcher than literary work. There is a growing interest amongst academic scholars of considering academic writing as identity work (Kamler & Thomson, 2006). According to McWilliam (2006), the researcher should be positioned within the research community with an authoritative speaking voice to turn a knowledge claim into an argument through compelling evidence from the field. In doing so, the debate should be a mutually informing debate that portrays the researcher’s own stance along with other researchers’ stances. In this line of reasoning, that identity work may become polemical when the researcher’s stance cannot be debated owing to the novelty of the research topic or the lack of research in that field. This may be the case of this study, which as discussed encompasses three aspects: international education, the use of ICT in higher education and computing education. Each of these topics has been individually researched but little has been done in a context including the three.

Another aspect of the rhetorical assumption is to write the dissertation using either research writing or a writing up approach. Traditionally, researchers consider writing as an activity that occurs at the end of a research process. This writing up approach overlooks that writing is integral to, and an organic part of, the research process and should occur all the way through the research process. The alternative of writing as research, gives the researcher the opportunity of uncovering new forms of knowledge from the research process (Kamler & Thomson, 2006). For this study, I adopted the
approach that writing should be integral and organic to the research process as in research writing, which proved to be effective particularly in the structure and consistency of the dissertation. In doing so, I was able to relate and cross-reference all the chapters without the risk of leaving loose ends.

Finally, the language of research relates to the cultural background and previous experience of the researcher. To some extent the rhetorical assumption is affected by the environment in which the researcher has been brought up at first instance. As mentioned, in this dissertation, the language of research for both text work and identity work may have been influenced by my NESB and previous professional experience.

4.4.2 Positivist and Interpretive Paradigms

While acknowledging the existence of many philosophical paradigms that inform the practice of qualitative research differently, I will focus only on the two major competing approaches that traditionally have framed research into teaching and learning in higher education: positivist and interpretive paradigms. Table 4.2 contrasts the characteristics of these two paradigms.

Table 5.2 Two Competing Paradigms

<table>
<thead>
<tr>
<th>Positivist</th>
<th>Interpretive</th>
</tr>
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<tbody>
<tr>
<td>Also known as quantitative, realist, objectivist, analytic or behaviourist</td>
<td>Also known as qualitative, constructivist hermeneutic or naturalistic</td>
</tr>
<tr>
<td>Rooted in scientific tradition</td>
<td>Aimed to investigate the context of complex educational settings and multiple subjective meanings of the world</td>
</tr>
<tr>
<td>Prove or disprove a theory</td>
<td>Qualitative methods to develop an interpretation or understanding of phenomena</td>
</tr>
<tr>
<td>Empirical, logical, deterministic, reductionist methods</td>
<td></td>
</tr>
</tbody>
</table>

Within the positivist paradigm, the researcher has a set of beliefs rooted in scientific tradition where the primary concern is to produce evidence in support of or
against a theory through the use of empirical, logical, deterministic, reductionist and
cause-effect methods (Creswell, 2007). In this paradigm, educational researchers are
realists who believe that the teaching and learning experience is a reality that can be
measured and observed as a simple experiment. Accordingly, it would be possible, for
instance, under controlled conditions to predict the type of behaviour and learning
expected from students (Reeves, 1997). It would be a matter of simply analysing the
collected and observed data in an educational experiment, to generalise on an educational
theory that explained the learning experience of computing students studying abroad. This
study is bounded and not a large-scale investigation that would be required to study such a
cause-effect oriented controlled environment. Moreover, the question I asked is open-
ended (How do international computing students learn in a blended learning
environment?), so not usefully answered by a quasi-scientific design. As discussed in the
literature review, the lack of understanding about students’ expectations in a multicultural
environment along with our own biases, assumptions and perceptions are major issues
surrounding the nature of this study. It appears that positivism does not have the
philosophical elements to guide the action of such a complex case study. As claimed by
post-positivists, I believe that the complex socio-cultural world surrounding teachers and
international students is a reality that cannot be usefully reduced to its components. Every
single human consciousness is unique and subjective (Denzin & Lincoln, 2005), with
different views of the convoluted reality of teaching and learning; therefore, it appears
that a more appropriate inquiry paradigm is needed to guide the action of this study.

Within the interpretive paradigm, researchers develop varied and multiple
subjective meanings of the world in which they live and work. In contrast to the positivist
paradigm, researchers “generate or inductively develop a theory or pattern of meaning”
(Creswell, 2007; p.21). In the context of qualitative inquiry, Schwandt (as cited in Denzin
& Lincoln, 2000) summarises three interpretivist philosophies to explain the aim and practice of understanding human or social action: interpretivism, hermeneutics and social constructionism (or alternatively termed constructivism) (p. 189).

In interpretivism, the researcher seeks understanding of a particular social action such as learning or teaching by grasping the “meanings that constitute that action” (Schwandt, 2000, p. 191). In other words, to understand the action of learning, for instance, requires that one, as a teacher, interpret in a particular way what students do to learn. This interpretivist view of learning is also called “empathic identification” with the student, where one attempts to re-enact the act of learning by getting inside the student’s mind to understand what she or he does in terms of learning. Schwandt says this view of interpretivism has an “objectivist” stance since it would be possible for the teacher to reproduce the intention of a student (Schwandt, 2000, p. 192). On the contrary, if the aim is to understand how participants experience the teaching and learning world around them, then Schwandt defines the notion of interpretivism as “phenomenological sociology”.

The second interpretivist philosophy to represent the notion of interpretive understanding of social or human actions is hermeneutics. Philosophical hermeneutics states that understanding, rather than a procedure, is a condition of being human. On these grounds “we are always taking something as something”; that is to say, we are always involved in the act of interpreting (Schwandt, 2000, p. 194). In this philosophy of thought, the understanding of what is not understood can be achieved through an open, participative, conversational and dialogic activity. Consequently, the understanding of something as intersubjective as teaching and learning can be generated from a dialogue within the participants and not from a simple interpretation of the phenomenon. According to Schwandt (2000), hermeneutics departs from the traditional interpretivist
view that human or social actions have meanings that can be determined by the interpreter. An implication of this view for teaching and learning is that meaning is negotiated mutually through dialogue and not simply discovered through interpretation; therefore, there is never a finally correct interpretation of a social activity like teaching and learning.

In social constructionism, which for this case is termed social constructivism, the belief is that “the mind is active in the construction of knowledge” where that construction is multidimensional with sociocultural and historical aspects (Schwandt, 2000, p.197). The ontological assumption of social constructivists is that the nature of reality is constructed through subjective meanings which are negotiated socially, culturally and historically (Lincoln & Guba, 2000) and which is open to multiple perspectives and interpretations rather than simply imprinted in our minds to be discovered by the interpreter (Creswell, 2007). In terms of educational practice, educational researchers as social constructivists pose open and general questions, and rely on participants’ answers to make sense of what teachers mean by teaching and learners mean by learning. Creswell (2003) argues that in this philosophical paradigm, inquirers should recognise that their own personal, cultural and historical experiences shape their interpretations of the situation under investigation. In terms of this study this is important to consider, for one of its aims is to investigate international students’ perceptions and attitudes towards the learning experience in a blended learning higher education multicultural environment. I have my own interpretation of this situation shaped by my personal, cultural and historical background. Through the study I listened to participants, both students and teachers, to interpret their reported experiences of teaching and learning in such a complex ambit. This subjective meaning is one of multiple interpretations of the situation which I used to develop practical guidelines that might support higher education teachers’ design and
implementation of blended learning contextualised in broader issues as articulated in the literature review. Thus, given the subjective and interpretive characteristics of this educational environment, I chose social constructivism as the most appropriate interpretivist philosophy to guide the conduct of this qualitative research.

4.5 Qualitative Research

According to Schwandt (2000) qualitative research is a reformist departure from traditional social scientific research “that favoured quantitative data such as experimental, quasi experimental, correlational and survey research strategies” (p.189). It emerged as a need to develop methods for generating and interpreting qualitative data in the exploration of natural settings. Denzin and Lincoln (2005) propose a definition of qualitative research to accommodate the different interpretive paradigms, disciplines, fields and subject matters that this field of inquiry encompasses:

Qualitative research is a situated activity that locates the observer in the world. It consists of a set of interpretive, material practices that make the world visible. These practices transform the world. They turn the world into a series of representations, including field notes, interviews, conversations, photographs, recordings, and memos to the self. At this level, qualitative research involves an interpretive, naturalistic approach to the world. This means that qualitative researchers study things in their natural settings, attempting to make sense of, or to interpret, phenomena in terms of the meanings people bring to them (Denzin & Lincoln, 2005, p.3).

In the light of this definition, there is a number of compelling reasons to conduct qualitative research in this study. Learning is situated in a context or setting and to make sense of it, the educational researcher has to be in a natural setting side-by-side actively interacting with the participants (students and teachers), collecting data from multiple sources and drawing conclusions about what teachers and students mean by teaching and learning respectively. Creswell (2007) argues that qualitative research is conducted when there is a need for a detailed understanding of a complex issue and the contexts or settings in which participants in a study address it. Central to this study is my role as a teacher and researcher located within a natural setting of blended learning, interacting with both
students and colleagues. As such I gathered qualitative data with the purpose of gaining a
greater and detailed understanding of how a specific cohort of international computing
students approach and perceive their learning.

4.6 Qualitative Approach to This Inquiry
Creswell (2007) argues that a good qualitative study should emphasise a rigorous research
design and central to this is the identification and definition of an appropriate research
approach to guide the research project. Accordingly, he suggests five criteria that may be
considered for the choice of a qualitative research approach (Creswell 2007). First, the
researcher should have a thorough understanding of what the approach is attempting to
accomplish. The aim of this study is to gain insight into the act of learning of international
students, their perceptions, experiences and behaviours in a blended higher education
learning multicultural environment. Typically in a day-to-day scenario, students are
expected to actively engage in moderated and facilitated discussions both face-to-face and
online to gain a thorough understanding of the subject matter. However, in the context of
international education, the richness and complexity of these social interactions might be
shaped by students’ socio-cultural backgrounds; therefore, their study could lead to
multiple interpretations. As discussed above, this study used social constructivism as the
inquiry paradigm to guide its conduct given that the nature of reality is believed to be
socially constructed through the synergy of both participants and researcher. Denzin and
Lincoln (2000) state that in such a paradigm, researcher and participants bring their own
culture, class, race, language into the reality to gain the insights of the situation.

Once the outcome of the study has been clearly identified, the second factor in
consideration for the choice of a qualitative research approach relates to the target
audience. In this regard, Creswell (2007) emphasises the importance of agencies and
organisations committee members, journal editors and advisers who as gatekeepers are
concerned for the significance of the study and the ethics involved. In this case, the suggestion is for the selection of an approach in accordance with their practices.

Thirdly, the chosen approach should be congruent with the researcher’s background or experience in the field of inquiry. In this respect, I strongly support the idea that the overall perspective from which I see and interpret the way international students learn is shaped by my beliefs, assumptions, cultural background, prior knowledge and professional experience. The realisation of this study, however will give me an insight of international students’ worldview of teaching and learning which I can use to inform better teaching practices and students’ learning outcomes.

The fourth factor has to do with the significance of the inquiry and contribution to the body of knowledge. Higher education students are increasingly encountering blended learning environments in their studies. Existing research literature suggests that such environments could potentially improve the experiences and learning outcomes of international students. This study will identify how international students from diverse cultural backgrounds learn in a blended learning environment. The findings of the research will have significant implications for the design of blended learning environments for culturally diverse learners and may lead to improvements in students’ learning experiences and learning outcomes. The findings will also be used to develop practical guidelines to assist educators in the design of effective and culturally inclusive learning environments within the context of computing education, but with potential applications beyond this disciplinary area.

Finally, the choice of a qualitative research approach should consider the degree of comfort the researcher has with the chosen approach — “is the researcher comfortable with a structured approach or perhaps with a storytelling approach?” (Creswell, 2007, p. 95). Based on these grounds, I decided that ethnography was an appropriate qualitative
research inquiry to provide guidance for this study. In the paragraphs that follow, I discuss the various characteristics of ethnographic studies and how they apply to my own research.

According to Schensul and LeCompte (1999, p.6) an ethnographic study is centred on two goals. On the one hand, the researcher attempts to gain a greater understanding of “sociocultural problems in communities or institutions” and on the other, the researcher uses the outcome of the inquiry “to solve problems or help bring about positive change in institutions or communities” (p. 6). Fetterman (1998, p.1) combines the art and science aspects of ethnographic studies to describe a group or culture. Through this study, I examined the “shared patterns of thinking, behaviour, beliefs and language” (Creswell, 2007, p. 68) international computing students bring to their learning in order to throw some light on best practice teaching in higher education. Schensul and LeCompte (1999, p.9) suggest seven characteristics that mark a study as ethnographic. In the light of these characteristics (see Table 4.3), I justify my choice of ethnography as the approach to this inquiry.

The first characteristic for a study to be marked as ethnography is that it should be conducted in a “natural setting” (Schensul & LeCompte, 1999, p.9). For Fetterman (1998; p.31), the researcher is a fieldworker who through a “naturalistic approach” avoids solicited or measured responses to interventions typical of controlled or artificial settings (Fetterman, 1998). The study was carried out in university classrooms with a blend of online and face-to-face forums for teaching and learning. This setting has been defined as a blended learning environment, a community of inquiry where participants are actively and socially engaged constructing meaningful learning experiences.

The second characteristic relates to the intimate relationship that should exist between the researcher and participants (Schensul & LeCompte, 1999; p.10). It is crucial
the researcher generates good rapport within the community; however, it is also important to maintain a professional distance so that the collected data are not accidentally contaminated (Fetterman, 1998, p.34).

Table 5.3 *Seven Characteristics of an Ethnographic Study* (Adapted from Schensul & LeCompte, 1999)

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>For this study</th>
</tr>
</thead>
<tbody>
<tr>
<td>The ethnographic study should be conducted in a natural setting</td>
<td>The study was carried out in university classrooms with a blend of online and face-to-face forums for teaching and learning</td>
</tr>
<tr>
<td>There should exist an intimate relationship between the researcher and participants</td>
<td>Rapport, empathy, sympathy and cultural awareness</td>
</tr>
<tr>
<td>The ethnographic study should emphasise participants perspective and meanings</td>
<td>Demystify stereotypes about students’ beliefs and perceptions of teaching and learning</td>
</tr>
<tr>
<td>The study should be inductive, interactive and recursive</td>
<td>Problem was formulated, philosophical assumptions spelled out, multiple data sources used and findings discussed</td>
</tr>
<tr>
<td>Use of multiple data sources to substantiate the findings</td>
<td>Semi-structured interviews, electronic text-based data, and field notes from classroom observations, research journal and course-associated data like synopsis, profiles, content documents and students’ assignments</td>
</tr>
<tr>
<td>Framing of human behaviour and beliefs within a socio political and historical context</td>
<td>International education, the development of emerging technologies for learning, Generation Y and recent Australian government educational reforms</td>
</tr>
<tr>
<td>The ethnography study should be culture-centric to interpret findings</td>
<td>Culture identified as quintessential to inform the type of learning as experienced by international computing students in a blended learning environment</td>
</tr>
</tbody>
</table>

The third characteristic as advocated by Schensul and LeCompte is that ethnography should emphasise “participants’ perspective and meanings” (p.12). This study forms part of my personal reflection for the improvement of computing teaching
practices in higher education. As a reflective practitioner, I have hunches about students’ beliefs and perceptions of teaching and learning as well as their limitations and learning needs in a multicultural environment. These stereotypes have been fully documented in the literature review and I must admit they had the potential of being highly influential in my interpretation of and reflection on participants’ multiple voices. Accordingly, I took steps to minimise the risks associated with these prejudices to provide a transparent account of how international computing students learn within the context defined in this study.

The fourth characteristic relates to the inductive, interactive and recursive aspects of qualitative inquiry (p.15). The inductive aspect means that the researcher works from the bottom up; that is to say, after formulating a research problem, a set of interrelated philosophical assumptions are set up and investigated through multiple data sources, results are analysed and conclusions are drawn. This process can be iterated until a greater understanding of the situation is achieved.

The fifth characteristic relates to the use of multiple data sources to substantiate the findings (Schensul & LeCompte, 1999, p.18). The researcher should make use of any and all types of data to enlighten the process of finding the answer to the research questions. Fetterman (1998, p.31) highlights the importance of multiple data sources in the provision of guidance “through the wilderness of personal observations” and in the accurate identification and classification of the “bewildering variety of events and actions that form a social situation” (p.31).

The sixth characteristic relates to the “framing of human behaviour and beliefs within a socio political and historical context” (Schensul & LeCompte, 1999, p.18). This study was contextualised in a complex situation comprising local and international issues
such as the internationalisation of education, the development of emerging technologies for learning, Generation Y and recent Australian government educational reforms.

The final characteristic for a study to be marked as ethnography is that it should “use the concept of culture as a theoretical lens through which to interpret results” (p.9). For Fetterman (1998) “culture is the broadest ethnographic concept” (p.17) and typically encompasses two perspectives, namely materialistic and ideational. The materialistic theoretical lens of culture focuses on “behaviour” whereas the ideational theoretical lens focuses on the “ideas, beliefs and knowledge that characterise a particular group of people”. This is in line with the nature of the study, with culture identified as quintessential and determinant to inform the type of learning and behaviours experienced by a cohort of students in a multicultural blended learning environment.

4.7 Data Collection

In this section, I describe the data collection methods in detail with discussion of the data analysis and representation, validation and reliability, and ethical issues of the project following. Data collection and its related activities are aimed at gathering reliable information to answer preliminary research questions as well as those questions that emerge during the course of the inquiry (Creswell, 2007). In this study, I built redundancy into data collection using multiple data sources. Mingers (2003) argues that the use of multi-methods produces richer and more reliable results and consequently a higher credibility within the research community. Fetterman (1998, p.93) strongly emphasises the importance of triangulation in ethnographic studies by stating that: triangulation “is at the heart of ethnographic validity”. In fact, Schensul and LeCompte (1999, p.131) suggest triangulation or multi-methods as a powerful strategy to confirm or corroborate the validity of information sources. In doing so, the researcher ensures that each research question is answered by more than one data source. Multi-methods also support data set
completeness; that is, if a data set is incomplete, then another one can elucidate further information to make it complete. Another advantage of using triangulation is that it enables the researcher to modify or adapt the interpretation of the situation recursively. Accordingly, in this study I used the following data sources: classroom observations, student and teacher interviews, a personal research journal and electronic data generated from students’ electronic web logs and discussion forum contributions, and collection of course documents.

4.7.1 Description of the Data Sources

In Table 4.4, I define and describe the various forms of data collected in the conduct of this study including electronic text-based data, semi-structured interviews, and field notes from classroom observations, research journal and course-associated data like synopsis, profiles, content documents and students’ assignments.

Table 5.4 Description of Data Sources

<table>
<thead>
<tr>
<th>Forms of Data</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electronic Text - Discussion Forum</td>
<td>Electronic text generated by teachers and students at Site 2</td>
</tr>
<tr>
<td>Electronic Text - Web Log (Blog)</td>
<td>Electronic text generated by teachers and students at Site 1</td>
</tr>
<tr>
<td>Transcripts of interviews</td>
<td>Voices digitally recorded Interview notes</td>
</tr>
<tr>
<td>Field notes</td>
<td>Taken during classroom observations including post-field notes and video data</td>
</tr>
<tr>
<td>Research journal</td>
<td>Reflective notes and general ideas</td>
</tr>
<tr>
<td>Course-associated data</td>
<td>Course synopsis, profiles, content documents and students’ assignments</td>
</tr>
</tbody>
</table>
4.7.1.1 Electronic Text-Based Data

The first source of data consisted of electronic text produced by both student and teacher participants during their interactions with the online component of the blended learning environment. During the term, in accordance with the course learning objectives, students were given various online learning activities for individual and group work. As discussed in Chapter 5–The Settings, there were two sites (Site 1 and 2) in the conduct of this research. At Site 1, student participants were required to maintain an electronic journal (blog) to reflect on their own learning experiences and perceptions of the course.

The use of electronic journals (in the form of blogs) has found its acceptance amongst communities of inquiry to improve students’ learning experiences (see literature review). The use of these learning spaces has been advocated as a very powerful approach to help students build their profile congruent with their professional aspirations. According to Lorenzo and Ittelson (2005), an electronic portfolio promotes the exchange of ideas and feedback between the creator of the portfolio and those who view and interact with it. From a learning perspective, the student’s own and “personal reflection on the work inside an electronic portfolio helps create a meaningful learning experience” (Lorenzo & Ittelson, 2005).

The blog at Site 1 was assessed and based on nine topical questions spread over the last nine weeks of the semester. The lecturer provided a set of structured marking guidelines to promote quality work and ensure each student contributed with the nine expected reflections. He also monitored students’ progress and provided prompt feedback. Figure 4.2 shows an entry logged into one of the participants’ electronic journal. A complete discussion of the blog structure can be found in The Settings, Chapter 5 of this thesis.
Figure 5.2. Example of a students’ electronic journal at Site 1.

At Site 2, students were required to use a discussion forum to promote their engagement with the learning activities initiated in face-to-face forums. As discussed in the literature review, discussions forums have also been promoted as learning spaces for reflective learning and critical thinking anywhere and anytime. There were six discussion forums. Three of them were designed for individual participation where students were asked to challenge or critique at least one of the questions raised by the lectures or fellow classmates during the classes. There was a general discussion forum to discuss general issues arising from the course and two group project related discussion boards. Table 4.5
outlines basic statistical data on the participants over the semester. Of the six forums only the general discussion forum was moderated by the lecturer. The other forums were only monitored to check students’ progress and to prevent language flaming. A complete discussion of the Forums structure can be found in Chapter 5 of this thesis.

Table 5.5 Forums at Site 2

<table>
<thead>
<tr>
<th>Description of Forum</th>
<th>Total Posts</th>
<th>Total participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discussions about Wk7-8</td>
<td>13</td>
<td>9</td>
</tr>
<tr>
<td>Discussions about Wk9-10</td>
<td>43</td>
<td>17</td>
</tr>
<tr>
<td>Discussion about Wk11-12</td>
<td>30</td>
<td>15</td>
</tr>
<tr>
<td>Group project discussion 1</td>
<td>41</td>
<td>16</td>
</tr>
<tr>
<td>Group project discussion 2</td>
<td>155</td>
<td>20</td>
</tr>
<tr>
<td>General discussion</td>
<td>33</td>
<td>12</td>
</tr>
</tbody>
</table>

4.7.1.2 Transcript of Interviews

The second source of data was collected in the middle of the term in the form of individual interviews with both teachers and students. The purpose of these semi-structured interviews was to gather participants’ reflective views of their teaching and learning experiences in a blended learning environment. The identification of potential interviewees was based on the criterion-based selection as recommended by Schensul and LeCompte (1999, p.113). Specifically, I interviewed four teachers responsible for the delivery of the subjects, two at Site 1 and two at Site 2. Decisions about how many sites and how many teachers at each site to include in the study were driven both by the desire to design a degree of diversity in the sample and the practical limitations of the study. Details about each site and the participating teachers and students are given in Chapter 5 – The Settings – together with a rationale for the decisions made. The teachers’ protocol interview, shown in Appendix B, included three major areas, in accord with the three
aspects of the research project: multiculturalism, the use of ICT in higher education and computing education.

Regarding the student participants, it was difficult to ascertain the number and type of students to interview as well as the interview technique to use. Potentially I could have interviewed all students who responded to my invitation to participate in this study; however this would have been impractical because of the magnitude of the sample, participants’ availability, and time constraints. Instead, I used my own judgement and selected what I believed was the most useful sample of students (Babbie, 2004; Patton, 2002). The following is an account of factors I used to justify the purposive sample.

I conducted the interviews in the middle of the semester two; therefore, I had the opportunity to get to know the students and assess the level of engagement and participation in both face-to-face and online forums. I was mainly interested in choosing a purposive sample in terms of engagement in the learning environment consistent with international students’ diverse abilities and learning needs, and in line with the aim of this study. Accordingly, I chose a mix of participants: students who were quiet in the classroom but very active in the discussion forums; students who were active online but not in face-to-face; students who were very active in both environments; and, students who were passive face-to-face and online.

Except for one student, all students were international students. There were nine women and nine men. This equal gender distribution was pure coincidence. Countries of origin included Australia, Oman, Vietnam, Indonesia, China, India, Pakistan, Bangladesh and Kuwait. None of the international students had visited Australia prior to their sojourn. Nine nations under represents the diversity expected in Australian universities. However, since the time this research was conducted, China and India constituted the two countries
with the largest number of international students enrolled in Australian universities and are represented in this sample.

The purposive sample was heterogeneous with some students having many years’ working experience in the field of computing whereas others had just finished their undergraduate programs. Seven students had been living in Australia for less than three months before enrolling in their academic programs. Such a short permanence in the country was highly influential on the way these students experienced their learning, as documented later in the thesis. As expected, owing to their field of study, all these students possessed excellent hardware and software skills. A more comprehensive description of the purposive sample can be found in Chapter 5–The Settings.

While acknowledging the advantages of focus group interviews, such as rich interaction, participants’ confidence and time saving, Creswell (2007) also contends that one of the challenges of focus groups as an interview technique is the control of individuals who may dominate the interaction and dynamics of the conversation. For this study, I chose the one-on-one interview technique over the group interview technique because the group of students was multicultural, with some students being more articulate, dominant and less shy than others. The interviews contained a wide range of open-ended questions linked to the research question and again structured around the three main themes of the research: multiculturalism, the use of ICT in higher education and computing education. The student interview protocol is shown in Appendix A. Both teacher and student interviews were audio recorded (with note taking as a backup) and transcribed in preparation for data content analysis.
4.7.1.3 Participant Observations

Participant observations give the researcher the opportunity to crosscheck data for the production of rich and detailed descriptions and explanations of the themes emerging during the data analysis process (Marshall & Rossman, 1995; Schmuck, 1997). Accordingly, I used observations as the third source of data to be analysed in the triangulation process. They were conducted to record reflective notes and descriptions of students’ face-to-face classroom activities and behaviours, stimulate personal views of participants in interviews, and record events such as student consultations and class participation. The use of observations was also instrumental in the process of selecting the purposive sample for the student interviews.

Appendix C shows a narrative created to reconstruct the observations. In doing so, I used contextual information (e.g. date, number of students present, purpose, type of interaction and reflections), general descriptions and my interpretations of the field notes. Observing the students, I gained insights about their changing behaviour within a multicultural environment. There were situations where they engaged spontaneously in face-to-face class discussions with little teacher intervention, whereas on other occasions the teacher’s intervention was necessary, not only to stimulate the discussions, but also to maintain them. This importance of the role of the teacher was also observed in the virtual learning space where the teaching presence was essential for the moderation and facilitation of the online learning activities. I also observed how in a face-to-face situation, some students sat very quietly, not participating in the discussions; however, their behaviour changed once the discussions continued online where they appeared to be keen to engage in highly stimulating and interactive discussions.

In retrospect, the use of observations was very helpful, but not without challenges. Sometimes I felt like an intruder, invading the privacy of the classroom even though I
took precautions of being as inconspicuous as possible by sitting quietly in the back of the room, out of students’ line of sight and not intervening in the discussions at all. This was particularly problematic during the video recording of the observations which involved the manipulation of the video camera, tripod and memory exchange. In this regard, I put the video camera in a quiet corner behind the students from where I could get a wide view of the teacher, whiteboard and the stage. To minimise the equipment noise, I used a set of memory sticks and batteries long enough to last for the duration of the class, video recording the whole session from the beginning up to the end as a single shot.

I must admit the propensity for bias in collecting data of my interest and ignoring rich cultural and social data which I might have judged as not relevant to answering my research questions. To alleviate this problem I designed a holistic approach or structured procedure to observe, document and interpret my observations (Schensul & LeCompte, 1999). Before the actual observation, and guided by the research question (DeWalt & DeWalt, 2011; Merriam, 1998), I planned a things-to-do list which included participants to observe, what to observe, when and the reason for that observation. This preplanning activity worked relatively well, but not always. Take the case for example when students from the same socio-cultural background were engaged in conversations using their own native language rather than the recommended language of instruction, that is, English. Initially, I did not consider this relevant to the study, but now in hindsight I recognise that it was a missed opportunity to gain a greater understanding of the way this cohort of students approach learning.

In the light of Whyte (1979), who emphasises the relationship between researchers and their informants, I always had the positive attitude of seeing the observed participants not as simple subjects for data collection but as collaborative researchers, within the
parameters articulated and approved by the university Human Research Ethics Committee.

I used additional data sources such as my own research journal, subject outlines, profiles, content and accreditation documents, and students’ assignments, to investigate the relationship and links between students’ perceptions of the subject and the actual learning outcomes, course content and students’ participation in the course.

4.8 Establishing the Validation and Reliability

The most distinguishing factor of a qualitative study is associated with the applicability and credibility of the findings as judged by examiners, reviewers and editorial boards. As stated by Klein and Myers (1999), the main challenge facing researchers is to convince the audience about the trustworthiness of a study’s findings (Klein & Myers, 1999) which is problematic when considering the many philosophical assumptions or perspectives that exist to determine “what constitutes good interpretation in qualitative research” (Lincoln & Denzin, 2000, p. 871). As discussed, the interpretive paradigm was chosen to guide the proposed study and rather than defending its validity using “quantitative terms” (Creswell, 2007, p.202), I used the standards for naturalistic inquiry advocated by Lincoln and Guba (1985). They replace the positivist or conventional terms of internal validation, external validation, repeatability and objectivity by qualitative terms such as credibility, transferability, dependability and confirmability (Lincoln & Guba, 1985). The following is a description of these qualitative terms and the way I addressed them for trustworthiness, including what I did and the limitations encountered.

The conventional term “internal validity” seeks to establish a one-to-one relationship between the nature of reality and the findings, that is to say, a single objective reality. In qualitative research, this term is replaced by “credibility” where the goal is to
establish a compatible description between the multiple interpretations of the phenomena as seen by the participants and those interpretations as attributed to them by the study (Erlandson, 1993). Evidence of credibility could be provided by various strategies summarised by Creswell (2007) as:

- prolonged engagement and persistent observation in the natural setting, building trust with participants and checking for misinformation,
- use of multiple and different sources, methods and theories (triangulation)
- looking for external check of the study through peer reviews or debriefings,
- asking participants to check the accuracy and credibility of the account,
- refining working hypotheses as the study goes,
- clarifying researcher bias, prejudices and orientations that could have affected the interpretation and approach to the inquiry (Creswell, 2007, p. 208).

The conventional term “external validity” looks into the applicability of the findings to other contexts or settings (Lincoln & Guba, 1985). This term is replaced by “transferability” that acknowledges true generalisations are not possible in interpretive studies, and that it is up to the reader to apply the findings in another context with the implication that the responsibility of establishing transferability of the study is left to the reader and not to the researcher.

In conventional inquiry, the term “repeatability” means that findings can be replicated using the same method in equivalent contexts. In terms of interpretivist inquiry, this term is replaced by “dependability” to highlight the importance of multiple data sources and that findings are “subject to change and instability” (Creswell 2007, p.204). In interpretivist studies, confirmability is preferred to objectivity. In this case there should be a confirmable process to establish the value of the data. Evidence of dependability and confirmability might be provided through an auditing process to track and explain
changes in methodology and through an adequate trail for the data analysis to be traced (Lincoln and Guba, 1985).

As a qualitative research study, I aimed for trustworthiness using the standards for naturalistic inquiry described above. According to Fetterman (1998, p.46), the prolonged daily interactions working with people is what validates ethnographic studies. In this study, credibility was achieved through prolonged engagement and persistent observations in the natural setting. During the semester term, I conducted seven two-hour observations at Site 1 and four three-hour observations at Site 2 building trust and rapport with participants. I had the opportunity to address this cohort of students in a plain and respectful language to explain the nature of the study and the value of their participation. Moreover, throughout this discussion, I have emphasised the importance and practice of multiple and different forms of data, the quality control of the collected data directly from the participants and the use of peer reviews from colleagues and research supervisors. I used a variety of data sources including reflective journals, classroom observations, semi-structured interviews, and the recording and collection of relevant documents. I asked, participants, particularly teacher participants, to check the accuracy and credibility of the account after transcription and analysis. Finally, I have provided clear statements about my own perspective on international education, highly exposed to prejudices and biases, which to some extent could have affected my interpretations of participants’ voices.

According to Lincoln and Guba (1985), rich and thick descriptions of participants and setting can make a study “transferable”. In this regard, transferability of the findings to another context has been attempted through a rich and thick description at the end of this thesis. In that section, I aim to share my experiences with the reader about how and what international computing students learn within a natural setting of higher education where ICT is organic to the learning environment.
Dependability and confirmability have been facilitated by tracking changes in my understanding and interpretations of how international students experience the learning process and through a careful mapping of the data analysis processes. Tables, interview transcripts and Nvivo coding have been clearly documented.

4.9 Ethical issues

Having established and justified the rationale of the approach to inquiry, the last critical consideration for a qualitative researcher is how to face the many ethical issues that emerge during the data collection and analysis and dissemination of the findings (Creswell 2007).

Specifically in the field of education, it is essential to protect student participants against unacceptable demands and pressures that could arise from academic or administrative staff. In Australia, principles underpinning ethical educational research are well established and the Code of Ethics is promulgated by the Australian Association for Research in Education (AARE). This Code of Ethics is definitive and encompasses four basic principles (Bibby, 1997):

1. The consequences of a piece of research, including the effects on the participants and the social consequences of its publication and application must enhance the general welfare.

2. Researchers should be aware of the variety of human goods and the variety of views on the good life, and the complex relation of education with these. They should recognise that educational research is an ethical matter, and that its purpose should be the development of human good.
3. No risk of significant harm to an individual is permissible unless either that harm is remedied or the person is of age and has given informed consent to the risk. Public benefit, however great, is insufficient justification.

4. Respect for the dignity and worth of persons and the welfare of students, research participants, and the public generally shall take precedence over self-interest of researchers, or the interests of employers, clients, colleagues or groups (Bibby, 1997).

In the light of ethical principles promulgated by the AARE Code of Ethics, I anticipated the development of many ethical issues derived from this complex study. Following is a list of identified potential ethical issues and the way I mitigated their impact in the study:

1. The coercion of students to act as informants - The field of education is characterised by a setting where teachers could potentially exert a great influence over their students. In some cultures this fact goes beyond the normal teacher-student relationship, with teachers even considered as directly responsible for students' success. The respect students have for a teacher is very profound and can be part of their cultures. This study was conducted in multicultural natural settings; therefore care was exercised in the process of inviting students to participate in it. To avoid coercion of students to act as informants, I was not involved in the teaching or assessing students participating in the study and my invitation to participate was handed to them by their respective teachers.

2. Plain language statements were used to communicate the voluntary nature of participation and the fact that they could withdraw their participation at any time.

3. Sensitive data collected from electronic sources – I recognise that some of the information collected electronically can be sensitive. I made sure to keep that information confidential by being the only custodian of the archives.
4. Coercion over junior academic staff – I exercised care in the selection of teachers to interview, particularly with two young teachers who were less experienced and more junior than me. It is worth noting that I played no part in the supervision or review of these teachers’ work. I made it clear to them that there was no obligation to participate.

5. Assignments analysis – I used assessed assignments of consenting participants as part of data content analysis, but under no circumstances I was involved in assessing assignments at all.

6. Field notes and observations in particular for publication of findings – I acknowledge that observations are intrusive in nature; however, they were essential to gain a deep insight into the problem under investigation. The international education aspect of this study has enabled me to be aware of commonly ascribed stereotypes and prejudices; therefore, I have made a conscious effort to avoid such constructions in my note taking. I ensured my reported reflection did not denigrate any of the student participants in the study.

7. Participants’ identification – Participants remained anonymous through the use of pseudonyms or codes in the data analysis. These pseudonyms will be used in any subsequent reporting or publication.

8. Interviews – Acknowledging the cultural sensitivity aspect of this research, I made sure that during the interviews, participants felt comfortable and relaxed before answering the questions. I made it clear to them that they did not have to answer the question if they believed that sensitive information was to be disclosed.

9. Quality of questions congruent with cultural sensitivity – I ensured my questions were culturally appropriate. The interview questions were reviewed by peers and academic colleagues.

10. Stereotyping (English language and critical thinking amongst others) – I acknowledge that my hunches in relation to students’ perceptions and attitudes to learning may had been biased; however, the research processes, as consistent with
the aims of the study and as informed by the existing literature, sought to question stereotypical assumptions.

11. Participants not familiar with interviews – I exercised care to prepare simple, plain and understandable open-ended questions I got them reviewed by peers and supervisors before using them.

12. Researcher lacking experience interviewing – I mitigated this limitation by following interview protocols as suggested by experienced researchers.

13. Data collected were kept confidential and stored according to Deakin University guidelines.

14. Sponsorship (rewarding the participation with a token) – These days, it is becoming more difficult to get participants to be involved in research and it is common practice to reward participation by presenting participants with a small token (e.g. bookmark, certificate of appreciation or movie voucher) as a gesture of gratitude for their participation and also as an acknowledgement of their valuable time and effort. Other than a sincere written thankyou note expressing my gratitude, I did not offer any reward to the participants. In terms of what the participants might have gained through the participation in this study, I can only assume that in the case of student participants, they were given an opportunity to reflect on their experience, which may have had a positive effect on their learning through reflection and increased metacognitive awareness. In the case of teacher participants, I assume they may well have accrued similar benefits through the opportunity to discuss their work with me.

In summary, this qualitative research study used a wide range of qualitative data sources that did not represent any harm to participants. Potential interviewees were identified based on purposeful sampling procedures. I used peer reviewed interview protocols (Appendix A and B) and consent forms (Appendix D) were obtained from
participants at the site before the interviews started. These consent forms were approved by the Ethics committee before use. I wrote a Plain Language Statement (PLS) to explain the purpose of the study to participants to reassure them that they were entitled to withdraw the study at any time (Appendix D). Anonymity was preserved through the use of pseudonyms or codes. Finally, the study was conducted with permission from the Research Ethics Committee of the two participating universities.

4.10 Summary

In this chapter, I outlined the research design and the methodology in the conduct of this study. The conceptualisation of the research design emerged from a careful and methodical analysis of the research question and the aims of the study, mapping out the design decisions I made at various levels of the research process. Central to these decisions were my personal background and philosophical assumptions (ontology, epistemology, axiology, rhetoric, methodology) that in the case of ontology (the nature of reality) relates to my perspective of what constitutes teaching and learning in the context of international education. Taking the epistemological assumption, I was aware of certain stereotypes, highly influential in my perception and beliefs about this cohort of students. The research design helped me to perceive this as a problem and to act upon it by setting the required processes to minimise the objective separateness between what students know and what I know. The research design also outlines the axiological assumptions concerning the explicit values of this study and the values that as a practitioner and researcher I bring to the study. In this respect, I made clear the cultural sensitivity aspect of the context and the wide range of students’ spiritual and aesthetical values. With the rhetorical assumption, I highlighted the importance of the language that identifies the research both literary and personally. I expressed my views that both the language of this
qualitative research and its identity may have been influenced by my NESB and my previous hard science-based knowledge and research.

In the chapter, I provided a comparative analysis between the two major competing approaches that traditionally have framed research into teaching and learning in higher education: positivist and interpretive paradigms. Based on this analysis and given the subjective and interpretive characteristics of this educational environment, I chose social constructivism as the most appropriate interpretivist philosophy to guide the conduct of this qualitative research.

In the light of Denzin and Lincoln’s (2005) definition of qualitative research, I found a number of compelling reasons to conduct qualitative research in this study. The learning was situated in a natural setting where I was side-by-side actively interacting with both students and teacher participants, collecting data from multiple sources and drawing conclusions about what teachers and students meant by teaching and learning respectively.

Based on Creswell’s (2007) five criteria for the choice of a qualitative research approach, I opted for an ethnographic approach to provide guidance for this study. This decision was justified in the light of Schensul and LeCompte’s (1999) seven characteristics that mark a study as ethnographic.

In this study, I built redundancy into data collection using multiple data sources including classroom observations, student and teacher interviews, a personal research journal and electronic data generated from students’ electronic web logs and discussion forum contributions, and collection of course documents.

With reference to the applicability and credibility of the findings of this study, rather than defending its validity using quantitative terms, I used the standards for
naturalistic inquiry advocated by Lincoln and Guba (1985), namely credibility, transferability, dependability and confirmability.

