Working to Learn:

The co-operative education program

in an information systems business degree

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Abstract

The thesis presents the findings of a case study centred on a co-operative education (co-op) program within an IT business degree in an Australian university. The aim of the study was to uncover the extent to which the development of generic employability skills can engage key stakeholders and provide the means to sustain program improvement. A multi-disciplinary literature review across the fields of workplace and organisational learning, professional formation, adult learning, higher education, co-operative education and work integrated learning uncovered a diverse range of views, tensions and gaps regarding placement programs. In depth interviews were conducted with a small cross-section of stakeholders to uncover their views of individual needs, expectations and actual outcomes. An analysis of the data highlighted the diversity of co-op placement settings, the uniqueness and value differentiation of individuals involved, and the breadth of opportunities for learning, professional formation and individual development.

Each individual was found to experience co-op differently and the learnings they took away were subjective. However what emerged from the study was the relational and social nature of self-determination and the multiple “I”, “you” and “us” identities. Students developed senses of the self through actively engaging in the co-constructed and co-participative practice of exercising agency to emerge as budding professionals.

The Emergence Model of Professionally Engaged Learning is proposed, a relational model that encompasses the individual, social and contextual dimensions of work-based learning. The Model is designed around three interdependent, interlinked activities that encourage individual and social agency through (a) engaging in mutually satisfying and rewarding workplace relationships (relationship development), (b) promoting work-related knowledge construction and reconstruction (knowledge development) and (c) nurturing and growing communities of practice (network development). The proposed Model necessitates the engagement of stakeholders across various levels of organisations and the University so that placement programs can be responsive to changing needs, strategic in direction, intentional in design and sustainable in practice.
Declaration

This is to certify that:

(i) the thesis comprises only my original work towards the degree of the Doctor of Education,

(ii) Due acknowledgement has been made in the text to all other material used,

(iii) The thesis is 52,700 words in length, exclusive of tables, references and appendices

Signed: _____________________________________________________
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1 Introduction

Innovative and efficient use of information communication technology (ICT) has been identified as a major driver of economic growth and productivity by the Organisation for Economic Co-operation and Development (OECD, 2006). The Department of Communication, Information Technology and the Arts (DCITA) reports that Australia needs to enhance its level of ICT skills and capability in order to build and maintain a sustainable and world-class ICT workforce, (DCITA, 2006). However, ICT is a collection of constantly evolving technologies that have implications on skills demand. The skills required vary considerably from job to job and context to context, ranging from specific to broader technical knowledge and expertise through to non-technical skills such as interpersonal communication, critical thinking and problem solving. The Australian Computer Society (ACS), the recognised professional association for the Australian ICT sector, sets professional standards that are committed to a Code of Ethics and Code of Professional Conduct and Practice; to continued knowledge and skills development; and to a level of excellence, rigour, integrity and honesty (ACS, 2005).

Businesses and governments look to educational institutions to prepare individuals that are job-ready and have the ability to grow in the constantly changing workplace. A study commissioned by (DEST, 2002) reported significant efforts made over the past 20 years, in identifying the capabilities, capacities, competences, skills, attributes and attitudes required to make graduates employable. Universities in every State and Territory have developed statements of the attributes they aim to develop in their graduates; and the Commonwealth has developed a number of tools to measure graduate outcomes (Graduate Skills Assessment) and satisfaction levels of university experiences (Course Experience Questionnaires).

However, despite all these efforts, a DETYA-funded report *Employer Satisfaction with Graduate Skills* (DETYA, 2000) noted that although “the overall performance of new graduates employed appears to be reasonable … a large proportion of applicants for positions are considered unsuitable” (p. vii). The Report went on to identify key skill deficiencies in the areas of communication skills, interpersonal skills and a lack of understanding of business practice. Hager, Holland and Beckett (2002) argue the ‘skilltalk’ masks employers’ real needs in graduates, that is ‘the
capacity to be grafted onto the culture of their organization, and to transform it productively” (p. 5). They suggest a broader notion of context-specific capacities should be investigated together with a better understanding of how adults learn. Research evidence suggests knowledge gained in the classroom does not become usable at work without further learning in the workplace (Eraut, 2002). Eraut adds that acquired knowledge only has meaning once used; and its meaning is strongly influenced by previous contexts of use. The ability to handle tasks in different situations also promotes growth in individual confidence and adaptability. A curriculum integrating workplace and classroom learning provides a good foundation for on-going professional development.

Universities offer a range of work-based learning (WBL), industry-based learning (IBL) and work-integrated learning (WIL) programs. These terms describe a class of university programs that bring together universities and work organisations to create new learning opportunities for students in the workplaces (Boud, Solomon, & Symes, 2001). Examples of these programs include work-based projects, traineeships, internships and co-operative education or “sandwich year” programs.

The co-operative education program (co-op) within higher education is the focus of this study. Such programs are unique forms of education that integrate classroom study with paid (sometimes voluntary), supervised work experience in the private and public sectors (Arnold and Nicholson, 1991 in Garavan & Murphy, 2001). Although co-op programs have been around for over 100 years, many struggle for educational recognition and overall viability. The literature suggests differing views held by the various stakeholders are hindering the progress of co-op programs. There are a number of stakeholders involved in such programs: the employers who recruit the students; the students who take on the jobs; the supervisors and immediate work colleagues who advise, guide and support the students, the co-op management who develop and maintain the relationships between the employers, the students and the university; the mentors who guide the student at the workplace; the academics who work with the students before, during and after the co-op year; the university that offers the program; the professional bodies who accredit the programs; and the government that may fund the Universities.
This study explores the needs and expectations of the various stakeholders. Participants in co-op program all want to “win” from the program (Neil-Smith, 2001). However, studies have found employers don’t feel academic programs for the most part are adequately preparing students with essential skills to be competent in the workplace (Howard 2004; Multimedia Victoria, 2005); while some in the academic community view co-op practice as limited to vocational development (Cates and Jones, 1999; Howard, 2004). Consequently co-op staff involved in managing co-op programs have reported feeling their work is undervalued by their university and the programs under-funded and under-resourced (Jancaukas, Atchison, Murphy, & Rose, 1999). Furthermore, staff involved in co-op are not recognised or rewarded through academic promotions. This means that the commitment by academics to co-op often takes a relatively low priority in their work planning (Weisz, 1995) and the learning in co-op is often left to chance (Atchison, Pollock, Reeders, & Rizzetti, 1999).

Research studies into co-op education present many benefits to students: improved confidence and self-concept, improved social skills, gains in practical knowledge and skills, and enhanced employment opportunities (Waryszak, 2000). However, some studies into student perceptions of their co-op experiences found differences of opinion with some returning to study disillusioned from working in their placement.

The range of expectations and needs of those involved in co-op raises a number of questions: Are the changing needs of the ICT industry being captured and met through co-op programs? Are students gaining and developing the necessary knowledge and skill set to become employable on graduation? How can co-op programs be improved in developing ICT professionals?

The proposed research seeks to explore the answers to these questions by taking an in-depth look at a co-op program currently being run within an undergraduate degree program at an Australian university.

1.1 Research Aim and Questions

The study explores the extent to which the co-operative education program in the Bachelor of Business in Business Information Systems (BBBIS) degree at the RMIT University in Australia develops employability skills to meet the changing needs of the ICT Industry.
The following questions will be addressed:

- Who are the key stakeholders, what are their perceived needs, expectations and actual outcomes from co-operative education programs?

- To what extent do generic employability skills offer a way of engaging the expectations of key stakeholders?

- What processes can be implemented for sustained improvement of co-operative education programs?

Proposed outcomes of the study will be a generic set of employability skills for the ICT industry; together with a framework to promote sustained program improvement and professional preparation.

### 1.2 The Study, Participants & its Setting

The setting for the study is an undergraduate information systems degree within the Business College at RMIT University in Australia. The 4-year program includes a mandatory 40 week co-op work placement in the 3rd year. At any one time there are approximately 120 students working in a co-op placement. Work placements are found across a wide range of IT job, within a diverse range of small, medium and large business across the full range of industry sectors. Most placements are located locally; however a number of students are increasingly electing to take up a co-op placement overseas. Students usually return to complete a final year of study after co-op in full or part-time mode.

Currently there is a team of 6 part-time university staff involved in this Co-op program: career staff involved in working with students to develop their job search skills to secure a co-op job, teaching staff to develop the skills to maximise the learning opportunities in and through the work placement, professional advisors to facilitate the work and learning relationship between the students and workplace supervisors and an administrative person to monitor the day-to-day operations of the team. Although the co-op program is increasingly successful with almost 100% of students securing placements together with an increasing number of return employers, there is a continual threat that funding cuts will reduce the staffing resources of the program. Although the University attributes the ‘work readiness’ skills of its graduates, there are increasingly less resources and funding allocated to placement programs. Efficiencies are been sought
through the delivery of work-integrated programs with little or no on-site work experiences. There are also moves within the Business College (in which this program sits) to remove the mandatory requirement of the placement program within the BBBIS. This study seeks to build a holistic picture of a co-op program within the context of the program in which it sits, the College, the University, the IT profession, the IT industry and the global work force.

There are a number of other stakeholders, in addition to the students and Co-op staff, involved in co-op programs. Since the co-operative year sits within an undergraduate program, other stakeholders would include the program teaching staff, school and university management together with all the various industry-based stakeholders such as human resource managers, workplace supervisors, managers, work colleagues and work clients. Consequently there is a diverse set of individuals involved in, during and after the co-op education year. Individuals have their own perceptions of co-op and the role they play(ed) in it.

1.3 Definition of Terms

A number of terms are used throughout the text that requires definition:

• The **co-op placement** refers to the period spent by students undertaking educational sandwich courses while working within an organisation. Other terms such as internships or co-operative education are also used. In this study the terms ‘co-operative education’ and ‘co-op placements’ will be used interchangeably.

• **Employability skills** are those skills required to gain employment and to enable progress within an enterprise so as to achieve one’s potential and contribute successfully to enterprise strategic directions (ACCI, 2002). They include technical, job-specific and more general skills and personal attributes related to employment.

• **Generic skills** also referred to as employability skills and soft skills are the non-disciplinary skills that are not specific to a particular job but rather provide a basis for learning and performing well on jobs. At RMIT the term **capabilities** is used to define “the ability to understand and effectively act in a field of practice and in civic life” (Reeders, 2002). Capabilities can be grouped
as those that relate specifically to the skills and knowledge of the profession, and those that are more generic. The generic capabilities are typically around communication, problem solving, teamwork, self-management, critical thinking, and sometimes learning how to learn. Socio-personal knowledge and skills specifically refer to a subset of generic attributes that pertain to one’s dealing with others.

- A stakeholder is defined as someone involved in, or affected by, an organisation’s activities. The definition is extended to include those on the fringe who one thinks ought to be involved or affected in order to yield additional perspectives. Midgley (2000) suggests that only consulting those already involved or affected can lead to constructive results. In this study the stakeholder samples will include students currently in a placement, post-co-op students and alumni, industry supervisors, academic teaching staff, co-op and university management personnel.

- The study is interested in articulating the perceived and actual needs of each of the stakeholder groups. Of particular interest is developing a shared understanding of the needs of students, employers and staff.

- Stakeholder expectations of the benefits of co-op programs will vary from person to person. New industry supervisors will have quite different expectations to those who have previously supervised students.

- The actual outcomes of a co-op program will vary with each individual within and across the various stakeholder levels and groups. Desired outcomes from post-compulsory educational institutions are referred to in terms of ‘generic skills’, ‘attributes’, ‘qualities’, ‘capacities’, ‘competencies’ and ‘capabilities’. To avoid confusion in discussion with the various stakeholders the term outcomes was used.

1.4 Researcher Bias

I have now been employed by the University for 22 years. Up until recently I was the Program Co-ordinator of the BBBIS program. I am now the Program Co-ordinator for Work Integrated Learning across the School and as such a key stakeholder of the co-op placement program within the BBBIS program. I therefore entered this study with an initial governing framework of ideas that
contain values, opinions, knowledge and understanding and a belief in the value of co-op programs for promoting student learning through increased industry participation and engagement. Steps have been taken to monitor and reflect on changes in my understanding of the various elements of co-op program.

1.5 Methodology

An inductive research design was selected and qualitative methods used to capture stakeholders’ experiences and perspectives. The study is situated in the global context with consideration of the changing socio-economic and political environment. The overarching epistemology for this study is interpretive. The social reality of the co-op workplace setting is continuously socially constructed and reconstructed by the individuals. Individuals bring with them their own complex set of beliefs, values, attitudes, motivations, biases and perceptions - their world-views. A person interprets reality through his/her world-view.

The following chapter is a literature review of research on co-operative education with particular attention given to the perceived benefits and limitations of these programs from the various stakeholder perspectives. Also research literature in the areas of adult learning and professional practice will be appraised with the intention of identifying how adults learn. The nature of the ICT industry and its profession will also be investigated within the historical and current socio-political environments.
2 Literature Review

2.1 Introduction

Innovative and efficient use of information communication technologies (ICT) has been identified as a major driver of economic growth and productivity (OECD, 2006). In order to build and maintain a sustainable and world-class ICT workforce, Australia needs to enhance its level of ICT skills and capability (DCITA, 2006). However, the constantly evolving technologies have ongoing implications for skills demand.

Unlike other sectors, ICT is continually leading and adjusting to technological developments. This change impacts on the demand for skills in the sector with some becoming obsolete while others grow rapidly (ICT Skills Snapshot, Multimedia Victoria, 2009, p. 7).

How can the Australian workforce continue to meet these ever-changing demands? What skills and knowledge are needed for ongoing employment? Who should be involved and how?

The past decade has seen increased interest from industry and the Government in the development of ‘work-ready’ graduates. The Employability, Employability Skills and Work section identifies the key stakeholders and their respective views on what skills, knowledge and attributes are required of graduates in the current Australian and global climate. Education institutions are expected to prepare students for professional practice. However government and industry-based reports highlight the quality of many graduates, in terms of their generic attributes, is poor. The nature of generic attributes and how they are developed is explored in the Developing Employability and Generic Attributes section. Generic skills are found embedded within practice and are developed through application in a variety of contexts. Workplace contexts provide a rich source of learning opportunities. Many universities offer work placements within their programs with returning students reporting varied learning experiences.

The Learning in Workplace Contexts section seeks to uncover the conditions that promote learning in the workplace. Working in a variety of situations hones
existing skills and knowledge and develops new ones. However the quality of learning is influenced by contextual, social and individual factors and goes beyond that of skills development. The Professional Formation section charts the learning and development of professionals within the workplace and the support structures that promote professional growth. The emergence of agency and selfhood are discussed in the Individual Learning and Development section.

Co-operative education programs are located within both the academic and workplace environments and offer the promise of integrating work experiences with theory. The Learning in Co-operative Education Programs section presents a review of the research literature within the areas of work integrated learning and co-operative education of evidence of employability skills development, professional formation and individual development. The chapter concludes with a summary of the gaps, tensions and challenges uncovered and highlights areas requiring further study.

2.2 Employability, Employability Skills and Work

The main sources of literature on employment and employability are Government and industry-based reports. In 2002, the Government released an Employability Skills Framework developed by the Australian Chamber of Commerce and Industry and the Business Council of Australia to guide university curriculum. The Framework identified both the employability skills and personal attributes required of both entry-level and established employees. Eight employability skills were identified: communication, teamwork, problem solving, self-management, planning and organising, technology, life-long learning and initiative and enterprise; and the associated personal attributes of loyalty, commitment, honesty and integrity, enthusiasm, reliability, personal presentation, commonsense, positive self-esteem, sense of humour, balanced attitude to work and home life, ability to deal with pressure, motivation and adaptability (DEST, 2002).

A variety of terms are used in connection with employability skills such as key skills, core skills, life skills, generic skills, essential skills, key competencies, necessary skills and transferable skills (DEST, 2006). A later report published by DEST (2007) re-iterated the relevance of the Employability Skills Framework to industry; however noted that the employability skills listed in the earlier report were in hindsight a significant subset of a broader set of generic skills that are:
multi-functional; relevant across many fields; of a high order of complexity; and multi-dimensional.

For some time employers have felt university programs, for the most part, have not adequately prepared students with the essential skills required for work (Howard, 2005; DEST 2002, 2007). Industry applauded the release of the Employability Skills Framework seeing it as a trigger to bring the needs of industry and universities together:

...employability skills provide an excellent example of where the interface between business and the education produces a tension to create reform and make the education sector more responsive to the needs of industry (ACCI, 2002, p. 5)

The scope of jobs within the IT industry is broad ranging from highly technical (hardware engineering jobs, software engineering, programming) through to highly non-technical (business analysis, project management).

They range from very specific in-depth technical knowledge and expertise to others broader technical ability alongside good interpersonal project management skills (DCITA, 2006, p. 24)

The ICT Skills Foresighting Working Group formed in 2005 with a cross-sector government, education and industry focus, released a report that analysed current trends and developments in IT and their implications for skilling the ICT workforce. The report found the roles of ICT professionals were increasingly diverse and the skills-sets required for tasks varied considerably: The increasing pervasiveness of ICT across in all sectors of the economy has seen the rise in the need for IT expertise in previously non-IT classified occupations (Australian Bureau of Statistics, 2009). The boundaries between occupations are becoming blurred with the prediction of new hybrid professions such as health technologists (DCITA, 2006). The DCITA report presented a list of the skills and knowledge required of today’s IT professional:

- must adopt a holistic approach to business, with a strong business and administration base under-pinning their technical knowledge and skills;
- needs to offer a broader range of skills such as customer service, presentation skills, high level report writing ability, high level management and interpersonal skills;
• needs to be less purely technically focused, given the ready availability of off-the-shelf software packages; and

• can make a crossover into ICT from another industry so long as they possess transferable skills, such as an understanding of how a business operates and end-to-end appreciation of business processes (p. 65).

Professional bodies provide an important link between universities and the profession. The Australian Computer Society (ACS), the professional body for the ICT industry in Australia, recognises the breadth of the ICT industry and has developed accreditation criteria for university programs to ensure the employability of ICT graduates. For a number of years the bodies of knowledge required of IT professionals have been articulated in terms of the IT domain. More recently its accreditation document introduced the category of professional knowledge (interpersonal communications, ethics/social implications/professional practice and project management/quality assurance) (ACS, 2007). Desired dispositions of IT graduates are not listed. The inclusions of the mandatory work-integrated learning programs in all ICT programs are strongly supported by the ACS. However, at present, the ACS has no legal mandate over the design and content of courses with universities and has little influence in controlling entry into the profession.

The DCITA (2006) report found employers lamenting graduates’ technical skills already out of date on commencement and “their business skills are not sufficient to support the innovative application of ICT to business challenges”

2.2.1 University and graduate attributes

Education and training are seen as the main instruments available to governments and communities to improve employability and prepare individuals for a rapidly-changing increasingly-demanding world of work (DEET, 2000). At the time the Employability Skills Framework was released, Australian universities had been working on policy statements which specified the graduate attributes of their graduates. Graduate attributes are defined as the qualities, skills and understandings a university community expects students to develop during their time at the institution and, consequently, shape the contribution they are able to make to their profession and as a citizen.
Bowden et al. (2000) saw these attributes as going beyond disciplinary expertise or technical knowledge to qualities that prepare graduates to be agents of change in an unknown future. Bowden et al. also observed that in the early stages, graduate attributes were viewed largely as rhetorical statements but with the development of the Framework for Standards, Evidence and Outcomes adopted by the Australian Universities Quality Agency (AUQA), universities were working towards embedding graduate attributes into curricula and broader university life. Graduate attributes reflect a link between employment and life-long learning. The characteristics of the life-long learner: an inquiring mind, helicopter vision, information literacy, a sense of personal agency and a repertoire of learning skills (Candy, Crebert & O’Leary, 1994 cited in Hager and Holland, 2006) are seen to be heavily reliant on the deployment of a range of generic attributes (Hager and Holland, 2006).

DEST (2007) acknowledged employability skills were found to exist as a subset of the graduate attributes in a number of universities but reported industry representatives still felt “that employability skills are underdeveloped” and in general, graduates lacked “the ability to intelligently apply that knowledge in the work setting” (DEST, 2007, p. 2). Shakespeare, Keleher et al. (2007) argue that it is not good generic skills employers want but “an ability to operate effectively and appropriately in situ in the workplace, recognising and orienting to context” (p. 2). What industry wants is a set of portable skills and attributes that can be called on, transferred, applied and transformed to meet the requirements of the situation on hand (Brennan and Little, 2006 in Patrick and Peach, 2007). However Hager, Holland & Beckett (2002) suggest looking beyond “portable skills” to the broader notion of context-specific capacities that can be advanced through both university studies and practice.

2.2.2 Young people and employment

Lifetime job with a single organisation is gone forever. Young workers need to have the skills to manage their own careers (Howard, 2005) and develop a long-term capacity to build a career and to prosper in a dynamic labour market. However, in this push by governments and universities on preparing young people for employment, Wyn (2009) points to a lack of information about what young people think. Her research into young people’s priorities revealed “they place a
particularly high priority on being able to get secure, reasonably paid and interesting work” (p. 18). Te Waita (2006) found the graduates interviewed had moved to different jobs within the first 12-18 months to when they first began their employment. Reasons given included the need to be in a:

“good” job that was challenging and stimulating, one that both supported and enabled learning to occur, one where graduates believed they were able to use and further develop their generic attributes in an increasingly complex and sophisticated manner (p. 237)

However, when asked about their hopes, dreams and aspirations for the future half of them said they hoped to live in modest material comfort with personal and financial security. A study of young people 15 years after leaving secondary school found in the main they had been successful in the job market, but struggled to achieve a satisfactory work-life balance (Andress and Wyn, forthcoming, cited in Wyn, 2009).

Students expect university courses to deliver content of personal and vocational relevance that are coherent in what is studied and assessed and build the capacity for appropriate employment on graduation (Scott 2008 cited in Review of Australian Higher Education: Final Report, 2008). Wyn (2009) observed the exponential increase in the variety of avenues for informal learning has young people seeing formal education as only one element of their learning repertoire.

Interviews with recent graduates stressed the importance of generic attributes for survival in the workplace. The development of generic attributes was also perceived as vital for enabling improvement Te Waita (2006). In particular the cluster of generic capabilities of critical thinking, problem solving, communications and interpersonal understandings were seen as important for:

...underpinning and helping make sense of their daily work routines; in conducting technical or technological aspects of their work; and in enabling them to meet unexpected or challenging situations with a sense of purpose and confidence (p. 14)

The majority of interviewed participants indicated “workplace useful” generic attributes were learnt outside university classrooms. Te Waita (2006) makes the observation that the graduate attributes most useful in the workplace are not the same as those attributes labelled “generic” in the classroom. These findings have implications for university curricula and pedagogy. Wyn (2009) points out:
Education has a responsibility to equip them to see the bigger picture as well as to give them the skills to be individually competitive (p. 18)

2.2.3 Conclusion for sub-section

Employability is a complex concept that has both formal and non-formal dimensions (Beckett and Mulcahy, 2006, p. 24)

The preceding literature review highlights the diversity of understandings of what constitutes employability skills and employability. As expected the views on employability of the different stakeholder groups are driven by their own needs: industry’s focus is on the skills and knowledge needed for work productivity; standards of conduct and practice are the mantra of professional associations. Students seek the knowledge and skills that will ensure employment, progress careers and maintain a life-work balance. Although most universities now include explicit or implicit mention of generic skills within graduate attributes, course curricula continue to remain focussed on delivering propositional knowledge.

There is an increasing awareness that in the current precarious climate of ongoing change, a strongly developed set of generic attributes will provide the means by which graduates can not only become employable but also contribute to individual development and good citizenship. However, the literature review points to many graduates not having a useful set of generic skills for employability. Of note is that generic skills and graduate attributes are treated as discrete items of knowledge, skills or capabilities that need to be acquired with the expectations they will be applied in practice (Snoke, 2004).

The literature review highlights some tensions that exist between the stakeholders as to the role of universities. Who is responsible for developing employability skills? Should universities focus on developing a set of specialised, discipline level skills and the corresponding knowledge base; or foster an environment that provides opportunities for development across a broad range of capacities? To what extent can a university develop such skills? The next section explores the literature on the conditions required for promoting employability and generic attribute development.
2.3 Developing Employability and Generic Attributes

Generic attributes are a “very mixed bag of things – skill components, attitudes, values and dispositions” (Hager, Holland, et al. 2002, p. 3). They are a diverse range of fundamentally different kinds of entities and should not be lumped together as if they are all of a kind. They are not atomic entities that can be acquired and transferred singularly. Generic attributes are found embedded in tasks (Hager, 1997; Hager, Holland et al. 2002) and therefore developed through carrying out a variety of tasks. Learning generic attributes is a process that is primarily contextual and on-going and is learnt from participation in social, educational and work contexts (Hager, 2006; Beckett and Hager, 2002).

Research indicates active learning approaches promote the development of generic skills (Hager, Holland, et al. 2002). Hager and Holland (2006) characterise active approaches as those that follow adult learning principles; promote holistic approaches to learning; adopt problem-based learning techniques; and involve reflective, learner centred approaches and role modelling. However in order to deliver such learning, the DEST (2007) study advocated academic staff needed to “move beyond traditional lecturing” (p. 24) and use suitable teaching strategies to develop generic and employability skills. An understanding of both individualistic and social learning theories is also required (Hager, 2006; Beckett and Hager, 2002). The DEST report went on to suggest educational institutions were not giving priority to the teaching and learning development of their academic staff and subsequently employability skills were not being effectively taught and assessed (DEST, 2007). However, this report went on to cite a study for the Higher Education Funding Council for England (Mason et al, 2003) on the impact of employability skills teaching and learning on graduate labour market prospects that cast doubt on the assumption that these skills can be effectively developed within classrooms. The findings from another study across eight universities in England concluded that relevant work experience during the degree program had a highly positive influence on employability and the employer involvement in course design and delivery also had a positive effect on initial employment (DEST, 2007).

History charts a range of approaches to preparing individuals for work from on the job training (as in apprenticeships); front-loading knowledge proceeding work practice (traditional educational institutions approach for profession); back-
loading formal/informal training (cadetships) with work experiences; and various combinations of the above (as in work placements embedded within formal training programs). However according to the recently published Australian Survey of Student Engagement that surveyed 35,000 undergraduates at 35 universities, 71% of third year university students had not done internships or work experience in their field of study (ACER, 2010). Dr Hamish Coates, a principal researcher at the Australian Council for Educational Research involved in the study, at a press conference in March, 2010 observed: “The huge number of students not doing internships shows students are not linking what they’re learning in the classroom with the world of work”.

So why aren’t more universities offering students internship opportunities? Sovilla and Varty (2004) identified a number of factors minimising the advance of co-operative education in the USA: the lack of understanding of institutional administrators and program staff of the role of co-operative education in enhancing student learning; the additional cost required to build a successful co-op program; the lack of integration of co-op into program curriculum; undervalued, overworked academics saw staff turnovers; lack of staff with suitable educational backgrounds; and lack of certainty of placements. Patrick and Peach (2007) found similar issues facing universities delivering work placement programs in Australia. Key concerns evolved around the continued perception that placement programs are ‘add-ons’ to the curriculum and as ‘something they do out there’. With this marginalisation of work placement programs they identified five critical issues around pedagogy; authenticity and quality of placements; quality of academic staff; risk management associated with placements that extend beyond the university environment; and allocation of sufficient resources and training to support student learning.

Universities have and continue to draw a distinction between learning on placements and learning in the classes. Learning in the classroom is planned, intentional and formal; while most workplace learning is informal and incidental. Eames and Cates (2004) suggest this distinction does not help in understanding learning in co-op programs. Learning on co-op placements should be considered as complementing the classroom learning:
“enhancing understanding of this placement learning and its integration with classroom learning through research-driven evidence, could remove administrative and political objects to the value of co-op placements, and help provide greater legitimacy to co-op programs” (Eames and Cates, 2004, p. 38).

Brennan and Little (2006) in Patrick and Peach (2007) validate workplaces as learning environments in terms of “being authentic and central to knowledge production” and found that such learning tended to be valued “over academic/formal knowledge”.

2.3.1 Section conclusion

Developing employability is inextricably tied to the formation of generic attributes. Generic attributes are not learning products that can be transferred to the learner but are acquired through practice in a variety of situations. Universities need to promote opportunities for students to learn tacit and practical knowledge formally and informally (Hager, 2006). The workplace offers a rich source of situations for practice. In the next section a review of the workplace learning and organisational learning research literature seeks to build an understanding of the impact and influences of the workplace context for learning.

2.4 Learning in Workplace Contexts

The nature of workplaces is highly complex with work activities strongly influenced by the macro and micro contexts of the organisation in which it is located (Smith & Sadler-Smith, 2006). External political, economical and technological forces drive an organisation’s strategies which in turn drive internal policy, culture, structure, processes and learning orientation. Smith and Sadler-Smith also found the type of industry the organisation is involved in influences the nature of the learning required and how learning is perceived. The organisation’s orientation to learning promotes or discourages a learning culture within the company and influences how managers, supervisors and co-workers share knowledge. Organisations offering a range of rich opportunities for learning are considered expansive (stimulating) workplaces (Evans & Kersh, 2003 cited in Beckett and Mulcahy, 2006) as opposed to organisations with restrictive (or non-stimulating) learning environments. Evans, Hodkinson et al. (2006) found that the location of organisations along their expansive-restrictive continuum was a

Domains of workplace knowledge include propositional (knowledge about), procedural (knowledge how), dispositional knowledge (values and attitudes) and strategic knowledge (how to decide what to do and when) (Gott, 1989 cited in Smith and Sadler-Smith, 2006). Much of the knowledge learnt in the workplace is implicit (or tacit) knowledge and over time becomes embedded in practice. Work and work practices are unique for each individual. Billett (2006) identified various dimensions of work activities in terms of their routines, discretion, intensity, multiplicity, complexity and accessibility and a set of workplace interdependencies that shape working life: homogeneity of tasks, working with others, engagement, status of employment, access to participation, reciprocity of values and artefacts.

Learning in the workplace can be formal, non-formal, informal and incidental (Foley, 2004) with most workplace learning occurring informally, but consciously through experience, or incidentally and unconsciously (Eraut, Alderton, Cole, & Senker, 1998). The situated learning view advocated by Lave and Wenger (1991) promotes individual exposure and osmosis within workplaces. Although immersion in the workplace and participating in everyday work activities has been shown to develop many skills and capacities (discovery), it does not “follow that everyday work experiences are conducive to adapting or transferring workplace learning to other circumstances and situations” (p 31, Billett, 2002). Beckett (2011), Evans, Hodkinson et. al. (2006), Billett (2002) and others expand on the situated learning view to one that sees the individual actively engaged in the practical activity, acknowledges the culture and context of the workplace/learning environment and recognises the socio-biographical history of the learner. Workplace learning becomes a purposeful, dynamic activity where individual interacts with and in the work context to construct understandings. Learning is both socially and individually driven:

Learning through working life can be understood in terms of participation in work activities and conceptualised as a negotiated (i.e. relational)
interdependence between the social and personal factors (Billett, 2008, p.39)

Eraut in Down (2006) advocates learning in the workplace be facilitated through programs of induction and integration, structured personal support for learning, performance management. However, as observed previously, it cannot be assumed that all organisations have a learning environment with resources and personnel in place to support learning. Down points out these are affordances offered by the workplace and therefore not necessary available. She adds the quality of these affordances and the learning outcomes are variable and are affected by the climate of the workplace. Neither can it be assumed that individual learning will occur by being in the workplace. Learning also depends on individual agency and existing capabilities (Down, 2006). Down maintains universities have a role to play in ensuring the learner has the necessary skills to actively interact with and learn from work and life contexts; and once in the contexts to have the capacity to adapt practice to meet the new challenges.

The literature on workplace learning has moved from a vocational training focus through work-based learning (which is defined as the effective learning that can take place at the workplace in Evans, Hodkinson et al. 2006); to a broader concept of workplace learning as learning in, for and through the workplace. This wider view of workplace learning includes organisational learning and moves the focus of discussion beyond employability to building individual capacity for life-wide learning (Furlong in Wyn 2009). This foray into the literature into workplace learning highlights the opportunities offered by situated, contextual learning in promoting the development of the skills and practical knowledge. However the workplace contexts are diverse and complex and structures to support learning vary. In the next section we take a longitudinal perspective of learning and probe the circumstances that form and shape professionals.

2.5 Professional Formation

Traditionally professional formation was seen as individual activity that involved the transmission, acquisition, storage and application of a body of data, facts and practical wisdom (Gherardi and Nicolini, 2000 in Beckett 2011). The individual would then transfer the knowledge in their heads to the situation on hand. Hager (2001) in Gonczi (2004) and others argue that professionals’ competencies are
developed through the experience of professional practice. Expert knowledge rests on a foundation of many situational experiences, being strongly domain-specific and requires extensive participation in practice (Hiam, 1993 cited in Fenton-O’Creevy, 2007). The expert knowledge base includes procedural knowledge, propositional knowledge, practical/process knowledge, tacit knowledge, skills and know-how (Eraut, 1994). Becoming a professional requires immersion in practice and performing tasks in a variety of situations.

However, Beckett (2011) notes that immersion in a context is not significant for professional formation. Contexts such as a community of practice or a work team are only structures. Context does not drive learning but it is in the “reflexivity of social relations” (p. 7) that learning occurs. Beginning professionals need to be initiated into the culture and practices of the organisation and work group; encouraged to view working life from different and shared perspectives; and directed as a peripheral participant to become a central, skilful participant in a community of practice.

New learners are invited into a perspective on the world, and they may take in up, diversely, in ways of knowing that are more or less skilful, and more or less their own (Beckett, 2011, p. 10)

Individuals actively construct knowledge from the circumstances in which they experience that knowledge. Although individuals construct meanings through observing and listening, it is through social mediation individuals gain understanding. Schön (1983) contends that it is through engaging in reflective conversations and interactive activities that lead to explaining, justifying and evaluating solutions to various problems that learning happens and changes are effected in practice. Through these reflective conversations implicit knowledge becomes explicit (Down, 2006). Reflective conversations enable participants to question the underlying assumptions of their actions, to re-frame their understandings of a situation in light of their experiences, to test new action (Schön, 1983).

Much of the knowledge required of professionals is tacit. Burbules (2008) in Beckett (2011) identified six ways of promoting tacit learning: observation, explanation, repetition, demonstration, reflective questioning and analogies comparisons. A range of these methods are employed in organisations through structures such as training, shadowing, mentoring and coaching. Co-workers can
influence the quality of the learning experiences through direct and indirect guidance (Billett, 2002). Direct interpersonal guidance from experienced co-workers can assist in development of practical knowledge and individual capacities. Direct guidance makes socially-derived knowledge accessible to learners. Indirect support for learning can be provided by expert others in managing the pace and sequencing of activities for learners. Organisations employ various strategies for guidance such as modelling, coaching, questioning, analogies and diagrams that seek to make explicit workplace concepts, dispositions (i.e. values, attitudes and norms) and practices. Questioning dialogues and group discussions seek to extend the individuals’ knowledge to other situations and circumstances through to see both variance and invariance across workplaces.

Individual practice and critical reflections through mediating artefacts (such as people, technologies, languages, mnemonic techniques, domain specific tools) promote the development of know how. ‘Knowing how to go on’ (Beckett, 2011) requires intelligent action in the use of skills. Explaining why certain actions were taken not only provides opportunities for communal, self-correction but establishes the individual’s expertise. Beckett (2011) suggests beginning professionals need these opportunities to give reasons and receive encouragement in order to develop their professional identities. Beckett and Mulcahy (2006) claim that professional identities are socially shaped in what individuals do:

*It is in the judgements of what is ‘appropriate’, which is both an ethos – what our peers enfold our individual practices within – and an ethic, a personal commitment to doing the right thing. These practices are agentive and can shape selfhood or identity (p. XX).*

The development of the professional takes time, lots of practice in a variety of situations and active engagement within communities of practice. Benner (1982) and Smith and Sadler-Smith (2006) found that learning needs for training and support vary according to the five stages of professional and skill development charted by Hubert and Stuart Dreyfus in 1980 in their Dreyfus Model of Skill Acquisition. Novices and advanced beginners required more learning support and scaffolding which decreased as they became more expert. Smith and Sadler-Smith
proposed more experienced co-workers can assist learner’s development through managing the pace and the sequencing of activities for the learner.

Universities tend to take a narrow view of their role in the professional formation of students and continue to focus on the discipline-specific knowledge required of professionals failing to recognise the importance of the different generic attributes and the value of informal knowledge in accelerating the development of masterful professional practice. Hager and Holland (2006) and others argue universities can do much to prepare students by making explicit the generic and discipline specific skills and attributes expected of the professional; developing critical learning reflection skills; encouraging active, self-directed learning practices; and providing opportunities for a variety of facilitated immersion experiences for learning.

Learning changes the learners and their environment. The next section focuses on the impact and changes work and working have on individual agency and selfhood.

### 2.6 Individual Learning and Development

Each person is unique biologically, physically and psychologically. The context of a person’s life is unique culturally, politically, physically and socially. Each context is active and dynamic and influences the individuals thinking and learning (Fenwick and Tennant, 2004 in Beckett, 2010) and effects some change on the individual. Knowles (1970) theorised adults learn through building on past experiences. Adult learning is different to the learning of children and starts from the premise that adults do not enter into learning experiences with “blank slates”; but come with banks of previous experiences, skills, knowledge, beliefs, assumptions and values. Adults assimilate new information with past experiences to develop new insights. He purported that adults learnt best when they learnt how to take responsibility for their own learning; how to work with others; and how to analyse their experiences.

Te Waita (2006) found in her study of first year graduates, the development of ‘workplace useful’ generic attributes vital for survival in the workplace. In particular generic skills such as communication, critical thinking and interpersonal understandings were identified as surviving those early “sink or swim” situations.
Ongoing use of generic attributes was seen to enable them to operate more effectively in their workplaces. Winch (2008), Te Waita (2006), Beckett (2011) and others suggest successes leading to increased confidence promote autonomy. The development of independence was observed in the reduced need for supervision in the completion of tasks; in the individual’s ability to plan, regulate and assess their own activity; and to work collaboratively with others (Winch, 2008).

How an individual interacts and engages with the workplace will depend on the degree of relatedness between individual interests and values and those of the social practice; the greater the relatedness the greater the likelihood of individual participation (Giddens, 1984 in Billett, 2002). Through social exchanges individuals redefine themselves. Derry (2004) in Beckett and McManus (2006) suggests development of consciousness is a first step towards self-determination and selfhood.

Honing of generic skills underlies the development of individual agency, efficacy and identity development and the purpose of universities (Barnett & Coate, 2005). The literature review reveals many believing universities hold a narrow view of learning that stifles learning and innovation with approaches that are “often antithetical to the development of flexibility and ability to grapple with complexity” (Fenton-O’Creevy 2007, p. 4). Spiro (1987) in Fenton-O’Creevy (2007) suggests a “massive conspiracy of convenience” (p. 4) in higher education where complex subject matter is simplified to make it easier for teachers to teach and for students to take notes and prepare for tests. Students work with purpose-built problems that have optimal solutions. Consequently students are ill-equipped for solving the complex problems presented in the workplace and struggle to transfer what they have learnt in an academic setting to a workplace context. Hayward, Blackmer et al. (2007) suggest students are socialized as passive recipients of knowledge in the classroom settings that then extends into the workplace where students expect direction and guidance. Rather universities should be developing active, self-directed learners who are engaged in the learning process. Grosjean (2004) believes the university context through its academic assessment processes also influence the students’ attitudes and approaches to learning. University learning is not an endpoint and universities need to take a broader view of preparing students for work, their profession and life and becoming contributing citizens of the world.
Barnett (2006) sees education’s challenges as an ontological one. In this world of uncertainty and incessant change the individual is continually being challenged and requires new forms of “being” in the world. Barnett notes “individual psychologies differ: some thrive on such a world: others respond by falling into a state of anxiety and self-doubt” (p. 63). He adds universities need to provide infrastructures that promote the development of independence of mind and action. Professor Furlong in Wyn (2009)

Young people must be empowered to negotiate risk, reflexively construct identities and make choices; they have to learn to locate and sift information rather than expect that to be done for them by a third party such as a teacher. (p. v)

Barnett (2006) proposes graduate attributes need to develop ‘authentic’ human beings that include “the capacity for engagement with the world, inquisitiveness and personal qualities like courage, resilience and quietness” (p. 11). Learning needs to be viewed as ongoing progress of re-shaping the self. Chappell et al. (2003) believe critical reflection of assumptions leads to learning from experience and on to changes in attitudes, beliefs, understandings and behaviours.

Although there are many educationalists that are aware of the ways they must change their practices, Wyn (2009) identified core aspects of the education system “designed to meet the needs of young people growing up in the 1950’s” (p. iv). However she is heartened by a number of policy documents from state, national and international level that explicitly recognise the role of education in promoting the individual and their social well-being.

The literature review has highlighted the opportunities for skills development, professional formation and individual growth working in work environments. Universities deliver learning in the workplace through a variety of work integrated programs. The next section looks at current practices in work integrated learning and to what extent employability skills, professional formation and identity development is promoted within curriculum and pedagogy.

2.7 Learning in Co-operative Education Programs

The fundamental concept of co-op is neither novel nor new. Vocationally orientated programs such as nursing, engineering and education have included
practical placements as graduate work preparation since certification was introduced. Cooperative education has a history stretching back to 1906 from the vision of Dr. Herman Schneider, Dean of Engineering at the University of Cincinnati. Its popularity in the past 20-30 years has spread rapidly and pervasively through most disciplines in the higher education system. In 1999, Atchison, Pollock et al. (1999) reported that 20 of Australia’s universities had co-operative education programs, involving 10,000 students, over 3,000 employers and student earnings in excess of $60 million. However a recent report published by the ACER (2010) state only 29% of final year university students in Australia have done internships or work experience in their field of study.

An exploratory review of research literature on co-op found a limited number of scholarly publications, government sponsored studies, conferences proceedings and doctoral dissertations. The only peer-reviewed journal for cooperative education appears to be the *Journal of Cooperative Education*. However, articles covering co-op matters have been located in a number of educational and profession specific journals. Up until the early 2000s there has been a shortage of evidence in Australia that supports co-op programs (Reeders, 2000) although more extensive research had been carried out in other countries, particularly in the United States and Canada. Coll and Eames (2004) observed a shift in focus and branding of co-op to talk of work integrated learning (WIL) and experiential learning.

A review of the literature sees the terms work-based learning (WBL), industry-based learning (IBL) and work-integrated learning (WIL) programs used interchangeably to describe a class of university programs that bring together universities and work organisations to create new learning opportunities for students in the workplaces (Boud, Solomon & Symes, 2001). However more recently the term work integrated learning is being used as an umbrella term for learning that is not necessarily located in the workplace as in the case of guest lectures and simulations. This study focuses on co-op and work placements. The formal learning in courses associated with work is referred to work-based learning; while workplace learning is the incidental and informal learning that occurs in the workplace.

Much of the early research is anecdotal, descriptive in nature, lacks any systematic approach (Eames, 2004) or strong theoretical framework. Bartkus and
Stull (1997) found some studies sought to describe the characteristics of co-op programs and the outcomes of the programs; while other research sought to describe students’ perceptions or experiences of co-op programs. Much has been written on the many economic benefits employers derive from participating in co-operative education (Abel & Love, 1988), such as reduced recruitment costs, saving in time and money in induction of new employees; increased employee productivity by employing students who are fresh and eager to achieve and to provide the company with a fresh supply of new blood (Braunstein and Stull, 2001; Deane et al. 1978; Hayes, 1978). Employers also benefit from hiring motivated and enthusiastic new employers (Braunstein & Stull, 2001; Garavan & Murphy, 2001); to develop an improved company image and achieve greater awareness of the company among the community (Hurd & Hendy, 1997).

Published research on co-op has largely focused on the perceived effects of co-op programs on personal growth and career development aspects of students (Ricks, Cutt et al. 1993; Branton, Cutt et al. 1991). However, most of the literature generally asserts that co-op programs have a positive influence on graduate marketability, earning potential, academic achievement, job satisfaction and discipline specific skills and knowledge, smoother transitions from school to work (Branton, et al., 1991). Not all students relate successful learning experiences during work placements. A number of students return from work placements to courses are disillusioned (Purcell & Quinn, 1995) and dissatisfied. Garavan and Murphy (2001) found a number of factors associated with students’ perception of their co-op experience: realistic job previews, the recruitment process, role of systematic orientation, on-site training, feedback and relationships with peers. A longitudinal study of the perceptions of international students by Waryszak (2000) found the students surveyed perceived a lack of support, high work pressure, high managerial control, and a lack of opportunities for involvement as contributing to an unsatisfactory co-op experience. Bates (2004) in another study also found students experiencing verbal abuse, feeling unappreciated, being ignored, exploited and poorly supervised.

Coll and Eames (2004) observed a diversity of views regarding the role of co-op programs. The traditional vocational view holds co-operative education is a vehicle for training students to develop the skills necessary to perform certain tasks in certain jobs. Co-op placement should offer students opportunities to
apply what they have learned in theory (Dressler & Keeling, 2004). More recently the value of work placements was recognised in the development of generic skills and abilities (Patrick & Crebert, 2004). While Grosjean (2004) saw co-op as instrumental in the formation of the professional. He highlighted the significance of the work context in which learning was taking place and promoted continuous contextualised learning across classroom and workplace contexts. Students entered a community of practice and underwent a process of enculturation into the professional environment. Through interactions and participation students adopted the characteristics of its members and starting developing a professional identity rather than that of a co-op student. Students became members of a situated community (Lave and Wenger, 1991) while becoming disciplined as members of a profession (Foucault, 1977 in Grosjean, 2004). Coll and Eames (2004) and others also observed co-op work experiences by their very nature are likely to result in individual developmental progress in life-long learning and reflective practice.

The perceived purpose of co-op by the stakeholder was found to influence how the curricula is designed, delivered, assessed and supported. Although one core feature of all co-op programs was found that there needs to be integration between work and classroom learning, there is little evidence of learning theories to underpin curricula and pedagogy (Coll and Eames, 2004). Weaver (1993) in Linn and Howard (2005) also maintains that:

\[ \text{...to be credible, cooperative education must be able to substantiate claims that cooperative education practice is good educational practice and be able to relate cooperative education practice to the theoretical framework of education (p. 10).} \]

2.7.1 *Learning Theories and Co-op*

The co-op research literature’s strong practitioner orientation has seen a number of studies keen to legitimise co-op as a pedagogically sound form of education. Cutt and Loken (1995), Van Gyn, Cutt et al. (1997), Branton et al. (1990) and Ricks et al. (1990) found legitimisation was “thin” and called for more research placed in the context of contemporary learning theories.
Within educational systems, the approaches used in delivering courses and programs are driven by theories of learning which lie embedded implicitly and explicitly within its curriculum and pedagogy. How those theories are applied depends on the larger social, cultural, economic and political contexts in which formal education is located (Van Gyn and Grove-White, 2004). Miller and Seller (1990) identified three general orientations to learning used by modern Western education: transmission, transaction and transformation.

The transmission view of education aims to ensure knowledge, skills and values are transmitted to students. Learning focuses on the mastering the content of the curriculum. Learning takes place in a class and is regarded as an individual endeavour. Assessment requires reproduction of prescribed curriculum content. This perspective has its roots in behaviourism, empiricism and conservatism. The ‘mind as a container’ metaphor fills student minds with knowledge equated with organised, codified data. Van Gyn and Grove-White (2004) observed examples of current university pedagogy still rooted in the transmission orientation: competency-based education, focus on learning outcomes, practice for transfer and content mastery (p. 31).