Finally, I addressed the many ethical issues that emerged during the data collection and analysis and dissemination of the findings using the AARE’s four principles to protect student participants against unacceptable demands and pressures that could arise from academic or administrative staff.

In the next chapter, I provide a detailed description of the context of the study, including information about the two university settings, the subjects and the profile of student and teacher participants.
Chapter 6 The Settings

5.1 Introduction

This study was undertaken at two different university sites. Multiple sites allowed for comparing and contrasting findings from different contexts and for the testing of conclusions made at one site against the context of another site that was qualitatively different. The first site (henceforth referred to as Site 1) was located in one of the international campuses of a multi-campus medium-sized regional Australian university, and the second site (henceforth referred to as Site 2) was located in a large metropolitan Australian university. I chose these sites for practical reasons and because of their contrasting characteristics. Site 1 was located in the institution where I work and Site 2 was within walking distance of my workplace. In addition, Site 1’s student body comprised international students only, whereas Site 2 was located in a university that catered mainly for domestic students with a relatively smaller population of international students. It is worth noting that at the multi-campus medium-sized regional Australian University, Site 1, all resource materials were created, managed and coordinated at a separate central location with all academic staff located at the international campuses teaching the subject content according to strict guidelines, recommendations and standards established by the central body. In essence, the international campus teachers were not responsible for the design of the blended environment. In contrast, at Site 2, teachers had full subject ownership and were responsible for the design and implementation of the blended learning environments. I chose subjects or units of study within these sites according to the discipline areas of computing education which constitute the focus of this research, focusing on two subjects from each site in order to provide a diversity of contexts, allowing for comparisons and the testing of conclusions across contexts. More specifically, these subjects formed part of postgraduate university
degrees in the field of information systems and information technology. In this study, the term subject is used interchangeably with other similar terms such as course or unit of study.

In this chapter, in order to provide information about the context of the study, I describe these two university settings, providing information about the subjects and the profile of student and teacher participants. These descriptions are based on data collected during the project and therefore represent a first step in the reduction and presentation of data. The information included here is that which I have determined will assist the reader in understanding the similarities and differences between the two sites as relevant to the research questions and in making sense of the thematic chapters that follow. In this way, the descriptions and summaries included here provide a context for the thematic chapters.

5.2 Site 1
As an academic and researcher at Site 1, I am familiar with degrees and subjects offered by this university; therefore, it was not difficult to identify a group of subjects and participants with the characteristics of interest to the study. Rather than choosing a single subject, I decided to consider two qualitatively different subjects to allow for comparisons and the testing of conclusions within the context of this site. The first subject under consideration focuses on systems analysis and design (SAD) and the second subject focuses on security in the network (SecNet). Both SAD and SecNet used the same learning management system (LMS) for assignment management, email communication, assignment submission, lecture notes, discussion forums and other online resources such as recommended readings, tutorial exercises and study schedules. The following is a detailed description of Site 1’s LMS (Learning Management System), and each subject’s learning goals, learning resources, blended learning design, and methods of assessment.
5.2.1 Site 1’s LMS

The LMS used at Site 1 was a purpose-built system developed in 1996 as a customised web-based system to provide resources for students enrolled in distance education at this site. Due to the university operational expansion, from mid-2001 through late 2003, there was a need to modify the LMS to include online academic and administrative support services. Table 5.1 shows a brief description Site 1’s LMS features.

Table 6.1 Outline of Site 1’s LMS Features

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
<th>Feature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information distribution</td>
<td>Distribution, value-added conversion and creation of information by all parties</td>
<td>Authentication, Access control, File transfer, Versioning, Backups/restores, Usage tracking, Integration with organisational systems</td>
</tr>
<tr>
<td>Communication</td>
<td>Support for one-to-one, one-to-many, many-to-one and many-to-many communication and collaboration</td>
<td>Discussion forums, discussion lists (mailing lists), Chat rooms, Blogs, RSS</td>
</tr>
<tr>
<td>Assessment</td>
<td>Methods for evaluating the progress and experience of students</td>
<td>Online quizzes, Survey tool, Online assignment submission/management, Assessment database, Peer review, Group management, Course barometers</td>
</tr>
<tr>
<td>Management</td>
<td>The clerical, administrative and support tasks necessary to ensure that e-learning operates efficiently</td>
<td>External integration, Temporary enrolment, Results processing, Review of grade processing, Teaching responsibilities database, &quot;Flexible&quot; mirrors, Student impersonation, Timetable</td>
</tr>
<tr>
<td>Design</td>
<td>Analysing, planning and implementing specific approaches to e-learning</td>
<td>Minimum course sites, Site skeletons, Customisable appearance</td>
</tr>
</tbody>
</table>

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Site 1's LMS provided a range of standard features to support both online and conventional face-to-face teaching and learning environments. Central to Site 1's LMS was the synchronous and asynchronous communicative media to facilitate constructivist learning approaches, knowledge creation and sharing, resources and information distribution, flexible group organization, and assessment management. As a customized and purpose-built LMS, Site 1's LMS was neither a commercial product nor built around the IMS/GLC (Instructional Management Systems, Global Learning Consortium) standards. To some extent this lack of standardization generated a number of technical issues that affected students' participation and interaction with the online learning activities. These issues will be reported in the findings section of this thesis.

5.2.2 Subject Description for SAD - Site 1

SAD was a postgraduate core subject for students wishing to extend their knowledge and skills in the field of information technology. SAD was worth eight credit points in a 96 credit point program. SAD had no prerequisites or co-requisites. A total of fifty-two on-campus students enrolled in the subject under the management and administration of a full-time, permanent member of the academic staff and teacher participant (pseudonym = Richard). Students could contact the lecturer in charge of the subject via direct phone, e-mail, face-to-face by appointment or dropping into his office (Richard, Site 1, teacher interview excerpt). According to the SAD Subject Profile available from its website (SAD Subject Profile, 2008); the aim of this subject was to develop a systematic understanding of the techniques and practicalities of the information systems development process. Through case studies and practical examples, students studied the four phases of the systems development life cycle (SDLC), consisting of: requirements elicitation, systems proposal development, systems design, and systems implementation. Students also learned how to apply the key principles to the effective implementation of system
development problems within business organisations. The expected learning outcomes of this subject had two aspects. The first aspect related to the specific technical skills gained through the study of the subject like concepts and terminology of information systems, tools, techniques and methods used to analyse, design, develop and document information systems satisfactorily and the production of proper requirement specifications. The second aspect related to the development of generic skills needed in complex business situations, including written and verbal communication, problem solving, organisation, management and high-order cognitive skills amongst others. Students enrolled in SAD were required to have an Internet connection to access the students’ portal as a gateway to the LMS containing online resources like slides covered in the face-to-face lectures, assignment requirements, case studies, tutorial exercises, extra readings, subject updates, announcements, examination advice and discussion forums. Students were required to attend a two-hour lecture, followed by a two-hour tutorial class each week, for twelve weeks. In addition to face-to-face classes, students were required to devote a minimum additional study time of about ten hours per week to reading, preparing classes, completing assignments and accessing the computer-mediated learning space specifically designed for discussing issues initiated in class. In addition, and as part of the assessment requirements, students were required to use a separate Blog as a learning space to reflect on their learning experience.

The subject incorporated a set of Web-resources accessible via the LMS, including teaching and learning materials and assessment tasks. Blogs were integral to the subject and formed part of the formal assessment. They were introduced as a mechanism for students to reflect on the work they did during the semester of study. Prior to the Blog implementation, the designers of the subject at the central body of this multi-campus university faced a wide array of subject issues like high failure rates, widespread
plagiarism, insufficient feedback to students and lack of students’ progress monitoring linked to unsatisfactory students outcomes. To address these issues, the initial approach was the introduction of an assignment task, where students were required to maintain a reflective diary and to submit it at the end of the semester as a Word document. Students were provided with a set of questions to assist them in their journal writing; however, upon review, the questions were considered to be too generic and not closely linked to the learning objectives of the subject. As it was structured, academic staff could not monitor the progress of the assignment. Regrettfully students perceived this assignment as an extra burden without any learning value, which they completed at the end of the semester, defeating the purpose of reflective journals. The assignment task was redesigned including three major modifications. The first modification was to change the format of the reflective journal from a Word document to a Blog. The second modification entailed the development of nine topical questions spread over the semester. The third change dealt with the introduction of a more structured marking criteria to encourage students’ participation. Through this redesign, the designers aimed to ensure students reflected on their learning continuously over the semester and not only at the end of it, to better enable the monitoring of students’ progress, to reduce the incidence of plagiarism issues and to reduce academic staff workload. It is worth noting that the Blog was configured as an external plug-in (not fully configured within the LMS), so students had to register before using it.

The assessment of SAD was a combination of assignments (60%) and a final examination paper (40%). Students had to score at least 50% of total marks available in the final examination paper and at least 50% overall to successfully complete the subject. They also had to submit every piece of assessment to achieve a grade of Pass of higher in the subject (SAD Subject Profile, 2008). The following information on the structure of
SAD assignments are excerpts extracted from the document containing the assignment requirements available to all students from the LMS.

All assignments were individual tasks to be submitted online using the LMS. The first assignment had a weighting of 20% and consisted of a case study where students had to simulate the real world of a consultant systems analyst. Under these circumstances, they were supposed to analyse the business requirements, process model and specification for a small information system project. Students were provided with a collection of resources and pointers to help them complete this assignment. Additionally, there were two document templates students had to use to prepare the business requirements scoping and process models. For the business requirements scoping document, students had to use a fact finding technique (SAD Subject Profile, 2008) to develop a thorough understanding of the existing system. Then students were required to use this understanding to identify at least one problem or deficiency and provide sound recommendations to improve it. Finally within this document, students had to identify all of the requirements that should be built into the new system. The process model document included the process modelling and the data entry dictionaries for the new system. For the process modelling students were required to produce a context data flow diagram (DFD) and at least the level 0 DFD. A data flow diagram is a graphic representation of the flow of data through business functions or processes, used by business analysts for the visualisation of data processing (Bruza & van der Weide, 1989). According to Hoffer, Prescott and Topi (2009), a data dictionary is a “repository of information about a database that documents data elements of a database” (p. 673). For the data dictionary task, they were to develop two data dictionary entries for any two processes of their choice from the level 0 DFD. There were detailed instructions on how to use the templates provided with the
assignment. The marking guidelines articulated the weight or mark associated with each assignment task (SAD Subject Profile, 2008).

The second assignment had a weighting of 30% and drew upon the same case study as the first assignment (SAD Subject Profile, 2008). Similar to the first assignment, students were required to act as consultant systems analysts and perform the data design for the proposed solution in line with the requirements specified in the first assignment. A second component of this assignment required students to research and write an academic essay comparing and contrasting the traditional and object-oriented approaches to systems development. As for the first assignment, sample solutions for previous assignments, academic essay templates and writing resources were made available to help students complete this assignment (SAD Subject Profile, 2008).

The third assignment had a weighting of 10% where students had to maintain a reflective journal or Blog (as described earlier) and post entries in response to a set of weekly questions. Specifically, for every week, starting on week 2 and during nine weeks, students were required to post only one Blog entry, answering questions related to the subject matter discussed during the face-to-face instruction (SAD Subject Profile, 2008).

The total marks allocated for the final examination paper was equivalent to 40% of the overall marks. It consisted of ten short-answer questions with each question worth four marks. The exam was two hours long, with 15 minutes of perusal time. It was a closed-book exam where students were only allowed to take into the examination room an English translation dictionary and writing implements (SAD Subject Profile, 2008).

5.2.3 Subject Description for SecNet- Site 1

SecNet was an advanced postgraduate elective subject at Site 1, with two prerequisites. SecNet was worth eight credit points in a 96 credit point program. The aim of this subject was to equip students with grounding in secure technology. The subject had a broad scope
including important aspects of information security, for example: authentication, TCP/IP, cryptographic and security protocols and systems, remote access technologies, email and web security, firewalls, intrusion detection and forensic computing amongst others (SecNet Subject Profile, 2008).

Forty-eight on-campus students enrolled in the subject under the management and administration of a sessional member of the academic staff and teacher participant (pseudonym = Georgina). The subject was formally assessed by two assignments - worth 20% each - and a 60% final examination. Students had to score at least 50% in the final examination and at least 50% overall to successfully complete the course. Assignments had to be submitted online using the LMS during Week 6 and 10 of instruction. The final exam included questions from all topics discussed during the entire semester. It was a two hour duration closed book exam (SecNet Subject Profile, 2008). The LMS was used to manage the administrative tasks inherent to a normal teaching and learning relationship. Students accessed the LMS via a student portal to download lecture slides and selected readings, submit assignments, and undertake online tutorials. The lecturer used the LMS to mark assignments, upload results and graded assignments, and check for academic misconduct (plagiarism). The LMS communication component was used to provide announcements to students, manage mailing lists and to promote online discussions via the discussion forums. In addition to the online activities, the subject encompassed a set of practical exercises through which students gained the competencies demanded by the IT industry, vendors and manufacturers. Students accessed handouts, lecture notes, tutorial and practical exercises from the LMS (SecNet Subject Profile, 2008). Additional materials were a set of selected readings students were able to access through the library’s online resources. These reading were used to complement the theory and principles discussed in class. The resource materials also included a pack including two textbooks.
and an electronic resource called Laboratory Simulator (LabSim™). Given the sensitive nature of the subject in dealing with information security issues, the university had not been keen in building a dedicated and isolated network for students to undertake their practical exercises. In response to this limitation, the course designers introduced the LabSim™ (Georgina, Site 1, teacher interview excerpt) as simulation where students could experiment with real world problems in a virtual environment. The LabSim™ acted as a virtual tutor guiding the students through complex and technical configurations of secured networks. The system could challenge the student to conduct tasks that replicated the real world providing immediate feedback after the completion of the task.

The discussion forum was not fully configured within the LMS. Students had to log in to access it before they could start the interactions. The forum was used on an ad-hoc basis (not compulsory), purely to stimulate discussions and foster collaboration spontaneously. A week before each lecture, the lecturer posted a question related to that week’s topic in preparation to the face-to-face discussion. Alternatively, instead of the weekly question, the lecturer posted a question to extend the discussion around something that was not fully discussed in class. Sometimes the discussions revolved around assignment-related issues and in other situations they grew up spontaneously as part of students’ learning needs. Student participation in the discussion forum was not taken into account in the formal assessment of the subject.

The assignments were designed to blend theory with practice where students were asked to report on a series of simulations implemented via the LabSim™ and to conduct some practical tasks based on the tutorial exercises (Georgina, Site 1, teacher interview excerpt). Student research into information security related issues was also part of this formal assessment. The first assignment (20%, Week 6 submission) consisted of five questions students had to submit online via the LMS (SecNet Subject Profile, 2008). The
first question of the assignment was used to assess students’ work with the *LabSim™*. For every week they had to give evidence of the completion of certain tasks by submitting a weekly progress report. There were a total of 26 simulations tasks. Figure 5.1 shows an example of a progress report for an imaginary student named James Smith (SecNet Subject Profile, 2008). For every task, the report shows the number of student attempts, the time spent on each attempt and the percentage score for that attempt.

![Report for James Smith](image)

*Figure 6.1. LabSim™ progress report example.*

The second question consisted of a confidentiality related project where students had to demonstrate the concept of password guessing using the brute force and dictionary algorithms (SecNet Subject Profile, 2008). For the third question students had to provide evidence of the installation of the network protocol analyser called Ethereal™ software in their home computers and the completion of a project based on the tutorial exercises.
explained above in the learning resources section (SecNet Subject Profile, 2008). In addition to the classroom interactions, students used the discussion forum as a medium to share and discuss many issues encountered as a result of this task. Question four related to the configuration of a firewall using Network Address Translation (NAT) and Port Address Translation (PAT) concepts (Ciampa, 2008) and, finally, question five was a case study to test students’ analytical skills in the event of a network security attack (SecNet Subject Profile, 2008).

The second assignment (20%, Week 10 submission) also consisted of five questions students had to submit online via the LMS (SecNet Subject Profile, 2008). The first question related to the use of the LabSim™ in a similar way as in assignment one. This time students needed to complete and document 16 simulations. For the second question students had to investigate the configuration of access control lists using the Cisco™ Internetworking Operating System. The third question was a case study, again intended to assess students’ analytical skills in the event of a network attack. Question four focused on data recovering techniques using the Grand Father, Father, Son backup strategy (Ciampa, 2008) and, finally, in question five, students were tested in the use of a free implementation of the Open Pretty Good Privacy standard (Koch, 2007). This assignment was a practical exercise that involved students and teachers exchanging secure information using public key encryption techniques.

The final exam was worth 60% of the total assessment in three parts (SecNet Subject Profile, 2008). Part A consisted of 15 True / False questions that tested students understanding (a mark each question). These questions resembled the technical exams used by IT corporations such as Cisco™ and Microsoft™ to test IT students who are expecting to get their worldwide accreditation certificates. Part B of the exam consisted of ten fill-in-the blank questions (1.5 marks each), again a very popular test format in the
accreditation of Cisco\textsuperscript{TM} and Microsoft\textsuperscript{TM} certificates. Finally, Part B (30 marks) tested students’ understanding with challenging questions requiring short answers (SecNet Subject Profile, 2008). Technical exam certificates have become the standard for IT corporations recruiting university IT students and have therefore become very influential in relation to university assessment practices (Ciampa, 2008).

5.2.4 Site 1 Participants

In this section, I describe the participants at Site 1, including student demographic data and background information collected through the student consent forms. The first part is dedicated to describing the student participants, followed by the teacher participants.

It is worth noting that this study was not intended to be based on a random selection of participants, but instead was looking at what was considered an innovative area of teaching and learning and, as such, the self-selection of enthusiastic teachers who were already involved in the implementation of blended approaches and who expressed an interest in this type of teaching fit well with the research design.

5.2.4.1 Student Participants – Site 1

The Site 1 student participants included twelve students. They had diverse educational backgrounds, with different residency time in the country. Four of these students undertook SAD and eight SecNet. Table 5.2 outlines students’ background information collected through the student consent forms. Where information was not provided, it has been entered as N/A. From the second column in the table, it can be seen that prior to the commencement of the semester term, Site 1’s students had been residing in Australia for a period of between 3 months and 18 months, with half of them for less than a year and five students for only three months. Similarly, from the first column of the table, the four students who undertook SecNet were: Samuel, Jacquie, Manuel and Bernie; and the eight
students who studied SAD were: Kathy, Katerina, Aurora, Gabrielle, Patricia, Peter, Vert and Fred. Of the twelve student participants, six were men and six women including nationalities from Pakistan, China, Bangladesh, Kuwait and India. The table also illustrates the heterogeneity of the sample in relation to degrees held and work experience, with six students already having a postgraduate degree and three with more than two years’ experience in the field of IT.

**Table 6.2 Background and Experience of the Students from Site 1**

<table>
<thead>
<tr>
<th>Pseudo - Country</th>
<th>Time in Australia</th>
<th>Highest Degree held</th>
<th>Experience</th>
<th>Skills (Expert-High-Medium-Low)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Samuel - Pakistan</td>
<td>Eight months</td>
<td>Diploma of Information Systems Management</td>
<td>Five years with the Ministry of Defence Pakistan</td>
<td>Expert using MS Office, Medium using forums, Expert writing academic arguments in English, Low team work and project management abilities.</td>
</tr>
<tr>
<td>Jacque - China</td>
<td>18 months</td>
<td>Master of Telecommunications Engineering</td>
<td>One year in retailing and management.</td>
<td>Expert using MS Office, forums and Blogs, Expert writing academic arguments in English, High team work and project management abilities.</td>
</tr>
<tr>
<td>Manuel - Bangladesh</td>
<td>18 months</td>
<td>Diploma of Information Systems Management</td>
<td>No experience</td>
<td>Expert using MS Office, Medium using forums, Expert writing academic arguments in English, Low team work and project management abilities.</td>
</tr>
<tr>
<td>Bernie - Kuwait</td>
<td>Nine months</td>
<td>Diploma in Computer Hardware and Networks</td>
<td>Two and a half years as a Systems Engineer</td>
<td>Expert using MS Office, forums and Blogs, Expert writing academic arguments in English, Low team work and project management abilities.</td>
</tr>
<tr>
<td>Kathy - Kuwait</td>
<td>One year</td>
<td>Diploma in Computer Applications</td>
<td>Eight years as a Systems Engineer</td>
<td>Expert using MS Office and forums, Expert writing academic arguments in English, High team work and project management abilities.</td>
</tr>
<tr>
<td>Name</td>
<td>Country</td>
<td>Duration</td>
<td>Qualification</td>
<td>Experience</td>
</tr>
<tr>
<td>----------</td>
<td>---------</td>
<td>-----------</td>
<td>----------------------------------------</td>
<td>------------</td>
</tr>
<tr>
<td>Katerina</td>
<td>India</td>
<td>One year</td>
<td>Master in Computer Applications</td>
<td>No experience</td>
</tr>
<tr>
<td>Aurora</td>
<td>India</td>
<td>Three months</td>
<td>Master of Computer Science</td>
<td>No experience</td>
</tr>
<tr>
<td>Gabrielle</td>
<td>India</td>
<td>Three months</td>
<td>Bachelor of Computer Applications</td>
<td>No experience</td>
</tr>
<tr>
<td>Patricia</td>
<td>India</td>
<td>Three months</td>
<td>Masters in Computer Sciences</td>
<td>No experience</td>
</tr>
<tr>
<td>Peter</td>
<td>India</td>
<td>18 months</td>
<td>Master of Business in IT</td>
<td>Retail industry (13 months)</td>
</tr>
<tr>
<td>Vert</td>
<td>India</td>
<td>Three months</td>
<td>Bachelor of Computer Applications</td>
<td>No experience</td>
</tr>
<tr>
<td>Fred</td>
<td>India</td>
<td>Three months</td>
<td>Bachelor of Computer Applications</td>
<td>No experience</td>
</tr>
</tbody>
</table>

The table also shows relevant background data about the skills Site 1’s students brought to learning. All students who provided information about their skills reported that they were experts at writing academic arguments in the English language. They also reported to have expert level knowledge using Microsoft Office™ and discussion forums; however, only three students reported to have experience using Blogs.

5.2.4.2 Teacher Participants – Site 1

The teacher participants at Site 1 were two young but highly experienced teachers: Georgina responsible for SecNet and Richard for SAD. Before the conduct of this study, Georgina had more than three years’ experience teaching SecNet and other information technology subjects on a sessional basis at Site, that is to say, through contracts for the
duration of each semester term. Georgina combined her professional academic practice with full-time paid work in a senior systems administration role at a prominent Australian financial organisation. She held a Masters degree in information technology from an Australian university. Richard was a full-time academic staff member with three years’ experience teaching SAD and other information systems units at Site 1. Before his full-time academic tenure, Richard was part of Site 1’s alumni and after his graduation he worked as a teacher on a sessional basis at Site 1. He held a Masters degree in information systems and a Graduate Certificate in university teaching. More detail is given about these teachers’ approaches to and beliefs about teaching in the thematic chapters that follow.

5.3 Site 2
In this section I provide a description of Site 2, the rationale for its inclusion in the study, the units of study taken by the student participants, and the student and teacher participants’ background information.

As mentioned, the selection of units of study and recruitment of participants was straightforward within my institution, Site 1. In contrast, the selection of the second site was a challenging exercise. Initially, I unsuccessfully approached two universities, seeking teachers to participate in the study. Teachers at these universities cited lack of time and minimal use of online technologies as the main reasons for their decline of my invitation. My third approach was two teachers who expressed enthusiasm about the use of blended approaches and about the study I was embarking upon. The first teacher (Sophia) was in charge of a postgraduate core subject related to business analysis and modelling (BAM) and the second teacher (Shane) was responsible for an elective or optional subject about the fundamentals of information systems (FOIS). Both teachers invited me to discuss further and assess the adequacy of their subjects in the context of my research project. The two subjects had contrasting characteristics which I thought
were valuable for the comparison of findings and testing of conclusions. For instance, FOIS was mainly implemented as an online subject whereas BAM was primarily implemented face-to-face. In both subjects, students were required to use technology as part of their learning activities. They had discussion forums through which students discussed issues around group assignments. Students also had to prepare Microsoft Power Point presentation TM packs to submit online along with their assignments to the LMS. The teachers used the announcement feature to communicate important information to the students. Lecture slides were online and students exchanged email and file sharing via the LMS. With FOIS being mainly an online subject, there was no opportunity for face to face interviews. It proved difficult to arrange appropriate times that suited both students and researchers’ availabilities; therefore this cohort of students was not interviewed; however their online interactions formed part of the electronic data pool and the teacher was interviewed.

The following is a detailed description of Site’s 2 LMS, subject descriptions, the learning resources, and the blended aspect of the subjects and methods of assessment.

5.3.1 Site 2’s LMS

In contrast to Site 1, where students used a custom purpose-built system, at Site 2 students used Blackboard TM, a popular commercially available system. The two systems appeared to have similar functionalities; however, the main difference between the two systems was the way the discussion forums and Blogs were integrated to the LMS. Blackboard TM is a system that comes shipped with its discussion forum module fully integrated into the system, facilitating the management and interaction of the discussions, whereas at Site 1, the forum was not an integral component of the LMS. It used a free Perl-based message board system plugged into the LMS with limitations from the management and interaction viewpoint. A similar situation occurred with the implementation of the Blogs at Site 1,
where students had to use an external Blog system linked to the LMS for management purposes.

5.3.2 Subject Description of BAM - Site 2

BAM was an advanced postgraduate subject with three pre-requisites, managed and controlled by Sophia. BAM was worth 12.5 credit points in a 200 credit point program. Twenty-five students from different nationalities and cultural backgrounds enrolled in the subject. The following description of this subject provides further information about the design and implementation features of including the blended aspect of the course and methods of assessment (BAM Subject Profile, 2008).

The main aim of BAM was to introduce the students to the fundamental processes for identifying information systems requirements, leading to the specification and design of information systems or the selection of commercial off-the-shelf packages to support business processes. The subject also aimed to develop students’ understanding of analysis tools and techniques, data and process modelling and systems development methodologies (BAM Subject Profile, 2008). The subject ran for thirteen weeks. Students were expected to attend all weekly lectures of two hour duration and devote a minimum additional study time of about seven hours per week to reading, preparing classes, completing assignments and accessing the computer-mediated learning space specifically designed for discussing issues initiated in class. In addition, and as part of the assessment requirements, students were asked to use this learning space to reflect and report on the progress of their group assignments (BAM Subject Profile, 2008). Two reference textbooks were recommended: one to support the specific learning objectives for this subject, and the other to support the generic skills students were supposed to develop and use intensively throughout their professional careers. There was also a reading pack of selected journal articles, conference papers and reports, printed out and distributed to the
students during the first seminar. The reading pack was organised by week and included references to the textbook and recommended books. Other learning resources included announcements, notes, and lecture presentations posted in the LMS. For those students who were not able to attend a lecture they could download material from the LMS (BAM Subject Profile, 2008).

The computer-mediated learning space comprised a set of learning tools supported by a Learning Management System (LMS). All face-to-face lectures were recorded and posted in the LMS as podcasts ready to download by those students who could not attend the seminars (Sophia, Site 2, teacher interview excerpt). However, it was also observed that students who attended the face-to-face lectures downloaded the lecture (Sophia, Site 2, teacher interview excerpt). The learning design also included two designated discussion areas: the first area designed to support groups on their semester long project and the second area for general discussions relevant to the subject (Sophia, Site 2, teacher interview excerpt). For the semester project, each group was required to post a fortnightly project progress report, including questions that emerged during their meetings. The posts were discussed widely by all groups and individuals, resembling a small virtual learning community sharing the same interests, willing to help each other and open to criticism in a very collegial manner (Sophia, Site 2, teacher interview excerpt). Lecturers monitored the discussions very closely and in many occasions, the issues were brought to the class for further discussions.

The project-based assessment of this subject (this subject did not include any examination paper as part of the formal assessment) required students to work in groups of a maximum of four people. Each group was required to find an organisation where they could apply the concepts and skills learned in the subject (BAM Subject Profile, 2008).
The first group assignment consisted of a progress report on a business process within the chosen organisation. The report was used to assess students’ ability to elicit, model and inform on the business process. They had the opportunity of describing the context or setting of the process, and elaborate on the requirements for the information system as a basis to decide if it had to be built or bought off-the-shelf. As part of this first group assignment, students were required to give a verbal presentation (to brief their classmates about their projects) and prepare a draft version of the progress report to be critiqued by their peers. The presentation and the critiquing report were designed to obtain valuable feedback before submitting the first report (Sophia, Site 2, teacher interview excerpt).

The second group assignment consisted of a final group report where students were expected to analyse critically the business process, determine its feasibility, provide a technical plan and ultimately use high-level thinking to decide if the system was worthy to be outsourced or built in-house. As part of this second group assignment, students were required to make an executive verbal presentation to the class but pitched to a senior and middle management audience and prepare a draft version of the final report to be critiqued by their peers (BAM Subject Profile, 2008).

As in the first group assignment, the presentation and the critique of the final report were designed to obtain valuable feedback before submitting the final report. The above mentioned draft versions of both progress and final report were distributed during the seminars to students as individual assignments (Sophia, Site 2, teacher interview excerpt). Each student was asked to criticise the reports from other groups in the course other than his or hers. As mentioned above, the feedback from these critiques was used by the teams to refine their reports before submitting for marking. The first time this subject was introduced, only a small group of mature domestic students with extensive industry
experience participated in the various class discussions (Sophia, Site 2, teacher interview excerpt). Participation was impromptu, making it hard for students to engage.

The subject developmental team, led by Sophia, the principal academic, was committed to achieve well-balanced participation in class leading to better learning outcomes (Sophia, Site 2, teacher interview excerpt). Therefore, following the numerous theories and frameworks in place supporting engagement and blended learning, they opted to redesign the assessment tasks (Sophia, Site 2, teacher interview excerpt). Two specific learning activities were introduced: Online participation using the LMS discussion forum facility and class participation. Every other week, each team was required to post a message to the discussion forum sharing ideas and experiences about the group project. Individually, students were required to discuss not only posts from their own group but also from the others; and to bring these issues to the face-to-face sessions for further discussion. Students were requested to moderate the discussion forum, closely monitored by the academic staff. In addition, for each week, students were required to write a summary, including one or two questions, of the weekly mandatory readings listed on the LMS. Then, during the class time, students had the opportunity to discuss further the issues and questions raised from the readings and challenge authors’ views critically (Sophia, Site 2, teacher interview excerpt). Finally, the subject designers implemented a peer assessment approach for both group reports – progress and final (group assignments) – to ensure each student received due credit for the work (Sophia, Site 2, teacher interview excerpt).

5.3.3 Subject Description of FOIS – Site 2
FOIS was an introductory postgraduate subject which equipped students with the basic concepts of information systems (FOIS Subject Profile, 2008) and was managed by Shane. FOIS was worth 12.5 credit points in a 200 credit point program. This subject was
not compulsory within the program and catered for those students who did not have a strong computing background. The design of this subject centred on the potential impact information technology may have on people's work and operations within their organisations both internally and externally (FOIS Subject Profile, 2008). Owing to its basic structure, normally this subject does not attract many students, and for the term of this study, only five students enrolled in the subject.

As mentioned earlier, FOIS was primarily implemented online for the thirteen weeks duration of the term with four complementary weeks - week 1, week 5, week 10 and week 12 - where students attended 1.5 hour face-to-face meetings for informal consultation with the lecturer and to reassure the sense of community of learning that sometimes is not perceived in online courses (Shane, Site 2 teacher). Students were required to access the subject’s LMS discussion forum and to engage interactively throughout the term. FOIS required an estimated total time commitment of nine to twelve hours per week for the duration of the term. Owing to the distinguished online feature of the subject, all contact information was provided via the LMS including email, phone details and announcements (Shane, Site 2 teacher). In terms of the objectives of the subject, FOIS aimed to provide students with a thorough knowledge of information systems practice and use, as viewed through a range of roles that interact with these systems such as system developers, users, business managers, IT managers, and vendors (FOIS Subject Profile, 2008). It also provided students with a foundation that was further built-on in other information systems subjects. The style of the subject was to integrate concepts, theories, and frameworks with case studies and examples drawn from industry. The emphasis was on gaining a tool kit for a rich understanding of the practical world of information systems (FOIS Subject Profile, 2008). Most reading materials were made
available online; however, when required, students were directed to specific Web sources to complement their learning.

Assessment for this subject (FOIS Subject Profile, 2008) included individual online written work of 5000 words, consisting of ongoing online discussion participation (10%) and 3 case studies (30%), group online written work of 2500 words consisting of a group response to a case study (30%); and, a downloaded examination completed over 48 hours at the end of semester (30%).

5.3.4 Site 2’s Participants

Like Site 1, the selection of Site 2’s participants was based on enthusiastic teachers who were already involved in the implementation of blended approaches and who expressed an interest in this type of teaching. In this section, I describe the participants at Site 2, including student demographic data and background information collected through the student consent forms. The first part is dedicated to describing the student participants, followed by the teacher participants.

5.3.4.1 Student Participants – Site 2

There were eleven student participants at Site 2. Table 5.3 outlines the profile of the interviewed participants. The table provides background information for the six BAM students because, as mentioned above, the five FOIS students were not interviewed. Of the six interviewed student participants at Site 2, three were men and three women including nationalities from Australia, Oman, Vietnam, Indonesia and China.
Table 6.3 Background and Experience of the Students from Site 2

<table>
<thead>
<tr>
<th>Pseudo - Country</th>
<th>Time in Australia</th>
<th>Highest Degree held</th>
<th>Experience</th>
<th>Skills (Expert-High-Medium-Low)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eloisa - Australia</td>
<td>Domestic student</td>
<td>BEng (Electronics) (Honours)</td>
<td>Nine years in Network Engineering</td>
<td>Expert using MS Office and forums. Expert writing academic arguments in English. High team work and project management abilities.</td>
</tr>
<tr>
<td>Natalie - Oman</td>
<td>One month</td>
<td>BSc computer science</td>
<td>13 years in Project planning and IT</td>
<td>Expert using MS Office and forums. Expert writing academic arguments in English. Medium team work and project management abilities.</td>
</tr>
<tr>
<td>Thomas - Vietnam</td>
<td>Three months</td>
<td>Engineer of Electronics and Telecoms.</td>
<td>Four and a half years in IT Support Engineering</td>
<td>Expert using MS Office and forums. Novice writing academic arguments in English. Low team work and project management abilities.</td>
</tr>
<tr>
<td>Rachel - Indonesia</td>
<td>One year</td>
<td>Bachelor of IT</td>
<td>Internship on IT at an oil company</td>
<td>Expert using MS Office and forums. Expert writing academic arguments in English. Low team work and project management abilities.</td>
</tr>
<tr>
<td>Henry - China</td>
<td>18 months</td>
<td>Bachelor of Information Systems</td>
<td>Software tester</td>
<td>Novice using MS Office and forums. Novice writing academic arguments in English. Low team work and project management abilities.</td>
</tr>
<tr>
<td>Bernard - China</td>
<td>Two years</td>
<td>Bachelor of Electronic Science</td>
<td>Sales person</td>
<td>Expert using MS Office and forums. Expert writing academic arguments in English. Low team work and project management abilities.</td>
</tr>
</tbody>
</table>

From the second column of the table, it can be seen that prior to the commencement of the semester term, except for a domestic student, Site 2’s students had been living in Australia for a period of between one month and two years, with two students residing in Australia for less three months. Also in contrast to Site 1, where six students already held a postgraduate degree, at Site 2 all students held an undergraduate
bachelor degree before the conduct of this study. Three students had between four to thirteen years’ experience in the field of IT. Only one student claimed to have novice expertise on Microsoft Office™ and discussion forums compared to the rest who reported to be highly experienced using those tools. Similarly, two students reported having novice experience writing academic arguments in English, with the rest reporting to have expert level essay writing skills. Most of the BAM students did not have substantial team work and management skills, except for one student.

5.3.4.2 Teacher Participants – Site 2
In terms of Site 2’s teachers, BAM staff was larger than FOIS. Staff to teach and manage BAM included three experienced professionals with different industrial and academic backgrounds. Sophia, the principal academic teacher and teacher participant responsible for this subject, had completed a PhD in Computer Science and also a graduate certificate in university teaching. She had extensive experience as a research scientist in information architecture; and usability analysis and design for various industrial and research projects locally and internationally (BAM Subject Profile, 2008). The second academic (not part of the teacher participants) was an industry consultant with a PhD in Information Systems and a vast experience in enterprise architecture and requirements engineering. The third member of academic staff (not part of the teacher participants) was a PhD in Physics with a wide experience in applying contemporary software development methodologies to promote innovation and competitive advantage in enterprises (BAM Subject Profile, 2008). During the semester, two guest speakers came to the seminars to talk about subject-related topics (not part of the teacher participants).

While BAM had three academic staff, FOIS was managed and taught by a single staff member, Shane. Shane was a senior lecturer within the Faculty of Science at Site 2
with extensive experience teaching online courses. He held a PhD in Information Systems and a Graduate Certificate in university teaching (FOIS Subject Profile, 2008).

5.4 Summary
Contextually, the two university settings were very different. Site 1 was located in one of the international campuses of a multi-campus medium-sized regional Australian university targeting international students only; whereas Site 2 was located in a large metropolitan Australian university catering mainly for domestic students and with a relatively small number of international students. At Site 1, international campuses teachers were not responsible for the design and implementation of the blended environment. They were responsible for the teaching of the units of study only; contrasting Site 2, where teachers had full ownership and responsibility for their units of study. The units of study at both sites were in the field of information systems and technology at postgraduate level. At Site 1, of the twelve student participants, six students held a postgraduate degree, whereas at Site 2 all six student participants held an undergraduate bachelor degree. However, despite this difference in previous educational backgrounds, with reference to working experience, there were no major distinguishing features between the two sites. Regarding the teacher participants, the two teachers at Site 1 held Masters academic qualifications with one having university teaching qualifications. This contrasts with Site 2 where both teacher participants held PhD academic qualifications and graduate certificate in university teaching. At Site 1 one of the teacher participants was a sessional academic staff member, whereas both teacher participants at Site 2 were full-time permanent staff members.

In this chapter, I have provided information about the context of the study including a description of the two university settings where the study was conducted, the units of study or subjects and the participants’ profile. These details are intended to
provide contextual information for the thematic chapters and the conclusions and discussion that follow.
Chapter 7 Data Analysis and Representation

6.1 Introduction

In this chapter, I describe the processes used to analyse the data and generate findings. This chapter includes a full account of the research framework that guided the data analysis, and of the pattern coding process that led to the generation of the following five themes:

1. Adapting to a new learning environment;
2. Preparing to learn;
3. ICT integration;
4. Keeping pace with the learning activities; and,
5. Perceptions of pedagogical practices.

The themes constitute the theoretical constructs used to communicate the findings about the behaviours, attitudes, perceptions and approaches to teaching and learning of international students in a blended learning environment.

6.2 Data analysis Framework

As discussed in Chapter 4–Research Design and Methodology, in this study I built redundancy into data collection using multiple data sources. The data analysis proceeded with a focus on the semi-structured interviews, with other data sources used to corroborate or contest my interpretations of the interview data.

While recognising that the use of a wide range of data sources in the form of multi-methods improves data quality and credibility of findings, it is also important to acknowledge that the synthesis and evaluation of voluminous data is complicated and may be overwhelming. Data analysis is an inductive process that requires excellent analytical skills to decide how to represent the gathered data in tables, matrices or forms of narrative. Creswell (2007) argues that in its simplest form, this inductive process
resembles a spiral image that starts with the preparation and organisation of data, followed by a data coding process where the researcher skilfully reduces data to themes or patterns, to finally represent the data into tables, figures, or a narrative account. Fetterman (1998) also states that during this analysis the researcher immerses in these data, in search of patterns of thought and behaviour. Accordingly, in the light of Creswell (2007) and Fetterman (1998), I structured the flow of these data as follows.