The transaction perspective, subscribed by cognitivists, constructionists and liberalists, places emphasises on the development of skills for knowledge acquisition. The focus is on the cognitive processes involved in the mind. From this perspective, teachers and students are partners in the learning process. Educational practices are learner-centred and include experiential learning, observational learning, scaffolding, learning to learn, critical thinking development, self-directed learning and continuous learning processes. Assessment centres on student’s ability to demonstrate higher-order thinking skills. Learning is focussed on improvement. The constructivists attest knowledge cannot be transmitted from one individual to another without it being shaped by the receiver (Eraut, 2002). The learning process is seen as “meaning making”. This perspective acknowledges the socio-cultural dimensions of learning - what we learn cannot be separated from how we learn (Lave, 1991).

The transformation orientation promotes the humanism, critical theory, post modernity position on education. This perspective sees learning primarily as a social process, transforming both the individual and his or her world. The focus is on the learner’s growth in critical consciousness, autonomy and independent
thinking. The learning process transforms the learner into an agent for social change. The key features of transformation practice are opportunities for critical discourse and reflection to build on previous learning experiences. For this to happen the learner needs to identify underlying assumptions of beliefs, feelings and actions. Assessment practices focus on the processes of critical reflection and self-evaluation. This view focuses on the whole person and recognises the diversity of learners.

Complex factors determine how educational institutions locate themselves within the orientations. These factors include the cultural and economic context on which learners, learning and education are defined. Van Gyn and Grove-White (2004) observed that the most higher education systems are philosophically grounded in the transaction orientation but show clear evidence of both transmission and transformation approaches in their policies and practice. Since co-op involves two educational contexts (classroom and workplace), multiple perspectives may help to understand how learning occurs. Underlying learning orientations are evident in how co-op programs are designed, delivered, assessed and supported.

2.7.1.1 Designing work placement curricula

Using theories from the field of adult education, Brodie and Irving (2007)’s Work-Based Learning Model integrates classroom and workplace learning together. The Model is based on the premises that students need to know how to apply the theories they have learned in classrooms in the workplace; to have the critical reflection skills in order to learn from their working experience; and to develop work-related capabilities (Brodie & Irving, 2007). Their approach fits well in a constructive perspective of knowledge, which emphasises that knowledge is built by students, not by a teacher’s direct instruction (Biggs, 2003). The nature of learning associated with work placements requires the student to be more self-directed ‘than being formally taught by teachers’ (Costley, 2007, p. 2). Teachers become facilitators and students are required to demonstrate their successful placement experience through the assessment process.
2.7.1.2 Promote student-centred learning goals
The student-centred learning approach places students as collaborators in the learning process taking responsibility for their own learning and for achieving their learning goals. Nicol & MacFarlane-Dick (2006) found that students can only achieve learning goals if they understand the goals, assume some ownership of them, and can assess progress. Therefore clear assessment criteria need to be established at the outset by the academic or the academic in collaboration with the industry supervisor in order to delineate the learning goals and to facilitate the measurement of the attainment of these goals. The early involvement of students in setting objectives is a critical component of workplace learning (Jones et al. 2009).

2.7.1.2.1 Advance joint collaboration in developing learning goals
Jones and colleagues (2009) found that the majority of the workplace supervisors advocated joint cooperation between the university, the work placement and the student in determining learning objectives. Jones et al. found the majority of supervisors worked from an assumption that there should be flexible goals and objectives for each student placement. They suggested that by building on something like a skills portfolio, or a clearly-articulated vision of a career trajectory, a student could discuss and develop some personal goals and aspirations with the workplace supervisor as a basis for performance assessment. Jones et al. describe a suggested model in use by a city council in which five or six set competencies each worker needed to achieve were used as the standard template, but other, personal goals could also be added. Student ownership of their goals was encouraged and the template provided clearer expectations for the supervisor, and more open communication between the university, the workplace and the student (Jones et al. 2009). In this model the template provided the basis of a matrix in which certain work related skills needed to be acquired or further developed and measures of success were agreed to after discussion between student and supervisor (Jones et al. 2009). Cates and LeMaster (2003) found that having a focus area for learning provided supervisors with a solid foundation for feedback.

2.7.1.2.2 Promote critical thinking and reflection
In order for students to be enriched by their working experiences and develop work-related capabilities, Brodie and Irving (2007) promote the use of critical
thinking as an assessment tool that encourages students to justify and validate their claims for learning. This process extends the value of critical thinking by enabling students to recognise their future learning needs and develop their capabilities for lifelong learning. This echoes the concept of assessment for lifelong learning (Boud, 2000; Boud & Falchikov, 2006).

2.7.1.3 Delivering and assessing work placements

The inherent diversity of work placement contexts has been met with a wide range of assessment tools and practices. According to Wellington et al. (2006), many institutions continue to use traditional assessment techniques, particularly exams as a preferred means of “testing” student learning in WIL programs. This remains the scenario in most engineering courses and supposedly reflects the desire to assess the “acquisition of specific knowledge and intellectual skills”. The educational value of assessing the full range of skills and competencies used in the professional setting is questioned (Bowden and Marton, 1998, Bowden and Masters, 1993, cited in Hodges, Smith and Jones, 2004) and they, along with others, argue that it is of doubtful validity in a workplace setting.

Yet there is recognition of the workplace as providing significant formal sources of learning (Duncan et al. 1990; Hamilton 1981). Knight and York (2004) in Jones et al. 2009) argue that the nature of capabilities – skilful practices, self-efficacy and other complex learning outcomes discourages aligning practical achievements and formal assessment. However capability building is a key component of successful co-op; but how to develop and assess the quality of professional capability that meets student, employer and higher education requirements remains a challenge. Knight (1995) makes the point:

> What we choose to assess (and how) shows quite starkly what we value...
> So, if we choose not to assess general transferable skills, then it is an unambiguous sign that promoting them is not seen to be an important part of our work and our programme (Knight 1995, p. 13)

Well-designed assessment tasks aligned with learning objectives provide a strong framework to guide student learning and supervisor engagement. Groenewald (2004) identifies the appointment of a workplace mentor/supervisor as a key contributor to the success of the co-op experience.
2.7.1.3.1 **Promote allocation and preparation of workplace supervisors**

The literature on the supervision of work placements is defined as the process in which a suitably trained professional is given the authority to oversee the developmental activities of a student attaining professional functioning (Pepper, 1996). The functions within this role are identified by Kadushin (1976) in Pepper, (1996) as administrative, educational, and supportive. The administrative function determines the day-to-day tasks the student is expected to perform. The educational function involves developing the students by teaching knowledge and skills and assisting the students to transfer their theoretical knowledge to practice (Bates, 2003). The supportive function involves encouraging students to develop their self-confidence as a professional. The allocated supervisor can potentially take on any of these roles. However, the allocation of a workplace supervisor is left up to the organisation and consequently may not have the best learning interests of the student at heart, the experience nor the inclination to supervise the student. Workplace supervisors often report they don’t know what is expected of them. University expectations of what the role of supervisor entails should be made explicit as the role the supervisor chooses to take will have a strong influence on the learning and professional development of the student. Richardson, Kaider et al. (2009b) and others have found working with workplace supervisors to establish criteria for measuring student work placement performance is integral to guiding and engaging supervisors in determining their role as a supervisor.

2.7.1.3.2 **Advance joint collaboration in assessment tasks**

Rainsbury et al. (1998) found overall general support for collaborative processes involving students, academics and employers used for assessing students in the workplace. Employers were noted to be 'positive about participating in the collaborative process' (Rainsbury et al. 1998, p. 318). Such collaborations encourage communication and feedback that underpin the quality of WIL programs and enhance the whole placement experience. Zegwaard, Coll and Hodges (2003) describe a model for supervisor assessment which includes a process for establishing criteria. In their study, academic placement coordinators worked with employers within the field of science and technology to determine the top ranked competencies of students need to develop during placement. The competencies were identified as: ability and willingness to learn, teamwork and
cooperation, initiative, analytical thinking, computer literacy, concern for order, quality and accuracy, and written communication skills. These competencies were then used in a template with supervisors asked to rank student’s performance part way through the placement and at the end of the placement.

However, concerns regarding the reliability and comparability have been considered constraints to including workplace supervisor feedback in assessment (Costley and Armsby, 2007; McNamara, 2008). This debate has tended to overshadow the need to improve the ‘informal feedback learning processes that go hand in hand with the doing of practice’ (Jones et al. 2009, p. 134).

2.7.1.3.3 Encourage feedback through assessment design

‘Ongoing feedback from multiple sources is integral to the student experience in practice education’ (Jones et al. 2009, p.133).

The value of industry supervisors in providing feedback to students in situ has been found to be of significance in facilitating students’ professional development (Richardson, et al., 2009b). Feedback from workplace supervisors has long been recognised and practised in the fields of medicine, allied health, mental health, education and law. Practicums, clinical and professional practice in these fields have relied on significant feedback from workplace supervisors, often involving intense supervision and comprehensive assessments.

However, the role of industry supervisors in appraising performance in the workplace is not necessarily the same as that of an academic’s appraisal. Clear, relevant, descriptive and supportive feedback cannot be guaranteed as many workplace supervisors have not received formal training in student supervision (Pepper, 1996). In fact, Kluger and DeNisi (1996) found that one third of feedback interventions resulted in decreased performance. The framing of negative feedback was found to influence how recipients responded to the feedback (Ilgen & Davis, 2002). Hence the judgmental feedback provided by some workplace supervisors may create barriers to learning (Jones et al. 2008; McNamara, 2008). This may explain the caution shown by some university programs which choose to filter supervisor feedback to students through academic mentors. It also underscores the importance of preparing workplace supervisors for their role. However even in the case where a clear requirement for feedback is established, the preparedness of supervisors to provide feedback is not always guaranteed.
Eisenberg, Heycox and Hughes (1996) found a lack of training or experience in the role of evaluating performance can lead to workplace supervisors feeling less confident in providing practicum feedback (p. 33). Universities often spend considerable resources in developing relationships with employers but fewer in ensuring that these employers are equipped and confident in fulfilling their role as workplace supervisor.

Despite the importance of feedback to students and their learning, the literature has paid limited attention to methods for soliciting and framing supervisor feedback. When mentioned, supervisor feedback is generally acknowledged as being difficult to a) obtain (motivating supervisors to provide it) and b) have supervisors focus on analysis rather than outcomes when providing feedback (Reeders 2000; Cates and LeMaster 2003; McNamara 2008).

2.7.2 Supporting infrastructures for work placements

There has been a long-time assumption by university administrators and academics that learning occurs in students merely because they are placed in a cooperative education. A study undertaken by Parks, Onwuegbuzie et al. (2001) refuted this assumption. Yet there is anecdotal evidence that suggests that given the right conditions, students on placement will become more confident in their job leading to greater agency and personal satisfaction. Research links the ability of a student to integrate and demonstrate generic skills to the development of confidence in applying knowledge and skills to new and different contexts (Harvey, et al. 1997 in Patrick and Crebert, 2004). Patrick and Crebert support the work of Tennant (1999) who proposed the transfer of skills occurs when students are exposed to opportunities to experience and reflect on a variety of experiences. Generic attributes of students were found to be greatly enhanced through the provision of structured work placements (Patrick and Crebert, 2004).

Situated practice is acknowledged as the site that enables students to exercise and hone generic skills through “productive engagement with multiple and diverse socio-cultural practices that are situated within workplaces” (Shakespeare, et al., 2007). However, Shakespeare, Keleher et al. make the observation that how soft skills are understood by academics and employers, is reflected in the extent they become valued by the student.
Loken and Stull (1993) cited in Forbes (2007) have identified both workplace and academic supervisors as critical to the success of industry linked partnerships. However the co-op research literature on program administration and support is limited. In the early 70s Knowles (1972) cited in Lazarus and Oloroso (2004) saw the success of co-op programs required the support of upper-level university administrators, the support of faculty, the availability of jobs, the requirement for co-op within a degree, and public relations. From then until now there has been debate as to the most appropriate organisational structure to administer programs and the extent to which academics need to be involved before, during and end of work placements. Lazarus and Oloroso (2004) identified three main job functions of co-op administrators/co-ordinators/directors: student development, employer development and program management. Forbes (2007) notes the university management continue to ignore the learning outcomes for students doing co-op and by continuing to allocate resources that focus on administrative process of program administration rather the student learning and employer development aspects of co-op. Where academic staff are involved there is a lack of recognition in promotion and reward structures. Much of the recent research literature speaks of co-op programs and WIL program in terms of the rich learning experiences and student development opportunities. However, universities continue to find difficulties acknowledging the value of informal learning, accepting such learning into formal learning curriculum and facilitating learning partnerships with industry. Traditional education systems remain entrenched (Sovilla and Varty, 2004) with many academics remaining sceptical that experimental learning warrants academic credit.

2.7.3 Conclusion for sub-section

The review of the literature around co-op touches on some of the complexities of workplace-related learning. The co-op placement offers a unique learning opportunity for students. However, a successful learning program in the co-op workplace is the shared responsibility of the student, the employer and the university and is most successful with the active involvement of all parties. Martin in Howe and Patrick (2007) observes the best co-op placements are those where industry and universities are seen as equal partners involved in the planning of the overall experience and student’s professional development.
2.8 Conclusions

The literature review uncovered differing views on what attributes young people need for work and life, on how these attributes are best developed, and on the roles the various stakeholder groups should take in this. Terminology and understandings of what constitutes attributes young people should desirably have differ and tend to be driven by the needs of each stakeholder group. Desirable attributes cover a range of generic and discipline-specific skills, behaviours and personal characteristics with differing emphases on which is the most worthwhile. For universities the term “employability skills” narrowly focuses around work-readiness and ignores the broader capacities needed to meet new challenges in work and life. Industry and the professions appear to value generic attributes more than discipline-based skills.

Although each stakeholder acknowledges the importance of good generic skills, neither takes responsibility for its learning and development. Universities purport generic attributes are developed through doing work and suggest their obligations are met through the inclusion of placement programs in degrees, while industry feel university programs do not adequately prepare students with the essential skills required for work. Students expect university programs will prepare them with the necessary skills to meet work and life’s challenges.

There appears to be lack of understanding across the university and industry sectors as to the nature of generic attributes and how they are developed. Generic attributes are found embedded within tasks and developed through use in a variety of situations. Industry sources do not support “stick-on” attributes but, rather, graduates who are able to adapt and use their knowledge and skills appropriately and effectively within a particular situation.

Both the classroom and workplace are sites of learning. Where classroom settings are generally controlled environments delivering teacher-directed programs focussed on formal knowledge acquisition, workplace contexts are dynamic, complex and diverse offering a wide range of opportunities for informal and incidental learning. However, the focus of most workplaces is on productivity and/or service delivery. An individual is expected to perform tasks calling on past experiences, skills and knowledge as required. Knowledge and attributes are developed through each new experience. Placement programs are located in
workplaces and as such offer fertile grounds for developing new knowledge and skills. However placement programs struggle for recognition as sites for learning. Although there has been some research promoting the educational value of placements the evidence is seen as anecdotal with little reference to learning theories. Consequently placements are not highly regarded by educators and continue to be sidelined in university curricula and not fully integrated within program design.

Many authors suggest the educational potential of placement programs is being held back by universities’ out-dated views on learning. Informal learning (in workplaces) is considered inferior to teaching delivered at universities. However substantial literature across the fields of workplace learning, professional development and adult education promote an admixture of both formal and informal knowledge to better equip students for the uncertainty of life and work. It is suggested by a number of authors that drawing distinctions between learning in the workplace and in the classroom is unhelpful, and that each should be seen to complement the other in developing the “whole” student. DEST (2007) advices that universities design curriculum around adult learning principles, use active teaching methods in the delivery of content in classrooms, prepare students better for workplaces by designing opportunities for critical reflection, and by developing assessment practices that align with such learning objectives. A lack of understanding and poor appreciation of the learning opportunities within co-op placements generates co-op programs lacking innovative pedagogy.

In general, the research literature highlights the marginalisation of co-op programs and consequently the lack of academic involvement. Harnessing the educational potential of co-op programs requires highly qualified educators and practitioners to design appropriate curriculum and assessment. Universities have been found to under-resource co-op programs, offer few reward systems (e.g. promotion structures) to entice academic participation and promote traditional views of learning that handicap student learning and individual development.

A co-op placement is unique with its own unique set of individuals, work activities and settings. However co-op programs are situated within a university curriculum and are often delivered with a “one size fits all” approach to curriculum design, pedagogy, management and assessment. Also, the literature claims there is a
general assumption that students will learn simply by being immersed in the workplace and that work supervisors and work colleagues will readily provide the scaffolding and resources for student learning and development. This “hands off” approach sees some students returning to university after their placement dissatisfied and unhappy. Research literature in the areas of workplace learning and professional practice highlights the need for supporting structures. Such structures encourage social interaction, engagement and reflective discussions within a community of practice and ‘self-correction’ can be instigated and change initiated. There is little recognition and acknowledgement of the part both the workplace supervisors and the workplace context play in promoting student learning, professional formation and individual development.

Much of the research literature in the area of co-op and WIL is impressionistic with little evidence of studies that delve into the various assumptions and expectations held by the various participants of co-op on the role of co-op programs and the part they and others play in it. This study explores what qualities and attributes are most valued by individual stakeholders and seeks to identify support structures that are most likely to maximise benefits for all the stakeholders involved and sustain ongoing program improvement.
3 Research Methodology

3.1 Introduction

This chapter outlines the research approach adopted in this study and provides justification for the approach selected. The purpose of the study was to explore the contribution of a co-operative placement program found in a 4-year business information degree, in developing employability skills to meet the changing needs of the IT industry. A number of individuals are implicitly and explicitly involved in a co-op program, each bringing with them their own set of assumptions, experiences, expectations and insights. Gleaning and capturing the perceptions from a diverse sample of these individuals was seen to be central to answering the research question. A single case study approach was selected with the Co-op program within the Bachelor of Business in Business Information Systems (BBBIS) degree as the unit of analysis. The study adopted an inductive design and engaged qualitative techniques to guide the capture, interpretation and analysis of individual perspectives. The following sections provide a rationale for the approach adopted and the steps taken to give a credible, plausible, resonant account of the participants “meaning making” of co-op.

3.2 Research Orientation

The approach taken in this study is driven by the nature of the study and my own perspectives on ontology and epistemology. Few research studies have been found to explore the complex factors involved in delivering co-op programs across both the work and university contexts, how these factors influence individual assumptions and views of co-op, and have an impact on judgements and actions. This study sought to uncover the range of views, perceptions and insights that exist within and across the stakeholder groups in order to build a holistic understanding of the machinations a co-op program.

Qualitative approaches and methods were considered the most suited to this task, as qualitative researchers are meaning-makers (Glesne & Peshkin, 1992). They draw on their own and other’s experiences, knowledge, and theoretical viewpoints, to collect data and present understandings to the world (Cousin, 2009). Glesne and Peshkin support the view that the research approach selected
should match the researcher’s personal view of seeing and understanding the world:

Our constructions of the world, our values, and our ideas about how to inquire into those constructions, are mutually self-reinforcing. We conduct inquiry into a particular paradigm because it embodies assumptions about the world that we believe and values that we hold, and because we hold those assumptions and values we conduct inquiry according to the precepts of that paradigm (Schwandt, 1989 in Glesne and Peshkin, 1992, p. 4)

My 35 years’ experience of teaching adults and working in industry has strongly influenced my assumptions of the nature of reality (ontology) and how we know what we know (epistemology). As a practitioner and educator I have come to realise there is no one Truth but many truths; that individuals may construct multiple realities from their experiences; and that we live in a social world where individuals and contexts influence our actions. With Merriam (2002) I see reality not as unitary and universal, but as multiple and context-specific. This philosophical world view therefore locates me within a constructivist-interpretative paradigm which assumes:

- a relativist ontology (there are multiple realities), a subjectivist epistemology (knower and respondent co-create understanding) and a naturalistic (in the natural world) set of methodological procedures (Denzin and Lincoln, 2005, p. 24)

Interpretive approaches focus the research interest on the meanings individuals give to their experiences and social interactions “to see things through their (other people’s) eyes” (Neuman, 1994, p. 62); while the constructivist view sees knowledge as a product of our minds as well as what exists outside the mind (Eisner, 1991). Although involved with the co-op program being studied, I entered the research as a learner and participant-observer, seeking to engage with a variety of stakeholders in a process of meaning-making. Research knowledge was created in an inductive process through my reading of the research literature, the carrying out of the fieldwork, and through reflections (Glesne & Peshkin, 1992). Participants were seen as collaborators positioning me mid-way on the participant-observer continuum. The constructivist-interpretative orientation was particularly suited to my study as the approach allowed me to explore the
complexity and uniqueness of the participants’ worlds and with their assistance develop and articulate a rich understanding of the nature of co-op and its potential for promoting new learning. In my role of educator I passionately believe the role of educational institutions and educators is to provide programs and supporting infrastructure that enable students to meet their full potential. So ‘meaning-making’ is the goal, both of such educational provision, and of my educational research.

Within the constructivist-interpretative orientation a number of qualitative methodologies are available. Creswell (1994) affirms that the nature of a study partially determines the selection of a particular methodology. My research approach needed to allow for studying both the particulars of a single case (a specific co-op program) and also the complexities of the each participant’s world. An ethnographic case study approach was seen as the best fit. The case study bounded the participants within a unit of analysis and provided the basis for a holistic approach to the study, while ethnographic methods provided the means to engage with and report on “the meanings that individual social actors bring to those settings” (Stark and Torrance, 2005, p. 33).

As stated above, the focus of the research was on building an understanding of the contribution of the co-op placement program within a particular undergraduate degree at the RMIT University. A number of people across the academy, industry and governments are implicitly or explicitly involved within this Program. A single case study approach was conducive to gathering insights from multiple sources (a diverse sample of stakeholders), representative of a wider population (anyone directly/indirectly involved in the co-op program within the BBBIS degree at the RMIT University). A wealth of perceptions and insights were collected and reported from which “fuzzy generalisations” (Bassey, 1998) or assertions (Stake, 1995) could potentially be made across the whole category. However the key aim of this study was first and foremost to gain a deep understanding of the BBBIS Co-op Program itself.

Stake’s case study approach was selected as he acknowledges: (a) the influence of an external reality on our meaning-making; (b) an acceptance of the mediated character of our meaning-making; and (c) the possibility for research to produce “integrated interpretations” (Stake, 1995, p.100). Stake argues with critics who
denounce the researcher’s interpretations as hopelessly arbitrary. Stake contends that interpretations are produced from evidence-informed “good thinking” within scholarly communities and accords respect for techniques of data gathering and analysis that places the researcher’s “best intellect into the thick of what is going on” (Stake, 2000, p.445). Rigor is achieved through thoughtful, scholarly engagement with empirical data. Stake’s position provides an interpretive framework suited to this case study research.

3.3 Case Study Research Design

The design, implementation and analysis of case study research is a messy business involving a degree of connoisseurship (Eisner, 1991), that is, a nose for an emerging focus, analytical moves to make, data to shed or to keep, and write-up flair (Cousin, 2009). A variety of methods can be used in designing case study research. For this study in-depth semi-structured interviews were conducted with a sample of individuals drawn from academia, industry and student bodies. Open-ended questions were followed by probing ones to uncover deeper meanings and create rich descriptions from the participants. Interviews were recorded and fully transcribed. Qualitative data analysis seeks to (a) find the complex layers of meaning from the transcripts; (b) interpret the participants’ comments beyond surface experiences; (c) provide illuminative evidence of experiences; and (d) build theory inductively from the data sources (Cousin, 2009). Interview transcripts were analysed through a number of readings of the transcripts and systematic processes of coding and categorising data to identify emerging patterns and themes. Methods used to give meaning to these themes included questioning “What were the lessons learnt?”, comparing the study findings with the literature and drawing on my own personal and professional experiences.

Further design details are given in following sections, together with how I sought to minimise the risk of contaminating the data, and yet maximising the opportunities provided by the techniques and methods selected.

3.3.1 Sampling and selection

A diverse sample of various stakeholders, involved directly and indirectly in the co-op program within the BBBIS Co-op program activities, was required. So a
variety of sampling strategies was used to capture the complex dimensions of the co-op program.