Initially I created, managed and organised units of data analysis using *Nvivo*, a qualitative research computer program developed by QSR™. The use of qualitative research computer programs has been advocated by qualitative researchers for many reasons, in particular for the analysis of the massive amounts of information typical of ethnographic qualitative studies. Computer programs assist the researcher to locate material easily, look closely at the data, visualise the relationship between codes and themes (Creswell 2007), and even in the testing of perceptions and behaviours and in the provision of new insights into the data (Fetterman, 1998). My background as an information systems practitioner, coupled with my experience and familiarity with qualitative research computer programs, provided a basis for such computer use. I iteratively and systematically read the data into memos (short phrases or ideas) in order to get a sense of the whole database. Fetterman (1998) suggests the labelling of these short phrases or paragraphs based on their meaning before classifying them.

After memoing, I described, classified and interpreted the data with the purpose of developing the categories or codes. Creswell (2007) suggests that for practical reasons, the coding of information should produce no more than six themes to write the narrative. During the interpretive phase, I made sense of the data based on my insights and intuition, looking into students’ attitudes to learning and teachers’ perceptions of teaching in a blended learning environment (Fetterman, 1998; Creswell, 2007). The whole process is
conceptualised in Figure 6.1, using the data layering model suggested by Miles and Huberman (1994).

**6.3 Data layering model description**

During the pre-analysis (Layer 1 and Layer 2), Figure 6.1, I created a pool of raw data including my observational field notes, transcribed interviews, electronic data, reports and files, and video data. This pool of data was then formatted, packaged and imported into *Nvivo*. There, the data were grouped into folders A and B. Folder A was used to store the transcribed interviews and the electronic text from students’ forums and blogs; whereas folder B was used to store other material such as students’ final results, statistical data and description of the courses or syllabuses.

In the analysis process, the interview data were iteratively read in search of references that were meaningful in relation to the research questions. The coding that arose was then tested against the other data sources which were used to test the salience of emergent themes and to seek corroborative or contradictory evidence. This coding process took ten weeks. I labelled and chose the codes that made explicit reference to both expected and unexpected elements of the focus of the study and that represented unusual information to researchers, participants and the general audience (Creswell, 2007).

The data analysis produced a total of forty-six nodes with direct or indirect relevance to the focus of this research (Layer 3). Using hierarchical clustering analysis, I started with each unit of meaning as a single separate cluster and then I merged them successively into larger clusters. As shown in Layer 4, Figure 6.1, the pattern coding produced five themes: 1) Adapting to a new learning environment; 2) Preparing to learn; 3) Keeping pace with the learning activities; 4) ICT integration; and, 5) Perceptions of pedagogical practices.
Figure 7.1. Data Layers (Adapted from Miles & Huberman, 1994).
Within a broader socio-cultural perspective, these themes will be used as the explanatory framework for the issues encountered by international students in a blended learning environment.

6.4 Coding

The coding started with my own generation of initial thoughts about international students’ learning in a blended learning environment, as informed by my immersion in the data. Figure 6.2 outlines these initial thoughts, showing the multiple and diverse factors that may affect learning.

![Diagram showing factors affecting learning]

**Figure 7.2. Factors that may affect learning.**

Through these thoughts and my intimate knowledge of the data, I generated nodes in *Nvivo* prior to coding. I moved through the data, coding data excerpts into these prior
nodes, and added more nodes as I encountered relevant or interesting issues in the data (Creswell, 2007). Table 6.1 shows the *Nvivo* export list of the nodes including the prior nodes and the nodes that arose through the iterative reading of these data.

**Table 7.1 Export List of Nodes Created in Nvivo**

<table>
<thead>
<tr>
<th>Code Name</th>
<th>Memo Link</th>
<th>Sources</th>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acceptance and tolerance</td>
<td>Yes</td>
<td>5</td>
<td>9</td>
</tr>
<tr>
<td>Achievement-oriented collaboration</td>
<td></td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Adaptation to the learning environment</td>
<td>Yes</td>
<td>17</td>
<td>63</td>
</tr>
<tr>
<td>Approaches to learning</td>
<td></td>
<td>17</td>
<td>78</td>
</tr>
<tr>
<td>Approaches to teaching</td>
<td></td>
<td>5</td>
<td>32</td>
</tr>
<tr>
<td>Assessment problems</td>
<td></td>
<td>19</td>
<td>59</td>
</tr>
<tr>
<td>Cognitive presence from e-data</td>
<td></td>
<td>6</td>
<td>55</td>
</tr>
<tr>
<td>Cognitive presence from interviews</td>
<td></td>
<td>20</td>
<td>76</td>
</tr>
<tr>
<td>Cultural experience</td>
<td></td>
<td>19</td>
<td>73</td>
</tr>
<tr>
<td>Explicit Interaction</td>
<td></td>
<td>6</td>
<td>52</td>
</tr>
<tr>
<td>Extracurricular activities</td>
<td></td>
<td>8</td>
<td>13</td>
</tr>
<tr>
<td>ICT as integral to T&amp;L</td>
<td></td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>ICT previous experience</td>
<td></td>
<td>15</td>
<td>28</td>
</tr>
<tr>
<td>ICT problems</td>
<td></td>
<td>21</td>
<td>86</td>
</tr>
<tr>
<td>Implicit interaction</td>
<td></td>
<td>6</td>
<td>54</td>
</tr>
<tr>
<td>Independent interaction</td>
<td></td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Independent learners</td>
<td></td>
<td>17</td>
<td>64</td>
</tr>
<tr>
<td>Language problems</td>
<td></td>
<td>15</td>
<td>28</td>
</tr>
<tr>
<td>Learning awareness</td>
<td></td>
<td>18</td>
<td>89</td>
</tr>
<tr>
<td>Learning oriented collaboration</td>
<td></td>
<td>6</td>
<td>78</td>
</tr>
<tr>
<td>Learning outcomes</td>
<td></td>
<td>15</td>
<td>29</td>
</tr>
<tr>
<td>Lifelong learning</td>
<td></td>
<td>6</td>
<td>10</td>
</tr>
<tr>
<td>Motivation to learn</td>
<td></td>
<td>16</td>
<td>93</td>
</tr>
<tr>
<td>Overload</td>
<td>Yes</td>
<td>14</td>
<td>27</td>
</tr>
<tr>
<td>Perceptions of ICT</td>
<td></td>
<td>19</td>
<td>105</td>
</tr>
<tr>
<td>Planning and time management</td>
<td></td>
<td>16</td>
<td>52</td>
</tr>
<tr>
<td>Social issues</td>
<td></td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
In *Nvivo*, a *node* is a collection of references about a specific theme or area of interest. There are two types of nodes: tree nodes and free nodes. *Tree nodes* are nodes organised into a hierarchical structure with parent nodes containing multiple child nodes. *Free nodes* are not part of hierarchies and do not have logical connections with other nodes. *Coding* is the process of gathering the references by reading through the data sources and categorising them into relevant nodes (QSR, n.d.). *Sources* is a collective term referring to the number of research materials or data sources the node uses and the term *references* informs about the total number of data excerpts, or units of meaning, gathered from the data sources (QSR, n.d.). *Memo* is a type of source created to capture thoughts about data, concepts and research procedures. A relationship between a *memo*
and a particular source or node is created through the use of a memo link (QSR, n.d.). For example, nine data excerpts from five different sources were coded under the node titled Acceptance and tolerance. For this code, as indicated in the second column in Table 6.1, I also created a link to a memo to describe my initial thoughts about the acceptance and tolerance cross cultural challenges faced by student and teacher participants within the context of this study.

6.4.1 Coding Process Illustration

Table 6.1 shows that forty-six nodes were generated containing the multiple and diverse collection of references about international students’ learning in a blended learning environment – the focus of this study. A collection of references like Adaptation to the learning environment, ICT previous experience, Language problems and Perceptions of ICT amongst others were coded into their respective nodes. In the section that follows, I will illustrate the coding process for four of the forty-six nodes. This is done in order to illustrate the approach that was typical of my coding process, and to provide a sense of the contents of a node. To do this, I will provide examples of the type of data excerpts coded within each of these sample nodes. For each data excerpt, I will also provide information in parentheses about the data source, for example, the participant’s pseudonym; for students, their country of origin; the university site; and, the type of data source.

I have selected particular nodes as illustrative of particular complexities encountered within the coding process. For instance, there may be one where the coding process and outcome was quite simple because it drew on only one type of data source and the data demonstrates some general agreement or trend (e.g. all students voicing similar comments about the issue). Similarly, there may be another node that is more complex because it captures students' different responses to the same issue. While there may be yet another node that is complex because it draws on data from different data
sources (i.e. my observation notes or reconstructions, online material or assessment
documentation, student and teacher interviews).

The *Adaptation to the learning environment* node captures those data excerpts that suggest student participants were aware/unaware of, and/or willing/unwilling to respond to, a need to change their behaviours to suit the teaching and learning environment. In some cases, this change was required as part of returning to study after a period of time away from study; in others, the change was required in order to adapt to an educational environment that is different from that with which participants were previously familiar. For example in the following coded data excerpt, for a student like Natalie, having spent a long time working as a professional, the process of adjustment had to do with a change in the way she learned to manage her studies in the past, consistent with the demands of the new learning environment:

I had been working for some time. I finished my university studies long time ago, so re-start studying has been a bit difficult, to get used to the study environment again and listening others (Natalie, Oman, Site 2, student interview excerpt)

Another coding example within this node is the following paragraph generated during Thomas’ interview:

In my country I studied in a different way for my undergraduate and I also came back to study postgraduate just recently. I have found a bit difficult to adapt to the Australian way of study. For example is not uncommon to have two assignments due at the same time. I concentrate too much in one and forget the other one (Thomas, Vietnam, Site 2, student interview excerpt).

Unlike Natalie, whose main concern centred on the challenges faced in returning to school, Thomas’ concern was mainly centred on his inability to adapt to a new learning environment.

Whereas the coding for the *Adaptation to the learning environment* node was mainly generated using data from students’ interviews, the coding for the *ICT previous experience* node was generated using data from sources including interviews and
electronic text. The ICT previous experience node captured insights into students’ prior use of ICT in learning; those with a poor level and those with a good level of experience. An example of this was extracted from Manuel’s interview, whose previous learning experience had predominantly been face-to-face:

In my bachelors what teachers normally did was to print hard copies or write something on blackboards and I always tried to copy or take notes. That was all ... At least two or three times in a week, I used to go to a cyber café in search of information but the use of learning technologies as part of my study, not at all (Manuel, Bangladesh, Site 1, student interview excerpt).

Language has always being considered as a major issue by Western-centric academics teaching international students and as a result, I used this factor to generate a prior node named Language problems. As expected, there were some instances centred on this issue drawn from both the student and teacher interviews. For example, in the following data excerpt, the student particularly emphasised the intricacies of communicating in a diverse environment:

The most distinguishing factor of being an international student is communication in terms of a language barrier, the accent is very different and also the fact of having international students as classmates they have different ways of communicating which sometimes is not easy to understand (Rachel, Indonesia, Site 2, student interview excerpt).

In relation to the Language problems node, there were only 28 references related to English language issues; relatively low compared to other nodes where the number of references was higher (see table 6.1). This finding will be discussed in detail in Chapter 12–Discussion of the Findings and Conclusions.

The Perceptions of ICT node contained the second highest number of references and included all data excerpts that conveyed participants’ value judgements about the technology being used, whether positive, negative or mixed. It included data from both the teacher and student interviews. In the following data excerpt, for instance, Bernie perceived the tools as a useful medium to keep permanently engaged:
Some of the topics posted on the forum were very useful. It is a kind of a medium that even though we do not come to see lectures and tutors everyday; we have something to connect to it (Bernie, Kuwait, Site 1, student interview excerpt).

Nonetheless, unlike Bernie, there were many participants who perceived the use of learning technologies as not worthwhile. Again, this finding will be discussed in Chapter 12—Discussion of the Findings and Conclusions.

As mentioned earlier, in many instances, a piece of meaningful information was coded into more than one node. For example, the following data excerpt was coded into Students' perceptions of T&L, Adaptation to the learning environment, ICT previous experience, and Perceptions of ICT nodes:

What I felt when I came to this university in the first semester, I found it a little bit tough because everything was new to us; the assignments, the exam preparation, and on top of that the blogs, a very new thing which I found very interesting. However, I think blogs should not be in the first semester (Kathy, Site 1, Kuwait, student interview excerpt).

Kathy perceived the teaching and learning environment as difficult to cope with (Students' perceptions of T&L), which eventually turned out to be more difficult with the use of something relative new to her as learning technologies (ICT previous experience). However, she also recognised the value of ICT in learning (Perceptions of ICT) provided they were used later in the process of adjustment to the new learning environment (Adaptation to the learning environment).

During the coding process, I also generated from the raw data some memos to capture short phrases or ideas which in a later stage could help me describe and define concepts or theoretical propositions, and data exploration enhancement. For example, in coding the node Acceptance and tolerance, I reflected on the socio-cultural challenges faced by both students and teachers during the adaptation process to the new multicultural environment. This deep reflection gave rise to the following memo:

International education demands tolerance and acceptance from both teachers and students. For students, to understand that they are embedded in a world far away from their comfort zone, therefore it is important to accept the new real world and cope relentlessly. For teachers,
to come to terms with a challenging environment where responsibilities are multiplied. There are new rules of engagement and the goal is to have a win-win situation for the benefit of the two-parties (Personal reflection).

Once the process of coding ended, I moved into the next stage of data analysis, in search of patterns or themes. Babbie (2004) suggests that in addition to text analysis as the main data analysis process, the researcher has at his or her disposal a set of complementary data analysis processes to think-aloud about the many relationships among concepts emerging from complex settings concerning multiple data sources. One of these processes is concept mapping which according to Miles and Huberman (1994) may be useful during the identification of an emergent theme, configuration or explanation. In that light, in the next section, I provide the reader with further information about how the themes emerged but mainly from the conceptualisation viewpoint rather than from the processes that were used in their development.

6.4.2 Pattern Coding

In this section, I explain the pattern coding process used to find patterns or themes meaningful in relation to the research questions. For each theme I used think-aloud and concept mapping processes to develop my own conceptions of the patterns in the data. Through the process, some of the nodes were excluded from further analysis and representation. In the section, I illustrate the *Adapting to a new learning environment* theme to give a detailed example of the think-aloud and concept mapping process followed by a briefer outline of the results of this process for the other four themes.

Guided by the research questions, I iteratively read through the data excerpts coded into the forty-six nodes in search of any relationships connecting the concepts. For example, I noticed that a number of data excerpts from different nodes brought to light a series of issues centred on students’ *cultural, social and educational* backgrounds.

*Culturally*, students were challenged by the highly westernised teaching and learning
environment and the likely repercussions this had in the expected teaching and learning outcomes. There were few instances where students appeared to be culturally shocked to the extent of remaining separated from the experiences of other cultures:

Cultural differences may be a huge problem, but I do not have to worry about it because I am not going to adapt to that culture (Samuel, Pakistan, Site 1, student interview excerpt).

For others, however, diversity was welcome and through acceptance and tolerance they adapted well to the multicultural environment:

I have not found any culture shock in Australia…. You can see that in a multicultural environment like here, people are from everywhere, you do not feel weird, and there are no boundaries. Most of people are not originally from Australia and they accept and respect you. The acceptance and tolerance is higher here (Natalie, Oman, Site 2, student interview excerpt).

**Socially**, there were data excerpts that brought to light the concept of students' conviviality. Coming from afar, students encountered the challenges of a new society with different standards of living, values, rights, and language and communication protocols. For example, the lack of networking and knowledge of the local environment was evident in the following data excerpt:

We are uncertain about the best way to contact the organisation we have chosen. Should we email them and attach the letter? Or should we call them and ask for appointment? In either case, whom should we contact within the organisation? (Unknown, Site 2, student discussion forum excerpt).

From the educational point of view, there were data excerpts related to the adaptation process to a new educational environment that brought together a group of people with the shared intention of advancing knowledge including new teaching practices, paradigms, and learning technologies and methodologies. As expressed by Vert, referring to the methodology of teaching:

The pattern is completely different to our country; however the lecturers and teachers here give us guidelines which we have to study. Back in our country, we do not have semesters like here; the term runs for a year. In Australia, we cover the main aspects of the subjects, whereas over there we have to study a whole textbook. Initially, it was hard but later on we adapted to this style of teaching and learning. (Vert, India, Site 1, student interview excerpt).
By reading the earlier student data excerpts, it appeared that the acquisition of knowledge by the learners had not only been affected by the quality of the teaching they received but, as recognised by previous research into intercultural relations (Berry, 1999; Berry, 2005; Hofstede, 2005), also by the way they experienced the world around them socially and culturally. This think-aloud process on the multiple concepts coded into the forty-six nodes helped me to identify a common theme concerning the challenges of a new teaching and learning environment where students had to “adapt” in order to succeed. The concept map in Figure 6.3 shows the relationships amongst the different concepts forming the theme, which I named *Adapting to a new learning environment*.

![Diagram](image)

*Figure 7.3. Conceptualisation of the Adapting to a new learning environment theme.*

The nodes containing data excerpts in the conceptualisation process of the *Adapting to a new learning environment* theme were merged into a tree node with the same name. Table 6.2 shows the seven nodes associated with this tree node including *Acceptance and tolerance, Adaptation to learning environment, Cultural experience, Language problems, Social issues, Social presence from e-data and Social presence from interviews.*
Table 7.2 *Adapting to a New Learning Environment Tree Node*

<table>
<thead>
<tr>
<th>Code Name</th>
<th>Memo Link</th>
<th>Sources</th>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acceptance and tolerance</td>
<td>Yes</td>
<td>5</td>
<td>9</td>
</tr>
<tr>
<td>Adaptation to learning environment</td>
<td>Yes</td>
<td>17</td>
<td>63</td>
</tr>
<tr>
<td>Cultural experience</td>
<td></td>
<td>19</td>
<td>73</td>
</tr>
<tr>
<td>Language problems</td>
<td></td>
<td>15</td>
<td>28</td>
</tr>
<tr>
<td>Social issues</td>
<td></td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Social presence from e-data</td>
<td></td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>Social presence from interviews</td>
<td></td>
<td>19</td>
<td>122</td>
</tr>
</tbody>
</table>

The data excerpts coded into the remaining nodes were reread and analysed in a similar way as described earlier, in search for more themes. Through this process, four more themes emerged; they were titled: *Preparing to learn, ICT integration, Keeping pace with the learning activities and Perceptions of pedagogical practices*. It is worth noting that the pattern coding process also included a decision making process to reject nodes deemed as irrelevant or redundant. For example, further analysis of the *Working while studying* node (see Table 6.1) was found to contain codes also present in the *Extracurricular activities and Planning and time management* nodes. Consequently, I rejected the *Working while studying* node and moved the *Extracurricular activities and Planning and time management* nodes into the *Keeping pace with the learning activities* tree node.
This is consistent with conventional research practices suggesting that during the coding process the researcher should filter out all those pieces of information that, deemed initially as important, at a later stage of the coding are found not to be relevant to answer the research questions (Creswell, 2007, Babbie, 2004, Fetterman, 1998). Accordingly, ten of the previously coded nodes were deemed to be either irrelevant or redundant, and therefore removed. Table 6.3 shows the retained thirty-six nodes.

Table 7.3 Retained Nodes

<table>
<thead>
<tr>
<th>Code Name</th>
<th>Memo Link</th>
<th>Sources</th>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acceptance and tolerance</td>
<td>Yes</td>
<td>5</td>
<td>9</td>
</tr>
<tr>
<td>Adaptation to learning environment</td>
<td>Yes</td>
<td>17</td>
<td>63</td>
</tr>
<tr>
<td>Approaches to learning</td>
<td></td>
<td>17</td>
<td>78</td>
</tr>
<tr>
<td>Approaches to teaching</td>
<td></td>
<td>5</td>
<td>32</td>
</tr>
<tr>
<td>Assessment problems</td>
<td></td>
<td>19</td>
<td>59</td>
</tr>
<tr>
<td>Cognitive presence from e-data</td>
<td></td>
<td>6</td>
<td>55</td>
</tr>
<tr>
<td>Cognitive presence from interviews</td>
<td></td>
<td>20</td>
<td>76</td>
</tr>
<tr>
<td>Cultural experience</td>
<td></td>
<td>19</td>
<td>73</td>
</tr>
<tr>
<td>Extracurricular activities</td>
<td></td>
<td>8</td>
<td>13</td>
</tr>
<tr>
<td>ICT as integral</td>
<td></td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>ICT previous experience</td>
<td></td>
<td>15</td>
<td>28</td>
</tr>
<tr>
<td>ICT problems</td>
<td></td>
<td>21</td>
<td>86</td>
</tr>
<tr>
<td>Independent learners</td>
<td></td>
<td>17</td>
<td>64</td>
</tr>
<tr>
<td>Language problems</td>
<td></td>
<td>15</td>
<td>28</td>
</tr>
<tr>
<td>Learning awareness</td>
<td></td>
<td>18</td>
<td>89</td>
</tr>
<tr>
<td>Learning outcomes</td>
<td></td>
<td>15</td>
<td>29</td>
</tr>
<tr>
<td>Motivation to learn</td>
<td></td>
<td>16</td>
<td>93</td>
</tr>
<tr>
<td>Overload</td>
<td>Yes</td>
<td>14</td>
<td>27</td>
</tr>
<tr>
<td>perceptions of ICT</td>
<td></td>
<td>19</td>
<td>105</td>
</tr>
<tr>
<td>Planning and time management</td>
<td></td>
<td>16</td>
<td>52</td>
</tr>
<tr>
<td>Social issues</td>
<td></td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Preparedness</td>
<td>Yes</td>
<td>14</td>
<td>34</td>
</tr>
<tr>
<td>Prior learning and working experience</td>
<td></td>
<td>10</td>
<td>22</td>
</tr>
<tr>
<td>Social presence from e-data</td>
<td></td>
<td>3</td>
<td>6</td>
</tr>
</tbody>
</table>
The following is a description of the processes in the generation of the four remaining themes: *Preparing to learn, ICT integration, Keeping pace with the learning activities and Perceptions of pedagogical practices*.

### 6.4.3 Preparing to Learn Theme

Following the same think-aloud process used to conceptualise the *Adapting to a new learning environment* theme, I identified the *Preparing to learn* theme. The concept map in Figure 6.4 shows the relationships amongst the different concepts forming this theme including the four main dimensions: *Prior knowledge, Previous learning experience, Motivation and commitment*, and *Range of skills*.

The *Prior knowledge* dimension related to the depth of students’ educational backgrounds. Many mature-aged students reported having a sound knowledge of the subject matter, gained through their previous degrees and their extensive computing working experience. This contrasted with other less experienced students who had enrolled into the postgraduate programme immediately after finishing their undergraduate studies. This dimension was also repetitive during the analysis of the data but in this case the concept centred on students’ lack of familiarity with the use of learning technologies.
There were many examples of students for whom this was the first time they ever got involved with blogs or discussion forums as part of the learning experience.

The *Preparing to learn* theme also included the influence that the students’ motivation to learn and previous learning experiences have on their approaches to learning, particularly in the context of international students, the raison d’être of this study. Finally, the *Preparing to learn* theme focused on issues arising as a result of the wide range of skills and learning needs international students bring to learning.

*Figure 7.4.* Preparing to learn theme.

The nodes containing data excerpts in the conceptualisation process of the *Preparing to learn* theme were merged into a tree node with the same name. Table 6.4,
shows the ten nodes associated with this tree node. As mentioned earlier, the findings centred on this theme will be discussed in detail in the findings chapter of this thesis.

Table 7.4 Preparing to Learn Tree Node

<table>
<thead>
<tr>
<th>Code Name</th>
<th>Memo link</th>
<th>Sources</th>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td>Approaches to learning</td>
<td>17</td>
<td></td>
<td>78</td>
</tr>
<tr>
<td>Cognitive presence from e-data</td>
<td>6</td>
<td></td>
<td>55</td>
</tr>
<tr>
<td>Cognitive presence from Interviews</td>
<td>20</td>
<td></td>
<td>76</td>
</tr>
<tr>
<td>Independent learners</td>
<td>17</td>
<td></td>
<td>64</td>
</tr>
<tr>
<td>learning awareness</td>
<td>18</td>
<td></td>
<td>89</td>
</tr>
<tr>
<td>Motivation to learn</td>
<td>16</td>
<td></td>
<td>93</td>
</tr>
<tr>
<td>Preparedness</td>
<td>Yes</td>
<td>14</td>
<td>34</td>
</tr>
<tr>
<td>Prior learning and working experience</td>
<td>10</td>
<td></td>
<td>22</td>
</tr>
<tr>
<td>Students’ expectations</td>
<td>14</td>
<td></td>
<td>52</td>
</tr>
<tr>
<td>Students’ perceptions of T&amp;L</td>
<td>14</td>
<td></td>
<td>60</td>
</tr>
</tbody>
</table>

6.4.4 ICT Integration Theme

Using the same think-aloud technique, I identified the *ICT integration* theme. The concept map in Figure 6.5 shows the relationships amongst the different concepts forming this theme including the five main dimensions of the theme: *ICT problems, ICT perceptions, ICT previous experience, ICT integral and ICT awareness*.

The *ICT problems* dimension related to the multiple factors that students found as problematic in using ICT as part of the learning process. There were problems associated
with the blending of face-to-face and online, particularly aggravated when the online tasks were part of the formal formative assessment. Unlike the ICT problems domain, the ICT perceptions dimension focused on a number of data excerpts reporting students’ acceptance and effectiveness of using ICT in learning. The previous ICT experience dimension resonated across the students’ data excerpts. For some novice students, the use of ICT in learning for the first time was a positive learning experience. On the contrary, as mentioned earlier, for others it was problematic, particularly for those students who were not aware of the ICT learning values and who had a strong stance of conventional face-to-face teaching. This attitude undermined the complete acceptance of learning technologies as integral to learning.

![Diagram of ICT integration](image)

*Figure 7.5. ICT integration theme.*

The nodes containing data excerpts in the conceptualisation process of the ICT integration theme were merged into a tree node with the same name. Figure 6.6 shows the five nodes associated with this tree node including ICT problems, ICT as integral, ICT previous experience, Online Assessment tasks and Perceptions of ICT. The findings
centred on this theme will be discussed in detail in the findings and discussion chapters of this thesis.

Table 7.5 ICT Integration Tree Node

<table>
<thead>
<tr>
<th>Code Name</th>
<th>Memo link</th>
<th>Sources</th>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICT as integral</td>
<td></td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>ICT previous experience</td>
<td></td>
<td>15</td>
<td>28</td>
</tr>
<tr>
<td>ICT problems</td>
<td></td>
<td>21</td>
<td>86</td>
</tr>
<tr>
<td>Online Assessment tasks</td>
<td></td>
<td>19</td>
<td>59</td>
</tr>
<tr>
<td>Perceptions of ICT</td>
<td></td>
<td>19</td>
<td>105</td>
</tr>
</tbody>
</table>

6.4.5 Keeping Pace with the Learning Activities Theme

Like in the previous themes, the Keeping pace with the learning activities theme was conceptualised after thinking-aloud of the multiple relationships among the concepts found in the data sources. Figure 6.6 depicts the main dimensions of this theme including Assessment, Overload and Extracurricular activities. For formal learning, institutions use assessment to ensure students have actually acquired the knowledge and skills to perform ethically and professionally in the workplace. In this study, students undertook formative assessment in the form of reflective online posts, critiques, peer reviews, online discussions, progress reports, individual and group assignments and final exams. In this respect, there was a reported feeling amongst some students that the learning activities both online and face-to-face were excessive and lengthy.

The theme also acknowledges the role extracurricular activities played in the students’ life and eventually in their studies’ performance. Many of them had to work to
raise money for the tuition fees, in addition to the daily basic activities like cooking, leisure and home maintenance.

![Image: Diagram showing Keeping pace with learning activities theme]

*Figure 7.6: Keeping pace with the learning activities theme.*

The nodes containing data excerpts in the conceptualisation process of the *Keeping pace with the learning activities* theme were merged into a tree node with the same name. Table 6.6 shows the four nodes associated with this tree node. The findings centred on this theme will be discussed in detail in the findings chapter of this thesis.

**Table 7.6 Keeping Pace with Learning Activities Tree Node**

<table>
<thead>
<tr>
<th>Code Name</th>
<th>Memo Link</th>
<th>Sources</th>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extracurricular activities</td>
<td>8</td>
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<td></td>
</tr>
<tr>
<td>Learning outcomes</td>
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<td>29</td>
<td></td>
</tr>
<tr>
<td>Overload</td>
<td>Yes</td>
<td>14</td>
<td>27</td>
</tr>
<tr>
<td>Planning and time management</td>
<td>16</td>
<td>52</td>
<td></td>
</tr>
</tbody>
</table>
6.4.6 Perceptions of Pedagogical Practices

Finally, Figure 6.7 shows the relationships amongst the main concepts forming the
Perceptions of pedagogical practices theme and developed through the think-aloud
process. In the figure, the theme has three main dimensions: Teaching practices,
Awareness and Teaching presence.

![Diagram of Perceptions of Pedagogical Practices]

*Figure 7.7. Perceptions of pedagogical practices.*

The teaching practices dimension stresses the importance of the teaching practices
captures and the wide range of learning abilities and needs students bring to their studies,
as outlined earlier in the Preparing to learn theme. This dimension also shows the
potential of the blended approach for better teaching practices. Similarly, the Awareness
dimension acknowledges the intricate aspects of teachers’ perceptions and assumptions and the way they may affect students learning.

Finally, the *Teaching presence* dimension recognises the instrumental role *Ownership* has in the development and delivery of effective blended learning environments, with practitioners having the power of making autonomous decisions for the betterment of teaching. The nodes containing data excerpts in the conceptualisation process of the *Perceptions of pedagogical practices* theme were merged into a tree node with the same name. Table 6.7 shows the ten nodes associated with this tree node. The findings centred on this theme will be discussed in detail in the findings and discussion chapters of this thesis.

**Table 7.7 Perceptions of Pedagogical Practices Tree Node**

<table>
<thead>
<tr>
<th>Code Name</th>
<th>Memo Link</th>
<th>Sources</th>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td>Approaches to teaching</td>
<td></td>
<td>5</td>
<td>32</td>
</tr>
<tr>
<td>Teachers’ assumptions of T&amp;L</td>
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<td></td>
<td>5</td>
</tr>
<tr>
<td>Teachers’ expectations</td>
<td>5</td>
<td></td>
<td>15</td>
</tr>
<tr>
<td>Teachers’ perceptions of T&amp;L</td>
<td>5</td>
<td></td>
<td>15</td>
</tr>
<tr>
<td>Teaching awareness</td>
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<td></td>
<td>26</td>
</tr>
<tr>
<td>Teaching ownership</td>
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<td></td>
<td>1</td>
</tr>
<tr>
<td>Teaching presence</td>
<td>15</td>
<td></td>
<td>79</td>
</tr>
<tr>
<td>Teaching presence from e-data</td>
<td>4</td>
<td></td>
<td>27</td>
</tr>
<tr>
<td>Teaching problems</td>
<td>2</td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>Teaching variation richness</td>
<td>Yes</td>
<td>3</td>
<td>10</td>
</tr>
</tbody>
</table>
6.5 Summary

In this chapter, I described the processes of the analysis and representation of the data based on Miles and Huberman’s (1994) data layering model. During the pre-analysis process, the pool of raw data was formatted prior to importing them into Nvivo. For over ten weeks, with the help of this qualitative research computer program, I conducted text analysis to elucidate units of meaning from participants’ data excerpts. This coding process produced forty-six nodes representing relevant information. Further analysis of the data excerpts coded into the nodes, which involved an iterative and incremental process using concept mapping and think-aloud techniques, resulted in the identification of five themes: Adapting to a new learning environment, Preparing to learn, ICT integration, Keeping pace with the learning activities and Perceptions of pedagogical practices. These five themes will be used as the organising framework for the presentation of the findings, the focus of the next five chapters.
Chapter 8 Salient Themes and Organisational Framework

7.1 Introduction

This chapter is the first of five chapters that illustrate and discuss the salient themes in the data. Figure 7.1 is an attempt to explain the relationships of the themes through an organising framework. From the figure, the *Adapting to a new learning environment* theme sits at the top of a hierarchical structure as the highest level of abstraction, which includes three dimensions: the social dimension, the educational dimension and the cultural dimension. This layer represents the broader context in which learning takes place whereas the second layer – titled *Blended learning encounters* – represents participants’ specific encounters with blended learning and the issues arising from these encounters.

There are complex connections between the three dimensions and the themes identified in the second layer. Examination of the second layer reveals the themes that have been constructed to characterise the issues arising from the participants’ blended learning encounters: *Preparing to learn, Keeping pace with the learning activities, Perceptions of pedagogical practices* and *ICT integration*. The lower portion of the figure represents the specific questions that this study seeks to address, that is, the five research sub-questions elucidated in Chapter 4–Research Design and Methodology. These questions comprise three *descriptive* research questions that seek conclusions about what occurs in a blended learning environment, and two *recommending* research questions that seek implications for the design and implementation of blended learning in multicultural higher education contexts.
Figure 8.1. Organising framework.
7.2 Adapting to a New Learning Environment Theme

This chapter introduces the *Adapting to a new learning environment* theme drawing on data excerpts from both research sites. As discussed in Chapter 5–Data Analysis and Representation, the *Adapting to a new learning environment* theme emerged from my conceptions of the patterns in the data. The findings associated with this theme centred on a wide array of issues affecting international students’ learning experience and stemmed from students’ cultural, social and educational backgrounds. Accordingly, this chapter is devoted to presenting the insights into participants’ perceived need to adapt, their attitudes towards this need, their reflections on the process, and the implications of this for their learning. It draws on data where students converse about their educational experience in terms of responding to and adapting to the unfamiliar. I also draw on data from classroom observations and online discussions to explore the issues raised.

7.2.1 Adapting to a New Culture

The findings related to the cultural dimension of the *Adapting to a new learning environment* theme are consistent with those of previous research that reports on phenomena such as *culture shock*, *cultural sensitivity* and *cultural awareness* (Chataway & Berry, 1989; Michailidis, 1996; Rajapaksa & Dundes, 2002; Stafford et al., 1978) in association with international students’ relocation to a different country to complete university studies.

According to Hofstede (2005), the intercultural encounter between one foreign individual and the new cultural environment is usually accompanied by feelings of bewilderment, anxiety, loneliness, helplessness, distress and hostility, called *culture shock*. In this study, the experience of the feelings that Hofstede attributes to culture shock was apparent in some students. The case of Samuel (Pakistan, Site 1) is an example. During my classroom observations, I noted that Samuel was willing to participate in open
discussions when moderated by the teacher. His English was very good, with a great ability to express himself (Observation Notes, Site 1, Observation 7). However, he seemed unwilling to participate collaboratively in peer learning situations where the negotiation of ideas was valued. In fact, during whole class discussions he was sometimes overemotional in supporting his points of views and very critical of peers’ opinions, sometimes without sound arguments (Observation Notes, Site 1, Observation 7). He appeared to prefer to work on his own and, when asked to join a group for discussion, he reluctantly agreed. Within the group he remained quiet, contrasting with his relatively active role in open class discussions moderated by the teacher (Observation notes, Site 1, Observation 7). When asked in interview about his approach to learning, he reported that he relied solely on reviewing lecture slides and reading textbooks (Samuel, Pakistan, Site 1, student interview excerpt). I asked him why he relied so much on authoritative sources like textbooks and the like, oftentimes incomplete, or out of date, to which he answered:

When I am reading something which I do not understand and there is no much clarification or when sometimes there is not much explanation, just a couple of sentences, I always go to the Web to find things I do not find clear (Samuel, Pakistan, Site 1, student interview excerpt).

From the data it is apparent Samuel preferred to learn independently and not collaboratively. When talking in the interview about cultural differences, he reported an unwillingness to adapt to the host culture:

Cultural differences may be a huge problem, but I do not have to worry about it because I am not going to adapt to that culture, I do not have to do with that culture. (Samuel, Pakistan, Site 1, student interview excerpt).

This is despite his desire to attain permanent residency in Australia:

I thought in Australia that I have admired since a child. I have had lots of interest in cricket, and I thought that I could have a chance over here. However, the main reason is the possibility of getting the permanent residency once I complete my course. This is a convenient thing if you want to commute between Pakistan and Australia and for better prospects (Samuel, Pakistan, Site 1, student interview excerpt).
Samuel also reported feelings of loneliness, living away from his family (Samuel, Pakistan, Site 1, student interview excerpt). The data provides a picture of Samuel as a student who is reluctant to engage in the collaborative work valued by the host culture, who reports being resistant to adapting to the new culture and who experiences negative emotions such as loneliness.

Thomas (Vietnam, Site 2) also reported experiencing some personal challenges due to the need to operate within a new multicultural environment. Unlike Samuel who seemed to actively resist changing his ways, Thomas appeared to be endeavouring to develop greater cultural understandings in order to adapt to the new environment:

A bit of problem with culture...Some misunderstanding is acceptable because of different culture. When there is a problem, I say “that is okay in my country but I do not know if it is okay in your country”. For example, when I was studying English, I had a conversation with a Chinese guy and there was a misunderstanding as a result of the culture (Thomas, Vietnam, Site 2, student interview excerpt).

From the quote, Thomas was mainly affected as a result of his lack of exposure to intercultural relations. In fact, he had never operated within a foreign culture before and had not had much time to adapt, having spent only four months in Australia (Thomas, Vietnam, Site 2, Student interview excerpt). Thomas also recognised that the process of adaptation had been affected by his English language skills (Thomas, Vietnam, Site 2, Student interview excerpt) and, as documented later, this also affected his studies. This English language barrier was reflected in his limited contributions in the discussion forums and lack of participation in class discussions (Observation Notes, Site 2, Observation 4).

The cases of Samuel and Thomas provide evidence of the phenomenon of culture shock already documented in the literature on international students. However, their orientations differed, with Samuel seeking to insulate himself from the host culture while
Thomas sought to adapt to a challenging situation by testing out new behaviours and developing new skills.

In contrast to Samuel and Thomas, some students like Jacquie (China, Site 1) and Natalie (Oman, Site 2) did not report or appear to experience any of the negative emotions associated with culture shock during their period of study in Australia. Jacquie, for example, referring to the significance of being an international student, recognised the challenges of, and the need to adapt to, the cross cultural environment:

For me it is to adapt to the culture especially to language, the environment around me because English is not my first language, I need to learn, study, live here ... and also the culture is quite different from our Eastern world; here is Western way of doing things, I have to learn how they behave and get used to them (Jacquie, China, Site 1, student interview excerpt).

During my class observations, there was evidence of Jacquie’s attitude and willingness to volunteer to answer questions posed by the teacher and to happily join the group activities; even acting as a leader. Such an attitude appeared to be in contention with previous research reporting passive behaviour amongst international students, particularly from Chinese cultural background (Arkoudis, n.d., Biggs, 2003; Chalmers & Volet, 1997; Kember, 2000).

In relation to Natalie, it was the high level of acceptance and tolerance of multicultural Australia that was the determinant factor in her adaptation process. In her own words, she did not experience any feelings of culture shock while studying as a foreign resident in Australia. On the contrary, she felt comfortable enjoying the openness and diversity of this country:

I have not found any culture shock in Australia.... You can see that in a multicultural environment like here, people are from everywhere, you do not feel weird, and there are no boundaries. Most of people are not originally from Australia and they accept and respect you. The acceptance and tolerance is higher here (Natalie, Oman, Site 2, student interview excerpt).
Natalie’s reported feeling of acceptance appeared to be confirmed by data recorded during my class observations. In fact, in class Natalie was a highly motivated student with a good sense of humour and lively facial appearance. She appeared to be very proud of her cultural background wearing colourful dresses typical of her native country (Observation Notes, Site 2, Observation 4).

In addition to the negative emotions associated with culture shock, the intercultural relation issues of cultural awareness and cultural sensitivity were raised by some student participants. In the literature, the terms cultural awareness and cultural sensitivity are interrelated. The former involves the continuous development of sensitivity and understanding of another cultural or ethnic group; whereas the latter means being aware that cultural differences and similarities exist and have an effect on values, learning and behaviour (Stafford, Bowman, Ewing, Hanna, & Lopes-DeFede, 1997). In this respect, Rachel (Indonesia, Site 1) was highly critical of the lack of cultural sensitivity by some of her fellow students and the marked disinterest in understanding and accepting others’ cultures and values:

One of my group members is from a different background of mine and I have found that that person is straightforward in expressing the [sic] views. They do not understand others’ culture, they ignore you. They are not culturally sensitive and I do not feel comfortable about it (Rachel, Indonesia, Site 2, student interview excerpt).

However, this sentiment of feeling culturally ignored by others appeared not to have affected Rachel’s learning journey. During my class observations, I noted she was keen to participate in class discussions and argue when required. For example, during the presentation of the progress report of a group assignment, she appeared to be relaxed and comfortable in presenting the subject matter and answering questions from teachers and students (Observation Notes, Site 2, Observation 4).
In essence, as evidenced by the examples discussed here and summarised in Figure 7.2, the students’ responses to the new cultural environment varied, with some seeking to learn its ways as part of their development and others seeking to insulate themselves by adhering to the cultural values of their home countries. In the discussion chapter, I will discuss further these findings in the light of the first research sub-question (*How do international computing students perceive the multicultural aspect of the new learning environment?*) and in terms of an international research agenda that is currently investigating the impact of culture on international students’ learning outcomes (Elkin, Farnsworth & Templer, 2008; Green, 2007; Knight, 2006; Leask, 2009; Marginson & Eijkman, 2007; Parsons, 2010). In the next section, I present the findings of students’
experiences related to their reported need to adapt to the host environment from the social viewpoint.

**7.2.2 Adapting to a New Society**

Within the theme of *Adapting to a new learning environment*, further to the cultural dimensions described above, there was also evidence of social dimensions to internationals students’ reported need to adapt to the new host country. Consistent with previous research (Stafford et al, 1978; Michaildis, 1996), the social dimensions of the students’ experience of the new environment included perceiving the host country as being safe and egalitarian, experiencing feelings of loneliness and homesickness due to lack of family support and isolation from social networks, and difficulties rooted in the lack of networking and familiarity with communication protocols.

During the interviews, I asked the students to state the reasons for choosing Australia as the destination for their further studies. The perception of the host country as being safe and egalitarian resonated across a number of students’ responses. One of the voices was Jacquie, who enjoyed the style of life of the host country:

[In my country] people tend to be very anxious or too careful about everything but here people are more relaxed and I have to admit that people enjoy more freedom (Jacquie, China, Site 1, student interview excerpt).

Moreover, she expressed that in Australia, people had more sense of respect for others compared to her country of origin. From the data, there was no direct evidence how these perceptions of the new environment might have impacted Jacquie’s learning experience, but from my observations of her willingness to participate in class and her positive emotions and expressions I assume she enjoyed her study time in Australia.

Like Jacquie, Kathy (Kuwait, Site 1) appeared to have enjoyed the safety and equality of the host country. She particularly highlighted the open-mindedness and tolerance of Australia:
I enjoy this type of culture and environment because back in my country there is too much of racism. In this country everyone is similar, there is no racism regardless you are a manager, employee or whatever. I found this is the best and people are so friendly (Kathy, Kuwait, Site 1, student interview excerpt).

As a mature student living in Australia with her daughter, Kathy found the new environment convivial, with people willing to cooperate, an ideal environment to raise children. As matter of fact, she envisaged applying for permanent residency as part of the country’s skill migration program. Jacquie and Kathy’s perspectives were common amongst the student participants. There were no issues that Australia as a host country was either unsafe or discriminating.

The social dimensions of the *Adapting to a new learning environment* theme also included the reported feelings of loneliness and homesickness amongst some students as a result of a lack of social life and family support. These findings are consistent with those of previous studies like the one conducted by Rajapaksa and Dundes (2002) who identified homesickness and loneliness as major factors affecting students’ adjustment to new cultures and their learning journey. Take the case of Katerina (India, Site 1), for example, who despite being happy and enjoying her learning journey in Australia, also lamented the lack of family support: “As an international student you feel lonely and homesick, there is not much social life because everyone is very busy” (Katerina, India, Site 1, student interview excerpt). Contrary to Katerina, for whom loneliness was a product of the lack of a social life, for Samuel, as discussed earlier, loneliness was mainly a consequence of the ‘*cultural differences*’ and his resistance to adapt to the unfamiliar.

Not surprisingly, in some cases, the experience of feelings of loneliness and homesickness as a result of social re/dislocation seemed to be related to the time of living in the host country, suggesting that for some it was a transition issue. This finding is consistent with Pascale’s (2006) research on the process of adjustment of overseas
students, stating that the longer international students were in the host country, the lesser the impact of feelings of loneliness and homesickness. This was the case, for instance, for Rachel (Indonesia, Site 2), who reported that, after living in Australia for a year and a half, she was not experiencing these sort of feelings, compared to the feelings of loneliness and homesickness she experienced during the first term of her period of study in Australia. She explained that, over time she developed social networks that helped her to cope with her emotions.

The social dimension of the *Adapting to a new learning environment* theme also included variations in networking and familiarity with communication protocols, the lack of which was experienced as problematic amongst some students. For example, as part of a group project assignment at Site 2, some students were concerned about the best way of contacting an organisation to conduct an interview. This was a challenging exercise for these students owing to their lack of networking and knowledge of local organisations. As expressed through the discussion forum by one of the students: “We consider that all of us do not have any working experience at Melbourne, so it is better for us to find an organisation within the university” (Bernard, Site 2, student discussion forum excerpt). Others were mainly concerned about the most appropriate procedure to contact the organisation and collecting the sought information. On behalf of the group, a student posted the following question:

*We are uncertain about the best way to contact the organisation we have chosen. Should we email them and attach the letter? Or should we call them and ask for appointment? In either case, whom should we contact within the organisation?* (Bernard, Site 2, discussion forum excerpt).

This was a fair question, for which the teacher replied: “I would recommend either calling them or going and seeing them in person .... a cold email has a good chance to end up not being read” (Sophia, Site 2, discussion forum excerpt). Undoubtedly for these
students, not having any experience with the communication protocol to contact local managers or any networking with local businesses, it would have been easier and more comfortable to contact them by sending an email with a letter of introduction attached to it rather than by face-to-face. In this way, deficits in their connection to the social context provided an added layer of difficulty for these students’ completion of the required task.

Although in this study, except for Thomas, it was found that English language issues did not have any major effects on students’ learning (discussed in detail in the discussion chapter); communication problems did affect the social interactions of some students. As mentioned earlier, Thomas’s contributions to the discussion forum and class participations (as noted during my class observations) were limited. As he expressed, the cause of these communication problems was mainly rooted in his “language barriers”, which combined with his short period of time in contact with the new environment (he had just arrived at Australia at the time of this study), made his adjustment to the new environment more difficult. In the case of Henry (China, Site 2), there was a similar feeling, recognising the difficulties of adapting when facing the host culture for the first time:

When I first came here, the culture was very different to my home town; I had to learn to cope with it, as well as with the language because it was not my first language compared to the local students. (Henry, China, Site 2, student interview excerpt).

However, two years after, as evidenced by my class observations and the ambience of Henry’s interview, he appeared to be fully confident in communicating his ideas and coping well during his stay in Australia.
**Figure 8.3.** Social dimension of the Adapting to a new learning environment theme.

In essence, as illustrated in Figure 7.3, there were a number of social dimensions that affected the students’ experience of the host environment and their response to this experience. There was a reported feeling of a safe and equal host country across all student participants. All appeared to be happy in having chosen Australia as the country of destination for their further studies. In a similar vein, and consistent with previous research (Pascale, 2006), there was a reported feeling of loneliness and homesickness amongst some student participants. Finally, students reported problems rooted in the lack of networking and familiarity with communication protocols acceptable within the host society.
In this study, in addition to cultural and social issues, my analysis of the voluminous data produced a large number of codes relating to participants’ encounters with blended learning within the new learning environment. As illustrated in Figure 7.3, this educational dimension emerged in conjunction with the cultural and social dimensions of the *Adapting to a new learning environment* theme. The unpacking of the educational dimension reveals a blended learning encounters layer of abstraction, comprising the four remaining themes, and I devote the next four chapters of the thesis to presenting the findings related to each of them.

### 7.3 Summary

In this chapter, I described the key findings in relation to the cultural and social dimensions of the *Adapting to a new learning environment* theme. Each finding is illustrated by an example from the data. Where exceptions were noted to general trends, those exceptions are also illustrated and discussed. In general, the sentiment amongst the student participants was that the multicultural aspect of the new environment was challenging but worthy. There was a group of students whose willingness to adapt and integrate to a new culture was a determinant factor in having an enriched learning experience. They enjoyed the cross cultural interactions and the openness of a learning environment where they felt every voice was equally heard regardless of skin tone and social status. They recognised the multiple opportunities and the international exposure they were elevated to as result of taking overseas qualifications. On the other hand, a cohort of students found the pressure of being in a foreign country problematic, missing their families, feeling lonely and overwhelmed with the new lifestyle and to cope with multiple learning activities. However, despite all these problems, they recognised the effort of studying abroad as valuable for the development of their future professional careers, and that some of the difficulties they experienced were transitional issues that
would lessen over time. Some of the issues identified had direct implications for these international students' experience of, and engagement with blended learning. These implications are raised in later chapters.
Chapter 9 Preparing to learn

8.1 Introduction

This is the first of four chapters that focus on issues arising from participants’ encounters with blended learning. The findings reported here emerged from my own conceptions of patterns in the data excerpts related to participants’ preparedness and readiness to learn in a blended learning environment. Figure 8.1 summarises the main aspects of the *Preparing to learn* theme in the context of the organising framework.

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**Preparing to learn**

1. Previous educational experiences and familiarity with teaching and learning strategies.
2. Previous computing education and familiarity with the subject matter.

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*Figure 9.1.* Preparing to learn theme in relation to the organising framework.

From the figure, the *Preparing to learn* theme encompasses four aspects of the students’ backgrounds, including their previous learning experiences and familiarity with teaching and learning strategies; their previous computing education and familiarity with
the subject matter; their motivation for learning; and, the skills they bring to the learning situation. Each of these aspects is explored below. I draw on data excerpts from participants’ voices, classroom observations and online discussions to explore and illustrate the issues raised.

8.2 Previous Educational Experience

Students’ previous educational experience was discussed briefly in relation to the Adapting to a new learning environment theme as one of a number of changes that international students need to meet when they go to study in the host country. It also features here as an important aspect of the students’ preparedness and readiness to learn in the new environment. This is not surprising given that previous research suggests that the way students approach learning partly depends on their previous teaching and learning experiences (Ramsden, 2003).

A constructivist teaching approach that incorporated a blended learning environment was experienced by these students undertaking studies in the Australian universities, and this contrasted to the more behaviourist and didactic teaching approaches that many of the students were accustomed to in their home countries. As a result, a number of students reported difficulties adjusting to this new educational environment of blended learning. For instance, Vert (India, Site 1) raised the issue of being exposed to a completely different approach to teaching including the way teachers and lectures guided students’ study and monitored their learning, the duration of the teaching term, and the scope of the subjects or units of study:

The pattern is completely different to our country; however the lecturers and teachers here give us guidelines which we have to study. Back in our country, we do not have semesters like here; the term runs for a year. In Australia, we cover the main aspects of the subjects, whereas over there we have to study a whole textbook. Initially, it was hard but later on we adapted to this style of teaching and learning. (Vert, India, Site 1, student interview excerpt).
A direct consequence of being exposed to an unfamiliar way of teaching, led Vert to depend on the teachers, to the point of considering them as the most distinguishing factor for the successful completion of his studies:

We need lecture’s guidance because we are new to this environment and this type of learning. If we have a problem with the subject the first thing that occurs to us is to ask your teacher. I believe he or she is the only one who can guide us to solve the problem (Vert, India, Site 1, student interview excerpt).

Vert’s apparent attitude of reliance on the teacher is not consistent with a constructivist teaching approach which, for postgraduates within a blended learning environment, emphasises independent inquiry, collaborative dialogue between peers and critical engagement with subject matter (Biggs, 2003; Bonk & Cunningham, 1998; Kanuka & Anderson, 1998; Laurillard, 2002). This issue is discussed in detail in Chapter 11, in the context of the Perceptions of pedagogical practices theme.

The constructivist approach used within the two sites was different to the more traditional text-based learning approach to which many of the students were accustomed. In the case of Site 2, for example, there was a reported feeling of puzzlement for some students facing learning experiences that involved the application of business analysis and processes modelling in real world industry projects. From a student discussion forum, a desperate student posted:

Within our group, we don’t really have any industry experiences, so we are having a really difficult time on understanding the concepts of the project and how to deal with it, like what exactly is one particular business process, any examples?? We are facing multiple choices and have no idea where to start....and how to abstract them into the models. Should we use any particular technologies on that? Is there any reference?? Thanks for your help!! (Unknown, Site 2, student discussion forum excerpt).

From this quote, there is evidence that these students were struggling to come to terms with the newness of the situation. Not only was this type of applied activity new to them, but they also lacked experience in the application of the tools, technologies, business processes and models that they supposedly developed during their previous
undergraduate educational experiences. As I discuss in Chapter 9—Keeping pace with the learning activities theme, the contrast between those students with previous industry experience and those students without industry experienced raises issues for the design of teaching and learning activities that cater for a heterogeneous group of students. This challenge is taken up in Chapter 12 – Discussion of the Findings and Conclusions, when I address my fourth research question: “How can blended learning be supportive of the diverse abilities and needs of international students?”

8.3 Previous Computing Education and Familiarity with the Subject Matter

The acquisition of new to old information and accommodation of prior knowledge to new facts (McInerney & McInerney, 2006) has received considerable attention amongst eminent scholars in the field of student learning research (Dewey, 1997; Piaget, 1969; Vygotsky, 1978).

For Piaget (1969), understanding prior knowledge is crucial in the interpretation of how individuals make sense of new interactive cognitive experiences. Similarly, Vygotsky (1978) stresses the importance of prior knowledge in the construction of learning through social interactions and Dewey (1997) draws on prior knowledge in the transformative process of learners’ experiences. Consistent with these learning theories, there was evidence in the data of the impact of prior knowledge on participants’ preparedness and readiness to learn within the context of this study. There was also evidence of the teachers’ awareness of the role of prior knowledge. For example, Sophia (teacher, Site 2) stressed the importance of the subject prerequisites and urged the students to make a special effort to overcome a late start. As she commented in an interview excerpt:

I learned that you have to really be clear about what you assume from the students right from the start. Students have to realise that the subject comes with prerequisites...... If they do not
have the right knowledge needed to undertake this subject, then they have to catch up somehow (Sophia, Site 2, teacher interview excerpt).

Taking the student perspective, there were two issues relating to prior knowledge that affected their participants: prior knowledge of the subject matter and prior knowledge of learning technologies.

8.3.1 Prior Knowledge of the Subject Matter
There were circumstances where the prior knowledge students brought to learning was not enough to understand the topics of the subject. In the case of Thomas, for example, who embraced information systems as part of a career change, his background in telecommunications was not a match for the prerequisites demanded by an information systems subject like BAM (Business analysis and Management). As mentioned in Chapter 5—The Settings, students enrolled in BAM were required to have knowledge of the fundamental processes for identifying information systems requirements and the analytical tools and techniques for business problem solving. Thomas’s knowledge background was mainly in the field of telecommunications, and despite having the analytical skills to solve engineering problems, he lacked the skills for solving the business-related problems typical of information systems. In his own words: “I think that this subject is a bit difficult for me because my background is not in information systems” (Thomas, Vietnam, Site 2, student interview excerpt).

If for Thomas, the study of a subject not fully consistent with his telecommunications background appeared to be problematic, that was not the case for a student like Jacque, whose educational background was also in telecommunications. She had embraced information technology, not for a career change like Thomas, but to gain complementary knowledge in the field of ICT:

I studied telecommunications, which is computing-related. I think there is an information technology trend now. You should know at least the basic information technology things so
that you can adopt it or implemented in your work or in your future life. I think that the salary level in this industry is a bit high, practical reason, and also I am quite interested in telecommunications (Jacquie, China, Site 1, student interview excerpt).

The difference in the impact on prior knowledge exerted in Thomas and Jacquie’s learning experience may be explained after further analysis of both students’ educational backgrounds. As shown by the collected student background information, before taking this subject Jacquie already held a Master in Telecommunications Engineering and a Graduate Diploma in Information Systems, whereas Thomas a Bachelor of Telecommunications Engineer. Additionally, Jacquie had spent a year and a half in Australia, compared to Thomas who had spent only three months. In other words, Jacquie was a more experienced student with a superior higher educational background and longer residency in the country. This observation demonstrates the interaction between the themes reported here: these students’ different experiences are a function of both their preparedness to learn (Preparing to Learn) and their need to adapt to a new environment (Adapting to a new learning environment). Seen through the lenses of each of these themes, Jacquie is better positioned for success in her studies. The extent of the change to which Thomas needs to adapt is greater than that for Jacquie. This difference is reflected in the qualitatively different reasons they give for enrolling in the subjects. In the case of Thomas, it was a career change owing to job promotion, whereas for Jacquie, she was mainly motivated to gain greater breadth of knowledge in the field of information technology, in line with industry trends. For Thomas, the situation represented a radical change in his way of thinking and operating as a professional practitioner, whereas for Jacquie, it was a matter of complementing her knowledge in preparation for a better career prospect and in this way can be seen as part of a continuum in her professional development. The role of students’ motivation will be explored in more detail later within this chapter.
8.3.2 Prior Knowledge of Learning Technologies and their Application to Education

The student background information collected before the interviews revealed that the majority of student participants had a comprehensive ICT background as a discipline, with a number of students having already completed a second postgraduate computing program. However, the findings also revealed that some participants, particularly from Site 1, were not aware of the potential of ICT to facilitate learning. Their lack of experience using ICT as a learning tool for critical analysis, deeper understanding of the subject matter and dialogical conversations (Garrison & Vaughan, 2008; Garrison & Kanuka, 2004; Laurillard, 2002) turned out to be problematic. For example, Vert (India, Site 1) “did not have any idea about the existence of” blogs. He reported that using blogs in the context of learning was a burden and that it took him a while to get accustomed to using them for the purposes required in the subject. In the case of Katerina (India, Site 1), the situation was more critical. For her, the lack of experience using blogs in the context of learning was considered as a “kind of a shock” and negatively affected her learning journey. This sense of shock was echoed by other fellow classmates. For example Kathy (Kuwait, Site 1), a mature-aged student with eight years’ experience in the workforce, the use of blogs as part of a new learning experience in the early stages of the term was difficult to deal with:

What I felt when I came to this university, I found it a little bit tough because everything was new to me; the assignments, the exam preparation, and on top of that the blogs, a very new thing which I found very interesting. However, I think blogs should not be in the first semester (Kathy, Kuwait, Site 1, student interview excerpt).

Being her first semester and not being an experienced blogger, she missed the opportunity to leverage the blogs to stimulate reflections and ameliorate learning. In fact, her lack of familiarity and experience with the tool led her to log journal entries without
the expected profound and reflective analysis of an independent and self-regulated postgraduate learner. Her blog entries were limited to short summaries and bullet point entries without the additional argumentation and reflection that you would expect to see in this genre. From the quote, she thought that the tool was interesting, but at the same time she was not comfortable with it; suggesting she would have been better off using it at a later stage of her program when she had gained some experience to use it for learning purposes.

Kathy’s words were consistent with Richard, the teacher of the subject, who was concerned by students’ lack of experience to use ICT as a learning tool:

Some students do not understand this type of technology. Initially they struggle a lot since this is the first time they experience things like discussion forums, blogs and learning management systems (Richard, Site 1, teacher interview excerpt).

From Richard’s comment, it is evident that some students experienced difficulties understanding the technological tools for the first time; and it appeared that this lack of understanding contributed to students not seeing the blogs as appropriate for reflective learning. In summary, students like Kathy saw their unfamiliarity with tools such as blogs as the main source of the difficulties they experienced. It may be that this focus on skills to operate the tools took their attention away from a deeper source of difficulties, that is, their unfamiliarity with culturally and critically appropriate usages of the tools to facilitate learning.

If for Kathy, Vert and Katerina, the issue was mainly associated with their lack of cultural and critical understanding of the tools, for other students like Bernard (China, Site 2), the issue mainly stemmed from his inexperience in using it as a tool to facilitate learning. Bernard was an experienced blogger and had had the opportunity of learning through the use of discussion forums in previous subjects; however, he was not sure about the benefits of learning through blogs. His mindset was biased to accept the use of blogs
for his own entertainment and social networking but not for learning (Bernard, China, Site 2, student interview excerpt). In essence, for Kathy, Vert and Katerina, finding a culturally meaningful use for the blogs was a new experience. For Bernard, on the contrary, he needed to adjust to this new socio-cultural context of teaching and learning, which required him to change his understanding about the potential blogs might have in learning. The blogging example provided here is just one of a number of observations made about students’ unfamiliarity with using online technologies, both their operation and their meaningful application for learning. The impact of students’ limited prior knowledge of learning technologies on their learning is discussed in detail in Chapters 9 and 10 in the context of the Keeping pace with the learning activities and the ICT integration themes respectively.

8.4 Motivation and Commitment to Learn

In addition to prior knowledge of ICT tools and previous educational experience, student motivation and commitment to learning was also a feature of their preparedness and readiness to learn, with participants reporting a variety of sources of motivation, including career path change and the desire to be “competitive” in the job market, and personal satisfaction.

8.4.1 Career Path Change and Desire to be Competitive

There was a reported feeling of preparedness to learn amongst some students, like Eloisa (Australia, Site 2) and Natalie (Oman, Site 2), who brought to the multicultural blended learning environment a wide range of graduate and professional attributes, coupled with a strong working experience. Both had the motivation to embrace postgraduate studies not only to remain current in their field of expertise but also to progress in their career paths. In the case of Eloisa, for instance, having spent ten years in networking engineering and deciding to change her career path into something more specific in information systems
management, the need to learn was driven by her personal interest in keeping up with the challenges of the new position:

I was thinking about postgraduate for a quite some time. The first time I thought about it was when I felt that my work was not engaging enough, and I wanted something else to do. At that point I did not end up doing anything. I look into a new job where I moved from networking engineering to something that is more systems IT based. It was interesting but I felt that I was missing a lot of what was happening because my undergraduate studies were in electronic engineering and my experience had been in networking and all of a sudden this is mostly about methodologies and the development of products. That was the trigger for my PG studies. I did not like the feeling that I was behind everyone else (Eloisa, Australia, Site 2, student interview excerpt).

Like Eloisa, Natalie brought to the blended learning environment sound abilities but in the field of information technology. Having developed her expertise purely in computer sciences, she had the need to upgrade her managerial skills as a result of a job promotion in management:

I am moving from a very technical field of computer sciences and information technology, to management. I would like to align my IT experience with management. That is why I came to study to Australia. At work I was promoted to a managerial level. I have found it a bit difficult coming from a very technical background. I have to concentrate a lot. I expect this course to help me a lot. This is my first semester and actually I am learning a lot from it. I also want to sharpen my managerial skills (Natalie, Oman, Site 2, student interview excerpt).

Natalie and Eloisa appeared to have been well prepared to learn in an environment consistent with their previous experiences and their motives to learn for career change. However, as mentioned above this was not the case for Thomas, who having the same motive to learn for career change, found it difficult to come to terms with the new learning experience because of his communication and adaptation problems.

Unlike Natalie, Eloisa and Thomas, a different but related motive to learn was given by Rachel. In her case, the need to learn was linked to her perception of being more accountable and competitive during her professional life. When asked why she decided to undertake further studies, she answered:

To be more competitive. I am still very young and still need more knowledge. I prefer to study all the way through, as much as possible and then go to work. I think to study undergraduate, then go to work and then do the postgraduate is harder to re-start your studies after working (Rachel, Indonesia, Site 2, student interview excerpt).
Rachel was concerned that undergraduate studies were not enough in today's competitive computing industry. Besides, she was also concerned with the difficulties of embracing further studies as a mature person after having undertaken professional work. This issue was also raised by Natalie:

I had been working for some time. I finished my university studies long time ago so re-start studying has been a bit difficult, to get used to the study environment again, and listening others (Natalie, Oman, Site 2, student interview excerpt).

However, she also recognised the worthiness of the effort, suggesting she would have not learned that much if she had undertaken her further studies in her own country. She said that here in Australia, she added more value to her study, learning more and thinking more in a better learning environment (Natalie, Oman, Site 2, student interview excerpt). In essence, the interview data with Rachel and Natalie indicate that the decision to return to study was not taken lightly, but they each had a clear purpose and motivation for returning to study.

8.4.2 Personal Satisfaction
The previous data excerpts about students’ need to learn appeared to be characterised by inquiry, autonomy and self-direction, in line with Knowles, Holton and Swanson’s (2005) adult learning theory: a need to knowing why to learn something before undertaking it; readiness to learn what is needed in real life; and motivation to learn driven by self-esteem. A further analysis of those findings also shows that they were mainly rooted in students’ motivation for external rewards: career change and competitiveness or professional accountability; however, in the case of Bernie, there was an additional intrinsic motivation to learn:

In a way money alone does not give me satisfaction, so for me gaining more knowledge in the same field and associated fields is worthy ...usually it gives me more motivation as a person (Bernie, Kuwait, Site 1, student interview excerpt).
In his view, to achieve a complete learning satisfaction there should be both internal and external motives to learning. Further evidence of Bernie’s intrinsic motivation to learning was found in the next quote, where he commented about the way he planned his studies: a careful selection of prerequisites to gain a depth of learning consistent with his technical expertise, combined with breadth subjects to explore areas outside his major study area:

I tailored my courses and subjects in such a way it goes towards networking and network security which I am very interested in .... I am also planning to take Information Culture and Communication to have me interact with people. In a future I would like to be a manager or a training person. I will be able to interface with clients, with trainees in a proper way and I will be able to understand the Australian culture of business even better (Bernie, Kuwait, Site 1, student interview excerpt).

During my class observations, I was able to verify Bernie’s behaviour: a proactive, critical thinker and independent learner, willing to take on the challenges of a different cultural and educational environment (Observation Notes, Site 1, Observation 7).

In the context of international students, the variation in type and source of motivation to learn is of interest for this study because these factors are linked to students’ preparedness and readiness to learn. This has implications for students’ learning, particularly in the Australian context since once students complete their postgraduate studies, they have the opportunity to apply for permanent residency as part of the Australian General Skills Migration program (Australian Government Department of Immigration and Citizenship, 2011)

### 8.5 Skills Required for Blended Learning

The constructivist teaching approach that incorporated blended learning was experienced differently by this cohort of students and to some extent that difference was linked to the skills students brought to the new learning environment. Being built on constructivist principles, effective blended learning requires learners to have online specific skills including operational, cultural and critical skills, as well as more generic skills like social,
management and metacognitive skills (Goodfellow, 2004; Green, 1988; Lankshear & Knobel, 1998). The evidence showed a shortage of these skills amongst a number of students, and as a result, they reported difficulties adjusting to this new educational environment. Earlier, in section 8.3.2—Prior knowledge of the learning technologies, I reported the difficulties faced by some students as a result of their lack of skills using the online components of the blended approach. The following lines elaborate on the social, management and metacognitive skills and the potential within blended learning to developing learning skills.

In relation to social and management skills, at Site 2, some students showed the skills and did not have major problems in integrating into group learning activities. For example, Bernard (China, Site 2) was outspoken about the skills he developed as part of his learning journey: “I enjoy working with people; discussing group assignments ..., a skill I actually developed here in Australia”. In fact, I was able to verify Bernard’s attitude to group discussion during my class observations. In a workshop-like class, the teacher asked the students to produce a poster summarising the main points of a classroom discussion. I saw Bernard’s engagement with the task at hand, participating and arguing actively in the production of the poster (Observation notes, Site 2, Observation 2). He was keen to add that within this learning environment he learned to “manage many things including study and work independently”, and see the world through a critical lens of discussion and argumentation:

Here if you say you can do something you have to convince people that you can do it before actually doing it. Everyone argue and discuss the issues. Nothing is taken for granted (Bernard, China, Site 2, student interview excerpt).

This quote provides insight into the demands of the Australian culture, requiring confidence and assuredness, and the ability to argue your own ability, skill or understanding. This has profound implications for students who are expected to have such
skills upon arrival and perhaps do not have them, coming from a home culture different to the host culture.

The data provides evidence that some students felt comfortable working in an environment that fostered collaborative learning activities such as group assignments and group study: "I like studying in groups because you can learn from others and share things" (Peter, India, Site 1, student interview excerpt). In contrast, others like Aurora (India, Site 1) found it easier and more comfortable to learn individually. In my observation notes, I recorded Aurora’s learning behaviours: She was a quiet and shy student giving the impression of being immersed in the class with the intention of obtaining a full understanding of the subject matter. However, it appeared she was not prepared to gain that understanding by engaging and participating in class discussions and debates (Observation Notes, Site 1, Observation 7). This approach to learning was also confirmed by her limited contributions to the online learning tasks. In comparing Aurora’s learning behaviour to Samuel’s (Pakistan, Site 1) reported earlier in the Adapting to the new learning environment theme, there are some aspects that are worthy of attention here. Both liked to work independently, appearing not to be comfortable with group work activities, and neither had previous experience with learning technologies. In the case of Samuel, however, he liked debating and discussing, and his encounter with learning technologies gave him the opportunity of developing further those debating skills. In fact, Samuel appeared to be more confident expressing his views through a virtual space rather than through his perceived heated and stressful atmosphere of a face-to-face environment:

For example in class, teachers ask questions that we are hesitant at times to answer but once those questions are to be answered in writing via these systems, it is easier for you because everyone is not the same and the confidence level is low. Using discussion forums and blogs, no one is watching you. You do not have the pressure of your peers or teachers. You gain confidence and things are easier to express. This is a very good way of interacting with people who are capable and have great ideas but lack of the confidence to talk in public. (Samuel, Pakistan, Site 1, student interview excerpt).
The example of Samuel is evidence of the likely potential of blended learning in the context of international students, especially for students who find the process of operating in and adapting to a foreign culture as problematic and who find it difficult to participate collaboratively in face-to-face shared learning situations. The case of Aurora, however, shows that not all international students will take the opportunities offered by online forums. Other variables are at play, including those noted earlier about students’ understanding of how to learn in an online environment.

The findings also show how the blended learning environment facilitated the further development of students’ social and communication skills. As discussed in the *Adapting to a new learning environment* theme, owing to the lack of networking or knowledge of local organisations, students at Site 2 perceived as problematic to find an organisation where they could apply the information systems theory they learned in class. The teacher’s intention with this project-based learning task was to force the students to get involved with the real world of business that could give them the opportunity to enhance the communication and business skills needed to succeed professionally (Sophia, Site 2, discussion forum excerpt).

### 8.5.1 Opportunities within Blended Learning to Develop Learning Skills

Computing as a discipline of study requires that the conceptualisation of the subject matter be accompanied by the implementation of practical exercises that resemble the real world. In this respect, some students brought to the blended learning environment limited practical skills. As discussed in Chapter 5–The Settings, to develop these practical skills, students at Site 1 were exposed to simulation software (*LabSim*\(^TM\)) to gain problem solving skills they could apply to real world scenarios within the industry. From Samuel, Manuel and Bernie’s voices, the effectiveness of the blended approach in supporting this specific learning need through the use of the *LabSim*\(^TM\) was apparent. In a more profound
way, Katerina (India, Site 1), as a mature student, saw the use of ICT in learning as a good opportunity to develop further her personal and independent learning skills: “These systems are good because we have to concentrate and do everything on our own” (Katerina, India, Site 1, student interview excerpt). In the ICT integration theme, I provide a deeper discussion of this issue. According to Zimmerman (2000) metacognitive skills like planning, organising, self-monitoring, self-teaching and self-evaluating can be developed in a learning environment selected, created and structured by the learner and where there is a motivation to learning linked to the learner’s beliefs. In this ecosystem there is a predisposition to learn with the learner having a continuous need to learn new knowledge based on prior experiences (Knowles et al., 2005). From the findings, there was evidence that some student participants brought to the blended learning environment certain metacognitive skills. In fact, as discussed earlier, students like Natalie, Eloisa and Bernie exhibited certain insights into these metacognitive skills, particularly Bernie whose main motivation to learn was for personal satisfaction. Another good example of metacognitive skills (in this case preparing and planning to learn) was given by Manuel:

Before choosing a subject, I always go through the course profile or subject notes which give information of what you can know after the completion of the course. I always take notes to see if the course is helpful for me or not (Manuel, Bangladesh, Site 1, student interview excerpt).

Manuel’s ability to plan and prepare his learning gave him the opportunity to tailor his preferences consistent with his learning needs, abilities and expectations of a future professional career. The way blended learning may help international computing students develop their metacognitive skills is discussed in detail in the discussion chapter of this thesis.

8.6 Summary
In this chapter, I reported the findings about student participants’ preparedness and readiness to learn in a blended learning environment and centred on the Preparing to learn theme of the theoretical framework developed and presented in the Data Analysis and Representation chapter. The theme comprised four dimensions: their previous learning experiences and familiarity with teaching and learning strategies; their previous computing education and familiarity with the subject matter; their motivation for learning; and the skills required for blended learning.

The findings related to the their Previous learning experiences and familiarity with teaching and learning strategies dimension were consistent with student learning research (Biggs, 2003) suggesting that the way students approach learning partly depends on their previous teaching and learning experiences. For example, not being accustomed to new approaches to teaching led some students to rely too heavily on their teachers to overcome the learning gaps.

The findings related to the their Previous computing education and familiarity with the subject matter dimension reveal that some students could not unleash the full potential of the learning technologies owing to their lack of familiarity with them, particularly when applied for the purpose of learning. In this respect, some students suggested that these tools should not be used in the earlier terms of the program, which suggests a need for a greater degree of scaffolding than was offered to these particular students.

Regarding the Motivation and commitment to learn issue, the Preparing to learn theme was consistent with adult learning tenets where some students reported career path change, competiveness / accountability in information technology, and personal satisfactions as the main motives to embrace learning. Finally, the findings related to the Skills required for blended learning domain, recognise the diverse skills international
computing students bring to the blended learning environment. Students varied in terms of their networking and social skills, collaborative and personal learning skills, practical skills and metacognitive skills. This domain also acknowledges the opportunities within blended learning to developing students’ learning skills.
Chapter 10 Keeping Pace with the Learning Activities

9.1 Introduction

This is the second of four chapters that focuses on issues arising from international computing students’ encounters with blended learning. A key theme arising from my analysis of students’ talk about their blended learning experience was the impact of the number and frequency of learning tasks required for participation in the learning. Learning was experienced by many students at both sites as fast paced with a need to rush to keep up. This theme emerged in a broader context of the intensification of people’s lives in terms of competing commitments and the normalisation of paid work and family commitments as part of university students’ lives (Clegg, Stevenson & Willott, 2009). My analysis of the data relating to perceptions and expectations of the learning tasks and student workload identified three contributing factors to the sense of ‘pace’ and the emphasis on ‘keeping pace’. These factors – shown in Figure 9.1 – are: number and type of learning activities; diversity of learning tasks and alignment of learning tasks and assessment. From the figure, the first issue raised by the students of this subject was that the blended learning environment required too many learning activities resulting in superficial engagement. The second contributing factor to the fast pace of this subject was that students were required to do all tasks, contrary to the spirit of flexible learning and catering for the needs of adult learners. The third issue was related to the lack of alignment between task requirements and the percentage of formal assessment associated with the tasks. Accordingly, in this chapter, I present the findings drawing on data excerpts where student participants expressed their opinions of the learning activities, the way they approached them and the problems they experienced in understanding the
Keeping pace with the learning activities

1. Number and type of learning activities
   - *Students felt overburdened*
   - *Quality of students' contributions compromised, resulting in superficial engagement*
   - *Student took different approaches to online interactions*

2. Diversity of learning tasks
   - *No choice of tasks*
   - *The challenge of designing teaching and learning activities catering for a heterogeneous group of students*

3. Alignment of learning tasks and assessment
   - *Some assessable learning activities were not matched well with the percentage of marks attached to them.*

*Figure 10.1.* Keeping pace with the learning activities theme in relation to the organising framework.
For the first two sub-themes – *Number and type of learning activities* and *Diversity of learning activities* – data excerpts from Site 2 are used to provide illustrations and a basis for discussing the issues involved. Site 2 is the focus for these sub-themes because it was at this site where the vast majority of students’ reported feelings of excessive student workload and no choice of tasks were found. Similarly, for the last sub-themes – *Alignment of learning tasks and assessment* – I draw primarily on Site 1’s students voices because it was at this site where issues such as the imbalance between the effort of the tasks and the associated marks were raised.

### 9.2 Number and Type of Learning Activities

In terms of the contributing factors to students’ sense of pace and emphasis on keeping pace, a key issue raised by the students was the *Number and type of learning activities* within the blended learning environment. In this section I focus on that issue, drawing on students’ reported data about what was perceived as an excessive number of tasks, seen as overwhelming and detrimental to students’ engagement. This issue was mainly raised at Site 2; therefore, the findings reported here are drawn from data from that site.

With reference to the number and type of tasks, in Chapter 5–The Settings, I have given a full analysis of the number and type of tasks provided to the students. In BAM, the learning tasks included: 1) the conduct of a major group project; 2) the posting of a fortnightly group project progress report to a text-based forum for peer discussion. For this group project forum all students were required to contribute with at least two posts commenting on others group project progress reports. Since there were five groups, each student was required to contribute with at least 10 posts fortnightly; 3) Mid-semester first draft group project report, including a group presentation; 4) write a critique on a first draft group project report randomly allocated to the students by the teacher; 5) critiques to be used by groups to write the final version of the first group project report; 6) points 3 to
6, for the final or end of semester group project report; 7) write a weekly summary, 
including one or two questions, on any of the mandatory readings located in the LMS. 
The discussions of the questions were open in another text-based forum and continued 
during face-to-face sessions. FOIS learning tasks included: 1) individual analysis of three 
case studies; 2) group analysis of a case study; 3) individual online discussions, 
equivalent to a 5000 word discursive assignment. In addition, FOIS was mainly delivered 
online with only four face-to-face sessions mainly designed to review the concepts 
discussed online.

Compared to the core, advanced characteristic and complex structure of BAM, 
FOIS was an introductory, non-core (elective) and straightforward blended course, with 
the number and type of tasks issue raised in this sub-theme not featuring in the interviews 
with participants. Accordingly, the following is an account of the issues as reported by 
BAM student participants.

In these words posted to the forum by one of the BAM students (unknown, Site 2), 
the presence of lots of information appeared to have affected the motivation to learn:

I think a lot of needs to be done: assignments, summaries, survey, and participations...
Sometimes I am busy during maybe two weeks, and what about my participation then, 
especially when we have to write a report ... lots of time is needed... so can we slow it down? 
We don’t have time to think.... We still have other subjects to do, however, I spend most of 
time struggling with this subject... and it is still hard to understand.... At the very beginning, it 
was exciting about these new experiences..., however; now, I am exhausted... how about you 
guys? (Unknown, Site 2, discussion forum excerpt).

There was a sense that their feet barely touched the ground before they were off 
again. Similarly, in the following excerpt from a student interview, the student not only 
found the pace of the online work very hectic, but also beyond not being able to think and 
feeling exhausted up to the point of being unable within such a fast-paced and changing 
environment to respond effectively to teacher feedback:

I know the lecturer is quite flexible but the feedback that you are getting is difficult to use 
because of the amount of work that needs to be done: one week we have to write summaries,
the next week we have to post questions. You cannot establish a pattern or rhythm of learning (Eloisa, Australia, Site 2, student interview).

Indeed, many students, particularly the less experienced, felt overwhelmed with lots of reading and writing. In the case of Henry, he expressed his satisfaction of a joyful learning experience during the first part of the semester which he reported as extremely interesting with practical solutions to real world problems, including business processes modelling and the like. However, later within the term, through the introduction of new knowledge and theory, the classes became hard for him to follow and the second part of the semester, where he had to read and write a lot, turned out to be more academic than he preferred (Henry, China, Site 2, student interview). In some circumstances it was evident that the heavy workloads became more problematic for some students, like Thomas, who had no prior experience with the blended learning approach and who reported difficulties due to a language barrier:

I have to look after three more subjects. Sometimes, I do not have enough time to study them all. There is too much information I have to read, and this is even though I only study. My language barrier also affects me negatively (Thomas, Vietnam, Site 2, student interview).

More specifically, he referred to his difficulties in coping with the discussion forums midway through the term when he was required to contribute with arguments and critiques:

At first, I followed the discussion forum but after a while I found hard to follow. You must read everything, post the questions, reply to others. I have to do a lot of thinking to read, post questions and post answers to other people questions (Thomas, Vietnam, Site 2, student interview).