Purposive sampling was employed to capture the greatest diversity of perspectives, assumptions and opinions from candidates in each of the stakeholder groups: students, employers, alumni, the professional association and academics. Although the sample size was small (26 participants) the data collected was rich so as to capture the complexity of and uniqueness of each individuals perspectives on co-op placements.

Roughly 100 students are in co-op positions at any one time. They can be characterised by gender, cultural background, placement job and size and type of placement organisation. Proportional quota sampling based on these characteristics was used in selecting the student sample. The ratio of males to females is roughly 4:1; local to international students 2:1; placements in ICT organisations to non-ICT organisations is 2:1. The size of companies employing co-op students are categorised as small (<20); medium (<200) and large (<200) at a ratio of 2:2:1.

Proportional quota sampling was also used in the selection of workplace supervisors. They were selected on the basis of gender, company size, industry type and length of involvement in the Co-op program. There are over 300 active co-op companies in the current co-op employer database.

Heterogeneity sampling was employed in selecting past students of the Bachelor of Business in Business Information Systems. Diverse opinions, views and ideas were sought from our Alumni on the value of co-op in their professional development; and ways the program could be improved.

Academics involved with students before, during and after co-op were also sampled (expert sampling) for their observations on the impact of co-op on the students. To develop an understanding of the impact of external influences on co-op programs, a sample of individuals holding strategic and tactical positions within the University, industry and government sectors were also included.

The composition of the final sample included:

- Five students currently enrolled in the BBBIS at RMIT (ages 18+)
- Five alumni of BBBIS at RMIT (ages 25+)
• Five work-based supervisors sourced from RMIT BBBIS Co-op Employer Database
• Five academics involved in the BBBIS program (ages 30+)
• Five managerial/executive level personnel (ages 30+):
  o two (2) from RMIT - Pro Vice-Chancellor (Teaching & Learning) and Dean (Academic Development) for Business Portfolio;
  o two senior executives one from a large government department; the other from medium-sized software and consulting company;
  o a manager and owner running his own IT business
• One executive from the Australian Computer Society representing the IT profession.

As I was involved in the BBBIS Co-op program, I had direct access to all the stakeholders. To minimise the risk of playing favourites with my selection of participants, colleagues were approached to identify possible candidates that would match the individual characteristics developed during the sampling process. In the case of the student sample I did not include any students I was teaching, or whose work I was assessing.

Potential participants, suggested by colleagues, for each sample group were then invited, via email, to participate. Voluntary participation was stressed. Interested parties were then contacted by phone or in person offering further clarification and forwarded the Plain Language Statement (refer Appendix B) and Consent Form (refer Appendix C) documentation. Once consent was given, a phone call or email set an appropriate interview time and venue of the interviewee’s choosing.

3.3.2 Data collection

In qualitative research a number of different research methods are available to collect and analyse data. The choice of research method informs the way in which the researcher collects data (Cresswell, 2007). Since the objective of this study was to develop a rich understanding of the meanings individuals have of co-op, one hour face-to-face interviews were conducted with each participant. A total of 26 one-on-one interviews were conducted across a period of six months. To ensure a broad range of opinions and perspectives were collected, tightly
sequenced interviews with stakeholders from the same group were avoided. This strategy was employed to avoid getting immersed in any one set of questions and responses. Appendix D (Schedule of Fieldwork) shows how I apportioned my interview time across all stakeholder groups.

I conducted the interviews in person, taking between 35 minutes to 1.5 hours with each participant. I was keen to develop a good rapport with each participant so they would feel comfortable in being open with their thoughts and opinions. The setting for the interview was of the interviewee’s choosing. The interview started with re-stating the purpose of the study - to build a better understanding of the Co-op Program - and reinforcing the interviewee’s role as a collaborator in the study and as such would be privy to a summary of the findings at the conclusion of the study.

The interviews followed a semi-structured format with a number of pre-set questions seeking to glean specific information from the participants regarding their assumptions and expectations of co-op, their experiences and views on the value of co-op, concerns and issues, and suggestions for areas of improvement. The semi-structured nature of the interviews offered opportunities for unexpected insights to be gained as well as encouraging participants to speak in their own voices and elaborate on responses. Open discussion was encouraged through respectful silences and sensitivity to signs of unease. Appendix E contains the pre-set interview questions. Questions were tailored to fit each stakeholder group. Interview questions covered a number of topic areas (refer Table 3.1).

As the researcher instrument in this study I was vigilant of my own subjective insights and viewpoints. I therefore approached each interview as both a site of data gathering and data-making (Baker, 1997). Reflections after interview found new interpretations emerged changing my own pre-existing assumptions and raising further questions. Consequently each interview was slightly different seeking to probe further issues identified in previous interviews.

All interviews were recorded and fully transcribed for further analysis. Member checking was carried out within the context of the interviews. Participants were invited to view the transcripts once they were typed up.
### Table 3.1 Summary of topics covered in interviews

<table>
<thead>
<tr>
<th>Topics</th>
<th>Senior Manager-ment</th>
<th>IT Profession Rep</th>
<th>Workplace supervisors</th>
<th>Academics</th>
<th>Alumni</th>
<th>Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interviewees background, experiences, values, attitudes</td>
<td>Q1</td>
<td>Q1</td>
<td>Q1-2</td>
<td>Q1</td>
<td>Q1, 2</td>
<td>Q1</td>
</tr>
<tr>
<td>Uni/org/industry context (external environment drivers &amp; pressures; internal responses)</td>
<td>Q2-5, 13</td>
<td>Q2, 3, 6</td>
<td>Q1, 14, 16-17</td>
<td>Q5, 6</td>
<td>Q3, 7</td>
<td>Q11</td>
</tr>
<tr>
<td>Skills for employability; for a (IT) professional (assumptions)</td>
<td>Q7</td>
<td>Q5, 10</td>
<td>Q10, 15</td>
<td>Q2, 5</td>
<td>Q5, 7-9, 11</td>
<td>Q11</td>
</tr>
<tr>
<td>Skills, attributes, experiences required/expected of students starting Co-op (expectations)</td>
<td>Q7</td>
<td>Q5</td>
<td>Q5, 6</td>
<td>Q4</td>
<td>Q5</td>
<td>Q3, 10</td>
</tr>
<tr>
<td>Maximising learning (how)</td>
<td>Q9-12</td>
<td>Q11</td>
<td>Q11-12</td>
<td>Q2-5,7</td>
<td>Q2, 3, 10</td>
<td>Q3</td>
</tr>
<tr>
<td>Role &amp; value of Co-op</td>
<td>Q5-6</td>
<td>Q7-8</td>
<td>Q3</td>
<td>Q2, 8</td>
<td>Q5, 7</td>
<td>Q10</td>
</tr>
<tr>
<td>Working/doing in the workplace</td>
<td>Q6</td>
<td>Q7</td>
<td>Q8, 9</td>
<td>Q2</td>
<td>Q3</td>
<td>Q2, 6-8</td>
</tr>
<tr>
<td>Learning in the workplace (what)</td>
<td>Q8-9, 10</td>
<td>Q9</td>
<td>Q8-9</td>
<td>Q2</td>
<td>Q5</td>
<td>Q2, 4</td>
</tr>
<tr>
<td>Evidence of impact and/or change</td>
<td>Q9</td>
<td>Q9-10</td>
<td>Q7</td>
<td>Q2-5</td>
<td>Q3-5, 7, 11</td>
<td>Q4, 9-10</td>
</tr>
</tbody>
</table>

#### 3.3.3 Data reduction and analysis

The goal of analysis is to reduce the data into meaningful constructs that best represent the experiences and understandings of the study participants. In this study each interview transcript was systematically coded and inductively analysed to evoke multiple and rich meanings. The process started with loading the word processed transcripts into NVivo, a computer software program that facilitates data coding and reduction. Next, an initial sample of transcripts across the stakeholder groups was scanned and “front and back brains” (O'Toole and Beckett, 2010, p. 170) were used to make the data coherent. This meant identifying key criteria essential to creating understanding of co-op (and responding to the research questions). Interesting affirming, contrary and surprising text was also identified. The text was chunked and coded with a word or phrase (referred to as a node in NVivo). Appendix F provides an example of a coded transcript. The nodes (representing meaningful chunks) were reviewed, repetitions removed and where appropriate grouped under one or more categories (higher-level nodes). Used were analytical tactics such as clustering, subsuming particulars into the general and making contrasts, comparisons and
establishing conceptual/theoretical coherence (Miles & Huberman, 1994). A hierarchy of categories emerged (Appendix G).

In discussion with colleagues, the data categories appeared to fall into three main areas:

- what the stakeholder (employer/student/academic) brought to co-op (assumptions, experiences, histories, etc.);
- what the stakeholder got out of co-op (benefits, outcomes etc.); and
- what the stakeholder valued most from co-op.

The remaining transcripts were analysed, coded and reduced (Appendix H).

Research involves “pulling the data apart and putting them back together in more meaningful ways” (Creswell, 2007, p. 163). There are few recipes for analysis and synthesis. “They are intuitive processes” says Stake (2010, p. 156). He adds that we also need to use common sense, follow certain routines, follow patterns of other researchers and centre on what we are finding, but come back again and again to the research question. A range of strategies were employed in synthesising the data that included taking a step back from the data, referring to theoretical constructs and theories together with discussions with colleagues outside of the study and drawing on my own experiences. As a result the data was aggregated then collapsed into twelve themes.

Cousin (2009) writes that the data gathering, data analysis and writing-up processes proceeds alongside each other in a process that involves continual focussing, reflexivity, scholarly engagement and theory building. I was aware of being involved as a professional, in the research (Eisner, 1991) bringing my own frames of reference to the task (Glesne and Peshkin, 1992) which in turn would shape my interpretations. On the one hand my experiences across the fields of education and industry allowed me to identify and connect concepts and draw out hidden meanings from the data. However, my interests and assumptions could potentially see me being selective, positioned and partial in my analysis and synthesis of data. Taking a reflexive stance, talking to colleagues, and revisiting theoretical concepts helped in developing a credible description (in the voices of the participants) and interpretation (in my voice) of the contribution of the BBBIS co-op program.
3.4 Trustworthiness

An important consideration for any type of qualitative research is the quality of its data (Neuman, 2000). Qualitative data by its nature is subjective. Rather than attempt to remove subjectivity, qualitative researchers immerse themselves in their study to obtain an authentic understanding of the social world. Due to what Glesne and Peshkin refer to as "my backyard" nature of my research, several strategies of validity were employed to increase confidence in the accuracy of the findings and the trustworthiness of my interpretations. Validity in interpretive studies relates to the trustworthiness of the researcher’s explanation. It is broadly held that trustworthiness can be secured through triangulation, checking accounts with research subjects, demonstrating researcher, collecting and surfacing sufficient data for plausibility and providing rich descriptive and analytical accounts (Cousin, 2009). All these strategies were employed to ensure the findings matched reality and how well these findings captured the various viewpoints of the study participants.

Validity of findings was addressed through the triangulation of multiple perspectives from a diverse sample of candidates. The study drew on the views and insights of individuals from industry, from the University and from the student body. Rich descriptions were collected from individuals located within the case study rather than external to it.

Purposive sampling was employed to identify the most diverse, disparate group of individuals to participate in the study, for the purpose of capturing the uniqueness of each individual’s views on co-op placements. As detailed above and in the Application for Ethics Approval, twenty-six participants were involved in the study representing students, alumni, academics and industry people located within a variety of roles across a diverse range of settings.

The semi-structured format of the interviews allowed for the clarification of points, verifications of meanings and open dialogue on issues, concerns and insights. Member checking was carried out within the context of the interviews. Participants were permitted to view the transcripts once they were typed up. However none chose to do as the nature of the data collected was not sensitive and because the anonymity of their identity in any written material was assured.
The transcripts of the full interviews were systematically reduced and analysed. Peer debriefing was employed to review data reduction and soundness of interpretations. Stake (2010) contends “Multiple interpretations provide a depth of understanding” not only to the researcher but to the reader reading the findings “readers sometimes can see more depth in our reports when we portray more than a single reality” (p. 66). Through questioning, conversations with others and revisiting the literature for theoretical concepts, I endeavoured to stay open minded and cognisant of my meaning-making.

Throughout the study, I focussed on the deliberate accumulation of knowledge. I reviewed, reassessed and readjusted my methods and interpretations with “gradualness, care, scepticism, revision” (Stake, 2010, p.129). Regular meetings were set up with my supervisor to discuss my findings and interpretations. Ad hoc chats with colleagues over lunches and meeting were also invaluable in this process.

Neither case study nor ethnography research claim findings can be generalised to other situations because says Creswell (2007) the contexts of cases differ. Stake (2005), Cousin (2009) and others say the key aim of case study research is to offer a wealth of readable detail and analysis, such that the reader can make a judgement on the case and draw “naturalistic generalizations”. It is hoped that some insights that emerge from this study will strike a chord with the readers and be transferable to other co-op programs.

### 3.5 Ethical Framework

An integral part of my study was the involvement of a sample of individuals with implicit or explicit experiences with the BBBIS Co-op program. My interaction with these individuals was guided by the ethical requirements of the University and by my own professional ethics and value positions. The preparation and submission of the required “Minimal Risk Application” to Melbourne University’s Human Ethics Research Committee laid the foundation for an ethical framework to be adopted for the research. Appendix J contains Ethics documentation.

Participation in the study was voluntary. Initial communications with potential participants set out the purpose of the research and the tone of the study as one of exploration and discovery with an invitation to share experiences in the quest for improving the Co-op program. They were informed that those who chose to
participate would be sent a one-page summary of the key findings and recommendations of the study. The communiqué made clear that the individual was free to accept or decline the invitation and withdraw from the study at any stage without explanation.

Interested individuals were then sent the Plain Language Statement that outlined further details of their involvement and requested they forward back a signed copy of the Consent Form attached. Anonymity of participants was assured through the use of pseudonyms in any written material. Participants were given the opportunity to review the interview transcripts and request changes. All the participants were adults and of consenting age. In my capacity as Program Coordinator of the BBBIS, a lecturer and Co-op mentor, I was cognisant of potential power influences over the students involved. To minimise this effect, I was not involved directly with any of the students either in the classroom or through assessment. The interviews were conducted in a location of the interviewee’s choosing and at all times, I sought to make the interviewees comfortable with my questions.

3.5.1 Conclusion

My fieldwork adopted an inductive case study design and engaged ethnographic techniques overlaid with a critical perspective, to guide the capture, interpretation and analysis of the many perspectives held by a sample of stakeholders within the BBBIS Co-op Program. Steps were taken throughout the study to minimise risk and maintain data integrity and trustfulness. The following chapter presents the analysis and results and analysis of the fieldwork.
4 Findings and Analysis

4.1 Introduction

This chapter documents the findings from the stakeholder interviews and presents an analysis of the responses collected. Twenty-six interviews were conducted ranging in length from 35 minutes to 1.5 hours. Transcripts were prepared of each interview and NVivo software used to code the data by categories. After an exploratory coding exercise it was found that the text fell into three main categories:

- what the stakeholder (student/industry/university) brings to Co-op;
- what the stakeholder derives from Co-op; and
- what the stakeholder values from the Co-op experience.

During coding sub-categories were identified under each category. Patterns and themes were sought from the categories and sub-categories. Themes emerging from under the category what do stakeholders bring to Co-op are summarised in table 4.1.

<table>
<thead>
<tr>
<th>Themes</th>
<th>What does industry bring to Co-op</th>
<th>What does the University bring to Co-op</th>
<th>What does the student bring to Co-op</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skills for work</td>
<td>Context for developing generic and non-generic employability skills &amp; IT professional capacities</td>
<td>Preparation of students in foundation IT skills &amp; knowledge. Awareness of employability skills</td>
<td>University-learnt IT skills &amp; knowledge; perceptions of employability &amp; professional skills. Different working histories.</td>
</tr>
<tr>
<td>How skills developed</td>
<td>Industry expects University to prepare students with foundation in generic &amp; non-generic skills; industry provides context for learning and work opportunities for further development</td>
<td>Little in generic skills development; University expects the Co-op experience to develop students’ generic skills &amp; non-generic skills</td>
<td>Student expect University to prepare them with the necessary skills for Co-op; expects industry to give them opportunity to apply learnt skills &amp; learn new skills</td>
</tr>
<tr>
<td>Views of Co-op experience</td>
<td>Work focus</td>
<td>Learning focus</td>
<td>Job &amp; career aspirations</td>
</tr>
<tr>
<td>Individual’s personnel &amp; professional history</td>
<td>Workplace supervisors, colleagues &amp; managers with diverse educational, cultural, work experiences</td>
<td>Teaching, non-teaching staff &amp; senior management with diverse educational, cultural, work experiences</td>
<td>Students attuned to learning about the world of work and wanting to find out how they fit. Students also bring with them diverse backgrounds and experiences.</td>
</tr>
<tr>
<td>Support</td>
<td>Safety-net. Workplace supervisors &amp; colleagues who support learning &amp; skills development</td>
<td>Teaching academics who prepare students to collaborate with supervisors and students during the placement to facilitate learning during Co-op</td>
<td>Support and camaraderie to other students on placements</td>
</tr>
</tbody>
</table>

Table 4.1 Summary of key themes emerging from what stakeholders bring to Co-op
Table 4.2 presents the themes arising out for an analysis of the sub-categories found under what do the stakeholders value from Co-op.

<table>
<thead>
<tr>
<th>Themes</th>
<th>What does industry value from Co-op</th>
<th>What does the University value from Co-op</th>
<th>What does the student value from Co-op</th>
</tr>
</thead>
<tbody>
<tr>
<td>Market profile</td>
<td>Company profile in terms of giving back to community</td>
<td>Producing employable graduates; reinforces branding leading to increased enrolments</td>
<td>Graduate of university with high profile in preparing work-ready graduates</td>
</tr>
<tr>
<td>Monetary gains</td>
<td>Cost effective recruitment (try before you buy); inexpensive employee to get job done</td>
<td>Funding for research, sponsorships &amp; scholarships.</td>
<td>Better paying jobs.</td>
</tr>
<tr>
<td>Networking</td>
<td>Development of business networks</td>
<td>Opportunity for further industry partnerships for ongoing Co-op placements &amp; research</td>
<td>Developing social &amp; business networks for future work</td>
</tr>
</tbody>
</table>

Table 4.2 Summary of key themes emerging from what do stakeholders derive from Co-op

However an analysis of the transcripts found stakeholders getting far more out of Co-op. Emerging themes were grouped under the sub-category what do stakeholders derive from Co-op and are summarised in Table 4.3.

<table>
<thead>
<tr>
<th>Themes</th>
<th>What does industry derive from Co-op</th>
<th>What does the University derive from Co-op</th>
<th>What does the student derive from Co-op</th>
</tr>
</thead>
<tbody>
<tr>
<td>Worthwhile Knowledge</td>
<td>IT and interpersonal skills; ability to learn quickly</td>
<td>Applying University-based knowledge &amp; skills; developing interpersonal skills; high-level problem solving skills; developing autonomy</td>
<td>Developing new skills &amp; knowledge to get work done; big picture view of world; personal development; professional identity</td>
</tr>
<tr>
<td>Agency &amp; efficacy</td>
<td>Positive impact of student on workplace; value-add to work performance</td>
<td>Generally better final year students producing a higher standard of work; better performance in teams</td>
<td>Doing real work in a real work environment</td>
</tr>
<tr>
<td>Support</td>
<td>University involvement prior to and during placement</td>
<td>Feedback from industry on and student progress and currency of courses</td>
<td>Preparation for job search. Support from University, workplace supervisor, work mates and student colleagues during work placement.</td>
</tr>
<tr>
<td>Individual benefits</td>
<td>Personal satisfaction of workplace supervisors &amp; mentors</td>
<td>Better students in final year</td>
<td>Skills development; learning about world of work; personal development; career direction &amp; professional identity</td>
</tr>
</tbody>
</table>

Table 4.3 Summary of key themes emerging from what do stakeholders derive most from Co-op

The findings and accompanying discussion of these themes are dealt with in five sections. The section headings and sub-sections emerge from the analysis of the contents of Table 1, Table 2, Table 3 and Table 4.
The **Skilling the IT Professional** section brings together references to the nature of the current IT industry and the skills required to meet the current and future needs of the industry (refer Table 2). This section also presents the various stakeholder perspectives on how and where these skills developed. The **Value of Co-op** section analyses topics highlighted in Tables 3 and 4. Table 4 also provides source for the data on the impact of Co-op on the various stakeholders is covered in the **Agency and Workplace Learning**; and the conditions for **Supporting Workplace Learning** covered in the section by that name.

The semi-structured nature of the interviews allowed for individuals to delve into areas of personal interest and concern. Consequently an analysis of the transcripts saw particular attention given to some topics that were ignored in others. A common theme emerging from all the transcripts (and therefore drawing from aspects of Tables 2, 3 and 4), saw discussions around what knowledge gained during a work placement was considered the most worthwhile. This area has been treated under a separate section **Worthwhile Knowledge** and covers a discussion of the IT discipline-based knowledge and skills, socio-personal skills and practical knowledge.

### 4.2 Skilling the IT Professional

All stakeholders were asked questions focused on what skills set they thought was required of business professionals and of IT professionals in particular. A number of managers and alumni spoke of how the advent of new ICT technologies has impacted on the organisations’ work practices, the job market and subsequently on the skills needed of the IT workforce. Therefore, those involved in the IT industry need to be vigilant and informed with strong research and social networking skills, and preparedness for life-long learning.

Most of the employers and academics noted the impact of technological advances on the IT job market with a wider range of jobs on offer across an increasingly diverse range of industries:

> ...it’s only I believe recently that people are actually recognising that the ICT industry isn’t just the software developer, hardware companies and the telecom companies. (Harry).

Harry added there was a 50/50 split in the membership in the Australian Computer Society between IT and non-IT companies. These comments highlight a
growing job market for IT people outside the traditional IT shops. Knowledge of business and other industries is therefore an asset together with a portable set of skills that would allow IT people to move across a range of industry sectors.

The advent of the Internet has also seen the world shrinking in terms of companies getting jobs done off-shore. Where jobs cannot be filled locally at a reasonable price some employers look off-shore and to the migrant population.

Mike, a CEO of a software company employs the recent arrivals from China:

\[\text{...at a price that we feel is more suitable than some of these others that have got tickets on themselves.}\]

However the ever changing landscape of IT will see industry seeking employees that have the initiative and vision to adapt to new challenges and have an arsenal of skills, knowledge and experiences to draw on. Looking forward, Charles, an IT manager, commented that “tomorrow’s IT employee needs to be multi-skilled”.

The interview discussions then moved to what skills and knowledge are specifically being sought for in university graduates. Firstly each of the stakeholders was asked for their understanding of what constituted employability skills. Responses varied as to what skill sets and qualities were held of most importance.

Most teaching academics stressed the importance of a good theoretical foundation of IT knowledge on which to build skills:

\[\text{My personal view is it’s better to have that theoretical grounding initially to then build on with experience rather than the other way around because it’s harder to change it after; it’s harder to change the habits or especially bad habits that have been learned (Nick, academic).}\]

Teaching academic and students spoke of employability skills in terms of the skills needed to solve problems:

\[\text{Number one on the list would be problem solving skills...if you couldn’t solve problems, the job’s not for you. You really need to sort of think outside the box (Rick, student).}\]

Students starting their Co-op year spoke of employability skills in terms of their ability to adapt and fit in to the work environment:
...how well you can adapt, how well you can work for them, what they require (Raj, student):

Industry responses varied with one manager seeing employability skills in terms of meeting the needs of the client:

The first thing would be the ability to understand what the customer requires and the second thing would be the ability to manage that expectation with the customer. And the third thing would be the technical skills required to deliver on the above two (Mike, employer).

Laura, a human resources manager referred to the set of employability skills as varying with the capabilities according to the requirements of the job or a group of jobs. While Charles, an IT manager saw employability skills for short term contracts different to those for long-term employment. When hiring for a position such as a grapefruit picker only a base set of skills required. However, when employing for long term employment he hires “for attitude, ability to learn, wanting to learn”.

The need for good communication skills was a common theme across the entire interview sample as one academic put it:

...to be able to listen, to be able to talk, to be able to articulate what you know. I think the ability to communicate with other people is critical in our game. ... There’s nothing more terrible than a geek because you can’t communicate with them and they will not communicate with you because of their arrogance (Vlad, academic).

Responses from alumni and industry spoke of employability skills that went beyond IT and non-IT skills to personal attributes that indicated confidence, motivation and initiative and demonstrated capacity for hard work:

So when we talk about employability skills, we’ve got the technical skills, we’ve got the so called business skills, problem solving and all those generic things, there are the... soft skills... but there’s also personal attributes such as responsibility and all that sort of stuff (Harry, IT Profession).

The desire to learn was considered an important inclusion under the employability skills banner. Senior university academics spoke of producing good thinkers with a solid base of knowledge; students’ concerns centred on how to make connections between learnt knowledge and practice; alumni were open to
all learning; and industry personnel looked at the ability to be open to learning as adding value.

A number of stakeholders commented on how the Internet in particular had had an enormous impact on business practices. Many companies are expected to support clients at anytime and anywhere in the world:

...there are certainly people that I know who are working for American companies sitting in their Australian house; they log on at 5 o’clock at night and they work through the night (Harry, IT profession).

In these cases staff may be required to work with little or no direction at any hour of the day or night. The nature of such work calls for a set of desirable qualities and skills that include independent problem-solving, self-direction, the ability to adapt to a variety of situations and to be technology savvy. Harry went on to add that these off-site working practices also demand a great deal of trust in their employees:

There is the issue of trust; if you’re going to employ somebody to work from home and you’re in another state or another country, you need to be comfortable that that person is only working for you, that they’re not doing exactly the same thing for another company.

The interview sample was asked to differentiate between employability and professional skills. In general most of those interviewed had not thought about defining what constitutes professional skills. Skills and attributes associated with being a professional were often confused with behaving professionally. When students spoke of developing professional skills during Co-op they were referring to knowing how to behave and communicate in a professional manner. Industry and alumni comments tended to regard professional skills more in terms of the qualities, experiences and higher standards of performance the person brought to a work situation rather than the capabilities required to do a job.

The skills of a professional are more highly regarded than someone with employability skills. However whether an IT worker is a professional or not is not clear cut as one academic pointed out:

... it’s not like yes and no, there are people who are very professional and very conscientious and very clear in what they do and then there are other
people that know what they have to do .... they’re kind of laid back and not careful but then there’s also a range in between (Nick)

From these discussions, understanding of employability skills appears to revolve around the necessary knowledge, skills and attributes to be employed in a job. The skill set includes both generic skills of problem solving and interpersonal communications, IT skills and a number of desirable personal attributes. A professional is considered by most to have employability skills together with a higher level of expertise and practical knowledge and have developed sound judgment that adds value to an organisation. A summary of the key differences identified in the interviews is found in Table 4.4.

<table>
<thead>
<tr>
<th>Skills/Knowledge area</th>
<th>Employability Skills</th>
<th>Professional Skills</th>
</tr>
</thead>
<tbody>
<tr>
<td>IT knowledge &amp; skills</td>
<td>Ability to apply learnt knowledge &amp; skills to IT problems</td>
<td>Expertise through developing a number of applications in a variety of situations and contexts. Informed of latest IT trends</td>
</tr>
<tr>
<td>Problem Solving</td>
<td>Ability to understand and solve problems</td>
<td>Good understanding of clients’ needs within their specific business contexts. Good judgment in decision making developed through solving problems in a variety of situations.</td>
</tr>
<tr>
<td>Performance</td>
<td>Ability to complete assigned tasks in a timely manner</td>
<td>Meet high standards of performance and quality. Adding value to company.</td>
</tr>
<tr>
<td>Socio-personal skills</td>
<td>Ability to articulate orally and in writing with peers, managers and clients. Ability to work in a team</td>
<td>Empathetic with client requirements and managing expectations. Ability to behave appropriately in a variety of situations with different levels of management, clients &amp; peers.</td>
</tr>
<tr>
<td>Attributes</td>
<td>Have motivation, initiative, honesty, openness to learning,</td>
<td>Maturity, confidence, responsibility, pride in work, integrity, intelligence, desire for life-long learning; ethical behaviour</td>
</tr>
</tbody>
</table>

Table 4.4 Differences between employability and professional skills

There is an implicit understanding that to be a professional requires work experience and as noted by alumni, experienced workers and senior university management, the development of a professional takes time. Employers don’t expect students to be an IT professional but do expect them to have a basic foundation of IT knowledge and skills, interpersonal skills and to demonstrate personal attributes which can be further developed through work experience.

Stakeholders were asked how they thought these employability and professional skills were learnt. All the teaching academics felt students developed a good set of IT skills through their University studies that met emerging and future graduate job requirements.
Dave used problem-based learning and case studies to prepare students:

All of our second year subjects are designed to grow employable skills. ....

every subject we’ve got in second year is based around case studies
because we’re trying to emulate the industrial environment (Dave,
academic)

He went on to point out the limitations of case studies for their lack of reality:

There’s a lot of things that case studies can’t do, they can’t put the real
time pressures that business have, they can’t emulate a real business
environment.

Also, problem solving skills development is difficult to assess in a classroom
situation said another academic:

We can be very creative with our assessments to try to help students
develop portfolios that show they have been involved in problem solving,
but...it’s a lot...more convincing and easier to evidence if students can
actually talk about...how they actually tackled or worked with other people
to solve the problems (Faye, university management).

All employers agree that the nature of tasks within the work environment is more
complex and hard to simulate in the classroom:

The tasks are more complicated not that they are harder because more
people are involved. In the learning environment you have tasks to do, a
problem to do. Your work is done singularly or in teams. By and large the
goal posts don’t move. The work environment is not black and
white...budgets are cut. Time lines change...parameters change. People
change. Projects go longer. This is hard to simulate in a classroom (Charles,
employer).

Problem-based learning is best learnt by solving real problems in real situations:

One of the major things about problem based learning is the salience of
the task...you’ve actually got a real problem...that requires a solution...
highly salient. It concentrates your attention (Barry, university
management).

All the academics, University management, students and alumni purported that
soft skills, in particular communications skills, were best developed in the context
of doing:
These (soft skills) are all difficult things to role play...you've actually got to get out there and try them, like learning...windsurfing, golf or hang-gliding (Barry, uni management).

You do learn it (communications at uni) to an extent but it's a bit different in life, especially when they're speaking to older people is a different ... so you sort of have to grow up quick and learn how to speak at their level (Rick, student).

Some of the employers agreed that the development of professional skills can only come with experience, associating with other professionals and time:

...some of it (professional skills) you learn by experience, others you learn by associating with people who you view to be professional (Harry, IT profession).

I don't think you can take someone straight out of tertiary institution and have that person do a job; it needs a level of experience and a level of confidence in your own abilities to be able to deliver those results (Mike, employer)

There were differences of opinion as to who should be involved in the students’ generic employability skills development. More than one academic felt they were not qualified to teach these skills and it was industry’s responsibility:

...for one thing we’re not qualified to teach them (employability skills); let’s face it; most of us academics are pretty socially inadequate ourselves (Barry).

Those interviewed from industry felt not enough was being done by universities in terms of developing students' written and oral communication skills:

I believe literacy is a real problem. I see people that are university graduates and their ability to put together a written communication with the correct grammar is appalling (Mike).

University management expressed the view there was a shared responsibility for student development of employability skills using Co-op work placement programs as the forum:

...it's not sufficient for us to say we have no regard whatever for the skills of working in the workplace; all we do is train people in the technicalities of whatever they’re doing, and you’ve got to take over from there. Both
extremes are wrong, and one of the ways of meeting that is have things like Co-op and work integrated learning, provide the opportunities for students to acquire... to at least get a feel for what these less tangible skills actually are (Barry).

All stakeholders interviewed agreed that Co-op placements present opportunities for student employability and professional skills development:

*The plan behind it is still the same ... to give undergraduates a good working experience and to accelerate their studies (Charles, employer).*

In general, the industry people wanted students with the abilities to get a job done; while the University personnel promoted graduate attributes that included ‘work-ready skills’ for getting a job. University personnel tended to dichotomise attributes as technical and non-technical skills; soft and hard skills; generic and non-generic skills; while employers, students and alumni tended to speak of individual sets of skills, attributes, attitudes, behaviours required of young people e.g. Teamwork, written communication.

However differences also found within the groups themselves. Within the employer group, while immediate supervisors were performance focused, managers and HR people were more interested in the attributes, attitudes and values. At the beginning of their work placements students thought the university-learnt IT-skills would be enough. Where the jobs were quite technical they were able to use their IT knowledge. However all the students found their IT knowledge was not enough and they had to quickly gain new IT knowledge.

An analysis of these responses suggests the most effective way of developing generic and non-generic employability skills and professional skills in the student is through working in a job within a work environment. Problem-based learning and case studies in the classroom only go part of the way in developing IT skills and knowledge. Table 4.5 presents this distinction.

It has been observed that the University could be more pro-active in equipping students with better written and oral skills and increasing the student’s awareness of what qualities, attributes and behaviours are expected of workers. Companies taking on work placement students also need to be realistic in their expectations of student capabilities and share some responsibility for the development of the professional skills.
Table 4.5 Comparing skill development in the current University and workplace contexts

The volatility of the IT industry requires IT workers to have an arsenal of skills and knowledge to draw on that can be transported from one situation to another; in particular a portable set of IT skills and knowledge, an inquiring mind that is open to life-long learning together with a strong set of generic skills, personal qualities and professional values. Industry wants more than work-ready graduates; they want new employees to “hit the ground running”. Universities are good at imparting knowledge but the university classrooms offers limited opportunities for developing both generic and non-generic skills. Immersing students in the workplace offers opportunities for a far richer context for learning. Accordingly, the next section delves into what aspects of Co-op (as an immersion experience) are most valued by each of the stakeholder groups.

4.3 Value of Co-op

All the stakeholders saw value in Co-op work placements. However there were variations in responses between the stakeholder groups as to where they placed greatest value. Academics focused on what students had learnt, students and alumni on their changing awareness of work and their place in it, while responses from employers and university management were couched in business terms.

4.3.1 Awareness of work context

All the stakeholders spoke of the value of students developing an awareness of work and the context of work. Some students had never worked or experienced learning outside of a classroom so having a job was an experience in itself:
Co-op was the eye opener, the first job actually for me to start in the IT industry (Sumi, international alumni).

Students had most difficulty of adapting to a new routine:

Adjusting to the world of work, getting up and working five days a week, getting up early and getting home exhausted, getting into a routine, getting an appreciation of what happens in work (Laura, alumni).

Abiding by new rules:

They need to understand about the business etiquette like when you’re sitting at your terminal, you don’t sit there and go through YouTube because you do it every day anyhow, it doesn’t mean that at a business you sit down and do your YouTube that you normally do and you don’t sit there and spend an hour working through your email jokes (Vlad, academic).

Meeting different expectations:

…it’s the workplace so… they’ve got to wear certain clothing, got definite deadlines, got social responsibility (Charles, employer).

Understanding management structures:

Getting to know the office environment and the workplace and all the different departments and the structure and hierarchy …. Has been more the learning experience for me than the technical side (Rick, student).

Reconstructing university-learnt knowledge:

…the management subject says you only report to one manager, in a real world situation that never happens (Pete, alumni)

4.3.2 Task Performance

The value of Co-op is giving the student the responsibility of carrying out a task to completion:

You’ve actually got a real problem that…requires a solution…highly salient, and it concentrates your attention…and if you think about all the things you know how to do best, they’re all things that have required you to engage in the resolution of that problem (Barry, academic).

Having responsibility:
The practical experience…you actually do it….and someone has to use it (a program) so there’s added responsibility involved with it (Pete, alumni).

Being challenged:

(They) seem to have been given really solid pieces of work to do, especially in that second half of the year, they’re not making coffee or photocopying, they’re doing… doing high level stuff (Dillon, academic).

dealing with complexity:

The tasks are more complicated not that they are harder; it’s because more people are involved. In the learning environment: you have a task to do, a problem to do. You may work singularly or in teams. By and large the goal posts don’t move. The work environment is not black and white…budgets are cut…times change…parameters change. People change. (Charles, employer).

reading situations and making adjustments:

…the ability to understand how to apply familiar skills in unfamiliar circumstances, which often requires some degree of adjusting those skills, some adjustments to what we’ve learnt from our books (Barry, Uni management).

4.3.3 Development of social and business skills and personal qualities

All of the respondents commented on the value of Co-op in the development of soft skills such as communication skills:

I think what this all comes down to is not the hard skills, it’s not the technical stuff, it’s the soft skills, people skills, communication, which is something which I continue to do, and I think for the rest of my life will be working on. And it is that which distinguishes between you and other people. And maybe in a nutshell that’s what Co-op (Scott, alumni).

Organisational skills:

The capacity to negotiate with others, to get along with difficult people while still putting work out; the capacity to organise priorities, to deal with competing priorities and to prioritise them in ways that will get everything done, the ability to relate to people up and down the hierarchy (Barry, academic).
Conflict management:

*Dealing with difficult situations where they maybe don’t know what they’re doing and how do they approach that in terms of having a go first or asking their manager, the coping mechanisms (Scott, alumni).*

### 4.3.4 Career planning and direction

A number of academics and students saw the Co-op experience year as an opportunity to test career choices in the IT industry:

*This experience has shown me that I don’t want to be in a technical role, I want to go another path of business or something else (Rick, student).*

*Co-op allows you to make a 12 month mistake in the wrong direction and come back with still more study to complete, more chances to learn the things you now know you’ll need if you want to go off in the direction you now know is a better direction (Dave, academic).*

All the students saw the inclusion of a 12 month work placement experience as increasing their employability chances on graduation by placing them in more competitive position for getting a good job:

*I know in the IT industry, when you go for a job, they look at your experience where you previously worked…. (Co-op) just a building block, a stepping stone towards benefiting my career (Rae, student).*

*It’s (Co-op experience) good to have on the resume, it helps with graduate employment. And it gives you that bit of edge (Suri, alumni).*

One alumni student added one of the key benefits of Co-op was in having something to talk about at job interviews:

*Employers are, in my view, very interested in students’ work experience because they want to be employing someone who can work as opposed to just a person who has studied. If you just study, you’re going to go in there and talk about your academic qualification, that’s not always enough … gave me something to talk about (Scott).*

### 4.3.5 Business Value

University and industry responses also highlighted the value of Co-op in business terms. The University sees Co-op and other work integrated learning activities as
reinforcing its branding as the “working man’s college”. Most of the academics and some students made this point:

*RMIT has got that as a reputation anyway … that we’re an industry oriented work focused academic institution. Students see the Co-op year as being a very attractive part of our degree program because they get some aid in a real experience with the potential careers that they might be looking at after they graduate. So we can use the fact of Co-op being part of our programs as a marketing tool* (Dave, academic).

Being involved in Co-op programs also adds to the profile of organisations as indicated in the following comment:

*These are students and they’re coming to work for us and it’s putting back into the community. So it’s got quite a good profile at ABC Company … We want to promote ourselves as an employer of choice. And not only that, but be seen by the community as an employer that provides opportunities for people. So even if people don’t come and work with us, the whole reputation doesn’t hurt* (Laura, HR manager).

A senior University academic saw Co-op having the potential to promote the University’s strategic aims:

*Industry engagement in this university is one of our highest priorities. The Co-op year has enormous potential in that regard if we exploit it … students in the workplace, they can become a kind of scouting party for research and development opportunity in industry* (Barry).

A number of academics commented on the potential value of building relationships with Co-op employers for research and maintaining currency of their courses:

*The school should be finding some way to make industry engagement just a normal part of the lifestyle of every academic in the organisation. And it’s just a sensible thing to do because you can get research data from industry, you can find out what’s going in your individual subject area from industry* (Dave).

Most of the employers saw the value of Co-op as part of their company’s recruitment process.
Students who perform well are offered continuing employment at the end of their placement:

*One of the main reasons now is that we’re starting to employ some of our IBL students, so they’re looking at potential future employees (Laura, HR Manager).*

*If you’ve got a good student and they’re good at what they do, you hang onto them (Shirley, HR Manager).*

In general co-op programs have the potential to benefit all participants. However what is of value to one stakeholder may not be considered of value to another. For example where an academic sees the application of IT skills as an essential part of a co-op job, industry people place higher importance on a student’s ability to pick up new ideas and to work with people to get a job done with minimum disruption.

What is valued in Co-op depends upon implicit assumptions of what knowledge is worthwhile. The interview data was able to ‘surface’ some of the assumptions, which are evidenced and analysed next.

### 4.4 Worthwhile knowledge

All the stakeholders agreed there was a great deal of worthwhile knowledge to be gained from working within the Co-op placement. There was however differences of opinion as to which knowledge areas were considered the most worthwhile. Most academics saw the work placement as the opportunity for students to apply their university-learnt IT skills and build on their existing knowledge base. However further into the interviews they acknowledged IT skills were not enough and socio-personal skills required consideration. Students and alumni placed most value on the knowledge and skills development that helped them to fit quickly into the workplace. Industry respondents expected students to have a set of IT and socio-personal skills and knowledge and felt the practical “know how” and skills students gained in situ of greatest value.

#### 4.4.1 IT knowledge and skills

While all the stakeholders interviewed considered generalist IT knowledge necessary, it was apparent that individuals held different views as to how knowledge is created. The academics placed great store on front-loading students
with a solid foundation of IT knowledge and basic skills they could then draw on during their Co-op year:

It’s better to have that (IT knowledge) upfront because then everything else builds on that (Nick, academic).

Further analysis of academics’ responses also found different perceptions on how knowledge is built. Nick saw knowledge as a series of building blocks, one block building on to another:

I’m really just talking about the basic conceptual building blocks that IT is about, which we really teach them first year...the basic concepts that never change.

Another academic saw knowledge as a series of inter-linked business and computer systems:

They need to understand systems... Meaning how systems work, how businesses operate, the nuts and bolts of how business works. How do you program, I think they need to understand how computers work, and...how networks operate. So it’s basically systems, it’s the applications development, the infrastructure upon which these applications live; they’re the key things (Vlad).

Yet another academic spoke of knowledge involved in solving problems (with technology) for people located in an organisational context:

We teach technology as a solution for business problems...the students see things like politics in organisations and organisational structure and organisational architecture as being as significant to the solution of a problem, using technology as the technology itself (Dave).

Students saw knowledge as worthwhile in terms of being “useful”. Previously learnt IT skills and knowledge are elevated as having some value when used to complete tasks in the work context:

It’s not until you start working and you’re in an office and people are using the words around you that it triggers and it all makes sense. And you start using it in the real world and you realise it’s not just something you had to remember when you answered it on an exam paper. I can’t put a value on it, that kind of knowledge (Rae, student).

Of value to students was the new IT knowledge and skills acquired through working:
I’ve learned how to debug a lot better, that’s probably one of the main things I didn’t get exposed to enough at uni (George, student).

Employers acknowledged the IT skills and knowledge gained at the University gave students a good foundation for work however, it is not sufficient. Additional IT training and practice was usually required for students to be able to do their jobs:

Even somebody that comes to us with technical skills in the programming languages we use will take a year to come up to speed with our application ...there’s still a large learning curve required before we see them as contributors to the business (Mike).

The development of IT knowledge and skills during the placement is dependent on the job the student takes on. Some jobs are more technically focused, drawing on a specific knowledge base:

[Knowledge gained is] highly depending on what role they had in Co-op. Some are developers and spend the whole time doing that, some of the others are doing networking and do more programming and analysis (Nick, academic).

Most of the respondents commented, or acknowledged, that knowing how to communicate and work with people was essential

I think what this all comes down to is not the hard skills, it’s not the technical stuff, it’s the soft skills, people skills, communication (Scott, alumni).

4.4.2 Socio-personal knowledge

As most of the work placement jobs in this degree require students to work in client-facing roles, excellent interpersonal communication skills are considered essential by individuals in industry and the IT profession:

That’s my general main beef. I see some really clever people, technically brilliant people but they don’t know how to put together some basic written communication in what I would call an acceptable form that could be put in front of a customer (Harry, IT Profession representative).

Academic respondents spoke of the knowledge of soft skills best being developed through immersion in the work context:

What we do in the classroom environment is not effective as what it is in Co-op, so where they really learn to be part of a team and to talk to the boss and
all the things that are really important communication skills, they really learn them in their Co-op (Dave).

He added that there is a general lack of understanding among academics as to how soft skills are developed: “nobody knows what it is”. There are attempts to explicitly teach the theory behind communication and teamwork that fall short of application:

And they may have some theory about roles but they don’t try to transfer that theory into any sort of meaningful practice (Dave).

Students spoke of soft skills as the means by which one fitted into a workplace. Most talked of being keen to adjust to the work context in terms of appropriate behaviour, language and work practices.

You need to really get on with other employees. I think that’s one of the main skills...you need to be more sensitive to the people around you. Everyone’s got a different personality so you just learn how to communicate with people. I think maybe that’s something you can’t learn by studying at university, that’s something you learn by being part of different clubs ... talking to other people (George, student).

Alumni spoke retrospectively of the value of a number of university courses focused on the team and communication development that seemed trivial at the time:

To me organisational behaviour is a really important part of business life, but kids at uni don’t pay attention to it, they think it’s a wank, and it’s not a wank. It’s very important to understand the dynamics between people and the way that people work with each other (Pete, manager & alumni).

All agreed the workplace provided a forum to develop a student’s interpersonal skills and personal attributes. However soft skills are not developed in isolation but honed in the context of doing and completing tasks to deadlines and budgets within a practical situation.

4.4.3 Practical knowledge

In general stakeholder groups differed in how they thought practical knowledge (“know how”) was developed. In general academics spoke of practical knowledge in terms of getting a job done; students as knowing what to do; while alumni and
employers spoke of practical knowledge as having the “know how” to read a situation and respond appropriately

Most academics saw developing practical knowledge as transferring, using or adjusting existing knowledge and skills to the job at hand:

[It is] the ability to understand how to apply familiar skills in unfamiliar circumstances, which often requires some degree of adjusting those skills, some adjustments to what we’ve learnt from our books (Barry, University management).

Students spoke of knowing what to do to meet expectations:

I can see the kind of standard he expects, like the standard he expected from me at the beginning is not the standard he expects from me now (George).

And of needing to know how they measure up:

Whenever I meet with my manager, I’m always asking for feedback. So if I’m doing something wrong, I want to know about it. So in that sense, I feel like I’m doing a good job (Rae).

Industry spoke of practical “know how” as knowing how to deal with and adapting to each different situation. Knowing how to get the job done means developing an awareness that tasks are more complex than those presented in the classroom. Tasks are inter-related and subsets of other tasks. One employer spoke of the importance of seeing tasks within its context:

An overall awareness that it’s not down at task level but above…the task has got related activities…may be part of sub-projects within projects. Different projects fit within programs…big picture view (Charles).

He added that the volatile nature of the workplace increased the complexity of tasks:

[Going] from [a] learning institution to a working environment, the tasks are more complicated not that they are harder because more people are involved. In the learning environment you have a task to do, a problem to do. You work singularly or in teams and by and large the goal posts don’t move. The work environment is not black and white, budgets are cut. Times change. Parameters change. People change. Projects go longer.
Knowing how to handle such complexity using time and people management skills was mentioned by all students and industry respondents. It consists, for example in:

...the capacity to organise priorities, to deal with competing priorities and to prioritise them in ways that will get everything done (Mike).

Most employers and alumni spoke of students having to develop “street smarts”, being able to “read” a situation and behave and act accordingly. They should:

...sit face to face with the end users and listen to their issues and indeed their objections and to be able to handle those and guide people down the right paths, and indeed to be able to say no to people (Mike, employer).

It was considered important that they be able to manage stressful situations:

How you actually survive in the political in the workplace, how you actually handle the stress and the political war kind of thing, political conflict, personal conflict. That’s some experience that you will never learn off the book (Henry, international alumni).