The heavy workload affected the quality of reflections, with students contributing with the minimum just to meet the participation requirements. As posted by this student, in one of the general discussion forums:

We all just try to answer questions and questions without any in-depth analysis because we all work against time having many assignments from many subjects due. As a result, we try less and less (Unknown, Site 2, discussion forum excerpt).
Even for experienced students, like Natalie, the online learning activities appeared to be overwhelming; however, in her opinion, it was a matter of using management skills to plan the learning week after week:

For this subject I have to read a lot, and if I have to submit my summary today, then two days before I start reading for two hours, then the next day I do the summary and then I submit. I have to plan beforehand because of my family obligations (Natalie, Oman, Site 2, student interview).

In summary, although Sophia, the teacher in charge of BAM at Site 2, offered a range of approaches to cater for different learning styles these were not well received by the students because of the sheer number of tasks. This combined with alignment issues discussed in the next sub-theme, led many students to engage only superficially with the online tasks to meet minimum requirements, which was counter to the teachers’ intentions and which may have had a negative impact on students meeting the learning outcomes. However, this is not to say students at Site 2 did not value the use of learning technologies; on the contrary, all of them were sympathetic with the tools. For example, Rachel asserted the blended approach was valuable in terms of conceptualising the subject matter: “The online systems can be used to consolidate and conceptualise the high level of information and knowledge this subject entails. Workgroups allow you to share ideas”. In terms of engaging in discussions, though, she preferred the face-to-face approach:

Online systems are useful in terms of information sharing and subject material which is available. However for discussions I prefer to have them in class verbally not by posting. The problem with posting is that you write ideas, then edit them, then re-write them, you want to make them perfect. You want to make a good paragraph and then post it. I think that is not a good idea because it takes time (Rachel, Indonesia, Site 2, student interview).

Rachel was concerned about the extra time involved in preparing online posting responses and the perfectionist approach towards idea generation. Unlike Rachel’s preference for in-class discussions, there were some students, like Henry, who preferred the online tool for its convenience of refining responses: “After writing the draft I post it
to share with my group members and to discuss about it. I get their feedback and that helps me refine it” (Henry, China, Site 2, student interview). From the quotes, Rachel and Henry’s approaches to using the tools are quite different, she focusing on the product (i.e. a polished message) and he focusing on the process (i.e. feedback from peers and learning). That is where potentially, as suggested by some commentators (Aspden & Helm, 2004; Osguthorpe & Graham 2003) the blended approach may be invaluable to support different styles of learning because students have the opportunity to participate face-to-face and online.

It is worth noting that the number and type of learning activities issue raised here was not featured in the interviews with student and staff at Site 1. At Site 1, something similar emerged but mainly focused on the alignment between the requirements of the learning tasks and the assessment marks. This sub-theme will be discussed later in the theme.

From the students’ reported data, there is evidence that providing opportunities for both face-to-face and online interactions catered for a diversity of student preferences and needs, but requiring students to do both contributed to the workload issues. This dimension of the theme is discussed next.

9.3 Diversity of Learning Tasks

The Diversity of learning tasks was the second contributing factor to students’ sense of pace and emphasis on keeping pace. In this respect, there were students’ reported feelings that the blended learning environments did not give them the option to choose from learning tasks and that somehow they were misaligned with their preferences and needs. Like in the previous section, data excerpts from Site 2 are used here to provide illustrations and a basis for discussing the issues involved. Site 2 is the focus because it
was at this site where students’ voices, particularly Eloisa and Henry’s voices, were inspirational in the conceptualisation of the sub-theme salient points.

Taking the case of Eloisa (Australia, Site 2), she expressed her concerns about Sophia’s (teacher) real-life and project-based approach in the design of the learning activities. As discussed in Chapter 5–The Settings, Eloisa was a mature student with an extensive information technology working experience, hence her high expectations of the subject. When I asked her about such expectations she replied:

I expect to have a much broader and deeper understanding of the different software development methodologies that are under the different methods people use for business analysis. I guess I expect that if I work for a role in business analysis I will be better placed to do that. I expect to be able to look across different practices people use and understand where they are best used, why they are or whether something might be better and I expect to apply it (Eloisa, Australia, Site 2, student interview excerpt).

In the following data excerpt, however, she expressed her disappointment with the first learning task not being aligned with her immediate preferences:

I prefer not to have subjects where I have to submit a real-life situation. I do not mind if it is a theoretical problem or an essay, a case study but the fact that we have to use a real-life case, I find it difficult but mostly I find it pointless when I am working. My goals are to learn something other than workplace. I do not need experience talking to people; I do not need experience in dealing with teams because it is part of my work. It is frustrating; I rather spend the time doing the review (Eloisa, Australia, Site 2, student interview excerpt).

As mentioned above, the combination of practice with theory was essential in terms of Sophia’s computing learning design; however, in terms of Eloisa’s expectations, she had already gained the practical knowledge and only the theoretical layer of the learning design appeared to have met her needs as she understood them:

The second assignment that we are doing is good because it suggests that it is more an academic essay, rather than having spent time organising meetings to try to understand the business (Eloisa, Australia, Site 2, student interview excerpt).

If Eloisa’s preference for learning favoured the embedding of theory and argumentation in the learning tasks, other students, like Henry, thought differently,
preferring the practical component of the learning design. In the following data excerpt, for example, talking about his expectations with the subject:

"I hope I can understand the business analysis process from the start to the end, how it should be implemented in the industry world and to know how to solve problems with practical implementations." (Henry, China, Site 2, student interview excerpt).

From the quote, Henry’s perception of computing learning was centred in real-life practical work rather than in academic or critical thinking. This was corroborated in another data excerpt, where he expressed his preference for learning activities involving practical work and disfavour for those requiring academic writing and argumentation:

"I enjoyed the first part of the semester because it was very practical. I am the kind of person who likes to provide practical solutions to specific problems, the analysis of business processes, the use of models to match them and so on but right now it is mostly academic where we have to write many things. The second part is a bit tough for me as opposed to the first part." (Henry, China, Site 2, student interview excerpt).

Considering these students’ very different preferences, Sophia’s challenge was to design teaching and learning activities that catered for a heterogeneous group of students. In the case of Eloisa and Henry, the collected background information showed marked differences in their expectations, prior learning and work experiences. Eloisa was a mature student with extensive work experience, whose main interest was the improvement of her critical thinking skills as a preparation for her new professional role in management. In contrast, Henry was a young adult, without any work integrated learning or professional experience, interested in gaining a practical knowledge of computing.

The findings on satisfying students’ preferences and needs as reported by Eloisa and Henry in this sub-theme, to some extent may be provocative and contentious; and in my opinion, should be taken cautiously. It could be argued that Sophia has provided a very good balance of learning activities, with both practical, industry-based, group activities and more individual, academic, discursive activities. In this way, both Eloisa and Henry experience activities that accommodate their preferences, as well as activities
which challenge them, or which produce an element of discomfort, which might be said to stimulate learning. Similarly, it could also be argued that Sophia has not provided the students with the option to choose the tasks. On the contrary, students were required to complete all the learning activities and that contributed to the workload issues reported above. Research suggests that freedom to choose the learning tasks based on students’ abilities, needs and interests promotes learning (Zimmerman & Schunk, 2001). This is one of the issues I address later in the discussion chapter of this thesis, and in the light of the research sub-question: “How can blended learning be supportive of the diverse abilities and needs of international students?”

Finally, the issue of students’ preferences and needs reported in this sub-theme were not featured in the interviews with participants at Site 1 with the same intensity as Site 2’s. There were some comments about the blogs-based learning tasks suggesting students’ dissatisfaction with the tasks; particularly in the case of Peter (India, Site 1), who complained about the compulsory mode of the task; and the misalignment between the requirements of the learning tasks and the assessment marks. This dimension of the theme is the focus of the next sub-theme.

**9.4 Alignment of Learning Tasks and Assessment**

The third dimension of the *Keeping Pace with the learning activities* theme focuses on the alignment between the amount of work required by particular learning tasks and the recognition of this work through the marks allocated for the learning tasks. Student satisfaction and engagement with learning tasks has been found to be affected by their perceptions of this alignment (Ramsden, 2003; Entwistle & Entwistle, 1997). In this section, I draw on participants’ reported data from Site 1 to illustrate the response of students who perceived that the work required to complete a task was not adequately rewarded in the assessment scheme. I focus on Site 1 because the attribution of marks to
learning activities was perceived to be particularly problematic at this site. At Site 2, this dimension of the *Keeping Pace with the learning activities* theme was not featured in the interviews with participants.

In terms of students' sense of pace and emphasis on keeping pace, Aurora (India, Site 1) and Peter (India, Site 1), raised the issue of keeping pace with the blogs and the imbalance between the effort required to complete the tasks and the percentage of marks allocated to the assessable items. Referring to the lack of time to complete the online tasks, Aurora emphasised her additional obligations as a student: "You have to deal also with assignments and there are circumstances you do not have enough time to post your reflection on the blogs" (Aurora, Site 1, India, student interview excerpt).

As discussed in Chapter 5–The Settings, blogs had a weighting of 10% and were used as part of the learning activities in SAD, one of the subjects at Site 1, to stimulate students' reflections on topics discussed during the face-to-face class. The use of these tools, however, was perceived as problematic to the extent that for some students, knowing that they had to contribute by posting their reflections became a burden:

The way blogs were used in this subject was a kind of obstacle for me. For starters they were compulsory. You had to do them regardless since they had marks allocated. It should be a reflection of the subject done spontaneously and not on a weekly basis as they have been set up for this subject (Peter, India, Site 1, student interview excerpt).

From the quote, there was a reported feeling of frustration and concern in Peter's words regarding the way the blogs had been implemented in the study of the subject matter. He did not think the way they were used was consistent with the spirit of reflection and was instead in favour of using them "spontaneously", that is to say, in response to a self-generated urgency of recording personal reflections on topics discussed in class, and not for the sake of a mark allocated.
In a similar vein, Richard (teacher, Site 1), the teacher of the subject was critical of the way the blogs activities had been implemented and assessed. He argued that the workload and effort of the blogs was not consistent with the allocated marks. He also criticised the designers of the learning activities (note that this teacher was responsible for the delivery of the subject, but not the design of the learning activities), arguing that the way the blogs had been conceived defeated the purpose of an actual reflective learning tool:

Assignment Item 3, the blogs related task, I think that it is too much for them to handle. It is only one mark each week. How much effort are we expecting from them with such a low marking weight? We could have thought of alternate means, reduced the assessment activities. We are asking them to draw DFDs diagrams in the blogs and also in the assignment. The initial idea was to incorporate the blogs as a learning space to enhance learning, but somewhere down the track it has lost that purpose. This assessment should be more balanced (effort versus marks) and accrue for more marks (Richard, Site 1, teacher interview excerpt).

These problems associated with the development of online learning activities that are poorly aligned with learning intentions and assessment processes, and the impact of this on students’ learning experiences, will be discussed in detail in the discussion in response to the research sub-question: What are the conditions that promote effective blended learning for international computing students?, and as part of the ICT integration theme.

9.5 Summary
In this chapter, I have reported the findings centred on the Keeping pace with the learning activities theme. Specifically, I reported on participants’ experience, perceptions and expectations of the learning activities, the problems they faced in coping with the blended learning design and the way they managed these problems. Three dimensions were identified in this theme: too many learning activities resulting in superficial engagement; requirements to do all tasks rather than being offered a choice and lack of alignment
between task requirements and the percentage of formal assessment associated with the tasks.

Regarding the first dimension of the theme and particularly at one of the sites (Site 2), a number of students perceived the pace of the blended approach to learning as overwhelming, not having enough time to meet the demands of the subject as well as the deadlines of the assessment tasks. A direct consequence of this intensity of workload was manifested in the quality of students' work, with many students at Site 2 making minimal contributions in online forums in order to meet the passing requirements.

In the context of the second dimension, the delivery of the blended subject was particularly problematic at Site 1. Some students had extensive professional experience in computing, with a main interest in taking the subject to develop further their critical thinking and managerial skills in the field of information technology. In contrast, other less experienced students were looking for a subject where they could gain the practical knowledge that could prepare them well as computer practitioners. The challenge for this teacher was the design of a blended learning environment with teaching and learning activities that catered for a heterogeneous group of students.

The lack of alignment between task requirements and the percentage of formal assessment associated with the tasks was the focus of the third dimension. In this respect, the sentiment of a number of students and of the teacher at Site 1 was that the effort required to keeping pace with the online learning activities was not justified by the percentage of marks allocated for students' participation and contribution.
Chapter 11 ICT Integration

10.1 Introduction

This is the third of four chapters that focuses on issues arising from participants’ encounters with blended learning. It is specifically associated with the ICT integration theme identified in the analysis. In the previous chapters, I reported how the lack of student participants’ ICT preparedness was counterproductive in the design, implementation and delivery of blended learning environments (see Chapter 8–Preparing to learn theme). Similarly, I also reported on students’ perceptions of the online learning activities and how these perceptions impacted students’ learning experience (see Chapter 9 - Keeping pace with the learning activities theme). Within the ICT integration theme, I report on further issues that affected the learning journey of this cohort of international computing students, specifically drawing on data excerpts related to participants’ perceptions of the use of ICT, their previous experience using ICT, the role of formative online assessment, and their acceptance of learning technologies as integral rather than complementary to learning.

In relation to educational technology, the term integration means different things in different contexts and it is often used without precise explanations of what it might mean to different people and for different authors. In this chapter, a number of ideas and practices related to integration are explored in the context of international computing students using blended learning and could be interpreted as any of the following: the way different online tools and their access are presented to students, the relationship between online and face-to-face components of a unit of study, the link between learning aims and the use of ICT, the link between assessment tasks and the way ICT is used; and the underlying assumptions of teaching and learning tasks for different aspects or components of a unit of study and how this relates to the way ICT is used.
Figure 10.1 summarises the main aspects of the ICT integration theme in the context of the organising framework. From the figure, the ICT integration theme encompasses various key aspects of participants’ views of the integration of ICT in teaching and learning, including general perceptions about ICT in education, perceptions of ICT implementation, technical design issues, and assessment of ICT-based learning activities.

**ICT integration**

1. General Perceptions of ICT in education
   - Useful, convenient, flexible, encouraging reflection and good for knowledge sharing and asynchronous interactions

2. Perceptions of ICT implementation
   - Not overall accepted
   - Keeping up with technology
   - Structure of the tools

3. Technical design issues
   - Lack of integration
   - LabSim as a good example of integration

4. Assessment of ICT-based learning activities
   - Excess of online tasks
   - ICT as part of assessment
   - Students’ level of interaction and participation in online learning activities related to the amount of marks allocated to the tasks
   - Compulsory

*Figure 11.1. ICT integration theme in relation to the organising framework.*
10.2 General Perceptions of ICT in Education

In general terms, student and teacher participants perceived that the use of the learning technologies in their courses was useful, convenient, and flexible; encouraged reflection; and, was appropriate for knowledge sharing and asynchronous interactions. However, the use of the learning technologies was not without challenges, with some of these challenges already reported in the previous themes. The flexibility and convenience of the tools, particularly as a learning management system, was emphasised by a number of students. Let us take the case of Vert (India, Site 1) for example, who had the need to urgently fly to his country owing to family problems during the teaching period. He recognised that through the blended learning approach, he “was able to keep in contact with lecturers, tutors, catch up with lectures, and lecture notes, materials and so on” (Vert, India, Site 1, interview excerpt), which in a conventional face-to-face teaching and learning program he would have found difficult to do, given his personal situation. But, if for Vert the use of ICT in his studies was a matter of flexibility and convenience, for Jacquie, an experienced user of the tools, it was necessary for learning. She referred to the discussion forums and blogs as “indispensable for learning”, to the extent that she would not have been able to conduct her studies without them. There was evidence of Jacquie’s engagement and facility with these learning tools through the high number of conscientious and thoughtful posts she generated during the semester term. In her interview, she particularly emphasised the ubiquity of the tools, her confidence to express feelings, and the wide audience you may reach with them:

They provide you with interactivity that traditional face-to-face methods could not provide; they are also 24/7. I think that maybe people tend to be shy in modern society. Maybe sometimes when I meet you face-to-face I could not say some words directly or I feel tensed or something [like that]. I do not want you to know it is me who said that, but with these tools you can solve all those problems. It can also involve large scale people, students, coordinators, lecturers and tutors that could discuss a problem together, not just limited within a classroom (Jacquie, China, Site 1, interview excerpt).
Jacquie's words are consistent with a cluster of research (Suler, 2004) highlighting the disinhibiting effect of online text-based interactions and particularly the potential that this has for international students (Lanham & Zhou, 2003) when socio-cultural factors and English language issues might otherwise inhibit them from participating in face-to-face forums.

A number of teacher participants also acknowledged the benefits of using ICT in learning. For instance, Georgina (Teacher, Site 1) mentioned the support students had through the use of ICT to alleviate English language barriers. The asynchronous feature of the system allowed them to express their views at their own pace, giving them time to reflect on what they were to write and post as a contribution to the discussion. Similarly, Sophia (Teacher, Site 2) praised the capacity the asynchronous system had to enable shy students to raise their voices to critique their peers' views; behaviours they were not confident to show in a face-to-face situation. This particular affordance of the technology was one of the main highlights reported by Jacquie earlier in this section. Although these are benefits that potentially apply to all students using online text-based forums, it is of particular relevance to an international non-English speaking background cohort, where issues related to confidence in English language and teacher-student relationship may amplify difficulties with face-to-face learning environments (Lanham & Zhou, 2003).

As mentioned, there was a reported consensus amongst participants that the use of learning technologies could have the potential of ameliorating learning, with some students like Jacquie going beyond and suggesting them as "indispensable for learning". However, during the conduct of this research, there was also a reported feeling of a strong preference for conventional face-to-face teaching and learning amongst some of the participants. Take for example Gabrielle's case, a young Indian student, who was adamant that she preferred more direct instruction from the teachers. She considered the face-to-
face lectures as the most fundamental resource to spread the knowledge. An analysis of her participation and contribution showed her apathy and lack of engagement with the blogs, consistent with her view of learning as information transmission via conventional face-to-face instruction. From a teachers’ perspective, I have reported Georgina’s feelings about the use of learning technologies and, when comparing them to the traditional approach to teaching, she was inclined to express her preference for a face-to-face only approach, with the use of ICT as a complementary rather than an integral tool to teaching and learning. This is more important in the case of international students from the subcontinent and Asian countries where teacher-centric approaches have a strong stance (Hofstede, 1986; Hofstede, 2005). This issue will be further discussed in the context of the Perceptions of pedagogical practices theme and in the discussion chapter when implications for practice are considered.

In essence, with reference to the perceptions of using learning technologies to support learning, there was a general feeling amongst the participants that the use of the tools was useful, convenient, and flexible; encouraged reflection; and, was good for knowledge sharing and asynchronous interactions. However despite this general acceptance of ICT in education, amongst some of the participants, there was still a strong belief that the conventional face-to-face approach to teaching and learning was superior.

As reported in the Preparing to learn and Keeping Pace with the learning activities themes, the value perceived of the use of ICT in the context of this study was tarnished by a series of concerns which tampered with the effective implementation of the tools to ameliorate learning. In the next section I will further delve into this important issue.
10.3 Perceptions of ICT Implementation

From the previously discussed findings, there was a general reported belief amongst students and teachers that the use of ICT to support learning was a good idea; however, the effectiveness of online learning tools to facilitate and improve the learning of this cohort of international students was not generally accepted. In fact, despite teachers at both sites perceiving the use of ICT in the learning process as valuable, they were not convinced of its effectiveness to ameliorate learning within this context, except for Shane: “For me the most important thing ... is what we call the discussion forum. That is the most integral part ...” (Shane, Site2, teacher interview excerpt).

In contrast, Georgina (Teacher, Site 1) raised the issue of effective interactions using discussion forums. She was concerned that within this context, students may only be motivated to use these tools to acquire or consume knowledge, to get answers without concern for the process; defeating what she saw as the purpose of a two-way collaborative and engaging learning system:

Discussion forums are good but there are elements in face-to-face interactions that cannot be achieved with online discussions. Technology may help but cannot replace the richness of classrooms because the whole learning process happens in face-to-face. Through discussion forums international students may only be interested in getting solutions to the problems. Give me the answer from the collaboration point of view (Georgina, Site 1, teacher interview excerpt).

Georgina’s concern about online learning is mirror by many commentators in the field of educational technology research (Bonk & Graham, 2006; Bourne, Seamna, & Sloan Consortium, 2005; Garrison & Vaughan, 2008) who suggest combining the strengths of the two modes: face-to-face and online. From this perspective, the best of face-to-face and online makes it possible to have a better teaching practice than either classroom-based teaching or online teaching alone can provide. Georgina also raised the concern of keeping up with the development of new learning technologies. In her opinion, there is a high risk in adopting everything that emerges and suggests ameliorating learning. She
suggested that, for these tools to be effective, they have to be “adopted contextually and in relation to what suits you best for the benefit of your students”. Like in the example mentioned above where she thought these tools may be effective in the context of international students to alleviate their language barriers, recollect ideas they could not grasp or understand in the lecture and obtain constructive feedback about what went well and what did not (Georgina, Site 1, teacher interview excerpt).

Georgina’s beliefs about what constitutes effective online learning environments were echoed by Sophia. Sophia described the structure and planning of the discussion forums and how she used them in the curriculum. Within this specific context, she wanted to use the online learning environment “for thinking and pushing ideas, a kind of tool for students to support each other and help them to grow” (Sophia, Site 2, teacher interview excerpt). Unfortunately, as documented in the Keeping pace with the learning activities theme (Chapter 9), she had problems during the implementation of her initial plan with the online learning environment not being as effective as she had expected. In her opinion, the effective use of discussion forums “requires lots of energy from students, the ability to stop and think and, most importantly, time and strategic management skills”. These are attributes that she did not take into account during the planning and design phases of the online learning activities:

I assumed what they would have to know but that was a big mistake, so I learned from that mistake. I learned that you have to really be clear about what you assume from the students right from the start (Sophia, Site 2, teacher interview excerpt).

Reflecting on Sophia’s interview data, she was aware of the potential value of using discussion forums in students’ learning; however, as she explicitly expressed it, it demands effort and understanding to implement them effectively. During the interview, Sophia mentioned that apart from discussion forums, she was also familiar with other tools like wikis and blogs and had used them effectively to support her joint research
projects. In her opinion, she was not prepared to use them in her teaching practices, despite a body of empirical evidence supporting their use for teaching and learning (Anderson, 2007; Bryant, 2007; Downes, 2005; Wise & Quealy, 2006). She needed time to actually explore the value of these tools in the context of computing education:

Wikis are good for workshops, organising ideas or start writing a paper. Blogs, on the other hand, are personal tools so you can reflect upon. In fact, I have not had a chance to actually stop and think on how I should use blogs in teaching and learning because I do not get a good feel for them. I have been using them for myself, I have a blog, and I am using wikis for different research projects. I cannot see how they would fit in my subjects with my learning objectives (Sophia, Site 2, teacher interview excerpt).

This quote is consistent with Sophia’s previously noted comments about the effective implementation of these tools requiring lots of effort, criteria for judging success and shared understanding. Without having invested the time and effort required to understand how new online tools might be used to support learning, Sophia was not prepared to use them.

If there were concerns amongst teacher participants about the effective use of learning technologies in the context of this study, the feeling was similar from the students’ perspective. For example, for Eloisa (Australia, Site 2), a highly experienced user of learning tools, the benefit of using them in her subject was minimal. She believed that the use of ICT as part of the online learning activities turned out to be counterproductive. She was frustrated by the lack of alignment between teachers’ expectations articulated in the course’s objectives and the students’ actual participation and collaboration. In her own words: “contextually, nothing happened”. In relation to student participation, she said that the discussion forums were fragmented, disjointed and hard to follow:

The discussion forum itself is fine but not effectively used in this subject. Perhaps the way we try to use the system is not quite right … I am not sure if it is the system by itself. I think it is the way the posts are put in the discussion forums which are very fragmented and the way they are used … It is all being kind of disjointed and hard to follow up (Eloisa, Australia, Site 2, student interview excerpt).
My analysis of the online discussion data confirmed Eloisa’s comments with fragmented and disjointed contributions. The students did not appear to have skills in communicating effectively via online discussion forums. For example, simple procedures such as copying a part of the post and pasting it onto their own post before responding to the post, was not taken into account by some students, making the discussion difficult to follow. Another example is that names were rarely used in posts and replies, that is to say, the social networking etiquette of initiating a post with a short greeting followed by the recipients’ name and closing the post with the senders’ name was overlooked in a vast majority of contributions. This is consistent with the issues raised in the Preparing to learn theme related to students’ unfamiliarity with the learning technologies and their potential to support quality learning. From the given examples, students appeared to be operationally literate when using the discussion forums but they seemed to lack the cultural and critical skills (Goodfellow, 2004) required to use them in a meaningful way.

Eloisa’s disappointment manifested when she talked about the effective use of the tools to promote knowledge sharing and collaborative learning:

Even though everyone is there trying to say something and you think that it would be collaborative but I think that there is a still an element of competition perhaps. I have seen in other subjects where the lecturer said that if you found an interesting article just posted it for everyone to share and no one posted anything. I cannot believe that no one found an interesting article. They are not sharing articles because they believe that should be used for their advantage. All of those things are working against the idea of sharing information, helping each other (Eloisa, Site 2, student interview excerpt).

Behind this quote, there are more than simply problems with the “system by itself” because the student data suggests a competitive culture amongst the participants, contrasting with the teachers’ assumptions and expectations of communicating in a collaborative way. The data also suggests that the assumptions and expectations held by the teacher (Sophia), which she hoped were built into the teaching and learning
environment, were not understood or shared by the students. Unfortunately, from Sophia’s perspective, not much work was done to make her assumptions and expectations explicitly known and understood by the students from the start of the term, which she recognised as “a big mistake”.

Eloisa’s sentiment was echoed by Natalie, who found the flow of the discussions superfluous and not engaging. She particularly lamented the apathy, lack of participation of fellow students and the low quality of the arguments:

I find the discussion forums superfluous and that is why I do not do participate a lot. You post interesting topics and no one replies with sound arguments (Natalie, Site 2, student interview excerpt).

From the electronic data, I was able to verify Eloisa’s and Natalie’s reports, which were echoed by Sophia, the teacher, who in response to these students’ concern posted the following comment:

Thanks … for your feedback. Following the criteria I proposed in the first post in this thread, I expect indeed your replies to be a little more than just a list of questions. Please use the knowledge you are building in this subject, and from your own project. Reflect, think critically, share and support (Sophia, Site 2, teacher discussion forum excerpt).

Additionally, Sophia took a proactive approach by implementing some changes part way through the semester to improve participation and the quality of the contributions; however, this change produced only minor improvements. Her intention to use the forum as a discussion place for sharing and possible meaning-making was a failure, except for contributions from Eloisa and Natalie. During the interviews, I asked Sophia what she thought was the cause of this problem. Even though she was not sure about the roots of the problems, she mentioned a wide array of student factors that could have contributed to its ineffectiveness; from time constraints, lack of interest and doing the minimum to get a pass, to lack of confidence in working out the appropriate argument for posting. All these explanations point to the students. In a more personal reflection,
Sophia was prepared to accept part of the responsibility in the flaw of the implementation of the discussion forum. Firstly, she did not manage to motivate the students to use the tools for learning purposes and, secondly, she failed to get it right from the start of the semester. Her future agenda is to learn from this mistake:

I have to see the next semester how it works. Getting them to spend some time online, then you know, reflecting on what they read and that can be done after we have the discussions in groups in the lectures, I think that would have been more successful and that has been more successful (Sophia, Site 2, teacher excerpt discussion forum).

Sophia has identified strategies that she could adopt in the future, including to better cater for a range of language abilities, familiarising students with discussion forums as learning environments, and scaffolding the learning process by modelling what is expected, amongst others.

Unlike with the discussion based tools, whose implementation was problematic due to many students’ inadequate skills and understandings and inadequate support from the teachers, the implementation of LabSim and its integration into the wider unit was very successful. As mentioned in Chapter 5—The Settings, at Site 1 the LabSim (laboratory simulator) was a computer learning tool integrated to the SecNet subject. Its intention was to help students experiment with real world problems typical of complex and technical configurations of secured networks. This strategy was very well received by all Site 1 students including Manuel, who praised LabSim’s capacity to guide him to construct real world scenarios without being actually exposed to them: “I found the LabSim very useful ... for example, in my home computer I could build a virtual environment to learn routing and networking” (Manuel, Bangladesh, Site 1, student interview excerpt). In Bernie’s case, the LabSim went beyond the construction of virtual networking environments, enabling him to achieve deep learning:

In the beginning when I planned to do this course and realised that it had something to do with security, I thought to get some basic expertise in security since that is my future goal in my career path. Once I started the course, I found lots of practical things, specially the
LabSim ... very industry like. That inspired me to put more effort to get a deeper understanding and to implement the knowledge I could get from it (Bernie, Kuwait, Site 1, student interview excerpt).

Taking the teacher’s perspective, Georgina underscored the practicality of the LabSim, particularly in those circumstances where it is not possible for the students to use a live environment where they could practice what they learn in theory:

The integration of the LabSim in the subject was really helpful because a pure technical subject like this should have some hands on practical activities. Because we cannot give them a live environment, giving them a simulated environment like the LabSim is as close as it can be (Georgina, Site 1, teacher interview excerpt).

In essence, both students and teachers perceived the blended approach to be advantageous in terms of the general administration of the course and the flexibility it afforded in terms of access in space and time, but in terms of using online communicative media like discussion forums and blogs as valuable spaces for supporting quality learning, few very positive experiences were noted except for the very special case of Shane (Teacher, Site 2) (discussed in Chapter 11—Perceptions of pedagogical practices), and the use of interactive and adaptive media like the LabSim, which was effectively integrated into Site 1’s blended learning environment. In relation to online communicative media, some students missed the opportunity of engaging in two-way collaborative and engaging dialogical conversations. From the data, some students appeared to be operationally literate when using the online communicative media but they lacked the cultural and critical skills to use them in meaningful ways to support their learning. In using the tools, some students embraced a competitive culture, mismatching the teachers’ assumptions and expectations of communicating in a collaborative way. In this regard, the problem appeared to be rooted in teachers’ lack of work in making her assumptions and expectations explicitly known and understood by the students from the beginning of the term. In terms of adaptive and interactive media, the LabSim tool was well received by

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Site 1’s students. They particularly appreciated the affordance of the tool to construct virtual networking environments, enabling them to achieve deep learning.

10.4 Technical Design Issues

In The Settings chapter, I described the learning management systems (LMS) used to support the blended learning approaches at both sites. At Site 2, students accessed the text-based forums through the built-in facility integrated within the Blackboard™ learning management system. In Blackboard, all forums related activities were configured and managed without leaving the system. In contrast, at Site 1, the text-based forum was not an integral component of the LMS. It used a free Perl-based message board system plugged into the LMS with major configuration and management limitations. A similar situation occurred with the implementation of the blogs at Site 1, where students had to use an external blog system linked to the LMS for configuration and management. The way these online tools were configured and managed, was perceived as problematic by some participants at Site 1. They particularly raised technical design issues of logging into the system, operation and registration. For example, Manuel was enthused to say that the online tools were great to facilitate learning; however, he expressed his frustration about having to log in over and over again:

The discussion forum was part of another system and any time you moved from that system to the discussion forum you had to log on again. This was a technical issue I found really irritating (Manuel, Bangladesh, Site 1, student interview excerpt).

Manuel’s concern also resonated amongst the teacher participants. In Georgina’s case, she thought the dispersion of the system into subsystems made it impractical and cumbersome to operate. In her opinion, the tools should be part of a student portal: a central location from where students could have access to all resources including the learning tools without leaving the learning management system (Georgina, Site 1, teacher interview excerpt). Richard, particularly, raised the issue of tools registration. In his
subject, students had to register the blog externally and then to send that external link to moderators for monitoring and marking purposes. This put an extra onus on his work for he not only had to ensure students registered the blogs but also became familiar with the technicalities associated with their use. In doing so, he was exasperated spending the first two weeks dealing with this extra work (Richard, Site 1, teacher interview excerpt).

10.5 Assessment of ICT-Based Learning Activities

My analysis shows that there were also issues associated with the methodology used to assess the ICT-based learning activities, including the practicality of the online learning tasks and the intrinsic / extrinsic incentives to complete them.

The issues of workload and ICT as it relates to assessment have been raised and illustrated in Chapter 9—Keeping pace with learning activities; however, the practicality of the online learning tasks is revisited here, with a specific focus on perceptions of and reported experiences with the integration of ICT as per the focus of this theme. As with earlier sections in this chapter, the analysis compares and contrasts the use of discussion forums and blogs (communicative media) with that of the LabSim environment (adaptive media). The way that discussion forums and blogs were implemented in the courses that were the subject of this study left students with feelings of frustration, particularly when they were linked to the assessment tasks and seen to contribute to an excessive workload. As expressed by Samuel: “One thing is that people perceive these systems as more and more study. They get fed up …; they do not want to waste their leisure time with more study” (Samuel, Pakistan, Site 1, student interview excerpt). This issue contrasts arguments (Downes, 2005; Wise & Quealy, 2006) that support the use of these systems to create richer and more innovative higher education environments.

The second issue in relation to the assessment of ICT-based activities is the incentive to complete the ICT-based learning task. Assessment was seen by participants to
play an important role in motivating students to complete tasks. This view is also found in the literature with some studies (Dennen, 2008; Lopez-Perez et al., 2011; McNamara & Burton, 2009; Pombo et al., 2010) suggesting that if the tools are part of the learning activities then the participation and level of engagement should be rewarded. On the other hand, other studies (Dennen, 2008; Gulati, 2008) disagree, suggesting the spontaneous use of the communicative media for learning without any element of coercion. Specifically, in the context of this study, there was a reported perception amongst the teacher participants that students’ level of interaction and participation in their online communicative learning activities was directly proportional to the number of marks allocated to the tasks. I have reported in Chapter 9–Keeping pace with the learning activities, how Sophia (Teacher, Site 2) perceived that her students contributed and participated with the minimum effort to get the mark associated with the online assessment. This feeling was also shared by Richard, in stating that students used the tools only because they were linked to the assessment: “… they use it because there were marks allocated to it … otherwise they would not bother …, definitely marks need to be allocated” (Richard, teacher, Site 1, interview excerpt).

As described in Chapter 5–The Settings, Sophia’s and Richard’s subjects were delivered face-to-face with the support of online learning management systems and the number of marks allocated for the online participation was relatively low. However, for Shane’s subject (Teacher, Site 2), the case was different for, as documented in Chapter 5–The Settings, this subject had a greater online component compared to face-to-face, making the online participation compulsory and essential to the unit. Therefore there was a strong correlation between the participation and collaboration and the marks allocated. As expressed by Shane:
The collaboration and engaging participation in the discussion forums impact on their marks. I do not set up a minimum requirement; however, the reality is that when some of them contribute less, the later weeks they contribute more (Shane, Site 2, teacher interview excerpt).

In this regard, I reported on Peter's (India, Site 1) feeling who felt exasperated with the way the online tools had been implemented in his course. He was highly critical of the use of the blogs where students were obliged to write and reflect about the subject matter in a timely fashion. He saw that as detrimental to the conversational, engaging and spontaneous aspects of blogging. In his words: "You had to do them regardless since they had marks allocated". This sentiment echoes that of Shane, who was more relaxed than the other teachers about the timing and frequency of students' online contributions. Shane's teaching approach and its impact on effective learning are described in more detail in Chapter 11–Perceptions of pedagogical practices.

As discussed, in terms of discussion forums and blogs, a number of participants challenged the practicality of the online learning tasks and the incentives to complete them in ways conducive to effective learning. In contrast, the LabSim was an example of appropriate integration into the design and implementation of the subject, which even in terms of assessable tasks was well accepted. Students reported being motivated to use the LabSim because they were motivated to learn rather than because they were motivated to get marks. They perceived relevance in the nature of the tool to support their learning, particularly in situations where actual computer network implementations were impractical. For example, through the tool students had the control locus to simulate the design, configuration and implementation of a virtual private network without the need of building it physically. They could experiment with real world problems typical of complex and technical configurations of secured networks, in line with their expectations, and the aims and objectives of the course.
The role of assessment in student motivation and engagement in ICT-based learning activities seems to be an important issue that cuts across each of the issues raised in this chapter. This concern is consistent with curricula assessment research in higher education (Ramsden, 2003) underscoring the influence that assessment has in students learning, with some commentators even considering it as the driving force behind formal learning (Entwistle & Entwistle, 1997). This issue will be further discussed in the discussion chapter in the context of this study.

10.6 Summary

In this chapter, I reported the findings centred on the ICT integration theme. In this respect, the wide spectrum of participants’ voices pointed to a series of ICT issues that I grouped into the following dimensions: general perceptions about ICT in education; perceptions of ICT implementation; technical design issues; and, assessment of ICT-based learning activities.

The reported findings around the general perceptions of the tools was consistent with previous research, with students perceiving the use of ICT as useful, convenient, flexible, encouraging reflection and good for knowledge sharing and asynchronous interactions. However, in terms of the implementation of the tools in their subjects to support learning, the opinions were quite divided. Some of the participants reported problems affecting the effectiveness of the tools such as students’ lack of skills with communicative media, conflicting assumptions and expectations about effective learning behaviours, and clumsy interfaces for accessing learning tools. Within the ICT integration theme, there were teachers’ opinions that students were only motivated to use them to consume knowledge, defeating the purpose of a true-way collaborative and engaging learning system. There were teachers’ concerns of keeping up with the development of new learning technologies and the effort from the students, to stop, think and use the tools
timely and strategically. From the students' perspective, some found the use of discussion forums to be disjointed and fragmented as a result of the lack of alignment between subject's objectives and students' participation and collaboration. A reported frustration amongst a number of participants was that some of the tools were not properly integrated into the learning environment. They were spread over different sub-systems making the operation cumbersome. During this research, there were some reported voices having strong face-to-face preference. In this respect, there was a voice of a teacher who favoured the traditional approach to teach, and saw the use of these tools only as complementary to face-to-face teaching. Finally, in this study it was found that students' level of interaction and participation in their online learning activities was directly proportional to the amount of marks allocated to the tasks raising the issue of compulsory use of the tools in the blended learning environment.
Chapter 12 Perceptions of Pedagogical Practices

11.1 Introduction

This is the last of four chapters that focuses on issues arising from participants’ encounters with blended learning and specifically associated with the Perceptions of pedagogical practices theme. The theme emerged after my analysis and representation of the data found in codes relating to teachers’ approaches to teaching, teachers’ sense of ownership, and teachers’ perceptions, assumptions and awareness of the context. As such, this chapter draws primarily on data generated by the teacher participants. Figure 11.1 summarises the main aspects of the theme in the context of the organising framework defined earlier. From the figure, it can be seen that the theme encompasses the teachers’ reported perceptions and assumptions of teaching in a blended learning environment for international computing students; the teachers’ observed and reported teaching practices; and, teachers’ and students’ constructed roles.
Figure 12.1. Perceptions of Pedagogical Practices theme in relation to the organising framework.
11.2 Teachers’ Perceptions and Assumptions

The teacher participants’ responses about what it meant to them to teach international students and their perceptions and assumptions of the multicultural environment had an implicit tone of tolerance, acceptance and cultural sensitivity. However, as reported here, those responses appeared to vary according to the context. At Site 1, located in an international campus where the student body comprised international students only, there was a reported feeling of teaching for the context. For these teachers, the cohort of international students were seen to require particular approaches to teaching that were different to those required by other, non-international cohorts. Let us take Georgina’s case for example who said that teaching international students had a meaning of being connected to cultural diversity:

> It is really complicated, I think, compared to just teaching students from one country, because you need to be careful with things like sensitivity of culture, how to give examples, how to ask questions, how to compel them to do activities. That is what I found difficult with international students (Georgina, Site 1, teacher interview excerpt).

The multicultural aspect of the environment, with students coming from a wide array of cultural and educational backgrounds, was perceived by Georgina as complicated, hence affecting her teaching. From the quote, there is a sense of precaution on Georgina’s position as a teacher that led her to take a prudent approach in managing students’ learning.

From the participants’ talk, it appeared that Georgina’s voice resonated with Richard’s view of the environment, but in his case he constructs the students’ difference as a series of deficits and as a barrier to learning, drawing on stereotypes documented in the literature that characterise international students by such things as lack of critical thinking and English language skills (Arkoudis, n.d., Biggs, 2003; Chalmers & Volet, 1997):
One of the things that I have noticed with international students is that since they come from multicultural cohorts, there are lots of learning barriers we need to overcome, barriers often related to language, adapting ourselves or helping students adapt to a new cultural environment. We often talk of the fact that students differ in terms of the content knowledge. That may not necessarily be true. The main difference is that they lack critical analysis skills, which is something that we need to work with our students. We have to be aware that they come from different cultural backgrounds, which means that you have to be culturally sensitive, avoiding political and religious issues that may hurt someone. Colloquialism is something that also should be avoided because is not often understood by international students (Richard, Site 1, teacher interview excerpt).

Richard’s perception of teaching international students translated to students with learning barriers that affected his teaching, to the extent of assuming responsibility for their adaptation to the new educational environment. A consequence of this self-imposed responsibility was the imparting of knowledge which students were supposed to acquire through his classes. In Richard’s view, “this cohort of students should attend all classes and be punctual and if they miss at least two classes I send them an email to explain the reason for the absence”. He also raised the issue of students’ prior knowledge and previous learning experience, which as reported in Chapter 7–Adapting to a new learning environment, exerted influence in the way this cohort of students learned. Like Georgina, Richard’s concern was mainly focused on the deficiencies of the students and the multicultural aspect of the environment that ultimately led them to adapt their teaching practices influenced by the specific characteristics they attributed to these students.

In contrast, at Site 2, located in a university that catered mainly for domestic students with a relatively smaller population of international students, teachers position themselves differently. They did not perceive that their approaches to teaching needed to be varied as a result of multicultural aspect of the environment. They were aware of international students’ learning issues but they also recognised their strengths. Sophia and Shane did not change their teaching practices solely to accommodate the needs of their multicultural cohort; instead, they were motivated to improve their teaching practices more generally and perceived that a quality teaching and learning environment would
support all manner of students, regardless of the sources of diversity. Sophia and Shane perceived the nature of the teaching and learning environment as nothing special, where the students were treated equally regardless of their cultural and educational backgrounds and where diversity was found amongst both international and domestic students. Let us take for example Shane, for whom the meaning of teaching international students was simply to teach across diversity:

It does not mean anything special either than the fact that whether they are international or not. It is really about teaching across a diversity of students whether they are international or not, students have different education backgrounds, different educational needs, different ways of processing information and different learning needs. It could be anything from visual to non-visual learning needs. It can also range from the way you communicate with them and the way they work with their teachers and this is a variety whether they are international students or not so it is really thinking through all these aspects, not necessarily a special thing. It is just highlight the fact that we need to be cognisant of diversity in the classroom (Shane, Site 2, teacher interview excerpt).

From the quote, Shane is aware of diversity in the classroom; however in his view, the concept of diversity is equivalent to teach across a group of students with a wide array of learning needs and educational backgrounds, regardless of whether they are international or not. This is important since his conceptualisation of diversity within the context of international students is educationally rather than culturally-oriented.

Consistent with Shane’s perspective of teaching international students, Sophia saw no difference in teaching local or overseas students. This perception contrasts with Georgina and Richard’s perspectives at Site 1, who focused largely on the special needs and deficiencies that they saw international students commonly bringing to learning. This is quite different to the view taken by Sophia at Site 2, who focused on the students’ strengths when comparing them with local students:

Every single student has strengths and weaknesses. International students sometimes they have English as a weakness but it does not mean that they do not have knowledge in the head and they are not able to make an argument like any other person. Some Australian students might have weaknesses. Some things might be easier for them but in some others they might not have the thinking skills that some international students might have. For me they are all a bunch of individuals. It does not really matter where they come from. I treat them all the same way (Sophia, Site 2, teacher interview excerpt).
In her opinion, international students are equally capable of learning compared to domestic students and not in need of any distinctive treatment. She recognises that individuals as learners have weaknesses and strengths regardless of their cultural and educational backgrounds.

In summary, Sophia and Shane report that their teaching approaches were not affected by the multicultural aspect of the environment. They taught through the same critical and analytical lens regardless of students’ cultural and educational backgrounds; contrary to Georgina and Richard whose experiences teaching international students appeared to have been influenced by the specific characteristics they attribute to international students and the ways they responded. The teachers’ attitude towards teaching for the multicultural context is further reported and examined in detail in the next section.

11.3 Teaching Practices

The goal of this research was to seek a greater understanding of how international computing students learned in a blended learning environment and, based on that understanding, to inform practical guidelines that might support higher education computing teachers’ design and implementation of blended learning environments to improve the learning experience for international computing students. From the data, there were teacher participants’ voices about their pedagogical practices; and my analysis of those data revealed some findings within the rationale of the two above mentioned aims. Building on the points I made above in the previous section, in this section I contrast the two sites in terms of their perceptions and approaches to the international cohort; and within each site, I contrast the teachers’ different responses to their perceptions.
11.3.1 Site 2 – The Importance of Explicit Instruction, Communicating Expectations and Teacher Questioning

Talking about his perception of teaching international students, as reported above, Shane said that it was “[not] anything special”, meaning it was no different from teaching domestic students. By the same token, talking about his teaching practice, he said that it was essential to use a variety of teaching approaches to engage students:

Of course there are differences in the way that I have coached my students but it is more a communication difference rather than a teaching difference. I always vary my method. I don’t teach the same way from week to week, that means that some weeks in my lectures I have more pictures, other weeks there is more words, other weeks there are more slides, other weeks there are less. So there is always a variety, you are engaging students differently at different stages (Shane, Site 2, teacher interview excerpt).

For Shane, the variation of teaching methods to communicate the subject matter encourages student engagement and, recognising student diversity, he incorporates a variety of modalities into his teaching practices and draws on materials from a variety of contexts:

When I am setting assignments I also value the different experiences international students might bring, therefore I have to validate that as well that not everyone has the same experience of going to school. So the case studies and the examples I use can come from a variety of contexts (Shane, Site 2, teacher interview excerpt).

He recognises the appropriateness of tools, such as the online discussion forums used in his blended approach, to help students learn from different scenarios and develop the analytical and critical thinking skills required in formal higher education:

I also value the different perspective in terms of analysis and critical thinking so getting all my students [sic] think critically from different perspectives and acknowledging that people can think differently using different tools and using different perspectives is actually very important in the way that I teach (Shane, Site 2, teacher interview excerpt).

For Shane, there are different ways of interpreting and discerning the world around us and he believes that the use of these tools in his teaching practice is an effective way to facilitate that interpretation and discernment:
He was adamant to say that his students discussed and debated as if they were face-to-face and underscored the fact that students’ posts increased as the semester term unfolded:

They are just as engaged as if they were face-to-face. If I were to break it down there are students who have posted an average of seven or eight but there are examples of more than ten in the first week for example. If I go to the last one, most of them are around 10 or 15 but there are some that go well above.

Shane saw this frequency of posts in his subject as a positive indicator of engagement, contrasting the low rate of posts at the other subjects. Similarly, this high rate of posts contributed to Shane’s sense of satisfaction with the teaching and learning just as the low rate of posts contributed to teachers’ dissatisfaction in the other contexts. The data analysis seems to reveal that a contributor to Shane’s success was the way he implemented the learning technologies within the course, providing appropriate scaffolding, guidance, monitoring and feedback to the students:

Each week I start with questions. It is always important to start as a lecturer you can’t just leave it for all. It has to be directed, scheduled. You have to scaffold the teaching, scaffold the ideas you want them to discuss. Even after I have done this some of the students say they need more scaffolding. My questions are giving them the directions of what needed to look at for (Shane, Site 2, teacher interview excerpt).

During the face-to-face classes, students had the opportunity of knowing each other, get the instructions about how to use the online system and information about what they should expect to get out of the system. Shane’s teaching practice contrasts with the approaches taken by the other teachers, like Sophia’s approach of assuming that students were already equipped with the cultural and critical abilities to approach the ICT-based learning tasks; or Richard’s approach of focusing on students’ deficiencies; or Georgina’s approach of teaching with sensitivity, patience and understanding.
In a more specific matter, talking about his subject, Shane said that through the blended approach students participated in peer assessment and asynchronous online discussions with minimum moderation. In this respect he said, that he intervened only when needed to clarify issues and stimulate the discourse:

I do jump in to challenging them on some ideas, what about this idea what about that. When there are two students or three students with vastly different ideas to explain why the ideas are different from different perspectives, approaches and angles that they may take (Shane, Site 2, teacher interview excerpt).

From that point of view, he mainly positioned himself as a learning facilitator, using a combination of explicit instructions and statements of expectations and teacher questioning to promote engagement and critical thinking. As a way of making the blended approach more effective, he was planning to re-structure it for future deliveries by taking into account the lessons learned and the feedback provided from his students at the end of the term. He believed that there was room to improve the whole structure of the online learning environment. While acknowledging the complexity of the approach, he was expecting to emphasise self-directed learning through the use of more structured scaffolding:

Currently, one of the issues with this subject is that there are not actual lectures week by week. I give them readings and then I ask them questions about the content, emphasising the self-directing approach to learning. Some students are not comfortable with this approach. The whole idea of scaffolding should be pointed out more. In the future, I am planning to provide a summary describing what I do want them to get out of the system, what direction to take (Shane, Site 2, teacher interview excerpt).

According to Shane, the concept of scaffolding is an essential factor in the successful story of using learning technologies in his teaching practice. At Site 2, this view was echoed by Sophia who, as reported in the ICT integration theme, referred to her lack of explicit instructions, communication of expectations and teacher scaffolding as some of the contributing factors for students' lack of engagement and the poor quality of the posts. In retrospect, Sophia and her students were dissatisfied with the implementation
of blended learning, largely because of the absence of the sorts of practices used by Shane, such that students had the operational skills, but did not really understand what was expected and why, or have the cultural and critical skills to participate in desired ways without teacher scaffolding. Contrasting with Shane and Sophia, at Site 1 different perspectives of teaching were practised by Georgina and Richard, largely affected by their perceptions of a need for a different approach for international students compared to local cohorts. Such practices have a sense of precautions and protections I analyse in the next section.

11.3.2 Site 1– Precautions and Protections

As mentioned, Georgina and Richard saw international students as having special needs and posing particular pedagogical challenges, but they took different approaches to this. In Georgina’s case, she took on a mothering or protecting role, requiring a lot more preparation so that she could approach the students with cultural sensitivity, patience and understanding. From the following quote, she recognised that she only became aware of this aspect of the context after her first experience teaching this cohort of students:

The first time I taught them perhaps I was not aware in the way they were going to perceive my examples but being a lecturer you tend to look for responses in the class and you can actually see emotional changes you can pick up. That has given me the key that you need to be careful about what you say and how you say it. So, yes, there are some attributes that as a lecturer you have in yourself but others have been built up as a result of this diverse environment (Georgina, Site 1, teacher interview excerpt).

The evidence suggests that once she was aware of the cultural differences, she opted for taking a prudent approach in managing students’ learning. Her awareness of diversity led her to change her teaching practice to accommodate the specific backgrounds of her students as she understood them:

Basically before the class actually starts, there should be a lot of preparation. Some of the examples you may think work for you but not necessarily may work for them because of sensitive issues like for example the 9/11 attack (Georgina, Site 1, teacher interview excerpt).
From the quote there is an implicit sense of restraint and uneasiness affecting Georgina’s teaching. Part of the change in her teaching included being more patient and sympathetic with the students and not making their “language issues” a problem:

You need to be patient with this cohort of students to give them the openness to answer questions. I know they have language issues but I try to promote that is not the problem, therefore you need to make an effort to understand what actually they mean. So it is important to be patient from that perspective (Georgina, Site 1, teacher interview excerpt).

However, the evidence may also suggest that behind Georgina’s sense of sympathy and patience, there is an implicit feeling that students’ learning is the teacher’s responsibility: If students lack academic language skills then it is teachers’ responsibility to make an effort to understand them. This attitude contrasts with the teaching practices at Site 2, where teachers were less protective in that respect; as in the case of Sophia, who was not prepared to take such a caretaking approach towards her students:

With this subject all we assume is that students can speak and understand English and that they can write. They come in here in an English university where everything is taught in English that is all I assume. Students who come to my course whose English is not too good, very early on I point them to students services at the university to get English support, because I am not an English teacher. I am not going to teach them how to write in English. I am going to teach them how to build the knowledge and the concepts we have to teach (Sophia, Site 2, teacher interview excerpt).

Contrasting with Georgina’s approach, Sophia’s responsibility for students’ learning primarily centred on teaching her subject of expertise and making sure students built the knowledge according to the course learning objectives.

As another matter, consistent with Shane’s feeling that the variation of teaching methods to communicate the subject matter encourages student engagement, Georgina emphasised the manifold aspect of the approach, but in terms of students experiencing learning in different modes:

The good thing [with the blended approach] was that one week they had a lecture on a topic and the next one they had a practical tutorial. There was also a lot of researching they had to do, collect the relevant information and use it accordingly. The assignments were set up to apply the theory, so that was good too (Georgina, Site 1, teacher interview excerpt).
Likewise, as reported in the *ICT integration* theme, Georgina thought that with the integration of the online tools in her unit, she could combine theoretical and practical teaching methods to explain the subject matter, which in the case of computing is essential due to its high level of abstraction.

As discussed earlier and like Georgina, Richard also perceived the teaching of international students as complicated, with the implication of having to change his teaching practices to cater for what he perceived as a group of students with particular needs that were different to those of domestic students. In contrast to Georgina, however, Richard took on a role of a champion or an advocate for whom the different types of learning associated with this cohort of students prompted him to reemphasise important topics, provide summaries between the lectures and continuously testing students’ understanding:

"International students imply you are dealing with different types of learners, that is why, particularly when the topic is important, it is necessary to reemphasise on it so that it gets through them. Another thing is summarising in between the lectures or every 15 minutes within the lecture and ask them questions (Richard, Site 1, teacher interview excerpt)."

The strategies that Richard incorporated into his teaching practices in order to respond to what he saw as the particular needs of international students, have been identified in the literature on higher education as consistent with principles of good teaching more generally (Chickering & Gamson, 1987). In this respect, for example, he identified prompt feedback as important for any student, but he saw its importance as amplified in the context of international students:

"Feedback is no doubt something that is important for any student but there is probably more emphasis when you are dealing with international students. Because they are international students I try to give them a lot of feedback (Richard, Site 1, teacher interview excerpt)."

Similarly, in line with his view on student feedback, Richard encouraged his students to prepare drafts of their assignments and bring them in to him for revision.
before the actual submission. He felt disappointed because not many students used that facility. The reluctance to seek help is an interesting aspect culturally entrenched in international students' behaviour, particularly of students coming from the subcontinent and Asian countries (Berry, 1999; Berry, 2005; Hofstede, 2005), which I discuss further in the discussion chapter.

In summary, the teachers' perceptions of teaching international computing students in a blended learning environment affected their teaching practices. At Site 1, the two participating teachers adapted their approach to teaching in response to the perceived complexity of the multicultural environment and the perceived special needs of international students. The implication for these teachers was that they had to change their teaching practices in response to the specificity of the student body. In the case of Georgina, she took on a mothering role, requiring a lot more preparation so that she could approach the students with sensitivity, patience and understanding. In the case of Richard, he took on a role of an advocate, who protected the students from failure by providing safety nets, checks and extra scrutiny.

In contrast, for teachers at Site 2, the multicultural aspect of the context was not a specific concern. Both saw international students as posing similar challenges and requiring similar approaches to other diverse bodies of students. They focused mainly on the potential of the blended approach to support teachers to teach differently and for students to acquire knowledge and interpret the world around them imaginatively. Shane successfully implemented a blended approach, supported by his explicit directions, communication of expectations and scaffolding through questioning. However, in the case of Sophia, the implementation of the blended approach was not successful, largely because of the absence of the sorts of practices used by Shane, such that students had the operational skills required to use the ICT tools, but did not really understand what was
expected and why or have the skills to participate in desired ways without teacher scaffolding.

In addition to teachers’ perceptions and teaching practices reported in the first two sections of this chapter, there were students’ voices, particularly from Site 1, that evidence a high degree of dependence on the teachers and seem to locate the responsibility for learning with the teachers, rather than to themselves. From the data, the evidence suggests that teachers at Site 1 modified their approaches to teaching to fit these students’ expectations. They did not position their students as independent learners who ought to take responsibility for their own learning, so not surprisingly they were dependent on them. In the next section, *Constructing teachers’ and students’ roles* I elaborate on this issue.

### 11.4 Constructing Teachers and Students' Roles

In this study, there were many reported voices about students’ profound respect for the integrity, knowledge and wisdom of their teachers, to the extent that teachers were considered as the most distinguishing and influential factor affecting students’ successful completion of their studies. For instance, Vert considered that his lack of familiarity with the new teaching and learning environment required the guidance and support of his teachers:

> We need lecturer’s guidance because we are new to this environment and this type of learning. If we have a problem with the subject the first thing that occurs to us is to ask your teacher. I believe he is the only one who can guide us to solve the problem (Vert, India, Site 1, student interview excerpt).

In his mindset, only his teacher had the capacity of helping him with his learning. As a teacher, I was taken aback by Vert’s answer. Within Australian universities, Western values of independence dominate (Berry, 1999; Berry, 2005; Hofstede, 2005) such that this dependency on a teacher is not common amongst the student body and led me to ask
Vert the obvious question: “What happens when the teacher is not available?”, and he answered: “I can go to a tutor or other people who teach the same subject but I still depend a lot from them”. Another similar remark was reported by Katerina:

Teachers are nation builders. They impart all the technical and practical knowledge to the students. They make sure students get the proper understanding of the subject (Katerina, India, Site 1, student interview excerpt).

However, Katerina’s view went beyond Vert’s, endowing the teachers with the direct responsibility, not only of what students should learn, but also for their understanding of the subject matter. That teacher dependency was made more explicit from the following Manuel’s data excerpt:

I am totally dependent on my teachers to attempt my assignments and to prepare my exams. I follow what they say and in the lectures and tutorials I always take notes of what they say. They are really very influential (Manuel, Bangladesh, Site 1, student interview excerpt).

It could be argued that such student behaviour of locating their learning responsibility on their teachers is consistent with the educational culture of Katerina, Manuel and Vert’s countries of origin. However, based on the findings from the previous sections, it could also be argued that it was a direct consequence of the advocating attitudes of the teachers at Site 1, who focused on their students’ deficiencies as learners rather than on their strengths, and who changed their teaching practices in response to the challenges posed by the multicultural environment.

The construction of teachers’ roles by student participants at Site 1 contrasted with the views of student participants at Site 2. This does not mean that teachers at Site 2 did not play any role in student learning at Site 2; on the contrary, they were influential but in a different way. Let us take Rachel’s case for example; who valued the teachers but only by the way they were capable of presenting new knowledge to the students:

They are influential to some extent I think, because sometimes when I do not enjoy the lecture, I feel that I cannot absorb the information of the material in the seminars. You should be focussed more in the information presented and not in the lecturer. I prefer to be more independent in that context (Rachel, Indonesia, Site 2, student interview excerpt).
From the quote, there is a sense of self-direction in Rachel’s words, primarily focusing on the quality of the presented subject matter rather than the medium. Rachel’s view appeared to resonate in Eloisa’s voice, but in this case she acknowledged the role of the teacher to prepare the right material and provide value for the students: “Teachers should be prepared, know the subject material, and know how to explain it in a way that is interesting and informative” (Eloisa, Australia, Site 2, student interview excerpt). It could be argued that Rachel and Eloisa’s perspectives make sense given that, as evidenced from the previous sections, Site 2’s teachers focused on critical dialogue and questioning. At Site 2, the teachers seemed to be more focused on “scaffolding” the students’ learning, rather than risk-managing them, which was the focus of Site 1’s teachers.

The construction of the teacher’s role was also a key theme in student participants’ talk in reference to the online activities of the blended learning environment. In this particular case, some students valued the ubiquity of the environment to get assistance from the teacher:

In terms of teaching, the lecturer may not have much time to meet and support each student personally. That support can be done online. Teachers easily can provide feedback and comment on drafted assignments easily (Peter, India, Site 1, student interview excerpt).

That feedback on drafted assignments in the quote was precisely the type of practice Richard had implemented in his teaching at Site 1; and that, as reported above, not many students took advantage. The fact that this feedback was valuable to Peter raises the issue of why it was not valued by others, or perhaps it was valued by others but not taken up for a range of reasons. In a related matter, the following student data excerpt illustrates the essential role of a teacher in the provision of guidance and moderation in discussion forum based activities:

We still rely on the teacher for the final wording, if our posting is correct or not. We keep waiting for feedback before moving further on. If the teacher was not there, we may just got
involved into irrelevant discussions not related to the subject (Bernie, Kuwait, Site 1, student interview excerpt).

From the quote, there is a sense of value in posting and discussing provided the virtual image of teacher was present moderating and directing the discussion forum. Again, this dependence seems to fit the teaching paradigm described by the Site 1 teachers, where there is a perceived risk that these international students will not make it through unless they are closely monitored, with information broken down into manageable chunks and then tested. This perspective of teacher-led virtual forums may be in contention with teachers like Sophia and Shane at Site 2 who perceived discussion forums as being better off with less teacher intervention. This does not imply that they were fully disconnected from the system. They were present in the forum but only whenever it was necessary, for example, validating and reassuring students’ learning:

If they are in the right direction, they still need that validation from me to say that is good. The reality is that sometimes I do not do that enough because I think that they are doing well, agreeing with each other, there is no real contentious issue, but I have learned I need to go in to say yes that is good. The reassurance is very important (Shane, Site 2, teacher interview excerpt).

While acknowledging the importance of monitoring every post, Shane also argued that teacher’s interventions should occur only under special circumstances, for example:

When there are two students or three students with vastly different ideas to explain why the ideas are different from different perspectives, approaches and angles that they may take. So we have to go in there and still moderate so I read every single posting. I do not leave any single unread post (Shane, Site 2, teacher interview excerpt).

In essence, with reference to the online activities of the blended learning environment, the evidence suggests a link between teachers and students’ perceptions; and the way they construct their teaching and learning roles. While participants at both sites acknowledge the active role of the teacher, confirming, validating and reassuring the flow of ideas when the two-way discourse and reflection moves from the classroom to online, they have different opinions on how that should be enacted. For Site 1’s students, there is a sense of
value in posting and discussing provided the virtual image of teacher is there present leading the discussion forum. Students need confirmation that the posting “is correct” from the teacher to move further on. As discussed, this teacher-led approach to manage the virtual environment seems to fit the teaching paradigm described by the Site 1 teachers, in contrast to the student-led approach taken by the Site 2 teachers.

Finally, as described in Chapter 5—The Settings, Site 1 was located in one of the international campuses of a medium-sized regional Australian University where the student body only comprised international students and the academic programmes were created, managed and coordinated at a separate central location. The result of this curriculum development ownership was that all academic staff (including Georgina and Richard) located at the international campuses delivered the course content according to strict guidelines, recommendations and standards established by the central body. In other words, Georgina and Richard did not have any teaching ownership, being only responsible for the delivery of the subjects and not for their design. In contrast, Site 2 was located in a major metropolitan Australian University dealing with both domestic (predominantly) and international students and where both teachers Shane and Sophia had full subject ownership and were responsible for the design and delivery of the blended learning environments. These organisational differences between the two sites may explain some of the differences in opinions reported in this chapter.

11.5 Summary
In this chapter, I reported the findings centred on the Perceptions of Pedagogical Practices theme. In this respect, the wide spectrum of participants’ voices encompassed a series of issues that I grouped into the following three dimensions: teachers’ reported perceptions of teaching in a blended learning environment for international computing
students; teachers’ observed and reported teaching practices; and, teachers and students’ constructed roles.

The teachers’ reported perceptions about what it meant to them to teach international students and their perceptions and assumptions of the multicultural environment had an implicit tone of tolerance, acceptance and cultural sensitivity. These perceptions, lead the teachers at Site 1 to teach for the context, that is to say, their teaching approaches appeared to have been influenced by the specific characteristics they attributed to international students. In contrast, these perceptions appeared not to have affected the teachers at Site 2, who taught through the same critical and analytical lens regardless of students’ cultural and educational backgrounds. These perceptions had a profound implication on teachers’ practices at both sites. In this respect, at Site 1, the two teachers adapted their approach to teaching in response to the perceived complexity of the multicultural environment. They changed their teaching practices in response to the specificity of the student body. In contrast, for teachers at Site 2, the multicultural aspect of the context was not a concern. They focused mainly on the potential of the blended approach to support teachers to teach differently. In relation to the teachers and students’ constructed roles, the findings confirm the importance of the online teaching presence in a blended learning environment when the two-way discourse and reflection moves from the classroom to online. There was a reported feeling amongst the student participants that the teacher should be present confirming, validating and reassuring that the flow of different ideas were in accordance with the established learning objectives. There was also a consistency between the general approaches taken by teachers at each site, particularly the way they positioned students, and their approach to teaching online.
Chapter 13 Discussion of the Findings and Conclusions

12.1 Introduction
In this final and concluding chapter, I discuss the findings presented in chapters 7 to 11 in order to draw conclusions in relation to the research questions. Specifically, the discussion and conclusions offered here focus on the types of behaviours, attitudes, perceptions and conceptions of teaching and learning reported by and observed in computer science postgraduate students as they encounter a multicultural blended learning environment, as well as what can be inferred about effective teaching practice in such an environment. This chapter is organised into three main parts:

Part 1 provides an overview of the research questions and a discussion of the findings in relation to the first three research sub-questions. In doing so, this section presents the conclusions of the study. Part 2 addresses research sub-questions four and five by discussing the practical implications of the findings. This section identifies five pedagogical principles for blended learning. Part 3 discusses the significance and limitations of the study and makes recommendations for further research.

12.2 Part 1 – Conclusions of the study
The large body of data gathered and the inherent complexity involved in ethnographic studies of this kind normally bring about evidence helpful to explain phenomena in educational settings, give insights about unknown knowledge or learning behaviours, and confirm or refute previous research findings or assumptions (Creswell, 2007). The investigation of international computing students’ encounter with a new educational environment that is reported here contributes to the existing body of knowledge with a deeper understanding about how international computing students learn in a multicultural context. It also sheds light on previously unreported aspects of international computing
education. Consistent with the aim of this study, the findings relate to the internationalisation of education in Australia, including its cultural and social consequences and the way it affects the learning experience of these students. Other findings relate to the way the students experience an educational environment defined here as blended learning: the mixing of conventional face-to-face teaching with ICT-mediated instruction.

**12.2.1 Overview of the Research Sub-Questions and Findings**

In this study, the central research question was: “How do international computing students learn in a blended learning environment?” As described in Chapter 4–Research Design and Methodology, five research sub-questions drove the design of the study and the focus of the data collection and analysis:

1. How do international computing students perceive the multicultural aspect of the new environment?
2. How do international computing students perceive the use of ICT in the learning process?
3. What issues arise from the use of blended learning within the context of international students?
4. How can blended learning be supportive of the diverse abilities and needs of international students?
5. What are the conditions that promote effective blended learning for international computing students?

Chapters 7 to 11 reported a diverse and wide array of complex characteristics of the teaching and learning context found in educational systems comprising international computing students and their respective teachers, and where information and communications technologies were integral to the teaching and learning activities. Based
on the salience of issues to the research question as they arose in the data, I undertook a
thematic analysis of the data, constructing five broad themes, as described in the previous
chapters:

1. Adapting to a new learning environment – cultural and social dimensions;
2. Preparing to learn;
3. Keeping pace with the learning activities;
4. ICT integration; and,
5. Perceptions of pedagogical practices.

In this section, I provide answers to the first three research sub-questions, which
together provides my conclusions about how international computing students learn in a
blended learning environment. Table 12.1 shows how the findings presented in chapters 7
to 11 relate to the research questions. From the table, data contributing to one theme may
provide information to answer more than one question, depending on the nature of the
issue under investigation. For example, the ICT integration theme spans over the second
and third sub-questions, whereas the Adapting to a new learning environment theme
concerns mainly students’ perceptions of the multicultural aspect of the new environment,
that is, the first sub-question. The table entries also show the strength of the relationship
noted as ‘high’ or ‘low’. Throughout this chapter I use this table to frame the discussion in
order to make links between the themes found in the data and the conclusions made here.
From the table, two of the themes: Preparing to learn and Perceptions of the pedagogical
practices appear to have a low level of significance to these three research questions.
These particular themes have more relevance to the practical implications (i.e. research
questions 4 and 5) I deal with later.
Table 13.1 *Relationship Between the Themes and the First Three Research Sub-questions*

<table>
<thead>
<tr>
<th>Theme</th>
<th>Q1. Perceptions of the multicultural aspect</th>
<th>Q2. Perceptions of the use of ICT in learning</th>
<th>Q3. Issues arising from using blended learning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adapting to a new learning environment</td>
<td>high</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Preparing to learn</td>
<td>low</td>
<td>low</td>
<td></td>
</tr>
<tr>
<td>Keeping pace with the learning activities</td>
<td>high</td>
<td>high</td>
<td></td>
</tr>
<tr>
<td>ICT integration</td>
<td>high</td>
<td>high</td>
<td></td>
</tr>
<tr>
<td>Perceptions of pedagogical practices</td>
<td>low</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**12.2.2 Discussion of the Findings in Relation to Research Sub-Questions One to Three**

In this section, I address research sub-questions one to three by initially providing a brief statement of the findings in relation to the questions, followed by a discussion of the findings in the light of previous research and relevant literature. The nature of questions one to three is mainly descriptive: they seek answers about the way international computing students learn in a blended learning environment, and these answers focus on students’ reported perceptions as they are relevant to the research project. In contrast, questions four and five are more recommending in nature, seeking to apply knowledge about the practice of blended pedagogies in the context of international computing students. When answering questions four and five (in part 2 of this chapter), insights gleaned from these first three questions are used as the basis for thinking about how blended learning can best be used to support international computing students.
12.2.3 Q1. How Do International Computing Students Perceive the Multicultural Aspect of the New Environment?

As shown in Table 12.1, for this research sub-question the discussion provided primarily draws upon findings from the *Adapting to a new learning environment* theme presented in chapter 7. In terms of their perceptions of the multicultural aspect of the new learning environment, students vary in a number of significant and interrelated ways. These include:

- their awareness of cultural differences and their knowledge of different cultures;
- their attitudes towards cultural diversity and the extent to which they value such an environment; and,
- their own intentions, convictions, and skills in relation to cultural adaptation.

This study demonstrates how, taken together, these aspects can influence the type of social interactions in which students engage, which can then have implications for their engagement in learning within an Australian university context. Issues such as homesickness, loneliness, culture shock, cultural sensitivity and cultural awareness are well documented in the existing literature on international students. The findings of this study are consistent with existing literature on international students' experience of these phenomena, and the analysis presented in chapter 7 illustrates how these issues can impact on the effectiveness of blended learning.

12.2.3.1 Homesickness and Loneliness

A characteristic of the experience of the international students involved in this study was the homesickness that most reported experiencing during their study time in Australia.
This finding is consistent with many previous studies. For example, Stafford et al. (1978), in a study of 747 international students from 71 different countries, report homesickness as the most commonly expressed experience of adjustment to a host culture. This finding was confirmed by Michaildis (1996) in a study of 118 international students, with homesickness as one of the most frequently cited stressors attributable to the adjustment to a new culture. However, despite the comprehensive evidence connecting students’ acculturation difficulties to feelings of homesickness, there is less evidence about the impact homesickness may have on students’ learning experiences. In this regard, Stroebe et al. (2002) has confirmed previous studies linking homesickness to “cognitive failures, poor concentrations, handing in work late, decrements in work quality and high scores on anxiety and depression measures” (p.150). In their view, the impact of homesickness on students should not be underestimated, with consequences similar to those found in situations of loss and bereavement.

In addition to homesickness, a number of international students also experience loneliness. These findings are consistent with previous studies like the one conducted by Rajapaksa and Dundes (2002) who reiterate homesickness and loneliness as major factors affecting students’ adjustment to new cultures and hence their learning journey. In Strobe’s et al. (2002) view, the patterns associated with loneliness are similar to the patterns associated with homesickness, both having negative effects on students’ learning outcomes.

This study provides some evidence of the potential of blended learning environments to help international students to overcome some of their feelings of homesickness and loneliness. This study suggests that both the communication afforded by many online learning environments and the flexible and accessible affordances of the blended approach (discussed later in the chapter in relation to research sub-question three)
can be used to support students to build new relationships and friendships and can make study more amenable to sudden return trips home as a result of family matters, homesickness or loneliness.

12.2.3.2 Knowledge and Awareness of Cultural Difference

Some of the findings of this study are also consistent with, and build upon, previous research about the experiences of, and challenges faced by, many international students as a result of intercultural relations including cultural shock, cultural sensitivity and cultural awareness (Chataway & Berry, 1989; Rajapaksa and Dundes, 2002; Michailidis, 1996; Stafford et al., 1978). The culture shock-related academic difficulties reported by some students in this study have been extensively investigated in previous research studies. For example, in a study about acculturation experiences, appraisal, coping and adaptation amongst a group of Hong Kong Chinese, French and English students, Chataway and Berry (1989) found that students’ academics difficulties were associated with their willingness to accept or recognise other cultures in relation to their own or original culture. In terms of Berry’s (1999) fourfold theory of intercultural relations in plural societies (see Chapter 3–Literature Review), some students in the study reported here had a strong psychological driving desire to maintain their own cultural identity and behaviours, and a relatively weak compelling desire to participate with those outside of their own culture. For some students, these compulsions, led to what Berry describes as a separation strategy. A separation strategy limited students’ explorations of the new world around them and, significantly for this study, deprived them of leveraging the blended approach to learning. For some students their desire to maintain their own cultural values and behaviours, or to isolate themselves from those of the host country, led them not to participate collaboratively in shared learning situations where the negotiation of ideas was
valued in accordance with the principles of university learning within the Australian context. For others, their lack of previous intercultural exposure produced feelings of frustration and stress, making it difficult to cope with the new learning environment. In contrast, those students who espoused a desire to integrate with others collaboratively and who exhibited behaviours of cultural acceptance were very well positioned to make gains from the blended learning approach through guided online and face-to-face interactions with their peers and teachers. With reference to intercultural relation issues of cultural sensitivity and cultural awareness, some of the student participants in this study were highly critical of the lack of cultural sensitivity by some of their fellow students and the marked disinterest in understanding and accepting others’ cultures and values.

12.2.3.3 Perceptions of the Multicultural Environment

The literature on international students also documents issues due to discrimination experienced by international students, as well as issues arising due to English language difficulties and lack of networking. The findings of this study are contrary to some of the dominant messages in the published literature and can be seen as supporting a recent move amongst some authors to challenge these messages. This study found some students were outspoken in their perceptions of the host country as a safe and egalitarian society where their voices and opinions were valued, heard and regarded, in contrast to the constraints and lesser freedom of speech they had in their native countries. This finding contrasts with the concerns of some Western commentators (e.g. Poyrazli et al., 2007; Wadsworth et al., 2008) who have written about the stressful atmosphere international students may have to overcome while undertaking studies because of issues rooted in discrimination and the devaluing of their voices and opinions. Both Poyrazli et al. (2007) and Wadsworth et al. (2008) report discrimination experienced by international students.
Both of these studies were conducted in the United States and the different national context may explain the contrasting results between the findings of this study and those reported elsewhere. With reference to undervaluing their voices and opinions, reporting on an Australian study of international students’ experiences, Ryan and Viete (2009) argue that these students “want to learn about more than just the content of their course; they want to grow and be valued” (p.308). In their view, failure to recognise this “can result in feelings of disengagement and a sense that their own knowledge and experiences are undervalued” (p.303). This study found that most international student participants emphasised the egalitarian nature of the host country and saw the multicultural context as a positive one.

In contrast to the findings from previous research, in this study there were no major language issues affecting students’ learning. In fact, these findings are in contention with the stereotypes held by many Western academics teaching international students (Arkoudis, n.d.; Biggs, 2003; Chalmers & Volet, 1997) that consider poor English as one of the most influential factors affecting international students’ learning. In assessing international students’ learning abilities, research suggests that there are more influential factors than language to be considered (Ginsburg, 1992; Green, 2007; Ha, 2001; Ryan & Viete, 2009). For example, there is evidence that academic problems experienced by Asian students in Australian universities may be linked, not to language problems, but to their cognitive architecture (Sweller et al., 1998) that enables them to think and learn differently; and to the way they approach knowledge and authority, which is culturally determined (Ginsburg, 1992; Ha, 2001). This perspective is supported by a more recent study of international students (Ryan & Viete, 2009), claiming that the stereotyped misconceptions “confuse proficiency in English with students’ ability to think and know” (p. 304). In this regard, the potential of blended learning is latent. Currently, there is a
number of language supporting tools including translators, grammar checkers, speech synthesisers and the like that once integrated into the blended learning environment may stimulate learners’ confidence to participate in dialogical conversations. In addition, as evidenced in this study and others (Lanham & Zhou, 2003; Suler, 2004) blended learning can provide students with opportunities to reflect and express views without the pressure of synchronous face-to-face interactions.

This study also identified an issue which is not documented in the existing literature on international students and is possibly specific to areas of study such as computing and business where postgraduate studies in particular often seek to make use of real-life contexts to support students' project work. The findings of this study reveal the difficulties faced by some students when participating in workplace projects in Australian settings as a result of their lack of networking and familiarity with communication protocols in a society new to them. Upon arrival to the host country, international students have to start building from scratch solid and trusting relationships with fellow students and people living around them. It is also in their interest to develop an understanding of the different aspects of conducting business and professional activities in the host country. This is particularly the case when course curricula require them to interact with the business or wider community as was seen in this study and as is common for postgraduate computing degrees.

In conclusion, the array of international students’ perceptions of the multicultural aspect of a new environment is wide and diverse; with those perceptions influencing the ways students learn by affecting their interactions with others, with their teachers and with the course content and learning activities. These phenomena, mostly already documented in the literature on international students, have quite particular implications for blended learning because, on the one hand, they can lead to students’ failure to engage fully in the
learning activities commonly supported by a blended learning environment (e.g. because of their separation strategy), and, on the other hand, blended approaches can potentially be used to ameliorate the situation.

12.2.4 Q2. How Do International Computing Students Perceive the Use of ICT in the Learning Process?

As represented in Table 12.1, the discussion provided for research sub-question two mainly draws upon findings from the Keeping pace with the learning activities and ICT integration themes; and to a lesser extent from the Preparing to learn and Perceptions of pedagogical practices themes.

The student participants in this study demonstrated a range of different perspectives on the use of ICT in the learning process. Key perceptions that are discussed here relate to:

- the positioning of ICT as an integral component of their learning;
- the diversity, number and alignment of ICT-mediated learning activities;
- the level of preparedness and experience with the ICT tools; and,
- teachers’ perspectives.

12.2.4.1 Positioning of ICT as an Integral Component

The vast majority of student participants perceived the integration of ICT into learning activities as useful, convenient, flexible, encouraging reflection and good for knowledge sharing and asynchronous interactions. These findings are consistent with those reported by similar studies (e.g. Stacey & Rice, 2002), where the use of learning technologies is seen to be a positive experience for students, enabling them to engage in learning activities even when the parties were spread geographically, at their convenient times, providing resources, idea sharing and a sense of a learning community. Many students
also perceived the virtual learning space as suited to reflecting and expressing their views at their own pace without the pressure of synchronous face-to-face interactions. In this regard, this study adds more evidence of the disinhibiting (Lanham & Zhou, 2003; Suler, 2004) effect of online text-based interactions and the particular potential that this has for international students when socio-cultural factors and English language issues might otherwise inhibit them from participating in face-to-face forums. This study found that this was particularly the case for students who reported issues in relation to cultural diversity and adapting to the new environment, with such students finding the online environment to be particularly enabling.