And have suitable mechanisms to cope with difficult situations:

Where they maybe don’t know what they’re doing [by either] having a go first or asking their manager, the coping mechanism (Scott, alumni).

However there is much that is unfamiliar and new. Knowing how and where to find the necessary resources to find answers to questions was considered by all to be essential.

Some students drew on material from past university courses:

I use a lot of my text books and my lecture notes, especially with programming because the notes were quite extensive which was really helpful (Rae, student)

Own personal independent research:

Google is fantastic, Google is everyone’s best friend (Rae, student).

Doing the tasks:

I’m probably just not a studious sort of person and I find things out for myself, so I learn from my experience rather than going and learning from a book (Pete, alumni).
Learning from mistakes:

You can make a mistake and you seek instruction as to how not to do it again, but if you make the same mistake again after having had that instruction, then management have a perception that you don’t get it, and that is a very difficult perception, it’s a very difficult thing to turn around (Scott, alumni).

Learning from others:

I ask my manager for any hints, people around me, you wouldn’t believe the amount of knowledge my work colleagues have, so they will know everything and anything and even things you wouldn’t think they know, they know. So you just ask questions (Rae, student).

Student and alumni spoke of knowing more about themselves as a consequence of their work placement experience. This topic is discussed further in the following sub-section.

What knowledge is considered most worthwhile to the respondents appears to be dependent on their role (academic, worker, learner), previous work experiences (stage in professional development), background (educational, cultural, family) and personality. The organisational context and culture also plays a part.

What knowledge the student takes from the co-op experience will differ:

Some of them may have worked doing networking and never actually seen the business angle of anything, and others may have had a lot of experience with business but nothing technical. They do get some kind of context to put things into but that context is widely varied. ... For an ideal scenario, yes it works but not everything is ideal and not everything is the same and the experience is very different (Nick, academic).

Students’ learning experiences from the co-op year vary and are unique. But what sense of one’s own learning is there? And of others’ learning? Evidence of perceptions of changes is discussed in the next sub-section.

4.5 Agency and workplace learning

All stakeholders observed evidence of change in students across the placement year. However some students changed more than others:
It’s more the amount of change in some of the students that is really noticeable but it’s not so much that everybody changes but there are some students that drastically change (Nick, academic).

The first few months in the new workplace setting sees students reconstructing their view of the world of work, making adjustments to fit in and to being accepted as an employee of the company. As they become familiar with their job and their environment, their confidence grows and with it their social interactions with others. With job recognition, increased responsibilities and freedom to make decisions come the signs of self-determination and a reassessment of their professional selves and personal goals. The study also found evidence of the impact students had not only on their workplace colleagues and clients, but also on University staff and other students, during and after their placements.

4.5.1 “Feeling the heat” - reconstructing perceptions of the world of work

All the students spoke of the first few months of their work placement as a time of major adjustment from the classroom context.

I guess you’ve just got to get a feel for the company, just settle in… I remember the first few days there, I was a little bit more quiet than I normally am, just trying to get a feel for everyone, see sort of where you fit and how everyone dresses actually (George, student).

Having to follow the routine of getting to work by a certain time suitably dressed was one of their biggest challenges:

I guess one of the major things that you notice between uni and working is that you’ve got routine, whereas university there is no routine and you’re by yourself and if you want to study then you study, if you don’t then you don’t. If you follow the course, then no one really cares (George, student)

Students soon found there were expectations of their performance. Sometimes these expectations were articulated in induction programs. However, induction programs for new employees varied across organisations with most students commenting that the organisation’s rules and norms were mostly picked up through observations:

You just pick that up slowly as you get to learn how everyone goes about their life (George, student).

Carrying out everyday activities:
I’ve stayed back often. He’s never said that you have to stay back but...a lot of things have just got to do with...what...he will expect from me. I could have left at 5 o’clock all those other days but I guess it doesn’t build my reputation (George, student).

Watching others:

I have to smile (Henry, international alumni).

Performance measures:

We’re expected to respond within a certain amount of time, and depending on how quickly and how well we respond to that, that’s actually measured (Rae, student).

A couple of students who had worked before observed the diversity of cultures between organisations and having to adjust accordingly:

Where I used to work was very informal and we used to wear jeans every day, I used to get my hands dirty, whereas here you deal with staff who are business oriented. And it’s not as technical with what I used to do (Rae).

Students quickly discovered the importance of having to work with others and learning to communicate sensitively:

You need to really get on with other employees. You need to be more sensitive to the people around you. At this company, everyone’s got a different sort of personality so you just learn how to communicate with people. I think maybe that’s something you can’t learn by studying at university (George, student).

And appropriately:

Even though it’s a small organisation, there’s still different levels. You have your boss and you have the other employees...you’ve just got to learn how to speak to people, and you speak to your boss in a different way than you would with another programmer at the same sort of level as you (George, student).

In the majority of cases academics found final year students were better able to contextualise the teaching content which enriches their learning:

they [the students] actually understand the context of what you’re teaching them ...which means we can do quite a bit more advanced things than we could have if they didn’t do the Co-op year (Dillon, academic).
With the reconstruction of their view of the world of work so too did the students’ perceptions of how they fitted into it. The next sub-section presents evidence that shows progressive changes in the student across the period of the placement.

4.5.2 Emergence of Autonomy

There was evidence supporting changes in most students across their placement year through a number of overlapping stages of assimilation, job performance and efficacy. Within each of these stages students develop both technical and non-technical skills, greater confidence in their abilities to do the job and increasing independence in decision making.

Employers saw evidence of technical skills development:

*Certainly their technical skills develop, that’s a necessary requirement*  
(Mike, employer).

Students spoke of their increasing confidence in terms of their technical skills. One alumnus who stayed on with the company reflected on the development of her technical expertise:

*I’m the only web developer (in the company) and now I can set up everything for the website and manage the server. It’s totally different [at work] now* (Lisa, alumni student).

Students also became aware of rising expectations in terms of their job performance:

*I can see the kind of standard he expects, like the standard he expected from me at the beginning is not the standard he expects from me now, because he knows I’ve done a few things more than once so he would… I’m sure he expects me by now to remember and not to make the same mistake again* (George, student).

As students became more confident in the performance of their job, all the employers observed students’ becoming more communicative and social:

*So you see them starting to mature socially, and that probably comes from also gaining confidence with the workplace they’re in and the technology they’re now learning that they feel perhaps on par to be able to have those conversations ….They generally all seem to be very quiet people and studious … and for the first month or so they’ll sit there and they won’t say*
boo to anybody and then you’ll see them in the lunch room one day and they’ll start to talk to somebody (Mike, employer).

A number of students saw signs they were fitting in and becoming valued members of the organisation, through increased responsibilities in their job:

My main task is to sort of manage the support and queries of end users across about 10 regions across Australia. So I’m sort of first level of support (Rick, student).

Being sent on training courses

They send their employees there (Chicago) for training. Usually they don’t send Co-ops but they sent me (Alex, alumni).

Student competency was measured with their reduced need for guidance:

[And being] able to handle most issues without having to seek guidance from others in the organisation (Mike, employer).

This gave rise to being given more freedom to make their own decisions:

I was a bit more free to make your own decisions (Rick, student).

And more challenging tasks:

And they believe in me, so I believe in myself and I just do the best that I can do, and if there’s something that I can learn from that and taking from the feedback (Rae, student).

One University staff member who visits students three times across the work placement year evidenced students’ growing confidence in their responses to questions:

Certainly the self-confidence of some of the students and their responses to questioning as well as talking about what they’ve been doing (Howard).

And dealing with higher levels of management and clients:

I can work at that high level and actually talk with management and clients and things like that, which I enjoy doing (Scott, alumni).

All the academics interviewed commented on changes in the majority of students returning from work placements. One academic noted that students showed a greater understanding of how to implement solutions:

The students that have been working as programmers or developers in Co-op are highly useful in the capstone group because they can do the actual
implementation, and there’s no way that what we teach them in 2 or 3 subjects gives them...anywhere near the same experience as working at it for 12 months full time would (Nick).

Showing greater independence in approaching tasks:

Actually, that’s one thing I do find with some of the students after their final year... they are more independent in going and finding things out...the students basically have gone and said they have this problem...and they found ways around...So some of them are used to finding things out from the internet and seeking a solution where there isn’t one (Nick).

Better organisational skills:

They’re sort of more responsible to get things done and on time (Nick, academic).

A more proactive attitude:

The other thing about Co-ops is that they know have to go out and dig for themselves, they don’t get it on a plate. And that’s the other thing that separates the ones that haven’t done Co-op and ones that have, they know how to learn (Vlad, academic).

One of the best capstone teams I’ve seen were aggressively managing client expectations and requirements right from day 1 as a project. They were a very good team and ....even though they were very good students, they still wouldn’t have been doing that, that was [Co-op] experience (Nick).

And maturity:

It’s [the Co-op experience] matured them, I think that’s the first impact and I think part of the elements of being mature in a student have been ones of discipline, ones of self-direction, ones of grooming, ones of responsibility (Vlad, academic).

One academic succinctly summaries the impact of Co-op on the students:

The fantastic thing really [about Co-op experience] is the kids find themselves during Co-op (Dave)

The relationship of ‘finding’ to ‘selfhood’ is explained in the next sub-section.
4.5.3 **Reflexivity - reconstructing self**

The students and alumni interviewed spoke of how the Co-op experience changed their sense of self. Most of the alumni comments were couched in terms of reflections on how they had changed personally and professionally:

> I became less of a uni student, more of an aspiring professional in my personal nature, and so a personality change (Scott, alumni).

Sense of selves in their work:

> Peter’s [the supervisor] work ethic is not the same as my work ethic. Peter’s was head down, don’t talk to me, I’m getting this done. I come up for air but it will get done at the end of the day (Rick, student).

And the impact of the Co-op experience on their career direction

> From my previous work experience at RMIT I felt that I wasn’t happy being technical because I didn’t have technical grounding. So from that background I knew that I wanted to be more working with people, working with the high level rather than the very low level. And I had the confidence that I could from the Co-op year as well (Scott, alumni).

> ...when I graduate then I know my direction, and for me I know I’m good in web development and then I can specify on this IT job for future work development instead of JAVA, instead of network... I know my direction is good (Lisa, international alumni).

Student responses also showed heightened awareness of changes in their career direction:

> ...This experience has shown me that I don’t want to be in a technical role, I want to go another path of business or something else more .... So without this [co-op experience] I would have probably gone down a path which I would have later regretted (Rick, student).

And their increased employability:

> My skill set has definitely expanded, so in terms of that I’m sure that my employability is probably a bit more appealing...Not only have I studied programming subjects but I’ve also experienced in the workforce. (Rae, student)

Some of the student and alumni comments also demonstrated their Co-op experiences went beyond professional development to their attitude to work:
I’m up at 6:30. Come to work and you do your thing. I’ve started working out since I’ve been here and I just feel a lot healthier and more energetic.  
(Rick, student).

And their outlook on life:

...in the way I think I also changed. Not thinking like myself as the first or the top, start thinking mmmm probably there’s other thing have to start planning, how you actually manage in money kind of thing, start thinking try not to depend on the parent’s money anymore, the pocket money anymore kind of thing (Henry, international alumni).

One of the university staff members who visited the students three times across the period of the placement also observed a change in the students’ outlook on life:

They [the students] got experience in working in a business, large or small, where they mixed with people and they mixed with clients and they mixed with customers, and generally broadened their outlook on life and perhaps revised their expectations about what work was going to give them, what they have to do to get it (Howard, academic).

Many student responses reflected an increased appreciation of previous University studies:

I thought wow this is exactly what we were learning about (Rae).

Making connections with course content:

After you study a subject, you go on holidays; you do the exam and forget all about it. It’s not until you start working and you’re in an office and people are using the words around you that it triggers and it all makes sense. And you start using it in the real world and you realise it’s not just something you had to remember when you answered it on an exam paper. I can’t put a value on it, that kind of knowledge (Rae).

Some students spoke of looking forward to their final year at Uni

Well with the Professional Practice course for example will be more meaningful to me now that I’ve done Co-op ... because I can relate to it (Rick).

I think it’s going to be really good when we go back now because now that we’ve been working in the industry... we know what the industry is like, so when we go back to that final year, we know what things are going to
benefit us and what things we should be paying attention to, so we know what to get out of (Rae).

With expectations in terms of course content:

Up until last year it was all the general stuff, like you get a big taste of all the different aspects of IT and business, now I’m hoping that the final year will help us towards determining what specific areas we might feel capable to take on as our specialty (Rae).

And further personal and professional growth

After working in industry you want to know how you can grow rather than stay at that same level (Rae).

Academics spoke of students returning from Co-op as more enthusiastic learners:

I was surprised at how positive students were. I thought there was a significantly higher level of enthusiasm from the Co-op students than from the second year students that I’ve been teaching (Dillion, academic).

Striving for better grades

Pretty much in the main those that have come back from Co-op always strive for the high distinction levels. The ones that haven’t done the Co-op, they always strive for the pass level, and that’s really quite interesting, they’re minimalists (Vlad, academic).

The quality of their work is there and they go the extra mile (Dillion, academic).

Academics also found students coming back from work placements needed less course structure and guidance than those without the work experience.

We use less structure (in project work), considerably less structure than the course at Monash and you can get away with it because the students ... used to having to do things without over the shoulder guidance (Dillion).

Students also felt that they had some impacted on their colleagues and the work environment in the quantity and quality of their interactions across time

I think I’ve got some good ideas. And I’ve put forth proposals to Laurie in terms of improving the ways we do things, and some have been taken on (Rick, student).

Across the work placement it is apparent that students evolve from observers to workers to individuals within their workplace setting. Accordingly, the following
sub-section investigates the impact of the student on the people, relationships, tasks and environments they interacted with during and after their placements.

4.5.4 Efficacy – value to others

There were comments from each of the stakeholder groups on the positive impact of work placements on various individuals and on their respective organisations. Employers spoke of the positive impact students had on peers and clients. Students bring new IT knowledge and fresh new ways of looking at issues and problems that added value to the work group performance:

[The students are] very dynamic and probably even a little bit more technically literate than some of the consultants who are quite a bit older, and in some cases they might be 2 or 3 decades older (Mike, employer).

One alumnus spoke of having to teach the staff about the latest technology:

I was giving presentations to Real Estate agents about what the internet was and how they could use it in their business (Scott, alumni)

Students came with a thirst for learning that motivated the staff and an enthusiasm that energised colleagues:

...having people that are fresh and new and excited and eager to learn. That rubs off. Certainly you put a person like that into a team and it can be infectious (Mike, employer).

Some of the employers commented on how quickly students picked up the requirements of the job and its demands. One employer commented on finding students directly from university better learners and quick to put these learnings into practice

They seem to be very quick on the uptake, so even the new technologies they learn them very quickly as well as current knowledge of new technologies. But generally they seem to be very bright people, and to take on an old... what’s the saying, the old dog, you can’t teach them new tricks, there’s some truth in that. The younger Co-op people are... probably because they’ve been used to the process of learning, so open to the process of learning so they do seem to learn our requirements quite easily (Mike, employer).

Some students were found to be contributing to the business within their first few months:
I just have a simple belief that it’s a year before people start contributing, so more often than not I am pleasantly surprised when we see people like Lauren and Diana actually contributing to the business in the first few months of being here (Mike, employer).

One employer also spoke of the commercial benefits of Co-op students to his business:

[They] want to prove that they’re worthwhile, so they actually put in overtime, they put in extra effort, they learn really quickly, and being a bit younger they’re able to do that, so they’ve got stamina, they’ve got more of a sponge, they learn things quicker. So these young people can make a really big difference to a project, and besides that there’s a commercial benefit as well which is that they’re cheap (Pete, employer).

Another employer commented on the positive impacts of students on their clients:

Well Lauren’s only been here since the start of December and we’ve already got some customers ringing up and asking for Lauren when they call, which is a fabulous thing, because usually customers don’t want to talk to new people, they want the ones who know everything. So it’s started to happen in the last week or so with Lara (Mike, employer).

Most workplace supervisors spoke with pride of the achievements of the students in their charge and implicitly of their influence in the students’ personal and professional development:

...turned him (the particular student) into a business analyst (Charles, employer)

Most employers’ comments also reflected their own increased satisfaction in seeing the student “coming out of their shell”:

[I]t’s quite a joy to watch them. ... It is fun to watch them start to open up with other staff (Mike, employer).

Alumni interviewed were forthcoming in their comments regarding the positive impact they had made in their respective organisations during the Co-op year.

All the interviews with academics highlighted changes to course content, delivery and support to accommodate the student returning from their work placements.
Academics found students coming back after Co-op had a better sense of the “big picture” of the world of work and were better able to contextualise problems:

“They’re more realistic about how the world works and how business works (Dillion, academic).

And better able to understand high-level ideas and conceptual concepts:

And when a student has done Co-op, the teaching then is almost more reflective. So what I have them do is I say well, as we know in business these are key prerogatives, now look at how we deal with some of these issues. So it’s a lot more advanced. For a student who hasn’t done Co-op, has absolutely no idea what I’m talking about and they’re really in difficulty and they just simply don’t understand the application of that theory, they see the theory but they can’t see the application because they have no experience of business (Vlad, academic).

With the students having an understanding of how business works, classroom discussions and activities were richer:

The way they question and interact is there (Vlad).

One academic commented on finding these students forthcoming in discussions with academics and peers:

They’re happy to talk about it, you don’t have to force them to talk about it much, whereas at the second year level sometimes it’s like pulling teeth (Dillion).

One academic commented on adapting assessment requirements to be more challenging for students returning from the work placement year:

I structure my assessment in a way where students have very clear and ambitious goals that they can reach for (Vlad, academic).

A couple of academics noted that when they were involved in site visits, the feedback they received from the employers helped them keep their courses up-to-date and highlight areas requiring further research:

Co-op business should be done by people who are teaching the program. What we guess and what we know from our visits to whatever, and talking to students who become sort of friends or acquaintances, what we guess is needed in industry (Dave, academic).
One academic commented on his involvement with a number of students throughout their time at University that nurtures long term relationships where the student keeps coming back to the University:

But I’ve been around for long enough that I’ve had a student who I’ve taught in second year, a student that I’ve been on co-op visits with, a student that I’ve taught in final year, a student who I’ve had lunches or what with after they’ve graduated, a student that has come back and done part time work for me as a sessional tutor, the same person keeps coming back again and again and again. So you keep talking about one of them, but our students that have come and worked for me as a sessional had a child, come back to me and worked with me as a sessional, another child (Dave, academic).

Most of the stakeholders commented on the change in students due to the placement experience. However, one academic noted that there were times he had seen little change in some students returning from Co-op:

Some of them manage to get through the year mostly unscathed but...
They’re the small minority, quite the small minority (Dillion, academic).

Why some students change more than others is investigated in the next subsection. Are there conditions and support structures that are more likely to promote a Co-op experience that enriches all those involved?

4.6 Promoting workplace learning

A number of factors emerged from the transcripts that impact on workplace learning: the organisation’s context, the nature of the job and meaningfulness of tasks assigned the quality of supervision, and the relationships between and among all the stakeholders involved.

4.6.1 Supportive organisational practices and culture

It was generally felt that organisations that promoted a culture of personal and professional development within their own organisations were the best candidates for taking on Co-op students. It was generally found the organisations that employ human resource (HR) personnel have an interest in staff development. One large organisation has a dedicated full-time human resource person managing its work placement program from job identification and recruitment, induction through to on-going monitoring of the student’s
performance. Organisations with HR personnel tended to be better prepared for taking on students for placements:

_They were prepared for me, they had a development plan ready for me, there was everything set up, like training (Rae, student)._ 

It was found that induction programs varied across represented organisations in content and delivery; who was involved; and across what period of time induction was delivered. Formal induction programs generally covered the structure, practices and policies of the organisation:

_We run a day of induction when they start to familiarise themselves with XXXX [the company] and the particular division that they’re working in...and run through the general policies and procedures in terms of their employment and who they speak to if they need help and what to expect (Laura, HR)._ 

In some cases induction consisted of a tour and a chat:

_I welcome the person on the first morning and show them through the office, tea/coffee all of those good things, where the bathroom is, but also does the general layout of the office and so forth. Then talk them/walk them through tax file, the mandatory paperwork...make sure that they know when is pay day, you’re too afraid to ask...and then they hand it over to the section to do the workplace induction (Sharon, HR)._ 

Or time with a previously employed work placement student

_There was a previous IBL [industry-based learning] student [who] basically had everything ready to hand over (Rae, student)._ 

Or mentor:

_...new people we assign a mentor to bring them up to speed. After they’ve been here for a while that tends just to diminish and people just talk to each other and we like to have a culture where people can talk to each other and ask other questions (Mike, employer)._ 

Over the course of the first few months one organisation organised a program of site visits to familiarise the students with the whole organisations operations

_We also put them on site visits throughout the year around XXXX [the company] to see operational areas, send them down to the Dandenong ... and have a look at ...logistics and our customer care centres, so all different facets of the business so that they can get a grasp of that the world that is_
not just their little IT world and how IT is used, how what they do makes an impact on our business operation (Laura, HR)

A number of organisations assign a buddy from within the organisation to help induct the student:

And then I got to buddy up with somebody and go out, and the first project was out at Telstra, there were 3 of us but 2 of us working together on ABAP, and I got to buddy up with someone and sort of have a mentor if you like and it sort of went from there (Pete, alumni).

Or a mentor outside of the work group the student can talk to:

They have to have some sort of mentoring/training, especially for that first 2 or 3 months. But they need someone to mentor the student through the whole year, not over the shoulder mentoring but someone they can go to and talk (Dillion, academic).

Student induction into the company’s IT environment may range from reading manuals to extensive training:

They had their own university called Sapient College and I did all the training programs that an SAP consultant needed to do in order to be qualified. So I flew up to Sydney, the whole graduate group went up to Sydney and we spent maybe a couple of weeks up there at their Sapient college as well (Pete, alumni).

Some organisations run separate induction programs for students as opposed to new employees:

There’s one for the students and there’s one for the staff (Alex, alumni).

However most employers saw the benefits of treating students the same as any new employee right from the start:

We treat Michael as another contractor starting for the first time … he has more freedom. Unless someone goes off the rails, it’s about accepting them as the role is going to be. That way there is more chance of them growing into it. If you type cast them in the role of a student, they will go into that mode... Michael is not seen as the newbie. I can’t tell the difference between how he is treated against the other team members (Charles, employer).
On alumni observed:

*I think it was a little bit of luck that they never had a Co-op student before so they just didn’t know what to do with me, they just put me through their induction program, I did all the training that a normal consultant would do* (Pete, alumni).

A couple of the students spoke with some pride of being treated like an equal:

*We are treated just like every other employee, not just a work experience student; we’re actually thrown into the deep end and we’re expected to contribute just like everyone else* (Rae, student).

*I’m sort of thrown in the deep end really... to sort of solve problems* (Rick, student).

Most employers spoke of the importance of placing the student in a supportive team:

*So I suggested I would take him, I immediately moved him to a different desk where he felt part of a team. From that moment, there was an enormous difference in his overall attitude but also in his throughput* (Shirley, HR).

A student spoke of appreciating the support:

*It was a bit stressful, but everyone here is pretty welcoming so it was good being the new kid on the block* (Rick, student).

One HR person also felt organisations should monitor the student’s development across the placement:

*Another thing is I have regular contact with the students, so we catch up every month for lunch, and if I’m wandering around the building I will impromptu calling by and seeing how they’re going. I also catch up with the managers informally and formally throughout the year* (Laura, HR).

She added that students need to be continually challenged:

*Whenever I catch up with them over lunches, it’s like what are you working on at the moment and are you enjoying that and is it challenging.*

The importance of meaningful, challenging tasks given to the students has brought up by all the stakeholders.
4.6.2 Meaningful jobs and challenging tasks

Both employers and students noted the importance the tasks allocated to students was of value to the organisation.