12.2.4.2 Diversity, Number and Alignment of ICT-Mediated Learning Activities
While the integration of ICT into learning activities was seen by many students to be beneficial for their learning, many also reported difficulties with the particular array of ICT-mediated learning activities that they experienced. Specifically, there were concerns related to the diversity, number and alignment of ICT-mediated learning activities within the blended learning environment. This experience varied between the sites, each of which had a different arrangement of ICT-mediated learning activities. From the gathered data, there was a perception amongst some of the students that the subjects were delivered at a fast pace, forcing them to rush with their learning activities, resulting in superficial engagement. They argued that the diverse number of learning activities was excessive and the use of ICT was somewhat perceived as a main contributor to those problems. In terms of Sweller et al.’s (1998) theory of cognitive load and Miller’s (1956) theory of human working memory, an excessive number of learning activities may result in excessive demands made on the cognitive processes, particularly short term memory. This phenomenon is known as cognitive overload which according to Chandler and Sweller
(1991) is considered to contribute to learners’ experience of learning environments as stressful and detrimental to effective learning.

There were students’ reported perceptions that the blended learning environment did not give them the option to choose from learning tasks and that somehow they were misaligned with their preferences and needs. From the findings, the requirement to do all the learning tasks was not well received. They would have preferred a learning environment with a higher level of flexibility in terms of content management and the mode of learning consistent with their professional interests and learning needs (Biggs, 2003; Cornelius, Gordon, & Ackland, 2009; Guest, 2005; Marton et al., 1997).

The findings of this study suggest that a requirement for students to complete all the learning tasks may be counterproductive for student learning. The blended approach to learning should support program designs which include a wide array of learning activities but where students are given scope to both pursue learning activities that align with their interests and preferences, as well as being supported to engage with non-preferred modes, including the dialogical and reflective modes identified as unpopular in this study.

12.2.4.3 Level of Preparedness and Experience with the ICT Tools

The load and pace issue discussed above has significant relevance when applied to international students without prior learning technologies experience. In this study, students were required to interact with instructional materials using technology and from the findings there was evidence of an increase in the level of cognitive load (Sweller et al., 1998; Miller, 1956) in those international students who did not have any previous familiarity with the online teaching and learning tools. The extra effort in learning how to use the tools for learning purpose was translated in feelings of frustration and exasperation. These findings are consistent with previous studies (e.g. Smart & Cappel,
suggesting the importance of students’ preparedness and readiness to learn in blended learning environments. In relation to this, it might be expected within a postgraduate computer science degree that students would easily overcome the difficulties associated with the newness of the learning tools. However the findings suggest otherwise.

12.2.4.4 **Teachers’ Perspectives**

The teachers’ perspectives provide further insight into the diversity of opinion surrounding the use of ICT to support learning and into the complexity of this field of practice. From the findings of this study and consistent with the findings from previous studies (Bain & McNaught, 2006; Ellis, Steed & Applebee, 2006), there are mixed perceptions amongst teachers about the use of using learning technologies in their teaching practices. For example, some teachers praise the value of learning technologies to help students learn from different scenarios and develop the analytical and critical thinking skills required in higher education. Others believe that the use of ICT in teaching and learning is worthy and essential for student learning, but its implementation is costly in terms of resources and time. Some acknowledge the use of ICT as valuable but just as a supplement to traditional teaching, whereas others do not accept them and regard face-to-face as the most effective way of facilitating learning. Such diversity of teachers’ attitudes towards learning technologies is further evidence of the complex relationships that exist between perceptions and practice in the use of ICT in higher education. In Bain and McNaught’s (2006) view, a thorough understanding of these relationships is one of the key factors for more meaningful integration of technology in higher education. Such an understanding is relevant given the quintessential role technology plays in the design and implementation of blended learning environments. A corollary of this understanding is
that teachers and designers of learning should recognise the inherent complexity of an effective integration of ICT in teaching and learning, hence requiring the implementation of more thoughtful teaching practices.

In conclusion, in terms of their perceptions of the use of ICT in learning, international computing students vary in a number of significant and interrelated ways that taken together may have a strong influence on the way they learn. This study suggests that, although blended approaches offer a lot of promise for supporting the effective learning of international computing students, the nature of the design of the learning environment and included learning activities may play an important role in terms of whether this potential is met, as does the preparation of students for the use of online learning tools.

12.2.5 Q3. What Issues Arise from the Use of Blended Learning within the Context of International Students?

As shown in Table 12.1, for this research sub-question the conclusions primarily draw upon findings from the Keeping pace with the learning activities and ICT integration themes. There are a number of issues arising from the use of blended learning. These include:

- unsatisfactory participation and engagement;
- capitalising on the characteristics of digital media; and,
- shortcomings of technologies.

12.2.5.1 Unsatisfactory Participation and Engagement

In this study, except for in one subject where the students effectively participated and engaged (FOIS), student participation and engagement with the online components of the blended learning environments did not meet the teachers' expectations. Teachers in two of
the subjects expressed concerns about low rates of participation, poor quality student contributions and inappropriate use of the some of the tools (e.g., blogs). This study suggests three factors that contribute to these problems: a heavy online workload, the assessment of online learning activities, and students’ perceptions of the use of digital technology.

In terms of student workload, as mentioned in the previous section, some students perceived that the subjects were delivered at a fast pace, forcing them to rush with their learning activities. They complained about the excessive number of learning activities and this was perceived by some as a main contributor to their lack of participation and engagement. This finding is consistent with previous research suggesting that excessive workloads results in students’ superficial engagement (Ramsden, 2003), with negative impacts on students’ deep approaches to learning because they do not have enough time to reflect on the key concepts of the subject matter (Garrison & Vaughn, 2008).

This study suggests that a large number of individual online readings and assignments affects students’ engagement in text-based discussion forums and blogs. The findings also confirm the influence assessment has in students’ participation and engagement with the online components of the blended learning environment. A cluster of research (Entwistle & Entwistle, 1997; Ramsden, 2003) highlights that assessment has a big influence on students’ learning, with some commentators even considering it as the main driving force behind formal learning (Entwistle & Entwistle, 1997). In the context of this study, the findings unveil two student approaches to participation and engagement with the online components that are closely linked to assessment. On the one hand, there is a perspective that if the tools are part of the learning activities then the student participation and level of engagement should be rewarded with marks allocated accordingly (Dennen, 2008; Lopez-Perez et al., 2011; McNamara & Burton, 2009; Pombo
et al., 2010). In contrast, there is a second perspective that favours the spontaneous use of the communicative media for learning without any element of coercion (Dennen, 2008; Gulati, 2008). These two approaches are consistent with the substantial literature on the role of intrinsic and extrinsic motivation in formal learning.

Students’ unsatisfactory participation and engagement with the online components of blended learning environments can also be seen as related to the way current generation of students see the use of digital technology. The students do not see the learning technologies as requiring the same skills they use for their social networking, and also, the teachers do not necessarily use the learning technologies in ways that are consistent with the use of these tools for leisure (e.g. blogging). As discussed in the literature review, these students were born in a time where the digital technology already existed, and, having grown up with digital technologies, these digital natives (Prensky, 2001) have learned to be highly proficient in using ICT but, as evidenced in this study, often with the motive of social networking: to have fun, for leisure, and to find informal ways of expressing their voices. The social networking skills associated with this generation, coupled with their openness for dialogical conversations, critical thinking and knowledge sharing – three essential graduate attributes in higher education – may give the erroneous impression that they are ready and willing to embrace the digital technology for formal learning. However this study suggests that is not the case.

12.2.5.2 Capitalising on the Characteristics of Digital Media

Particular technologies are understood to have particular affordances and constraints (Laurillard, 2002), that is, any one technology can be analysed and understood to afford some types of usages and behaviours while constraining others (see Laurillard’s Conversational Framework in chapter 3- Literature review). Laurillard’s (2002) analytical
framework, which identifies the affordances of both communicative media and adaptive media, is useful in terms of the findings of this study. This study found that the students responded differently to different types of digital media. Using Laurillard’s terminology, some students found the use of communicative media (e.g. blogs and discussion forums) to be problematic, and some teachers and students were dissatisfied with the use of these technologies, specifically in relation to supporting reflection, discussion and collaboration. The main sources of this dissatisfaction are evident in the findings of this study. First, although social constructivist theories of learning suggest that students learn best through collaboration, dialogical conversations and critical thinking, for some international students their willingness to learn collaboratively and to participate in the communicative environments was inhibited by a number of socio-cultural factors (discussed earlier in my responses to research sub-questions one and two). Second, although these types of skills and interactions are promoted at the level of policy (e.g. through stated graduate attributes), the fit between these types of reflective and dialogical activities and the culture of computing science (Dijkstra et al., 1989; Lynch et al., 2001) is not necessarily good, such that computing students do not necessarily understand the potential value of engaging in the reflective, dialogical learning activities afforded by communicative media.

Where the use of communicative media appeared to be problematic in the context of this study, the use of interactive and adaptive media in the form of the LabSim was a different story. Laurillard (2002) states that interactive media support the investigating and exploring nature of the learning experience. Adaptive media support the experimenting and practising culture that dominates in computing education. The learning activities that made use of adaptive media (i.e. through the use of the LabSim) were well received by the student participants who could see their value. Further, the sorts of
activities afforded by the adaptive media did not present challenges to the students' socio-culturally laden conceptions of, and skills in, learning in the same way that the communicative media did. In essence, the findings suggest that some types of ICT-based learning activities appeared to be a better fit with the expectations and behaviours of international computing students. While other types offer much potential for developing desired learning outcomes and providing flexibility and accessibility, they are not as easily “sold” to these students.

12.2.5.3 Shortcomings of Technologies

In this study, a key issue amongst participants was the nature of technology itself. This issue encompasses two main concerns: the risk that the use of technology is not driven by the needs of learners and technical problems inherent to the implementation of the tools. Each of these concerns is discussed here in relation to the study’s findings and existing literature.

Consistent with the views of influential commentators (McLuhan, 1964; Postman, 1985) about the adverse effects technology may have in the way we see and experience the world, some teachers in this study were cautious about the use of technology and believed that its adoption for learning had to be done “contextually and in relation to what suits you best for the benefit of your students” (Georgina, Site 1, teacher interview excerpt) rather than be driven by some technological imperative. There was a feeling amongst these teachers that the uncontrolled use of technology may position teaching and learning as subservient to technology (Westera, 2004).

Although teachers were concerned that technology use was contextually relevant and driven by the needs of learners, in this study the sites varied in terms of how well they facilitated this due to the organisational structures and the positioning of the teachers
within these. This issue was particularly relevant in terms of Site 1’s teachers who, as discussed in Chapter 11—Perceptions of Pedagogical Practices had no input in the design of the blended approach, being only responsible for the implementation of the subjects and not for their design. Further, this study suggests that within the context of international education, where many students have come from transmission-based education cultures (Chalmers & Volet, 1997), there is a risk that technologies that easily facilitate the transmission of information will drive the design rather than the teachers’ desire to engage students in interactive learning activities.

The second issue in relation to the nature and complexity of technology has to do with technical problems inherent to the implementation of the tools. In this respect, learning technologies manufacturers, researchers and developers are under pressure to innovate and bring into the market technical products that are not fully tested, prone to faults, and hard to interface and configure. This has a profound implication on the educational innovator who has to cope with unreliable systems, spending precious time figuring out the best way to integrate disparate systems. In this study, this issue was latent at Site 1, with both teachers and students reporting feelings of frustration with some of the learning management systems spread over different sub-systems, making the operation cumbersome and discouraging. The message here is to acknowledge that the use of technology for learning encompasses a wide array of issues rooted in the nature of technology itself and its economic and political context, and they should be taken seriously in the design of blended learning environments.

In conclusion, in terms of issues arising from blended learning in the context of international computing students, which is the focus of the third research sub-question, this study has identified three main issues: unsatisfactory participation and engagement; the issue of teachers and designers capitalising on the characteristics of digital media; and
shortcomings of technologies. Regarding the first issue, three contributing factors to the unsatisfactory participation and engagement were salient: the size of the online workload, the assessment of online learning activities and the way the students see the use of technology. The issue of teachers and designers capitalising on the characteristics of digital media suggests that some types of ICT-based learning activities appeared to be a better fit with the expectations and behaviours of students, while others require more scaffolding and promotion amongst students. In relation to the shortcomings of technologies issue, two main aspects of technology were identified: the importance of prioritising learning needs over the technological imperative, and the inherent technical problems associated with the use of learning tools.

**12.2.6 Summary of Conclusions**

A number of issues were shown to impact on international computing students’ effective participation in blended learning. The main conclusions of the study are summarised below:

1a. International computing students vary in terms of their knowledge and awareness of, and their attitudes and orientations towards, cultural differences and multiculturalism.

1b. International computing students’ knowledge, skills and orientation in relation to the multicultural environment can affect their engagement with blended learning environments.

2a. International computing students vary in relation to the way they perceive the use of ICT in their studies, with most favouring its use but some being highly critical and questioning its value to ameliorate learning.

2b. Student perceptions of excessive online workloads are linked to their experience of stress in relation to their studies and such workloads appear to be detrimental to deep learning.
3a. Students' lack of preparedness and experiences in using ICT tools for learning purposes has a negative impact on their engagement and the effectiveness of their learning.

3b. Some types of ICT-based learning activities appear to be a better fit with the expectations and behaviours of computer science students than others. Specifically, the use of interactive and adaptive media appeared to be preferred to communicative media.

**12.3 Part 2 – Implications**

In Part 1 of this concluding chapter, I discussed the findings in relation to the three descriptive research sub-questions and from there I drew the conclusions of this research project. In Part 2, I translate these findings into recommendations, seeking to apply knowledge about the practice of blended pedagogies in the context of international computing students. These recommendations are filtered through a reading of the data (and the reported views and experiences of others), through a reading of the literature on blended learning and international education and of best practice within such contexts, and through my own eyes as an experienced and reflective practitioner. The recommendations take the form of a set of pedagogical principles for the practice of blended learning in the context of international computing students.

**12.3.1 Pedagogical Principles for the Design of Blended Learning in the Context of International Computing Students**

The following pedagogical principles for the design of blended learning are the practical implications of what emerged from this study. They are consistent with established and emergent teaching and learning theories on blended learning and international education (see Chapter 2 and 3–Literature Review) and with the researcher’s perspective, experience and reflective practice. The four pedagogical principles are based on the conclusions, and they represent the responses to research sub-questions four and five. The principles are:
1. Enabling learners – learning how to learn in a blended learning environment;

2. Promoting inclusivity – learning about each other in a blended learning environment;

3. Programming for flexible learning – learning how to manage learning; and,


12.3.1.1 Applicability of these Principles

These principles for blended learning are applicable in the design of computing postgraduate courses for a cohort of students from diverse educational and cultural backgrounds. Computing encompasses various fields including computer science, computer engineering, information systems, information technology and software engineering. According to the Joint Task Force on Computing Curricula (ACM-IEEE, 2005) each field has its unique characteristics with marked differences in the emphasis, goals, and capabilities of its graduates; however, they also share some common elements including, amongst others foundational underpinnings, foundation in the concepts and skills of computing, understanding what computing can and cannot do, understanding the significance of the concept of the lifecycle and understanding the essential concept of process (ACM-IEEE, 2005). These pedagogical principles are based on this shared identity of the computing disciplines.

12.3.1.2 Principle 1: Enabling Learners – Learning How to Learn in a Blended Learning Environment

Promoting students’ awareness of things like the assumptions and rationale behind the blended learning design, the expectations and roles of students and teachers, and approaches that best allow them to leverage the online aspects of the course to learn
effectively, enables the students to be more aware of what effective learning looks like within the blended learning context and more strategic and reflective in their learning behaviours.

This principle responds to conclusions 2a, 3a and 3b summarised earlier in Part 1 of this chapter and is exemplified by observations made about the BAM subject (Site 2) and the lack of preparedness of the students at that site. As mentioned in Chapter 5–The Settings, BAM students were required to use the LMS for online participation. Every other week, each team was required to post a message to the discussion forum sharing ideas and experiences about a group project. Individually, students were required to discuss not only posts from their own group but also those from the others; and to bring these issues to the face-to-face sessions for further discussion. In addition, for each week, students were required to write a summary, including one or two questions, of the weekly mandatory readings listed on the LMS. Then, during the class time, students had the opportunity to discuss further the issues and questions raised from the readings and challenge authors’ views critically.

As reported in the findings, the BAM teacher was disappointed about the quality of online participation and later reflected that she and the students did not share the same expectations and that the students could have been better prepared. In a subject like this, where students are expected to participate in reflective online exchanges to engage critically with the subject matter and to develop generic skills, the students could have been better prepared and more empowered to be effective learners if, for example, they had participated in an introductory face-to-face session where they were exposed to the aims of the online learning activity, the rationale behind the design, and guidelines and examples of what effective participation would look like within this particular learning activity and in reflective online discussions more generally.
This strategy is one of a number that could be used to promote students' empowerment as learners through an increased understanding of the aims and processes of blended learning. Other complementary techniques could be built into the delivery of the subject, such as online modelling of effective discussion contributions by the teacher, modelling of an online activity for the students before they are asked to complete the same or similar activity by the teacher, explicit acknowledgement and reinforcement of effective contributions by the teacher, facilitating engagement and participation and building a criterion that rewards the quality of online discussion contribution into the assessment regime amongst others.

12.3.1.3 Principle 2: Promoting Inclusivity – Learning About Each Other in a Blended Learning Environment

As evidenced and argued in this thesis, teaching and learning activities in the context of international computing students need to be informed by an international education awareness acknowledging the social and cultural diversity of today’s classrooms. This principle responds to conclusions 1a and 1b, summarised earlier in Part 1 of this chapter, that for international students to succeed in their studies there needs to be a culturally aware and sensitive learning community, in terms of providing resources, support and opportunities for all stakeholders to develop increased cultural awareness and cultural sensitivity, and to adapt to the challenges posed by the cultural, social and educational aspects of the new environment. Accordingly, the aim of this principle is to look for opportunities that raise social and cultural awareness from the beginning of the semester term and to establish a climate for openness and collaboration: a community of inquiry where all voices are equally heard regardless the educational and cultural backgrounds (Downes, 2005; Wenger, 1999).
For example, in my experience, an initial way of fostering this climate is to ask students, to introduce themselves to the whole class by giving names, nationalities, reasons for taking that specific course and the sort of expectations and concerns they may have about the course. This could be done face-to-face, online or both. This is also an opportunity to discover why the overseas students chose to study abroad and, particularly, why they chose Australia as the destination. Personally, I have found this activity quite rewarding since through it I have been able to develop an initial impression of the diversity of students which is based on their own representations of themselves, and which may help me shape my pedagogical practices to support their learning needs. This sort of activity ought to be followed by the teacher’s own introduction to the class where he or she reemphasizes the social and cultural diversity of the classroom and the implications of this diversity for learning. It is worth noting that raising cultural awareness and establishing a climate for openness and collaboration requires more than these initial introduction sessions that are common practice within universities. A more compelling strategy, albeit institutional, would be to incorporate international content into the curriculum and effective pedagogical practices that, as discussed in the literature review, would acknowledge the great diversity of culture international students bring to Australian multicultural classrooms (Marginson & Eijkman, 2007).

Other opportunities that could be built into the course include the modeling by the teacher of the process of communicating and sharing information, which may be different to that which is practiced in other cultures or countries, from which students originate. Similar issues may arise when working collaboratively in teams alongside members from different cultures, and when using text-based discussions that take advantage of the disinhibiting effect on international students’ participation, flexibility to access the content and resource materials anytime anywhere, promoting student transition programs
and intercultural events, and getting students involved with the community and the industry amongst others.

12.3.1.4 Principle 3: Programming for Flexible Learning – Learning How to Manage Learning

This principle is linked to conclusions 2b and 3b summarised earlier in the chapter and is consistent with previous research suggesting the benefits of flexible learning in providing multiple pathways through the course material in order to facilitate student choice and to respond to students’ learning needs. The principle also emphasises the negative impact excessive student workloads might have in students’ learning experience and outcomes.

The opportunity of empowering the learners to choose their learning from a wide range of options in accordance with their learning needs, interests and preferences has been supported and documented by prominent educational researchers (Marton et al, 1997; Biggs, 2003). In this mode of learning, the learners are responsible for the management of their learning with the freedom to choose what, when, where and how to learn (Guest, 2005; Cornelius et al., 2009). In terms of this learning ownership, designers and teachers should anticipate students’ workloads which are consistent with students’ needs, preferences and busy lives. In this respect, research suggests that excessive student workloads result in students’ superficial engagement (Ramsden, 2003), with negative impacts on students’ deep approaches to learning (Garrison & Vaughn, 2008).

In Chapter 3, I reviewed the affordances of blended learning that can support flexibility and student learning management: 1) pedagogical richness, 2) increased access to multiple resource materials for students on a timely and flexible manner, 3) personal agency, and 4) ease of revision and update (Osguthorpe & Graham, 2003). In the light of these affordances, there is a wide range of options that can be implemented in blended
learning programs and that include reasonable student workloads in terms of skills, knowledge, resources and estimated time on task (Laurillard, 2002).

The following is an example that outlines what a blended learning computing course or program might look like that offers flexibility and choice, so that students can manage their workloads and learning needs. In the example, I use again the observations made about the BAM subject at Site 2 and the student reported issues raised about excessive workloads and the lack of freedom to choose from the learning activities.

The BAM subject comprised a group of graduate students with different educational backgrounds, learning needs and motivation. There were part-time and full time students. Some students already had an extensive working experience in comparison to others who did not have any. Others were mature students with family obligations who had returned to study after a long period of time working for the industry. Additionally, BAM was an advanced postgraduate project-based subject with specific demands on the students in terms of skills, time, knowledge and resources. The project had to be conducted in groups with two progress reports submitted in the middle and at the end of the term. The group project approach was well received by inexperienced students; however, it was not well received by those part-time students who already were involved in project management as part of their paid work. They preferred individual tasks that catered for specific needs including risk analysis, resource management and the like.

In a subject like this, students' learning experiences can be improved if they are given the option to conduct the project either individually or in groups. Students who opt for individual projects can be peer-assisted using online collaborative tools where they can critically discuss and assess the main project activities (Garrison & Vaughn, 2008). It is apparent that these students who do not do a group project might not be able to demonstrate some of the skills (e.g. collaborative teamwork and project management)
such assignment project assess. One possible way of managing this is that the alternative individual assignment (which is proved anticipating that some students are already working in team environments and have experience in project management) incorporate a requirement for these students to document aspects of their work experience that demonstrate such skills. So, instead of participating in a group project, they provide individual evidence of their understanding of, and experience with, these sorts of skills. Students who opt for group projects can meet on campus face-to-face and use online project management tools to manage the project tasks. For group projects, the teacher can use a self and peer assessment process for students to self-assess and assess their team member’s contributions in group project assignments (Lejk & Wyvill, 2001; Mello, 1993; Somervell, 1993; Willey & Gardner, 2010).

The findings of this study showed how for mature students with family obligations and students who have paid work; time is a major constraint. Support for these students can be given in the form of Podcasts (video and audio). In podcasting, face-to-face sessions, live presentations or related learning material are recorded and uploaded onto a web server from which they can be downloaded or streamed at a later time at the students’ convenience. Podcasts should be of easy access, from anywhere and at any time and in that respect Wichelhaus et al. (2008) suggest the use of the popular Apple iTunes Music Store to publish them. Students can access them by means of a portable player or a mobile phone. By nature podcasts are unidirectional and some interactivity may be added by synchronously linking them to electronic annotated slides and equipping them with a note taking facility for students to make their annotations. Similarly, they should come with a number of questions about the topic under discussion that not only test student understanding but also stimulate reflection for further discussion in the face-to-face classes.
In summary, a blended learning computing program should offer a flexible and convenient learning environment where students have the option of choosing from a wide range of learning materials in search for meaning (what to learn); the option of choosing from various strategies to structure, organise and experience learning (how to learn); the option of embracing learning in an open distributed environment and still retaining the traditional face-to-face interactions (where to learn); and the option of learning at any convenient time (when to learn).

12.3.1.5 Principle 4: Transforming Learning – Learning How to Capitalise on the Affordances of Blended Learning

Blended learning should be seen as a transformative redesign process that rebuilds university courses in more meaningful ways than do more traditional face-to-face and online approaches (Garrison & Vaughn, 2008; Garrison & Kanuka, 2004; Littlejohn & Pegler, 2007; Sharpe et al., 2006). This principle is consistent with learning theories that promote the design of learning experiences for the life (Knowles et al., 2005), and in ways where learners can relate new concepts and propositions to what they already know (Novak & Cañas, 2008).

This principle responds to conclusions 2a, 2b, and to some extent 3a and 3b summarised earlier in the chapter. The principle particularly addresses current concerns of promoting students’ effective participation and collaboration in teaching and learning environments where the integration of learning technologies is not perceived as disruptive, bothersome and intrusive in the construction of knowledge (Kanuka & Rourke, 2008; Rourke & Kanuka, 2007). To illustrate this principle, in the following lines I provide some examples of blended teaching and learning activities (TLAs) that I believe respond to this principle. In doing so, I use Biggs’ (2003) TLAs framework, that
distinguishes three types of TLAs: teacher-directed, peer-directed and self-directed, giving an example for each type of how blending face-to-face and online tools can result in more meaningful and transformative learning experiences.

12.3.1.5.1 Blending Face-to-Face and ICT Tools within Teacher-Directed activities

Lecturing is a characteristic component of traditional teaching in higher education yet the debate continues about its philosophical value (Biggs, 2003; Laurillard, 2002; Ramsden, 2003). Acknowledging the numerous problems associated with lecturing – such as poor attendance, focus on transmission of information and limited opportunities for interaction – the blended approach to teaching potentially offers a more engaging alternative. The following example illustrates how students’ attention can be directed to important content linked to the course aims through both face-to-face and online media within the lecture theatre, and the benefits this could have for engagement and interaction.

Increasingly, students can access social networking sites such as Twitter™ via web-enabled mobile phones (Chamberlin & Lehmann, 2011; Faculty Focus, 2009). This sort of online tool can be used during a face-to-face lecture to enable student feedback or input, thus overcoming some of the barriers to interaction within the conventional lecture format. Twitter™ affords anonymous comment, allowing comments to be posted immediately without the angst of peer pressure, which has particular advantages for international students who may lack confidence to answer questions in public (Suler, 2004).

For example, the lecturer could pose a question or raise an issue and ask students to encapsulate their responses in a Twitter™ comment. Alternatively the lecturer could provide an oral summary of a concept or process that has been described in an earlier part of the lecture and ask students to post a Twitter™ comment to raise areas of which they
are not certain or have some confusion. The lecturer could project the Twitter™ site onto the lecture theatre projection screen, so that the online interaction can be meaningfully integrated into his/her oral commentary and response. Such blended activities, when used in large classes, might produce more effective results in comparison to the more traditional lecture with fewer opportunities for interaction. Activities like the one described here use the affordances of the technology to overcome the limitations of more conventional media.

**12.3.1.5.2 Blending Face-to-Face and ICT Tools within Peer-Directed Activities**

Peer-directed activities are learning activities where students equally engage and participate in both spontaneous and formally structured student-student learning interactions (Johnson & Johnson, 1985). They may be conducted by the students after being initiated by the teacher or totally conducted by the students outside the classroom. Regardless, students report to the teacher for guidance or clarification (Biggs, 2003). The following is an example of blending face-to-face interactions with ICT-mediated tools within a peer-directed activity that capitalises on the affordances of a particular technology.

As with the previous example, a tool that exploits students' familiarity with social software and Web 2.0 is PeerWise™. According to Purchase, Hamer, Denny and Luxton-Reilly (2010), PeerWise™ is a tool where students engage collaboratively in the creation, sharing, evaluating, answering and debating of a repository of assessment questions about the course content in ways that appears to promote deep learning and improve students' performance. There is a cluster of research about the benefits of giving students assessment responsibilities that traditionally are the domain of teachers and instructional designers (Dearing, 1997; Dochy, Segers, & Sluijsmans, 1999; Falchikov, 2005). The
following is a description of how a tool like PeerWise™ (Luxton-Reilly & Denny, 2010) could be integrated into a blended learning environment such that the affordances of blending face-to-face and online communications are capitalised upon.

Individually, students are required to author a question linked to the learning outcomes of the course and to provide what they believe is the correct answer to the question. Both the authored questions and the answers are stored in a repository which is available to all students. When a student accesses the repository and attempts one of the stored questions, the student can see other students’ responses to the question as well as the students’ normal distribution of the responses. This process enables the students to reflect on those answers and compare them with their own responses. Students are given the opportunity to review and edit their own questions based on the global feedback and engage in discussions (Luxton-Reilly & Denny, 2010). Once the questions have been authored and reviewed by the students, they may be evaluated by others in class with the teacher providing guidance and clarification.

12.3.1.5.3 Blending Face-to-Face and ICT Tools within Self-Directed Activities

In a self-directed learning activity, the learner is personally responsible for the management and control of the learning activity (Biggs, 2003). Self-direction is at the centre of the blended learning approach and essential in the context of computing education. There are many ways of exploring the avenues through which ICT may be used to develop and support self-management skills that add value to independent learning.

As evidence in this study, the blend of online classes and self-directed exploration using the LabSim, seems to be a good example of how ICT-mediated and face-to-face activities can be blended in meaningful and transformative ways. As mentioned in
Chapter 5—The Settings, at Site 1, the LabSim was a learning resource integrated to the SecNet course. Using the tool, students were required to complete a set of self-directed activities at their own time and pace. For every week, they had to give evidence of the completion of the tasks by submitting a weekly progress report.

The use of the LabSim was meaningful in terms of its practicality, particularly in the design of courses like SecNet where it was not possible for the students to use a live environment where they could practice what they learned in theory. The tool provided students with prompt and accurate feedback on tasks, and supported students’ development of explorative, deductive and investigating skills that empowered them to achieve deep learning through interactive simulations of real world problems typical of complex and technical configurations of secured networks.

It is worth noting that the challenge of integrating ICT tools like the LabSim in a meaningful way was not as great as it might be to integrate communicative media such as blogs because of the good fit with the culture of the computing discipline. With reference to this, as evidenced from this study, one of the big challenges facing computing teachers is to support reflective processes that the students may not initially value.

Acknowledging the cost and expertise required to set them up, interactive tools like LabSim can enhance learning by supporting a blend of face-to-face and online activities that facilitate activities not otherwise easily accomplished by overcoming the constraints of face-to-face activities through a capitalisation on the affordances of the technology.

This section has outlined and illustrated four pedagogical principles that have been developed in response to the research findings, namely, Enabling learners, Promoting inclusivity, Programming for flexible learning, and Transforming learning.
12.4 Part 3 Discussion of the Research Project

In this section, I aim to list and describe the research findings, their significance for the research community and how, in my view, they might contribute to the body of knowledge. I also refer to the various limitations faced during the conduct of the research project; and some recommendations for further research.

12.4.1 Significance of the Findings and Contribution to the Body of Knowledge

Since I started this research study in 2007, I have experienced the steady growth of blended learning as a common trend in higher education. Faculty, instructional designers and teachers have been instrumental to this growth, bringing innovative approaches to teaching and learning consistent with the principles of blended learning put forward by prominent researchers in the field (Bonk & Graham, 2006; Driscoll, 2002; Garrison & Kanuka, 2004; Garrison & Vaughn, 2008; Stacey & Gerbic, 2006). However, despite this tremendous growth of the blended approach, there are still debates about what constitutes blended learning. This research project is timely, bringing about clarification of the philosophical values of blended learning and its affordances, particularly in educational contexts of international students. The study is also significant because, despite the extensive research on the field of international education and blended learning as separate issues, that is not the case when combining the two issues.

The conclusions of this study, summarised in Part 1 of this chapter, show a number of issues that appear to impact on international computing students’ effective participation in blended learning. The conclusions vary in terms of their significance and the contribution they make to the body of knowledge. Next, I examine the extent to which each conclusion challenges, adds weight to conclusions already made elsewhere or provides insights into a little known area in studies similar to this.
Conclusion 1a that “international computing students vary in terms of their knowledge and awareness of, and their attitudes and orientations towards, cultural differences and multiculturalism”, makes a significant contribution to international education because of what it implies in terms of the type and complexity of support that might be needed by students who are inclined to resist the pressure to adapt. With reference to this issue, this study also makes a significant contribution to the field with fresh arguments about social and cultural issues that currently affect international students learning journey.

Like conclusion 1a, conclusion 1b that “international computing students’ knowledge, skills and orientation in relation to the multicultural environment can affect their engagement with blended learning environments”, is of great interest because the findings associated with this conclusion are contrary to some of the dominant messages in the published literature about student discrimination and English language difficulties and can be seen as supporting a recent move amongst some commentators to challenge these messages. Unlike dominant assumptions about international students, this study found that the vast majority of students were outspoken in their perceptions of Australia as a non-discriminative society where their voices and opinions were valued, heard and regarded. Similarly, apart from some miscommunication and the lack of networking and knowledge of the local environment, this study found no major English proficiency issues amongst student participants.

Conclusion 3b that “some types of ICT-based learning activities appear to be a better fit with the expectations and behaviours of computer science students than others”, makes a significant contribution to computing education because of the implications it has for blended learning design. The cultural preference found amongst computing students for adaptive rather than communicative media suggests a very significant cultural barrier
to effective engagement in online dialogical exchanges, barriers that are not easily overcome. The study sheds more light on the advantages and disadvantages of different types of ICT media to be integrated in computing education scenarios. The affordances of communicative and interactive media are further explored and some suggestions are given for the appropriate integration of such media in computing learning activities that best prepared computing students.

In contrast to conclusions 1a, 1b and 3b, conclusion 2a that “international computing students vary in relation to the way they perceive the use of ICT in their studies, with most favouring its use but some being highly critical and questioning its value to ameliorate learning”, does not seem particularly significant. This conclusion is not very different to what would be found amongst other types of student cohorts as reported in the literature. However, conclusion 2a is of interest because it adds weight to conclusions already made elsewhere that illustrates the complexity of issues, opinions and attitudes in relation to blended learning.

Conclusion 3a that “international students’ lack of preparedness and experiences in using ICT tools for learning purposes has a negative impact on their engagement and the effectiveness of their learning”, contributes with further evidence in terms to the complex issues associated with the effective integration of ICT tools in learning. This conclusion suggests that, although the current generation of students might have a wide array of dialogical, critical thinking and knowledge sharing skills acquired through social networking, this does not imply they are ready and willing to embrace the digital technology for formal learning. This conclusion points to a need for faculty programs that prepare and encourage students to go beyond the online operational literacies and to move into the online cultural and critical literacies (Goodfellow, 2004) required for the effective use of ICT tools for learning in higher education.
Conclusion 2b that “international student perceptions of excessive online
workloads are linked to their experience of stress in relation to their studies and such
workloads appear to be detrimental to deep learning”, does not seem particularly
significant, but it is of interest in terms of informing blended designers about the risks of
using blended learning without a thorough knowledge of its affordances so that students
can manage their workloads and learning needs.

Finally, a further contribution of this study to the body of knowledge is the
development of a set of pedagogical principles for the design of blended learning in the
context of international computing students. The principles are targeted to a computing
education audience but they can easily be modified and applied to any other educational
context. The unpacking of these principles produces a set of guidelines, based on
empirical evidence, contrasting with other guidelines found in the research literature, that
are oftentimes bulky, implicit, highly descriptive and hard to apply in practice, and not
specifically targeting the field of computing education.

12.4.2 Limitations of the Study
The inquiry of a student body in its natural setting like the one found in this research
project brings with it a series of limitations and delimitations. The following is a
description of these found in this study.

1. I was hoping to have a mixed student participant sample including domestic and
overseas students. Unfortunately the participation of domestic students was very
limited (just one domestic student). A more diverse sample might have contributed
with data that had added more richness to the study by enabling the comparison
and contrasting of student participants with differing characteristics. Instead, I
have focused here on the qualities of an international sample, without explicit comparisons with a domestic sample.

2. As mentioned, most existing research on international education and blended learning has been conducted as separate issues. Consequently, it was not possible to exhaustively compare the outcomes of this study with similar settings previously researched. Focusing on these two aspects of a higher education field is one of the distinctive features of this research.

3. The complex multifocal nature of this study, including a wide array of issues like international education, computing education and the use of ICT in learning, made it difficult to get a more representative student participant sample. However, that is also the source of the richness of this study, which, being qualitative and ethnographic in design, sought to develop a rich picture of a small number of purposefully selected cases, rather than a randomised, representative sample, and the aims and research questions fit this particular character of the study, as does the nature of the conclusions.

4. With reference to teacher participants, some were not involved in the design of the blended learning environment, being solely responsible for the delivery of the content. Such limitation could be seen as adversely affecting the quality of the findings but not in a student-centric project like this where the main aim was the investigation of behaviours, attitudes and perceptions of computer science postgraduate students as they encountered a multicultural blended learning environment. Further, having teacher participants who were employed in a variety of responsibilities added richness to the study by enabling the comparison and contrasting across sites with differing characteristics.
5. Given the qualitative nature of this study, conducted within a specific context – higher education, multicultural, blended learning, computing education – which has been elaborated extensively, any consideration of the applicability of findings to others contexts must necessarily also consider the implications of contextual differences.

6. This study provides an in-depth understanding of how international computing students learn in a higher education multicultural environment. It does not attempt to prove any particular theory of learning; however, it provides a comprehensible analysis of theories of learning as relevant to the research context, and the findings might be used as a basis to stimulate discussions and in the provision of guidance to other researchers who want to undertake studies in the field of blended learning.

7. I recognise that the conclusions of this study might have been influenced by my own NESB and previous hard science-based knowledge and research. To mitigate this issue, I conducted the study with the highest standards and rigor guided by the ethical issues listed in Chapter 4 – Research Design and Methodology.

12.4.3 Recommendations for Further Research

The conduct of this research was guided by a central research question that investigated the way international computing students learned in a blended learning environment. I broke down the central question into five research sub-questions and provided answers to them; however, many other questions of interest to the central research question have arisen during the conduct of the study. In this section, I will use such questions and my conclusions as basis for recommending further research in the field.

1. This study adds further evidence on the significance of cultural awareness, sensitivity, inclusivity and cultural competency in Australian multicultural classrooms. However, more research is needed to investigate the ways of building
cross-cultural competencies across the board in Australian higher education consistent with the demands of a globalised world. As providers of formal education, universities have the moral obligation of helping their students develop such competencies, empowering them to see the big picture of what is to live and practise in a borderless world.

2. This study acknowledges the great diversity of cultures international students bring to multicultural classrooms. With reference to this and in the context of computing education, there is a need for further research on the factors that should be considered in the design of computing curricula consistent with the trends of the internationalisation of higher education and computing industry demands (Guo & Chase, 2011; Marginson & Eijkman 2007; Sawir et al., 2009; Sawir, 2011).

3. The study sheds more light about the problems faced by international students as a result of their lack of preparedness and readiness to operate in a blended learning environment for which they are not familiar. Based on these findings, there is a need for further research on the best avenues to facilitate the adjustment and adaptation process of international students to a learning environment new to them. There is also a need to investigate ways of helping students' develop the online critical and cultural skills required for the effective use of ICT tools for learning purposes.
12.4.4 Concluding Remarks

This research study investigated the learning experiences of computer science university students in a multicultural blended learning environment. The findings have implications for teaching and learning designs; a direct consequence of the explosive growth of international education and the rapidly changing educational technologies. In that respect, there is a need for international students to adapt to the host culture, new society, and new education environment. Teaching and learning designers should not overlook international students’ prior knowledge and previous learning experiences in their designs of blended learning. Students’ academic workload should be in accordance with the abilities and busy lives of the students. Educational technologies should be integral and not simply used as a supplement or complement to conventional face-to-face teaching and learning. In that regard, to leverage the transformative potential of blended learning, teachers and learning designers should acknowledge that any one technology can be analysed and understood to afford some types of usages and behaviours while constraining others.
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Appendix A – Protocol Interview: Students

Interviewee Name: 
Institution: 
Date and Time: 
Course (Subject): 

1. Part A -> Multicultural aspect
What does it mean to be an International Student?

2. Part A -> Multicultural aspect
Why did you choose Australia as your destination for further studies?

3. Part A -> Multicultural aspect
In a typical day, how do you distribute your time? How much time do you allocate to your studies?

4. Part A -> Multicultural aspect
How influential are teachers in your studies? What do you expect from your teachers?

5. Part B -> Computing Education aspect
Why did you decide to undertake further studies? Why computing

6. Part B -> Computing Education aspect
What do you expect to know when you complete a course (subject) like this?

7. Part B -> Computing Education aspect
What did you do to ensure the successful completion of this course (subject)? How do you approach the learning of a course (subject) like this?

8. Part B -> Computing Education aspect
To what extent have further studies changed your life?

9. Part C -> ICT aspect
Had you used learning technologies as part of the learning process before? How
10. Part C -> ICT aspect
How confident are you at using systems like blogs, wikis, Discussion forums, etc.?

Wikis

11. Part C -> ICT aspect
How did you find the use of these systems in this course (subject)? Why?

12. Part C -> ICT aspect
Do you think that the use of these systems can enhance your learning? Why and how?
Appendix B – Protocol Interview: Teachers

Interviewee Name: Institution:

Date and Time: Course (Subject):

1. Part A -> Multicultural Aspect
   What does it mean to teach international students?

2. Part A -> Multicultural aspect
   How do you go about teaching international students?

3. Part C -> ICT aspect
   How were those learning technologies used within the course (subject)?

4. Part B -> Computing Education Aspect
   What do you do to make sure that your students achieve this course (subject) learning outcomes?

5. Part C -> ICT aspect
   What types of learning technologies were integral to this course (subject)?

6. Part B -> Computing Education Aspect
   What do you expect your students to know when they have completed this course (subject)?

7. Part C -> ICT aspect
   How effective were the integration of these learning technologies in the students’ learning outcomes?

8. Part C -> ICT aspect
   What sort of problems have you experienced in using these learning technologies as integral part of teaching and learning?
Appendix C – Reconstruction of Observations

Introduction

This anecdotal description of the observed participants’ behaviours at both sites is a combination of raw observational field notes, contextual information gathered in the classroom, general descriptions of participants’ interactions, my interpretations of participants’ experiences within the classroom and my reflections.

The following is a detailed description of the observations conducted in two of the subjects: SecNet at Site 1, and BAM at Site 2. These descriptions are organised in chronological order. For each observation reconstructed here, I describe the date the observation took place, the number of students that attended the class, the focus of the observation, the type of interaction and reflections made.

Description of the Observations at Site 1 (SecNet)

At Site 1 I conducted seven observations in semester two. The lecture classes were scheduled at 2:00pm with duration of two hours. The lecture room was a rectangular room located on level 5 of an old CBD building to accommodate up to 60 students in removable chairs. On the left hand side of the room there were four glass windows furnished with venetian blinds. The ambience lighting consisted of fluorescent lights, controllable by two on-off switches. The classroom only had one access door and close to it there was a ceiling data projector. A section of the wall near the whiteboard was used as the computer projector screen. The classroom was located in a noisy area surrounded by the main foyer, a computer lab and a cafeteria. In many occasions, I observed the teacher being forced to close the door to mask the incoming noise. This added an extra layer of disruption generated by late arrivals of students who had to knock on the door to enter to the classroom.
Observation 1 (Site 1): Lecture – Week 1 – Tuesday 8th July, 2008 – Room 505
This was the first week of the term. The class started at 2:00pm. The purpose of this observation was to get an initial impression of the students and record their experiences in their first day of class. I also used this class to introduce my research study to the students and distribute the PLS. Twelve students attended the class.

The teacher described the subject’s administrative processes, including the subject learning objectives, expectations, learning management system (LMS), resource materials and type of assessment tasks. The teacher encouraged the students to use the virtual forum for the discussion of topics. Then, before starting the subject discussion for the first week, the teacher asked the students to introduce themselves. One by one, the twelve students proceeded to the stage to tell their peers their names, nationalities, academic qualifications and previous working experience. It was surprising to observe some students’ anxiety in delivering those short words. For some of them, it appeared this was the first time ever they had addressed a multicultural background audience. Such angst was manifested, for example, in the shaky voice and lack of body language of one of the male students. Observing the student’s uneasiness, the teacher promptly intervened and encouraged him to finish the introduction. In retrospect, she told the class that public speaking was not that easy, particularly for the first time and before an unknown audience.

After this short introduction, the teacher gave me the opportunity of introducing my research to the students. In plain language, I talked about the importance of the study for the broader community and particularly emphasised that its success highly depended on their participation. I let them know that they were not going to be treated as simple informants but as collaborative researchers and that their likely participation in the study had the support of the university Ethics Research Committee. I distributed the plain
language statement (PLS) and the consent forms to the students and asked them to take them home for further reading. After my presentation, the teacher asked two questions to the students. The first question was about the motivation to undertake the subject and the second question was about students’ expectations of it. Students’ answers varied. Some students enrolled in the subject following the suggestions of peers who had already studied the subject, and others enrolled the subject to gain the skills in the field of information security with the purpose of professional employment. Others said that they had undertaken the subject because it was the focus of their specialisation in the field of information security. Others enrolled in the subject for self-improvement and knowledge development.

After this session, the teacher proceeded to deliver the lecture that consisted of a review of computer networks and an introduction of network security fundamentals. Students were quiet and most of the talk came from the lecturer. The class ended at 4:00pm.

Observation 2 (Site 1): Lecture – Week 2 – Tuesday 15th July, 2008 – Room 505
This observation took place on the second week of the term and started at 2:00pm. The purpose of this second observation was to observe students’ level of engagement and participation. The class session was attended by 16 students, four more students than the previous session.

In Site 1, the enrolment process typically extends up to the end of week two of the academic semester. This gives students the opportunity of making up their minds for either dropping or adding subjects. Since this class was timetabled for Tuesdays afternoons, it was reasonable to expect a different number of enrolled students for the following session (week three of the term). Reflecting on this, such variability in enrolment numbers may potentially be problematic, particularly when the cohort of
enrolled students changes abruptly from a small to a big number. Both teachers and students may be disadvantaged; particularly teachers who may have to multiply their efforts to bring late enrolled students up to speed in relation to the content and subject administration.

Students' level of engagement and participation in this class was low and it was vastly devoted to the settlement of the new students. The teacher elaborated on the weekly topic and ended the class by asking some questions students were required to reflect upon and post their answers in the virtual learning space located in the LMS. The class ended at 4:00pm.

Observation 3 (Site 1): Lecture – Week 3 – Tuesday 22nd July, 2008 – Room 505
This observation occurred on the third week of the term. It started at 2:00pm. The purpose of this observation was to gather general information such as the final number of students enrolled in the subject (previous week was the last week to add or drop subjects), new students' behaviours and attitudes, and importantly, to observe any issue or discussion related to the questions the teacher posted on the forum the previous week.

As in the previous session, there was little discussion and the class was mainly dedicated to the orientation and familiarisation of the new students. As expected, more students had enrolled in the subject for a final number of 26; however only 20 students turned up for this class.

I started to observe the first indication of commitment and motivation, with some students asking good questions about the topics under discussion. However, there were also off-topic questions. For example, one of the students asked the teacher about the format of the final exam, its degree of difficulty, and type (if open or closed book). The teacher acknowledged this concern and responded that the semester had just started; therefore it was premature to ask that type of questions. She added that at a later stage
within the semester, she would be advising about the most important topics and how they related to the exam.

During the class, the teacher raised her concern about the little use of the discussion forum. She emphasised the relevance of these forums to promote learning and to continue discussions initiated during the face-to-face sessions. She also said that she would be relating these discussions to the first assignment requirements due in week six of the term, hence the need for the students to access, engage and participate in the forum. Like in the previous session, she ended the class by asking some questions students were required to reflect upon, discuss and post the answers in the discussion forum. The class ended at 4:00pm.

**Observation 4 (Site 1): Lecture – Week 4 – Tuesday 29th July, 2008 – Room 505**

This observation took place on the fourth week of the term and started at 2:00pm. The purpose of this observation was to collect the participant’s signed consent forms distributed during the first session. I also planned to take note of students’ concerns about the first assignment and how they used the discussion forum to address these concerns.

Twenty students attended the class. There was a long session to discuss issues concerning the first assignment due in two weeks. Through the discussion, I realised that some of the students particularly those who enrolled late, had not started working on their assignment yet. This took me aback since it was actually a major assignment that required a lot of work. For example, as part of the learning resources, students were required to conduct a series of simulations using specialised software packaged bundled to the textbook. The computer simulations had to be completed on a weekly basis and in relation to the topics discussed during the classes. Students were required to document the simulations with appropriate evidence they actually conducted the tasks. With reference to this, a major concern amongst some students was their lack of a personal copy of the
simulation software, relying mainly on the library reserved copies. I also observed that as part of preliminary work towards the assignments students had to conduct some tutorials with practical exercises requiring the installation of freeware security software in their home computers. Being SecNet a network-related subject, I was surprised a couple of students did not have either Internet access or computers at home, relying mainly on University’s computer labs.

At the end of this assignment discussion, and with the authorisation of the teacher, I proceeded to collect the consent forms from the students who accepted to take part in this study. The response was good with 15 (of 26 students) consent forms signed. The class finished at 4:00pm.

Observation 5 (Site 1): Lecture – Week 5 – Tuesday 5th August, 2008 – Room 505
This was the fifth week of the term and as usual started at 2:00pm. The aim of this observation was to observe students’ behaviours when required to work in groups.

Twenty students attended the class.

In previous observations, I noted how students preferred to join the classroom group discussions according to their preferences. It appeared that students felt more confident and willing to discuss when they were grouped with peers who spoke the same native language, came from the same cultural background or had similar interests. For this class, however, the teacher asked the students to organise the discussion groups following a group work protocol which included members from different backgrounds and nationalities. For each group, she asked the students to allocate roles and responsibilities amongst themselves. The scribe who was responsible for note taking the main issues discussed within the group; the spokesperson whose responsibility was to synthesise the group’s view in relation to the topic under discussion and provide a summary for the general audience; the leader who was in charge of managing and moderating the
discussion within the group; and finally a time keeper. The protocol included that all these roles and responsibilities were to be rotated on a weekly basis. The teacher moved from group to group to monitor students work. In some groups there was a need for the teacher to intervene providing further information, ideas and suggestions whereas in others there was little or even no intervention. There were a couple of instances where the groups were not really focused on the learning activity and the teacher had to intervene to get them to work. Under close scrutiny, I saw how they were using the class time for other academic commitments like assignment work or even matters not relevant to the point under discussion. The class continued with the teacher asking the group spokespersons to approach the stage to chair the discussion forum. Given the nature of the new reallocation of the groups, I thought that the quality of the discussion was going to be undermined, but on the contrary, it was a rich and enjoyable session with students being fully engaged and supporting their groups. Some groups were more outspoken than others but as a whole, all of them were able to express their ideas in a critical and sound manner. In my opinion, the session was a success thanks to the prompt intervention of the teacher in changing the structure of the groups and facilitating, stimulating and catalysing the discussions. The class ended at 4:00pm.

**Observation 6 (Site 1): Lecture – Week 6 – Tuesday 12\textsuperscript{th} August, 2008 – Room 505**

I conducted this observation on the sixth week of the term. The class started at 2:00pm. The aim of this observation was to observe and select students for my interviews. This class session was attended by 23 students.

At this time of the term, I was familiar with the vast majority of the students. Based on students’ behaviours shown in the previous classes and participation in the discussion forum, I made a list of students to call for interviews. In doing so, I was able to compare their behaviours and in both environments; face-to-face and asynchronously.
During this classroom observation, I noted something peculiar amongst the students. They were not willing to ask questions or be engaged in one-to-one discussions promoted by the teacher. They looked afraid of raising arguments publicly with the teacher for at the end of the class, I saw how some of them approached the teacher in search of clarification about specific issues raised during the class or to ask questions. This students’ behaviour contrasted the one they displayed at the previous session where they were actively engaged in the discussion as part of the group activity. Apparently their confidence increased when they had peer support. I also noted that in previous classes the teacher discussed issues concerning the first assignment (due on this week) and asked the students to carry on with the discussion outside class hours over the discussion forum. I observed there was little discussion around the essence and substance of the assignment topics with students’ posts mainly focussed on non-relevant things such as technical questions about the installation of specific software package and the like. The class ended at 4:00pm.

Observation 7 (Site 1): Lecture – Week 7 – Tuesday 19th August, 2008 – Room 505

This was my last observation of students at Site 1 and conducted on the seventh week of the term. As usual, the class started punctually at 2:00pm. This class was attended by 20 students. I used this session to observe more closely the behaviours and approaches to learning of those students I had decided to interview. For example; I observed that Samuel was a very active student, willing to participate in open discussions moderated by the teacher. I noticed he was a bit overemotional in supporting his points of view and very critical of peers’ opinions. He was the kind of student who liked to work on his own and when asked to join a group for discussion, he reluctantly agreed. Within the group he remained relatively quiet, contrasting his active role in open class discussions. His English was very good, with a great ability to express himself.
Jacquie used to be the first student arriving at class and liked to sit in the first row near the stage. She always was the first student volunteering to answer questions posed by the teacher. As a matter of fact, her answers were sound and well structured. She happily joined the group activities mainly taking the role as a leader. I observed her skills leading the group discussion and when asked to act a group spokesperson she was willing to do it. Moreover, Jacquie had excellent communication skills, a superb way of handling the English language confidently and convincingly. She always made excellent and to the point remarks.

Manuel used to sit in the second or third row from the stage very quietly. I noticed that his participation in class had to be motivated through the teacher’s intervention. He was not the kind of student who initiated discussions but once involved he could argue and support his views very well. He was easy going to work in groups taking any role or responsibility assigned.

Bernie was an outspoken student who appeared to have an extensive industry experience. In many times he took the initiative to kick off a discussion and his arguments had a strong practical foundation. Despite his strong technical and management background, he was open to accept peers’ points of views respectfully. He did not have any problem in joining the groups and participating in any role as required.

Kathy and Katerina were two affable students who always arrived early at class and liked to sit together right in the first row near the stage. Of the two, Kathy appeared to be more experienced for her answers and arguments were sounder. Kathy was keen to answer open questions, whereas Katerina had to be addressed directly to get her opinion.

Aurora was a quiet student who sat in the middle of the room and took notes diligently. She gave the impression of being immersed into the class with the intention of
getting a full understanding of the subject matter but not willing to participate in the debates. I saw how at the end of the class she approached the teacher to ask questions.

*Gabrielle* was a student who characterised for arriving late and leaving earlier. I also noticed that she was not a regular attendant to classes for she had missed the last two sessions. Her participation in class was also minimal and when addressed by the teacher to provide her opinion about a topic under discussion I noticed her nervousness and difficulty to express her opinions.

*Patricia* was another student who liked to sit in the very back of the room and like many others not willing to participate in the discussions raised during the class. Like, Gabrielle, when challenged she had difficulties in expressing her opinions.

*Peter* appeared to be a highly focussed student willing to participate in class discussions. I had already noticed from previous session he had the positive attitude of asking sound questions that were used by the teacher to ignite discussions. He arrived early to class and at the end of the class he regularly approached the teacher for additional questioning.

*Vert* had been absent for the last two sessions and in this particular class, I noticed he was basically trying to catch up, asking questions about topics already discussed in previous classes. The teacher respectfully sorted out the situation by asking the student to arrange an appointment to discuss a catching up plan.

*Fred* used to sit in the middle of the classroom along with a group of fellow students. During group discussions, he appeared to take the leadership within the group and liked to participate in classroom discussions.

The teacher used this session to provide an initial feedback on the assignment students submitted the week before. Even though all students had completed the assignment successfully, the teacher was disappointed with the outcome, well below her
expectations. She thought students had not worked hard for this assessment task. She mentioned that some students might have had a better result, had they dedicated more time to critically address the assignment requirements.

Finally, from my field notes, I highlighted students’ politeness and the respectful way they used to approach or greet the teacher: “Sir…”, “Hello sir”, “How are you sir”, “Yes sir”, “Thank you sir”. This class ended at 4:00pm.

**Description of the Observations at Site 2 (BAM)**

At Site 2 I conducted four observations in semester two. The classroom was a fully furnished lecture theatre located on the ground floor of a modern building with a capacity of 100 seats. It had two ceiling data projectors with dedicated projector screens. In the centre of the stage there was a lectern from where the teacher could control the audio-visual equipment and the ambience lighting.

**Observation 1 (Site 2): Lecture – Week 1 – Tuesday 29th July, 2008 – Lecture theatre 3**

The class started at 5:30pm. This was the first class of the semester. The purpose of this observation was twofold: 1) to introduce my research to the students and 2) to familiarise with the student cohort, classroom environment and type of interactions.

The week before the semester started, in a planning meeting I had with the teacher, she expressed her concerns in relation to the low number of students pre-enrolled in the subject. At that time, nine students had shown interest in studying this subject and there were no expectations of a greater number; however I was surprised because for this first class there was a turn up of thirty-five students.

The teacher introduced the subject, its nature, the field of study, learning objectives and also put into consideration to the students the different administrative aspects of the subject for the entire semester. After this, the teacher proceeded to discuss the first topic of the semester. It was an introduction of information systems and the role
of a business analyst within that system. Since this subject was all about the analysis, modelling and design of information systems with a major project as the main learning activity, the teacher dedicated this class to introduce the students to the requirements of the project. Students were required to research an organisation, understand its business processes, identify the different personnel within the processes and document the likely problems within that organisation. At a later stage within the semester, they were required to produce a system’s model and design that could solve the uncovered problems.

Students were to work in groups for the completion of this major project. A student raised her concern about the finding of an appropriate organisation to conduct the project. I later discovered that some of these students had just arrived at Australia and lacked the confidence and networking to find an appropriate organisation they could use to complete the project. The teacher suggested the students to look around their neighbourhoods for an example of a business process. As part of the class discussion, other examples emerged like milk bars, bakeries and charitable organisations amongst others.

During the class, the teacher implemented a group learning activity focused on discussing ideas about what students believed was a good information system. Students gathered around in groups to discuss the topic and later they provided their agreed definition. They seemed to easily and spontaneously choose their groups. It worked mostly in relation to how close they were located geographically in the classroom. The discussion was quite animated and I thought that everyone was interested to participate with their own ideas. At the end of the discussion, each team provided their agreed definition which was compared with the definition given by the other groups. I observed that the success of this learning activity was attributed to the prompt teacher’s intervention providing guidance, monitoring and motivation amongst the participants. Helped by the teacher students were able to construct the definition of a good information
system. The teacher took the opportunity to inform the students that this type of learning activity was crucial to understand the requirements of the first group project progress report. At the end of this discussion the teacher made reference to the next week’s topic and how such a discussion was linked to it. I learned later that there was a period during the class that the teacher thought she was talking too much. This self-awareness seemed to put her under control of the situation encouraging the students to converse. An hour and a half later, the first part of the class concluded. The teacher made an announcement asking the students to fill up a survey with student background information she could use to form the group projects. She suggested having a five-minute break to stretch legs and to fill up the above mentioned survey.

At the beginning of the next half of the class, the teacher asked me to introduce the students to my research and invite them to participate. This had been the first time I ever had talked to students from that perspective. I addressed the students with simple and plain language, focussing on the three main aspects of my research, namely, computing education, international education and international students. One by one I explained the students the aim of the study and how important it was for us to have their participation. Once I finished, the teacher helped me distribute the plain language statement, and the consent forms to the students.

Then, the teacher continued with the class discussion by providing an overview of the subject matter, particularly on business processes, key themes, methodologies, requirements gathering and rich pictures. The class finished at 8:30pm.

**Observation 2 (Site 2): Lecture – Week 2 – Sunday 10th August, 2008 – Lecture theatre 3**

This was the second class of the term, twelve days after the first class in accordance to the subject schedule. The class started at 9:00am. The teacher scheduled the class on a Sunday morning and ran it for two sessions, three-hours each. It was raining and despite
of the ungraceful weather all students turned up on time. The main purpose of this observation was to collect participants’ signed consent forms and observe with more detail students interactions and responses to questioning.

The teacher introduced Blackboard™, the Learning Management System (LMS) to be used during the semester to support students’ online and asynchronous learning activities. The teacher emphasised the importance of announcements published via the LMS to communicate vital up-to-the-minute information to the students. She suggested students to stay tuned and take the habit of visiting this learning space frequently. She also strongly recommended students to get to know and familiarise with the LMS’s structure and wide range of tools.

After this introduction, the teacher reminded the students about the study I was undertaking and asked those students willing to participate to return their signed consent forms. Of the 20 students enrolled eight accepted to participate (40% participation).

In this class, the discussion focused on important topics like requirements elicitation, documentation and modelling. Particularly there was a great deal of discussion around qualitative data collection techniques (Interviews, Focus Groups and observations) and conceptual data modelling and tools.

The teacher introduced a learning activity around the analysis of an Ethics application form from the incumbent university. Students were to conduct the analysis by taking into consideration the ethical and cultural aspects of the BAM’s subject. As noted in Observation 1, as part of the subject assessment, students were to find an organisation to complete their group project. In doing so, they had to deal with ethical issues during the data collection and this was a good opportunity to understand the complexity behind the process. The teacher challenged the students with an ethics-related question to which only two students attempted to respond. I noted that, unlike in the previous class I had
observed, this time students were less willing to get involved in the discussions. I thought this might have been attributed to the fact the discussion had went through topics relatively new to the students.

By this time, I noted a very peculiar event related to the multi-cultural aspect of this study. The teacher used a thematic approach to introduce a topic relevant to the subject learning outcomes. The idea was to explain the propensity for “subjectivity” in the context of systems analysis. She showed the students a famous picture that portrayed two women; one old and another young. Depending on the viewer’s perspective, it was possible to identify either the old woman or the young woman. Despite the effort, it looked to me that students did not get the message and did not find any relationship between the theme and the actual topic under discussion. The same behaviour occurred when the teacher introduced a comic strip to initiate a discussion around another relevant topic. Students did not get the idea and there were no responses to the theme. I did not remain for the second session and left the classroom around 12:00pm.

Observation 3 (Site 2): Lecture – Week 4 – Tuesday 26th Aug, 2008 – Lecture theatre 3

Two weeks had passed since my previous observation. The class started at 5:30pm. The aim of this observation was to observe the eight participants’ behaviours and approaches to learning. For this onsite observation, I opted for video recording the class. Permission had already been obtained when the teacher and students signed the consent forms.

Previous to this recording I let the teacher and students knew that this was my intention and they happily agreed. I took the measures to remain inconspicuous to both the teacher and students to minimise disruptions to the environment. In doing so, I located the video recording gear in a quiet room corner facing students’ back. I was able to get a nice view from the teacher, whiteboard and the stage. I used a Canon™ MVX200i mini DV camera on top of a Manfrotto™ tripod with no fluid head. This equipment was not that
sophisticated since the aim of the recording was mainly as a backup of my note taking during the observation process. It also helped me in improving the description of my observation.

By the time of this observation, I was already familiar with the profile of each student because the teacher in charge had provided me with the students' background information she had collected during the previous weeks. This gave me the opportunity to focus my observations on those students specifically. I noted that students sat in the same place with reference to my previous observations. This was cleverly used by the teacher to remember students' name. In fact, the teacher had the good attitude of referring to students by their names which in the case of international students is a major feat owing to the complexity and structure of their names. To help her memorising their names, she drew on a piece of paper a topological diagram of the classroom and recorded the preferred names of the students on top of the seat where they usually sat.

During the first 45 minutes of the class, the teacher re-emphasised the subject assessment, marking criteria and her expectations. This part of the class was vastly a memorandum of understanding to provide a clarification and further information on those important matters. This was timely since the following week students were to submit the first draft report and present face-to-face a 5 to 10 minute interim progress report. For this report students were to draft the information systems models to be used in their projects. One of the students asked a question concerning the structure of the draft report, an important element of the subject assessment. This was followed by another student who asked a question about the format of the critique they were supposed to do on their peers draft report.

The teacher was concerned about the lack of online discussion via the forum. She explained that this was a very important component of the subject therefore more action
was needed. She also suggested students to regularly access the LMS for announcements and updates made available to them during the week. She re-emphasised students with writing and academic difficulties to approach the university Learning Skill Unit and Library resources for help.

Observing the students, I noticed that a large number of them used laptops to either follow the lecture notes or for note taking. Next, the teacher went through issues around the research article summaries students had submitted in the previous class. She insisted students were to be more critical when writing their summaries and post more challenging questions on the Forum. She asked students to read the comments and feedback provided on their summaries for the sake of improvement. She was very critical about the superficiality and lack of interesting discussions on the forum. She reinforced that the forum should be a virtual learning place for reflection, in-depth analysis and critical thinking. In her view nothing like that had been happening except for two or three students.

After this introductory discussion, the teacher went through a quick summary of what she had been discussed over the last classes. Then she started the week’s discussion including how to design the user’s experience in an information system, users’ characterisations, personas, which they are, and what they do. In order to illustrate this she used the example of booking a flight ticket online. She asked students if any of them had actually booked a flight ticket online and if so, what sort of interaction that involved. As expected a number of students confirmed their familiarity with this task and talked about their personal experiences using this type of information system.

She explained the whole process and likened it to the type of interactivity occurring between the system and the user as a “persona”. To understand the concept of persona she referred to the book by Alan Cooper (1998), “Inmates are running the
Asylum” and the likely personas to be found in that environment: doctors, nurses and patients. Then she proceeded with an activity where students were to identify the personas involved in the context of their group project. Some of them provided examples coming from settings like a corner shop, bookshop, tobacco shop, etc. Students were open to express their opinions of personas in a friendly environment. After these students’ examples, the teacher proceeded to examine the concept of persona as defined by an author from the subject set of readings. She took the timely example of an enrolment system within a tertiary education to identify the categories of users: local and international students, administrators, academics, etc. In summary, there were plenty of real world scenarios to help students to conceptualise this topic. The pace of the class continued with the teacher introducing the remaining topics pretty much using the same teaching style and constructive examples that forced students to think about real situations related to their group project. Twenty students turned up to the class which ended at 8:30pm.

Observation 4 (Site 2): Lecture – Week 5 – Tuesday 2nd Sept, 2008 – Lecture theatre 3
This was my last observation at Site 2. The class started at 5:30pm. The main purpose of this observation was to observe participants’ behaviours during the first presentation of the group project.

Two important deliverables were due this week; the 5 to 10 minute presentation on the progress of the group project and the submission of a draft report on the group project. The attendance was full with all students sitting in the same seats as in the last observation. I was particularly interested in this observation since through it I could examine students’ confidence to address an audience, public speaking skills and body language. Owing to the importance of this session, I decided to video record this class as well. In doing so, I had the opportunity to examine the participants and relate them to their
participation in the virtual learning space. Again I took the precaution of setting up the recording gear in a spot behind the students to cause the minimum disturbance. I thought students were a bit nervous with this presentation and this was not a surprise since for some of these students this type of activity represented a challenge perhaps being the first time they ever had to perform before an audience.

The teachers started the session clarifying that the duration of each presentation should not go further than 10 minutes and they should stick onto that constraint. The first group to present comprised three members, including Henry, one of my research participants, who remained very quiet during the whole group presentation. His two classmates did the presentation and apart from some issues raised by the teacher regarding the structure of the project, no one else intervened in the discussion. I noticed that most of students were not engaged during their peers’ presentation. This lack of engagement might have been attributed to students’ nervousness and their total concentration in preparation for their turns to present. Unfortunately, the teacher did not promote the discussion by challenging the audience to get involved with the discussion. They were vastly focused on providing feedback to the presenters for the improvement of the project. The presentation ended without any question from the audience during the question and answer time.

The second group of the night comprised four members, three of them research participants: Eloisa, Rachel and Bernard. Within this group, Eloisa appeared to be the leader of the team who started the presentation with a rich picture of the organisation they had chosen to complete their project. One of the teachers asked for clarification regarding the nature of the organisation and Eloisa provided a sound response from the perspective of the work they were expected to do to improve one of the organisational processes. I observed how Rachel stood next to Eloisa ready to intervene and support her during the
presentation. There was an intervention of the teachers clarifying a technical aspect of the presentation. The presentation continued with Eloisa providing a deeper insight about the processes under discussion. At a certain point the teacher made a suggestion to improve the process which was followed up by Bernard in support of the team leader. The teacher asked if they were comfortable with the recommendation, for which Rachel said that they had to think about it. The teachers agreed that they had to be pragmatic and not to be over ambitious on what students were to achieve within the constraints of a short semester (thirteen weeks). I noticed that presenting students felt more relaxed at the very end of the presentation (even laughing) which I attributed to the timely and friendly intervention of the teacher. Like in the previous presentation, there was no audience intervention to challenge or question the presenters. As a reflection, I thought that the teacher should have been more proactive inviting the audience to be part of the discussion.

The third group of the night had four members, including Natalie as its team leader. After introducing the team members, Natalie proceeded to introduce the organisation and reported on their difficulty of finding it since as international students they had certain limitations like not being familiar with the environment and their lack of social networking. They were lucky to get an organisation attached to the university that provided medical and health services for both international and local students. Through a rich picture, Natalie introduced all the personas within the process of their concern. I was pleased with Natalie’s motivation and willingness to present her project. She looked very confident and comfortable during the entire presentation. It looked to me that she had a strong experience doing this type of work. In my field notes, I recorded this as something to be proved during Natalie’s interview at the end of the semester and through the analysis of the background information collected at the beginning of the semester. Natalie handed over to one of the team members to elaborate on the next topic under discussion.
Through the discussion, the teacher suggested not to jump on finding a solution to the problem. She advised the students that during the development of this phase, the focus should be put on the exploration of the case, to find what needed to be done and why. The teacher raised the issue that at this stage the most important thing was to understand the existing system and problem definition for which Natalie provided further clarification.

At this point, I noted the first intervention of a peer student who had already presented and who was willing to participate in this discussion. He provided some suggestions and recommendations in accordance to the teacher’s comments. The presentation ended with a teacher’s strong recommendation of making things simpler and clear by providing a concise and to the point problem definition, before attempting its solution. Like in the previous presentations, there were no questions at the end of the session from the audience.

The next presenting group had three members, including Thomas, one of my research participants. Thomas did not participate in the presentation, preferring to assume a very passive approach. During the presentation, the team leader of the group attempted to explain the nature of the problem, which for the teacher it appeared to be very complex and lengthy. She suggested the group to define the scope of the problem and limit their effort to a single process.

The night finished at 8:30pm with an exchange of reports for students to critique. The teacher collected various copies of group draft progress reports and re-distributed them to the individuals for peer review.

Finally, the teacher thanked students for their efforts and finished the class with a wide range of generic recommendations, being the most important one “to keep the things as simple as possible”. I found the teacher very helpful and proactive giving timely advice to the groups. I was expecting to have a more interactive session with a high level of
students' engagement and participation. As I had already noted in my journal, “students were mostly concerned in preparing for their presentations rather than taking advantages of the actual presentations”.
Appendix D – Plain Language Statement and Consent Forms

DEAKIN UNIVERSITY

PLAIN LANGUAGE STATEMENT AND CONSENT FORM FOR STUDENTS

Plain Language Statement for students

Version 1.0

Full Project Title: Blended learning in a higher education multicultural environment

Principal Researcher: Associate Professor Elizabeth Stacey

Student Researcher: Edison Arenas

Associate Researcher(s): Dr Julianne Lynch

This Plain Language Statement and Consent Form is 4 pages long. Please make sure you have all the pages.

1. Your Consent

You are invited to take part in this research project.

This Plain Language Statement contains detailed information about the research project. Its purpose is to explain to you as openly and clearly as possible all the procedures involved in this project before you decide whether or not to take part in it.

Please read this Plain Language Statement carefully. Feel free to ask questions about any information in the document. You may also wish to discuss the project with a relative or friend or your local health worker. Feel free to do this.

Once you understand what the project is about and if you agree to take part in it, you will be asked to sign the Consent Form. By signing the Consent Form, you indicate that you understand the information and that you give your consent to participate in the research project.

You will be given a copy of the Plain Language Statement and Consent Form to keep as a record.

2. Purpose and Background

I am writing to invite you to participate in a PhD research project I am conducting in the School of Education at Deakin University.

The aim of the project is to identify how students perceive the blend of face-to-face and online learning activities in multicultural environments. The outcome of this study will be used to develop practical guidelines that might support higher education teachers’ design and implementation of blended learning in multicultural environments.
In order to complete this research I seek involvement from information systems and information technology students at your university. If you are willing to participate, I will interview you for a period of around 40 minutes to ask you questions about your learning experience during the term. The interview will be video recorded and I will provide you with a transcript of the interview so that you can ascertain the accuracy of the collected information.

In addition to the interview, I would like to perform content analysis of the electronic data you generate throughout the term including your interactions with your peers and teachers, and online learning activities performed on the learning management systems.

I would like to assure you that all information collected during all these sessions will be treated with the strictest confidence and will be kept in a locked filing cabinet in the Faculty of Education at Deakin University for at least six years. No student will be identified by name, and pseudonyms or code names will be used in any reporting research.

You are free to withdraw your consent at any time and, upon withdrawal, any information you may have contributed to the research, or which has been gathered by me with your permission, will not be used.

Findings of the research will mainly be documented in the doctoral thesis submitted to Deakin University as a requirement of the PhD, but may also be published in articles in teacher education journals, or presented at conferences.

If you are willing to participate, we ask that you provide your consent on the Consent Form attached. Should there be any concerns about the natures and/or conduct of this research project, you may contact either me on (03) 86620570

3. Privacy, Confidentiality and Disclosure of Information
Any information obtained in connection with this project and that can identify you will remain confidential. It will only be disclosed with your permission, subject to legal requirements.

In any publication, information will be provided in such a way that you cannot be identified.

4. New Information Arising During the Project
During the research project, new information about the risks and benefits of the project may become known to the researchers. If this occurs, you will be told about this new information. This new information may mean that you can no longer participate in this research. If this occurs, the person(s) supervising the research will stop your participation.

5. Participation is Voluntary
Participation in any research project is voluntary. If you do not wish to take part you are not obliged to. If you decide to take part and later change your mind, you are free to withdraw from the project at any stage. Any information obtained from you to date will not be used and will be destroyed.
Your decision whether to take part or not to take part, or to take part and then withdraw, will not affect your routine treatment, your relationship with those treating you or your relationship with your University.

Before you make your decision, a member of the research team will be available to answer any questions you have about the research project. You can ask for any information you want. Sign the Consent Form only after you have had a chance to ask your questions and have received satisfactory answers.

If you decide to withdraw from this project, please notify a member of the research team or complete and return the Revocation of Consent Form attached. This notice will allow the research team to inform you if there are any health risks or special requirements linked to withdrawing.

6. Ethical Guidelines

This project will be carried out according to the National Statement on Ethical Conduct in Research Involving Humans (June 1999) produced by the National Health and Medical Research Council of Australia. This statement has been developed to protect the interests of people who agree to participate in human research studies.

The ethics aspects of this research project have been approved by the Human Research Ethics Committee of Deakin University.

7. Complaints

If you have any complaints about any aspect of the project, the way it is being conducted or any questions about your rights as a research participant, then you may contact:

Ms Silvia Rametta, Executive Officer, Human Research Ethics, Deakin University, 221 Burwood Highway, Burwood Victoria 3125, Telephone: 92517123, Facsimile: 9244 6581.

8. Further Information, Queries or Any Problems

If you require further information or if you have any problems concerning this project, you can the researchers responsible for this project:

Edilson Arenas

Faculty of Business and Informatics

Central Queensland University – MIC

Phone: (03) 86620570

Email: arenase@mel.cqu.edu.au
Consent Form for students

Version 1.0

Full Project Title: Blended learning in a higher education multicultural environment

I have read and I understand the Plain Language Statement version x dated x.
I freely agree to participate in this project according to the conditions in the Plain Language Statement.
I have been given a copy of the Plain Language Statement and Consent Form to keep.
The researcher has agreed not to reveal my identity and personal details, including where information about this project is published, or presented in any public form.

Participant’s Name (printed) .................................................................
Signature ............................................................................... Date ..............................

Edilson Arenas
Faculty of Business and Informatics
Central Queensland University – MIC
Phone: (03) 86620570
Email: arenase@mel.cqu.edu.au
DEAKIN UNIVERSITY

PLAIN LANGUAGE STATEMENT AND CONSENT FORM FOR TEACHERS

Plain Language Statement for teachers

Version 1.0

Full Project Title: Blended learning in a higher education multicultural environment

Principal Researcher: Associate Professor Elizabeth Stacey

Student Researcher: Edilson Arenas

Associate Researcher(s): Dr Julianne Lynch

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I am writing to invite you to participate in a PhD research project I am conducting in the Faculty of Education at Deakin University.

The aim of the project is to identify how teachers perceive the blend of face-to-face and online learning activities in multicultural environments. The outcome of this study will be used to develop practical guidelines that might support higher education teachers’ design and implementation of blended learning in multicultural environments.

In order to complete this research I seek involvement from information systems and information technology teachers at your university. If you are willing to participate, I will interview you for a period of around 40 minutes at the end of the Term. The interview will be video recorded and I will provide you with a transcript so that you can ascertain the accuracy of the collected information.
I would like to assure you that all information collected during all these sessions will be treated with the strictest confidence and will be kept in a locked filing cabinet in the Faculty of Education at Deakin University for at least six years. No teacher will be identified by name, and pseudonyms or code names will be used in any reporting research.

You are free to withdraw your consent at any time and, upon withdrawal, any information you may have contributed to the research, or which has been gathered by me with your permission, will not be used.

Findings of the research will mainly be documented in the doctoral thesis submitted to Deakin University as a requirement of the PhD, but may also be published in articles in teacher education journals, or presented at conferences.

If you are willing to participate, we ask that you provide your consent on the Consent Form attached. Should there be any concerns about the natures and/or conduct of this research project, you may contact me on (03) 86620570.

11. Privacy, Confidentiality and Disclosure of Information
Any information obtained in connection with this project and that can identify you will remain confidential. It will only be disclosed with your permission, subject to legal requirements.

In any publication, information will be provided in such a way that you cannot be identified.

12. New Information Arising During the Project
During the research project, new information about the risks and benefits of the project may become known to the researchers. If this occurs, you will be told about this new information. This new information may mean that you can no longer participate in this research. If this occurs, the person(s) supervising the research will stop your participation.

13. Participation is Voluntary
Participation in any research project is voluntary. If you do not wish to take part you are not obliged to. If you decide to take part and later change your mind, you are free to withdraw from the project at any stage. Any information obtained from you to date will not be used and will be destroyed.

Your decision whether to take part or not to take part, or to take part and then withdraw, will not affect your routine treatment, your relationship with those treating you or your relationship with your University.

Before you make your decision, a member of the research team will be available to answer any questions you have about the research project. You can ask for any information you want. Sign the Consent Form only after you have had a chance to ask your questions and have received satisfactory answers.

If you decide to withdraw from this project, please notify a member of the research team or complete and return the Revocation of Consent Form attached. This notice will allow the research team to inform you if there are any health risks or special requirements linked to withdrawing.
14. **Ethical Guidelines**
This project will be carried out according to the *National Statement on Ethical Conduct in Research Involving Humans* (June 1999) produced by the National Health and Medical Research Council of Australia. This statement has been developed to protect the interests of people who agree to participate in human research studies.

The ethics aspects of this research project have been approved by the Human Research Ethics Committee of Deakin University.

15. **Complaints**
If you have any complaints about any aspect of the project, the way it is being conducted or any questions about your rights as a research participant, then you may contact:

Ms Silvia Rametta, Executive Officer, Human Research Ethics, Deakin University, 221 Burwood Highway, Burwood Victoria 3125, Telephone: 92517123, Facsimile: 9244 6581.

16. **Further Information, Queries or Any Problems**
If you require further information or if you have any problems concerning this project, you can the researchers responsible for this project:

Edilson Arenas
Faculty of Business and Informatics
Central Queensland University – MIC
Phone: (03) 86620570
Email: arenase@mel.cqu.edu.au
DEAKIN UNIVERSITY
PLAIN LANGUAGE STATEMENT AND CONSENT FORM FOR TEACHERS

Consent Form for teachers
Version 1.0

Full Project Title: Blended learning in a higher education multicultural environment

I have read and I understand the Plain Language Statement
I freely agree to participate in this project according to the conditions in the Plain Language Statement.
I have been given a copy of the Plain Language Statement and Consent Form to keep.
The researcher has agreed not to reveal my identity and personal details, including where information about this project is published, or presented in any public form.

Participant’s Name (printed) ……………………………………………………………………………………
Signature ………………………………………………………… Date ……………………………..

Edilson Arenas
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Email: arenase@mel.cqu.edu.au