I feel like I’m doing a good job, I’m proud to be working for YYY [the company] and I’m proud to have the position that I do, I know it’s an important position.

Challenging and diverse:

So it’s [the job] always a challenge, it’s never the same (Rae, student).

Increasing in technical complexity over the Co-op year. One student spoke of becoming unhappy in his job:

You sort of see a lot of the same problems and that’s what I dislike about my job here because all I do is the same thing day in day out (Rick, student).

However this same student did acknowledge that the challenges in the job did not necessarily lie in the technical but in the non-technical:

I thought it was going to really challenge me in a technical sense but in fact it’s probably been the opposite. Had I probably been more challenged in terms of communication and like I said, getting to know the office environment and the workplace and all the different departments and the structure and hierarchy and all that, that’s probably been more the learning experience for me than the technical side (Rick, student).

However some academics and in turn the students, judged the Co-op jobs that provided less technical development as being inferior to those jobs that promoted soft skills development, verbalised by an alumni and an academic:

...mickey mouse jobs such as help desk not appropriate Co-op jobs (Vlad, academic).

Most employers argued that the development of soft skills was an essential aspect of the Co-op experience. However, in most cases students were unaware of the importance of such skills at the start of their placement year and had expectations of applying university-learnt IT skills and knowledge to the job.

Whatever the job or the organisational context, the most significant factor impacting directly on student learning revolved around the extent workplace supervisors were engaged and interested in the student’s development:
4.6.3 Engaged, qualified, responsible workplace supervisors

To maximise the learning and skills development students need a quality supervisor. Experienced supervisors have realistic expectations:

_No, I don’t have too many surprises. When they come on I have an expectation they actually have to learn the development environment we can operate in, that they do need to start to learn our applications and the way our customers use them. And I just have a simple belief that it’s a year before people start contributing_ (Mike, employer).

A number of employers were keen to plan the placement program around the students’ expectations:

...trying to work out in an informal sense what the benefit is that the role of the person [student] was going to play. How relevant it is to their degree (Charles, employer).

Another employer spoke of the importance of listening to what the student wanted to gain from the placement:

_We also need and do recognise that these people are trainees. We have a requirement to fulfil some outcomes they’re expecting. And while we all go into it with that outlook, it seems to work. We’re reasonably flexible. We try and accommodate people’s wants and needs, and as long as the company’s wants and needs_ (Mike, employer).

And encouraging them to work in areas that interest them:

_One area in particular encourages the student to seek out what they’re interested in and feed that back to the manager who will then say okay then well if you’re interested in that, let’s get you involved in_ (Laura, HR).

While a number of students looked to their supervisors to guide them and promote learning opportunities:

_He [the supervisor] just didn’t really understand that I’m here on Co-op and there’s more to learn than just technical side of things, there’s a lot of politics, communication skills and personal skills that you learn and pick up_ (Rick, student).

A number of desirable qualities were highlighted by all stakeholders during the interviews. A good supervisor should have empathy with their student and be able to gauge the student’s progress and development and adjust work plans accordingly to:
...work out what pace he could go at. Everyone’s got a different pace sometimes it can be a matter of confidence if they’re really lacking in confidence, they can be slower to develop. I’ve seen that happen as well (Charles, employer).

Provides appropriate advice, instruction and guidance:

In the beginning... to start off with, Roland was the one that gives me the assignments, the little jobs I do. In the beginning, he was very flexible with me (George, student).

You can make a mistake and you seek instruction as to how not to do it again, (Scott, alumni).

I’m sure he expects me by now to remember and not to make the same mistake again. However, even if I do, he just says what’s wrong here, instead of pointing the mistake at me, he goes through the module with me, already I can see what he’s pointing at and then I’ll go and correct it – something like that (George, student).

And gives regular feedback on performance

Just a small bit of feedback makes you feel good, like you’re work is actually worth something to the company (George, student).

Without regular feedback and performance reviews, some students floundered

I didn’t get any feedback which is very bad, I didn’t get any feedback that I did a good thing or a bad thing. There’s no negative or positive feedback which is kind of bad for a Co-op which is never worked before, as in someone who never worked before thinking oh okay, so have I not been doing the right thing (Suni, alumni).

And one student spoke of consequently becoming unmotivated:

But there’s no regular ongoing assessment. So it does make it hard...and motivationally it’s not the greatest politics (Rick, student).

Some of the students and academics felt supervisors should challenge their charges and drive them to higher levels:

Someone who can actually drive them, assist them, challenge them to think through some of their work (Barry, academic)

I just expect him to give me a little push in the right direction (George, student).

And given freedom talk and discuss new ideas:
Lots of communication between myself and Paul, who’s my new boss … Me and Paul are sort of a team, we sort of share ideas, we throw answers to questions back and forth, because he knows some things that I don’t and vice versa, so we act as a team. So if I don’t know something, the chances are he… we’ll try to work it out and if we can’t, we’ll go somewhere else (Rick, student).

The degree of supervision and direction needed by students will vary. One alumnus felt in his case he didn’t need a supervisor:

No [need for supervisor] … my nature was suited to being in such a chaotic environment… if they had somebody else who was more... had to be organised and things had to be structured like administrative sort of things, quite the opposite to me, then may not have worked out. I think your question generally depends on the specific personality of the student (Brad, alumni).

A number of employers commented on “unscrupulous employers” taking advantage of work placement students; and the importance of organisations being made responsible and more accountable to the student and the Co-op program:

So there needs to be sign off from a company that it does commit to honour… yes they pay less perhaps than the market rate. The student has to be managed properly and they need to take some more accountability for what they’re taking on (Shirley, employer).

She felt that their commitment should be re-addressed with each new student:

I think it needs to be every time a new student comes on; the company reaffirms its commitment.

Supervision of work placement students is often undervalued by their organisations. Supervisors either take on the role because their managers tell them to:

And generally it comes down to the manager’s discretion as to who spends time with that person.

Or because the students are assigned to the project the supervisor is working on. Students may therefore have a number of different supervisors over the course of their placement:

And it may change throughout the year as well, because as the IBL student learns more they’re often given different things to do, not taken from one extreme to the
other but they might learn certain modules and then they might work with someone else to learn some other ones.

One HR manager spoke of selecting supervisors who have the knowledge and experience and aptitude for passing on the knowledge:

They’re (supervisors) people who have worked there and they know what they’re doing and they’re able to pass that knowledge on (Laura, HR manager).

Time given to by organisations to supervision is sometimes not considered:

You have to understand that Peter [his supervisor] is very, very busy, we have a small department for 400 users (Rick, student).

One employer felt that supervisors and mentors should be vetted for their suitability by the university:

Need questions or plan that allows you to evaluate the desirability of the position, the skills experience of the mentor - have you mentored before, have you had supervision experience and 3 years experience (Charles).

He went on to add that he felt many organisations were not ready to supervise students on placement. He suggested a measure of the degree of understanding of the supervisor of his/her role was in whether workplans included social and technical:

Development of social skill part should not be underestimated. Sure technical skills are great. But that’s why I’d be looking for what you get out of the mentor and mentor’s managers as to what they put into that plan. This allows you to gauge the maturity of the organisation because you’ll be able to pick up what the job is technically but just as importantly whether going to help Fred and Fred’s going to help me.

This view was backed up Richard from the IT profession:

One of the other things I think is there is a very strong need for a more rigorous assessment of the employer and what they can offer and are going to offer, particularly when you’re looking for the student to get experience in their field.

Academics spoke of the value of good supervisors in glowing terms:

Our supervisors do an enormously wonderful job in bringing the students into the organisation. I think they’re saints.... They get something out of it, but only in the long term; they still have to invest that 3 months with a wet behind the ears kid (Dave, academic).
However, what part does the University play in preparing these supervisors? The perceived responsibilities of the University in providing support to Co-op programs are discussed next.

4.6.4 Committed & engaged university and academics

Universities need to be actively involved in Co-op programs said one senior academic:

*I think there needs to be a mentor in the workplace and I think the University has to be an active participant in the process. Now that I think is often lost on universities, to be really frank, I’m not saying this is true of us, but in some places there is a notion that we just dump the students for 12 months… now that’s not Co-op, that’s child minding* (Barry, University management).

However one alumnus was cynical about universities commitment to co-op programs:

*Universities often brag about working closely with industry and I don’t know that that happens in terms of Co-op* (Pete, alumni).

Recently the University introduced a Work Integrated Learning Policy across all the University that required all programs at RMIT contain a major component of WIL. A number of academics interviewed were cynical of the implementation of the Policy:

*It was a little bit like their Policy on using the internet to help deliver subject material. What does that mean? Stop doing the good stuff you’re doing … yeah. We’re cynical, old… lecture people* (Dave, academic).

One academic felt that the University saw co-op as a costly exercise:

*[The University’s] accountants look at the co-op year and see it as not being cost effective* (Vlad, academic).

There is a lack of funding allocation for the provision of staff and resources to provide the appropriate support required before and during the Co-op year:

*You cannot take an academic and overload them and say now you’re going to do this, it just doesn’t work* (Vlad, academic).

Also staff involved in industry engagement activities like co-op receive little or no recognition:
Industry engagement is the listed (University) objective but a key criteria for entry into RMIT academia and promotion is not that and some other thing that’s not stated, which is the research, and so there’s a disconnect from that (Vlad, academic).

A number of academics felt that university management had little understanding of the value of workplace learning possibility due to their own lack of industry experience:

I think some of the people who are in positions of leadership and authority have a very skewed view of how industry looks and works and operates, through simple lack of experience of industry and lack of engagement (Vlad, academic).

It was also noted there was a lack of employment of practitioners to the University positions and consequently relevance of courses to students declining:

The School was good in the past because people who were appointed knew something about the real world and so appointments have to be cognisant of that, you don’t appoint somebody because they’ve got 5 ARC grants because they’re useless, you appoint someone because they’ve worked in industry or they’ve got niche contacts or connections or things like that. And until that happens, things are going to keep going backwards.

He observed that the value placed on co-op started changing with RMIT’s move to becoming a university:

…so many people are just career academics, they move from uni to uni without understanding that some places actually have a brand and an ethos and a mindset, which RMIT used to have, and when you have so much change it flushes out your old memory and consequently, all the things that used to work just vaporise (Vlad, academic).

A couple of students commented on the expectation that academics could add value to textbook knowledge with their own experiences:

Anyone can pick up a textbook and read it, whereas our lecturers, we look to them for their knowledge, their experiences; we’d like to hear your stuff, it’s the only way that we can sort of make the connection to the outside (Rae).

One student felt that the University could have done more in preparing students prior to Co-op with better soft skills:

This course [university program] is more concentrated on technical skills and soft skills are less important … [courses] should include more presentations because
every time I get involved in the presentation, my heart rate goes up (Liddy, international student).

One employer who had supervised students for many years felt that universities should do more in marketing work placements to businesses as a highly desirable partnership:

...market it [Co-op] ... like trying to get into bar .wait outside ....queue up outside...make it an honour to get in (Charles).

He went on to suggest that universities should set standards for assessing an organisation’s suitability for supporting a Co-op student:

...shouldn’t assume environment will be right at customers side...hoping will work out...gauge the maturity if you like or keenness or desirability of the organisation [for supporting Co-op student] (Charles, employer).

Such measures will minimise situations where an employer takes advantage of the student’s naivety and inexperience:

...some employers...there was one particular student at the Chinese newspaper people, clearly were exploiting, and the student really didn’t get a solid experience out of what they were doing (Dillon, academic).

The University should prepare and induct the workplace supervisor as to what is expected of them said one employer:

Strongly recommend formalise it (expectations of supervisor's involvement)...role they are expected to complete. What is the ratio of learning to doing. Get immediate supervisor to actually think about the plan for that person (Charles, employer).

And what support is available from the University for them and the student:

...and everyone has to know what that structure is, especially the Co-op employer, that they know there’s a visit coming, this sort of thing, and here’s what’s going to happen during this visit (Vlad, academic).

Students need to be informed of occupational health and safety issues and their individual rights in the workplace

...knowing your rights as an employee – that’s something important. And that’s something I’m still in the dark about but I really think should be taught in university because it’s something that affects everyone (Rick, student).

One student felt the University should have provided more support to students:
As a student it can be a very daunting experience when you’re just thrown into this world of business you feel scared, you feel alone. It was pretty disappointing that we didn’t hear from any mentors until yesterday, thinking that would happen towards the start of the year (Rae, student).

In addition to its responsibility of duty of care to students on placements, there is much the University can do to promote learning during the Co-op year. The way assessment tasks are designed and structured can promote learning. Students spoke of a growing awareness of their own personal and professional qualities and their development. This self-discovery started during their preparation of their job applications prior to the Co-op year and continued with mandatory University requirement of maintaining a journal to record their observations and experiences while on the job:

The reflection paper was really good, I got a lot out of that because I reflected on my experience (over the Co-op year)…. I did get a lot out of that, because you look over what your expectations were, where you are now, the journey you’ve been on, and that was really rewarding to look back (Rae, student).

Encouraging discussions with other students on Co-op about their experiences:

Sharing experiences...asking everyone, so how’s that working there, what’s the bad thing there .... there was no monthly seminars then where all the Co-op students come together formally...You do it now which is very, very good, which is kind of help you to share the experiences (Sumi, alumni).

And providing opportunities to link theory and practice:

I’m fresh out of uni and there’s a lot of stuff that I don’t know, I just basically know the theory, and I expect there to be someone to close the gap between the theory and the practicality, and that could be the supervisor or somebody that works there, colleagues maybe (Raj, student).

Conversely practice can inform theory as one teaching academic observed:

RMIT has always been focussed on teaching, and where it did research, research was always applied, so it was driven by the needs of industry (Vlad, academic).

There is much that universities and workplaces can do to maximise the learning opportunities of students. There are benefits to be had for all stakeholders in focusing on the student’s professional and personal development during Co-op. However none of this is possible without a shared vision and collaborative partnership between all the stakeholders. The success of a Co-op placement
requires multiple support systems across and between the organisation and university as one student found:

\[\text{It’s a real good support network; you never feel like you’re alone (Rae, student)}.\]

### 4.7 Chapter Conclusions

The findings from this study re-enforce the belief that the workplace can provide a rich and powerful environment for professional skills development. This ‘case’ illustrates opportunities that enrich student learning and development in his/her chosen field of study; and also develops a sense of personal and professional identity. Knowledge gained in the workplace goes beyond textbook knowledge and skills to practical knowledge that reconstructs the students’ view of work, their interactions with people and themselves. Most students become more confident in their abilities, more socially mature and more independent thinkers.

The responses from the teaching academics indicate that students returning from their Co-op experiences were better learners, more independent, more communicative and more proactive. The evidence found conversations in class were richer and with the better understanding of organisational issues, students were more holistic in their thinking. It was found that some academics of the final year courses had re-designed to accommodate the students changed view of the world of work.

The findings indicated that the extent of preparation of both the students and of the workplace before the placement has a great impact on the richness of the workplace experiences and learnings. There was evidence to suggest that the value organisations place on Co-op is reflected in the supervision and support the student is given and the development of the student. Also the jobs needed to be meaningful and have some benefit to the organisation. Guidance, instruction, direction and support during Co-op maximise learning opportunities.

Responses from all the stakeholders of this sample indicated students learning (to varying degrees) their Co-op work placements. However there are differences of opinion across the interviewed sample as to who is responsible for the development of the student’s practical knowledge – the university or the workplace or the student. The findings from this study suggest that there is a middle ground where both the university and industry are equally responsible for
providing a platform or ‘safety net’ for the student to test their skills, their abilities, their career choices and develop new skills, abilities and identities.

In the next chapter the findings of the study are discussed with reference to the literature review completed in Chapter 2. The discussions will centre on the five themes emerging from the study: skilling the IT professional; the value of Co-op; worthwhile knowledge; agency and workplace learning; and promoting support structures for workplace learning. A model will be proposed that brings together the five themes to provide an interface between the academic and corporate worlds.
5 Discussion of Findings

5.1 Introduction

This chapter focuses on tensions, insights, surprises and “hunches” arising from the data analysis and discusses them with reference to my research literature across the fields of co-operative education, higher and vocational education, organisational studies, workplace learning and professional development. There appears to be an overall tendency in the research literature to treat topics such as co-op programs, employability, generic attributes, as unitary and to play down different views and interests of individuals across and within stakeholder groups. However, it is in acknowledging these very differences that understandings may occur and new insights emerge, as I will endeavour to show.

5.2 Skilling the IT Professional through Co-op

Unlike other sectors, ICT is continually leading and adjusting to technological developments. This change impacts on the demand for skills in the sector with some becoming obsolete while others grow rapidly (ICT Skills Snapshot, Multimedia Victoria, 2009, p. 7).

The ICT industry is in a constant state of flux with jobs morphing into different jobs and many disappearing altogether. Political, competitive and economic forces demand universities produce graduates with the capacities to adapt, to perform and to grow in this ever-changing, complex and uncertain environment. However both the literature and the study uncovered differences of opinion as to how best to prepare young people for employment and for life. Broadly speaking universities believe a solid foundation of formal knowledge and skills will provide their graduates with the necessary attributes to enter the workforce and society. Employers on the other hand find graduates lacking in the knowledge and skills necessary to work effectively (DEST, 2007). However talking to individuals within the stakeholder groups I found they were not so different in what they saw graduates needed. Each wanted graduates to be well prepared for life after university; to be able to quickly adapt, perform and innovate in whatever situation they found themselves in; to be quick and open to learning; and to have the capacities to continue learning, developing and growing. The employers assumed a foundation level of IT skills and knowledge but expected students to be
more self-aware of their strengths, weaknesses, values, attitudes, motivations, career directions and to have the ability to articulate these through past experiences. In general, the employers sample was interested in “the whole package” (including qualities, dispositions and values), and the students’ capacities to adapt and grow within their organisations.

The study highlighted, not only the differences in meanings individuals attached to various terms used in research, business and government literature such as employability, work-ready skills, generic attributes and professional skills, but the lack of use of these terms in practice. Employers, students and graduates did not talk of “generic skills” or “soft and hard skills” but spoke of specific abilities and capacities that were essential for adapting, working and growing in the working environment. The necessity of good oral and written communication, teamwork skills and an ability to learn and adapt quickly were common themes arising from the interview responses and supported research findings that good interpersonal skills were the catalyst for speeding up new employees’ survival, task performance (Te Waita, 2006) and identity development (Beckett, 2010, Barnett, 2006, Shakespeare et al. 2007) in the workplace.

However, embedding the development of generic skills or “wicked” competencies (Knight, 2007) within the university courses to generate better learning in the workplace (Hager, Holland et al. 2002), was generally not acknowledged by the academics interviewed. On-line courses, lunchtime workshops and once-off lectures with guest speakers were used to deliver the theory on communications and team building. Students were expected to develop these interpersonal and communication skills through their class and assignment work and activities outside the universities. What became evident in the study was the lack of understanding (across the stakeholder groups) of the nature of skills such as oral communications and team working and that they are best developed through doing a variety of tasks in different situations (Hager, Holland and Beckett, 2002), (Billett, 2008).

Hager and Holland (2006) and others promote active learning approaches for the development of these skills. Yet there was little evidence in the study of the use of such learning approaches’ use in classrooms. Government literature notes university staff lack expertise in teaching in such environments (DEST, 2007) and advocate educational institutions give greater priority to teaching and learning
development of their academic staff. However, Government funding prioritises university research endeavours and not teaching and learning. Consequently university reward structures and promotions are still linked to research output and not those of teaching and learning. Continued recruitment of research-focussed academics by the University reinforces this view. Professional development in teaching practices are not encouraged so many academics remain oblivious to better teaching methods.

Despite the research from industry (MMV, 2009) that the most sought after ICT skills in Victoria in 2008 were generic skills rather than specific skills, the study highlighted a great deal of discomfort and resistance from academics to incorporate the various generic skills into their courses. Most considered these skills as “soft” (as opposed to hard) and appear to support Whitehouse and Diamond’s (2006) observation of the stereotyping of male and female traits between hard skills of software architecture and design and soft skills of interpersonal relations and customer service. A point of note is that the majority of the staff teaching into this degree are male and have computer science degrees which could attribute to their preference of “techie” skills over social ones. However the program within the “case study” is not a computer science degree but a computing degree located within a Business College. Graduates of this program will generally not become hardware engineers or software designers, but business analysts and support people generally located in service-oriented, client-facing jobs. The development of non-IT skills and professional qualities is to a large extent ignored by the teaching academics and responsibility for its development relegated to organisations hosting the co-op placement. Industry personnel involved in the study agreed generic attributes and knowledge were developed on the job however asserted the University should accept some responsibility in their formation.

In the next section the value of co-op found in the study is discussed with reference to the research literature.

### 5.3 Value of co-operative education

The economic and vocational benefits of co-op are well documented (Abel and Love, 1988). Studies also evidence the impact of work placements in the development of students generic skills (Patrick and Crebert, 2004; DEST, 2007;
Knight, 2007), professional formation (Grosjean, 2004), professional expertise (Fenton-O’Creevy, 2007) identity development (Mann et al. 2008; Shakespeare et al. 2007; Bates et. al. 2007) and personal development (Ricks et al. 1993; Dressler and Keeling, 2004). My study found evidence to support each of these claims but identified differences in what aspects of co-op were considered of most value. Broadly speaking academics valued the development of IT knowledge and skills; workplace supervisors extolled students’ abilities to complete tasks efficiently, effectively and independently; professional conduct and practice was the mantra of the representative from the IT professional; students on the other hand, wanted to be valued employees in their immediate and long-term futures. These different agendas did not mean they did not value the other aspects of co-op. These value sets are not mutually exclusive and the learning associated with developing each value set is not the property of any one domain (educational institutions, workplaces, communities). Dewey’s idea of holistic, organic learning (and teaching) allows us to acknowledge and appreciate the various perspectives. Co-op offers opportunities for learning that are multiple and interconnected that contribute to developing a sense of self in a variety of social contexts. However, the research and industry-based literature highlights epistemological and ethical tensions at national, organisational and workgroup levels. I am one with Beckett (2010) who suggests these tensions are best resolved at local level with due recognition of contextual and individual sensitivities.

The value of co-op within university programs has long been contested. Many academics resent having to deliver what they perceive as demand-driven curricula and often see work placements as a necessary evil. The question arises as to where academics’ first allegiances lie – to their own educational institutions, to the industry for which they are preparing future employees, to society or to the current student (Bates, 2004).

Coll and Eames (2005) and others point to deficiencies in the research literature on the pedagogical issues surrounding what and how students learn in work placements. The Co-op year is a mandatory requirement of the BBBIS program. Academics involved support the inclusion of the co-op year; however they have very little understanding, knowledge or interest in the learning aspects of the work placements. Although course material covers knowledge about work and
workshops to develop the skills for work, there is little involvement by academic staff to provide authentic, contextualised learning experiences.

One observation I made from my interviews was that what individuals value is strongly influenced by organisational affordances, personal values and histories. Many academics interviewed saw University management support for WIL and placement programs as rhetoric and with management “not putting their money where their mouth is”. Weisz and Smith (2005) and others observed that universities do not support the staff involved with co-op, by training, professional development, support structures and pathways to promotion and rewards. Insufficient budget allocations see most placement programs employing administrators rather than academics to deliver placement programs. Consequently academics with legitimate promotional aspirations do not want to be directly involved in co-op programs.

With Bates (2004), I found workplace supervisors received little recognition, training and workload relief in their supervision of co-op students by their respective organisations. The fieldwork found supervisors take on students for different reasons, some are coerced, some volunteer, while some have a need for some tasks to be done. Many supervisors don’t know what is expected of them. There is some literature on the need for inducting employers and workplace supervisors (Eisenberg et al. 1996; Jones et al. 2008; Patrick et al. 2008; Henschke et al. 2010) with clear guidelines on their role and in how to promote student learning. However I found little evidence of the usage of such documents. The enactment of the roles within co-op is usually left up to the individuals involved. Personal histories, subjectivities, agency and personal factors (e.g. interests, motivations and goals) subsequently provide unique interpretations as to how these roles are to be performed.

What an individual values has consequences on the judgements and decisions they make and the actions they take. An individual’s values are influenced by individual histories, cultures, experiences and motivations (Billett, 2009). The study found that those academics with an IT employment background taught material that was skills-based, practical and contextualised as opposed to those with no similar work experience, who instead taught course content using the more traditional approaches. Where the academic had an educational qualification and teaching experience, there was evidence of the use of active
learning approaches (DEST, 2007; Hager and Holland, 2006) and assessment aligned with learning objectives (Biggs, 2003). Academics appeared to hold the implicit belief that once in the workplace, students would learn through observation and discovery. Richardson et al. (2009) in their study across a number of schools, found co-op staff had a “hands off” approach to work placements: “the student is there to gain workplace experience”. It was assumed workplace supervisors would provide the student with the necessary guidance and support required. This was found not to be the case, particularly with new workplace supervisors. On the other hand, the study found experienced workplace supervisors knew the potential value of work placements for the students, as evidenced through the time and effort given to the student’s induction, work allocation, feedback and support.

Spencer and McDonald (1998) in Bates (2004) observe that much of the literature talks about students as objects rather than active participants in the design of their workplace learning. However students are young adults who bring their experiences, assumptions, expectations and values to the university (Beckett, 2010) and into the co-op year (Billett, 2007). The study found students who had worked before viewed co-op with excitement and looked forward to the opportunities for further learning and career planning. However, students who had never worked were most anxious even before the start of their co-op year, and looked to academics for guidance. In the case of the BBBIS students, academic views were found to reflect in the expectations of many students who walked into their placement organisations expecting the campus-learnt IT skills were enough to get them through. As Te Waita (2006) also observed, they soon discovered the importance of good interpersonal and social skills in surviving the first few months of the new job, and in the ensuing months, to becoming accepted as a contributing member of the workgroup. Some students consequently became disenchanted with University learning.

Each co-op placement can be viewed as a human activity system (Checkland & Scholes, 1990) involving some purpose (developing IT skills, doing work, becoming employable) and actors (student, workplace supervisor, university staff member) carrying out activities (to achieve the system’s purpose). A systemic view of co-op placements begs the question as to who are the owners of the co-op placement. Both organisations and the University have a responsibility to their students for
their well-being. In most situations within the BBBIS, students are employed and paid by the placement organisation. Yet the co-op placement program is still part of a university degree. From an organisational perspective, the employer is responsible for the safety and well-being of the student at the workplace; while the university is responsible for meeting its obligations for promoting the learning of student during the co-op year. Government funding for WIL courses are provided on this basis (Patrick and Peach, 2007). At the local level, the guidelines as to who is responsible for what is not clear. There are various contractual documents used by universities and organisations outlining responsibilities to the student and to each other. More recently some universities have moved to include the student in taking on responsibility for his/her learning with the introduction of learning or work placement contracts (Zegwaard et. al. 2003). Students are asked to negotiate with their supervisors on the learning and/or work goals and to map out an action plan. There is an assumption students have the self-awareness, confidence, communication skills and the attributes to articulate their learning goals; and the that the workplace supervisor has the experience, interest and time to negotiate with the student. In some cases university supervisors or mentors are assigned to co-op students to facilitate the initial learning agreement. The university supervisor or mentor could be an academic, administrator or practitioner. Again there is an assumption that this person will have the understanding, necessary skills and interest to facilitate the process. There is also an assumption that all parties involved have the same views as to the purpose of co-op and what knowledge and skills are to be gained from it. The next section looks as whether all the stakeholders can agree on what knowledge and skills are worthwhile.

5.4 Worthwhile Knowledge

“A coded recipe ... only attains meaning in a human context” (Bates, 2004, p. 11).

The workplace context has the potential to develop a wide range of working, professional and personal knowledge. However to my question as to what knowledge gained through co-op they considered most worthwhile, responses across the stakeholder groups were varied. Broadly speaking teaching academics valued the acquisition and utilisation of IT knowledge and skills most
(knowledge/skills-based focus); workplace supervisors the practical knowledge that got the job done well (activity-based focus); while students and alumni found most valuable the oral communications, interpersonal and business skills that gave them the ability to survive the first few months and become contributing members of their respective organisations (individual-based focus). Crebert et al. (2004) attributed different stakeholder interests were influenced by local and context-bound interpretations. Organisations’ first priorities are usually not around learning even though this is acknowledged as being critical to economic success (Evans et al. 2006). Universities on the other hand are in the business of education (Boud and Solomon, 2003) “to assist individuals to be effective in their lives outside of and beyond educational programs and institutions” (p.1, Billett, 2007). However, the range of responses presents a broader definition of learning involving: in, through and for the workplace (Evans et al. 2006) that moves the focus beyond employability to life-long learning.

The study found that what knowledge was most valued had implications for how teaching academics designed and delivered course material before and after co-op and how workplace supervisors inducted and supported students during the co-op placements. These approaches in turn had consequences for how the student approached, survived and grew during their placement year. Academics in the study promoted the importance of front-loading students with IT knowledge and skills in preparation for their co-op year. Any approaches to include generic skills development in courses was strongly resisted as its inclusion was seen as replacing more important IT-specific course content. Generic skills development was assumed the domain of the workplaces, which is contrary to Beckett and Hager (2002) and Hager (2006) that promoted the development of generic skills though participation in a variety of social, educational and work contexts. The academics interviewed regarded technically-oriented co-op jobs highly. Conversely, jobs that were less technically oriented and more client-facing were considered inferior despite the fact that students may have developed socially and personally. This view was reinforced with the expectation that students returning from Co-op would have a high level of technical knowledge. Where this was not the case the Co-op experience for the student was considered a failure.

The high regard for propositional knowledge is evident across the educational literature and echoed at the lower levels of the Skills Framework developed by
the IT industry to assist organisations employing IT professionals (SFIA, 2005). A comprehensive set of skills is presented in categories and subcategories and defined through seven levels of competency (from entrant to strategist). The ACS (2008) accreditation documentation draws extensively on the SFIA “to provide a framework of ICT Building Blocks” (p. 23) of requisite skills/knowledge for an ICT professional. Policy documents continue to support the notion that knowledge is an identifiable entity which can be reduced to discrete components and once learnt the knower has the capacity to adapt that knowledge to the situation at hand and make the necessary decisions and adjustments to then complete that task (Hager, 2006). However, workplace supervisors, students and alumni confirmed Te Waita’s findings that the skills and knowledge developed in university settings were not the same as workplace useful skills. Employers in the study spoke of students having to be trained or re-trained and given time to develop the necessary knowledge and skills required to carry out their jobs.

Fenton-O’Creevy (2007) and others argue that higher education practices create barriers to students developing ways of knowing. The view of skills and knowledge as discrete entities that can be acquired and transferred singularly, propagate the notion of the mind-as-a-container metaphor and the ‘folk theory’ of learning (Bereiter, 2002). Eraut (2002), Hager (2006), Bransford and Schwartz (1999), Tennant (1999) and others refute that simple transfers can occur, as such views omit the crucial relevance of learning as a consequence of changing contexts. Each context holds a different set of tasks, people and expectations (Atkins, 1999) so the learning experiences will also be different.

Talking to the teaching academics in the sample I found a variety of teaching approaches and methods used in the delivery of course material. These could be linked to previous educational and working experiences. For example one academic with a computer science degree and a highly technical working background delivered content using the traditional approach of delivering lectures, setting practice exercises and setting assessment based on written exams and assignments. This observation links to some research literature where learning was seen as an individual activity that sought to accumulate learning products (Hager, 2006). Another academic with an extensive educational background in mathematics in secondary schools took a problem-solving approach to course design and delivery. Class notes and exercises were written
around a variety of real-life case studies and worked on in student-managed teams. The development of oral communications and team working skills were embedded in the design of the tutorial exercises. Both formative and normative assessment tasks were evident. His pedagogy acknowledged the holistic, social, on-going nature of learning promoted by Hager (2006), Beckett and Hager (2002), DEST (2007) and others. However, he admitted he spent little time making explicit the generic attributes students were developing. Hager and Holland (2006) note that leaving such learning implicit, prevents significant learning and development of those attributes. These two approaches highlight the impact of different worldviews on pedagogy practices.

Features of the second academic’s learning environment align with de Corte’s (1996) powerful learning environments that enable formal, informal, intentional and non-intentional learning (Beckett and Hager, 2002). However the research literature highlights a history of resistance to acknowledging informal learning within higher education and not legitimising learning outside of school (Billett, 2007). Hager and Halliday (2006) observe the push to locate formal learning as a public concern within educational institutions and informal learning as a private one. However informal learning can happen anywhere and separation is not helpful to the development the individual learner.

Workplace supervisors’ expectations of the knowledge and skill level of incoming students were found to be local and context-specific. Where students were employed on a once-off project-basis, workplace supervisors wanted the students “to be able to hit the ground running” with the necessary skills, knowledge, experiences and dispositions. Where the employment of the student was part of a long-term recruitment strategy for the company, supervisors were prepared to build student capacities over a longer period of time. Employers assumed students had basic IT knowledge but commented that it was not enough. A well-developed set of interpersonal skills was considered essential for adapting quickly to the company’s culture together with the ability to learn quickly. Crebert (2004) similarly found employers wanted graduates who were ‘less theoretical’, and had the abilities to communicate with others and understand instructions. A number of employers noted the remarkable speed with which students picked up new skills and knowledge, so more experienced workplace supervisors held little expectations of the student’s productivity for at least 4-6 months. However they
were pleasantly surprised when some students did “fit in” quicker and attributed it to previous work experiences, confidence, a “can do” attitude and the personal motivations. Evans, Kersh and Sakamoto (2004) in Hager and Halliday (2006) found gaining tacit knowledge becomes pivotal to learning in new and unfamiliar environments. As Gonzi (2004) points out

> What makes people competent, resourceful, adroit (i.e. what makes them knowledgeable) is largely tacit, instinctive, intuitive difficult to pin down and certainly can’t be located in objects stored in the mind (Gonzi, 2004 p. 30).

One supervisor emphasised the importance of being able to “read a situation” aligning with Hinchliffe (2006) in Hager & Holland (2006) who found the ability to engage in situational learning, the capacity to ‘read’ situations accurately and sensitively.

Co-op places learners in a central role (Furco, 1996 in Billett 2007), yet traditional classroom teaching approaches see educators controlling the students’ learning to produce passive learners (Hager and Holland, 2006). A number of workplace supervisors in this study commented on the importance of students having the confidence to communicate with their peers to progress their assimilation into the workplace. They observed many students were afraid to ask questions if they didn’t know or understand what needed to be done. It was noted that the international students in particular lacked the confidence to ask questions for fear they would be considered stupid. Some students complained they felt unprepared for co-op and that the University could have done more. Wyn (2009), Barnett (2006), and Fenton-O’Creevy (2007) suggest universities promote passive mindsets and create barriers to developing ways of knowing.

My findings highlight the diversity of individual views regarding what knowledge is of most value. Hager and Halliday (2006) and others acknowledge and promote a broader spectrum of worthwhile knowledge and suggest universities recognise different stakeholder values within its courses and programs. They consider formal knowledge is not superior to other forms of knowledge. Incorporating all forms of knowledge and learning within courses and placement programs in particular, provide students with a richer, more satisfying learning experience. The integration of real world work into university curriculum supports Billett’s (2007) own conclusions.
Students and alumni spoke of their co-op experiences in terms of the people they had worked with, the challenges they faced and the achievements they had realised. In most cases they named the co-op year as the best part of the program, a finding confirmed in many other studies (Crebert et al. 2004; Bates, 2004). However, they felt the University could have done more to prepare them for the co-op year particularly in the preparation of interpersonal skills, handling conflict and learning the language of business. Interestingly the value they attributed to generic skills and abilities changed over the time of the co-op placement, from disdain at the start of their placements, to a necessity. Patrick and Crebert (2004) similarly found graduates without work placement did not easily recognise the need for the development of generic skills during the undergraduate degree compared with those who had.

The workplace learning literature (Evans et al. 2006; Down, 2006) found organisational affordances promote or restrict the learning. This was evident in the study that highlighted good and bad placement experiences. A staged induction into the company made them feel welcome and the standards of behaviour and performance expected of them were appreciated. Students commented approvingly on the wisdom of their peers, on the value of regular conversations and feedback regarding their progress and the acknowledgement of jobs they had done well. These comments reflect Billett’s (2007) findings that individuals have personal ways of making sense of their work through their participation, engagement and previous experiences. Crebert et al. (2004) also found a few students and alumni spoke of the need for challenging, meaningful work.

The Skills Framework for the Information Age (SFIA) (2006) developed in the UK by the IT industry identifies seven levels of competency expressed in terms of increasing autonomy, influence, complexity and business skills and appear to draw on Dreyfus’ Model of Skill Development (1980). Students in the BBBIS tend to work in co-op jobs at the lower skills levels (follow, assist, apply) and some venture into the middle and upper skills levels of ensure/advise and initiate/influence levels. Why do some and not others? Reasons may lie at the organisational level with the affordances given to students on work placements; or at workgroup level with the tasks assigned and type of relationships between the people involved; or at the individual level with the students themselves.
Although the SFIA describes the progression of skills across the seven levels, it does not articulate how autonomy, influence, complexity and business skills are acquired and progressed. There is an implicit understanding these will be developed over time with experience. In the next section study evidence of the development of such qualities and skills are discussed with reference to the workplace learning and adult learning literature.

5.5 Agency

“The self is not something ready-made, but something in continuous formation through choice of action” (John Dewey, 1859-1952).

The development of a professional takes time, lots of practice in a variety of situations and active engagement within communities of practice (Beckett, 2011; Billett, 2007; Fenton-O’Creevy, 2007). Yet the ACS accreditation documentation (2008) expects new graduates to reach Level 4 (Enable) of the seven-level SFIA at the conclusion of their IT degrees. At Level 4 individuals are expected to be able “to perform a broad range of complex work activities in a variety of contexts”, “to exercise substantial personal responsibility and autonomy”, “to facilitate collaboration between stakeholders” and “to make decisions which influence the success of projects and team objectives” (p. 9). Each of these abilities suggests a level of personal agency, a ‘capacity to exercise control over the nature and quality of one’s life’ (Bandura, 2001). However such agency is developed through experiences in a variety of practice-based learning environments that offer opportunities to make decisions and judgements particular to the purposes of the specific contexts (Beckett, 2010). Where university classrooms offer limited opportunities (Wyn, 2009; Hayward, Blackmer et al. 2007), workplace contexts are a rich source of practice-based learning situations for developing agentic students.

At the start of the placement, most students though nervous and anxious want to (1) fit in and belong to the organisation, (2) be able to do their job and (3) to contribute to the workgroup. This was evidenced in the study and also parallels with Deci and Ryan’s (1985) self-determination theory that individuals are motivated in response to their psychological needs of relatedness, competence and autonomy. However in the case of the co-op students and alumni students interviewed it appears that how these needs were satisfied is influenced by the
extent of their previous work experiences, their personalities, their attitude to work and life, their interpersonal skills and the affordances offered by the organisation in which they were completing their placements. These findings parallel with those of Billett (2008) that individual motivations (interests and values), personal histories (ways of knowing and doing) and individual characteristics and perceptions shape how the students chose to think, act and reflect on, throughout their work placement experience.

My study found evidence of agency within a couple of the co-op student sample. Agentive characteristics arising from my data paralleled with observations documented by Smith (2006) of new employees in the first few months in an organisation. Some students and alumni comments reflected how they sought to fit in and assimilate to their new organisation (relatedness), how they participated and engaged with others in carrying out their work (competence), and how they became active, responsible, and contributing members to their workplaces (autonomy). The following discussions seek to uncover how the students become agentive in their pursuit of developing a sense of self.

5.5.1 Relatedness (to belong)

How an individual chooses to interact and engage with the workplace will depend on the degree of relatedness between individual interests and values and those of the social practice; the greater the relatedness to the people and the organisation the greater the likelihood of individual participation (Giddens, 1984 in Billett, 2002). The study found that even before students start the co-op placements they had formed perceptions and expectations of the placement organisation and the job, based on information gleaned from the Internet and talking to others, together with impressions taken away from the job selection processes (“I could tell from the interview first off when I met my managers, [that the company] was very motivated towards making sure that employees are satisfied, happy, had opportunities”).

Students spoke of assuming a role in those early months (“the first few days there, I was a little more quiet than I usually am”) observing, absorbing, processing what they saw, heard and read. This ability to adapt to a situation is referred to by Devos and Banaji (2003) as plasticity. Students spoke of looking around the workplace for role models on how to dress, behave, speak and work,
and adjusted accordingly, “I had to smile”. Billett (2007) purports the roles individuals select to enact as an important aspect of adapting to and becoming accepted by the workgroup. Past experiences determined the role they adopted and how quickly they adapted. Students with little or no work experience were inclined to assume a passive role waiting for direction on what to do next and how to proceed.

Students with good social skills and outgoing personality held an advantage over students with that were shy or had less confidence in their communication. One employer observed of some students “for the first month or so they’ll sit there and they won’t say boo to anybody”. These findings are similar to those of Te Waita (2006). Students with previous working experience also appeared to be quicker in taking up opportunities offered and settled into the organisations more quickly.

Garavan and Murphy (2001) and others suggest universities could do more to prepare the students for those first months by encouraging them to take on an active learning approaches to controlling their own job search process by firstly becoming more aware of their own values, interests and motivations, identifying job opportunities, researching the company beforehand, and maximising the job selection process. Self-awareness and critical reflection of individual strengths and weaknesses focus learning as becoming and co-op placements as an invitation (Billett, 2009) to grow.

The perceived status of the student (as a “work experience” student, contractor or potential employee) was found to influence the amount of time and resources allocated to inducting the student into the organisation. In some cases induction of co-op students was different to that of new employees. Bates (2004) and others promote the importance of the student being invited in as “a peer rather than a visitor” (p.11). This was reinforced by one of the managers interviewed:

*We treat Michael as another contractor starting for the first time ... he has more freedom. Unless someone goes off the rails, it’s about accepting them as the role is going to be. That way there is more chance of them growing into it. If you type cast them in the role of a student, they will go into that mode (Charles).*

Within a workplace, success or failure for new employees is reliant on how quickly they meet the requirements of the job. Also having a defined job gave them a
purpose and gave them a sense of worth in the company. However, many students arrived at their organisations on the first day and the workgroup they were assigned to, didn’t know they were coming. Some students spoke of spending the first few months at their desks reading manuals until the workgroup and/or supervisor sorted out what to do with them. In many cases it was up to the student to seek out guidelines on the job and information on the tasks they were to perform. In stark contrast other organisations were prepared for the student, as in one case (“They were prepared for me, they had a development plan ready for me...everything set up, like training”). Eraut (2010) and others support the importance of proper induction of new employee into the organisation. However many organisations offering placements for the first time are not aware of their responsibilities to the new student. I therefore contend the University has a responsibility to induct the organisation into co-op program by providing appropriate guidelines and setting expectations.

Students spoke of appreciating having set tasks to do right from the start (“actually thrown into the deep end and we’re expected to contribute just like everyone else”). There is considerable support in the co-op literature for the view that where students are given challenging initial tasks, they tend to internalise high standards and positive job attitudes (Garavan and Murphy, 2001). Doing a good job will encourage the organisation to increase opportunities for more complex tasks and boost their confidence further.

Although participation in everyday activities has the potential to develop competencies, without structure, organisation and refinement, Billett (2007) purports such learning may promote bad habits, be limited, lack guidance and support, lack understanding; or inhibit future development. The presence of an intentional guided learning plan had a significant impact on augmenting the students understanding of organisational procedures and practice, “they had a development plan ready for me ... everything set up, like training”. Significantly, induction programs usually involve interactions with other people in the company (Billett, 2009). There was also evidence of workplans developed in consultation with the student. One employer noted: “We also need to recognise that these people are trainees. We have a requirement to fulfil some outcomes they’re expecting. And while we all go into it with that outlook, it seems to work”. However there were instances where the supervisor was not well-versed by either
the company or the University as to his duties and responsibilities for his student: “He [the supervisor] just didn’t really understand that I’m here on Co-op and there’s more to learn than just technical side of things, there’s a lot of politics, communication skills and personal skills that you learn and pick up”. Often decisions made regarding co-op programs such as where the student was located and who would be their supervisor, was made at upper management levels and not relayed to the individuals involved. Consequently the workplace supervisor (and members of the workgroup) did not necessarily have had the best interests of the students at heart, the experience or inclination to supervise the student and may/may not be welcoming or supportive (Pepper, 1997). My study, the literature and my experiences suggest both organisations and the University have a shared responsibly to providing opportunities for new workplace supervisors to be inducted into the co-op placement program and acknowledged for their time and efforts.

An awareness of the complexities and diversities of the business world, what to expect from the co-op year together with various learning strategies they can use, may help ease their transition into their organisations. Encouraging students to develop research skills and their interpersonal skills through a variety of tasks in a various contexts could improve student confidence accessing the knowledge required to learn on the job. DEST (2007), Hager and Holland (2006) and others propose active approaches be employed by educators that follow adult learning principles; holistic approaches to learning; problem-based learning; lifelong learning skills; learning how, why and what if; reflective learning; active, learner centred approaches and role modelling. However the workplace context offers a plethora of opportunities for doing work in a variety of situations and to hone existing skills and knowledge and develop new ones.

5.5.2  Competence (to be able to do the work)

Students enter their co-op placements with different abilities, histories, interests, personalities, expectations and motivations, but all want the co-op experience to be a positive and satisfactory one. Many supervisors/managers also expressed the same for their students:

*The plan behind it [Co-op] is...to give undergraduates a good working experience and to accelerate their studies (Charles, employer).*
From my own observations, and supported in this study, I have found that generally students are motivated to do work placements in order to increase their chances of a well-paying job on graduation; so when they arrive into their new place they are keen to starting applying the skills and knowledge learnt in their university studies and developing new ones. They quickly pick up that doing tasks in the workplace is very different to the ones they did in the classroom.

Within co-op placements the majority of tasks carried out by students involve maintaining current work processes, solving problems, improving current practices and identifying new opportunities. At the heart of all these tasks is the need to make decisions that involve human and/or non-human artefacts directly and/or indirectly. Making decisions involves developing thoughts and intentions beforehand, self-reaction and self-regulation in carrying out the tasks and self-reflectiveness on own capabilities and performances that lead to self-correction and direction in future activities (Bandura, 2001). The key to making any decision is having access to the necessary resources and people to make it well informed. Yet the information required may be explicit, implicit and/or yet unknown. Eraut (2010) found Individuals draw on their personal knowledge and capability to think, interact, perform and learn.

What arose from the data in the student sample was evidence of different approaches being taken to learning in their workplaces: learning through observation, doing a task repeatedly, making mistakes and/or asking lots of questions. Smith (2007), Billett (2008) and others similarly found workers employed a variety of learning strategies in developing an understanding of the job/task/situations to do their jobs. These authors found the various learning approaches were influenced by personal motivations and the depth and breadth of access to human and non-human artefacts for guidance, support and feedback (affordances). Evidence of the various learning strategies and what influenced them are discussed further in the following sub-sections.

5.5.2.1 Learning strategies

Much of the knowledge needed to carry out tasks is embedded in the organisation’s work practices and access to it depends on interactions with others in the workplace. Seeking out knowledge requires learning strategies and confidence (Smith, 2006). Developing learning strategies means drawing on past
working and educational experiences to deploy a range of information seeking skills (Smith, 2006) and adapting them to the current circumstances. A couple of students in the sample commented on how they initially expected to be able to apply university-learnt knowledge and skills to the new job and were surprised that their previous learnings were insufficient. Another student observed the difference by the changed context: “It’s not until you start working and you’re in an office and people are using the words around you that it triggers and it all makes sense”.

All the students in the study spoke of having to rely heavily on informal learning methods for accessing knowledge such as researching company documentation (usually available via the company’s Intranet) and Internet research. These findings are borne out by Lohman (2009) who found IT professionals had a greater preference for engaging in independent activities than the professions of human resource development and teachers who preferred more interactive face-to-face activities. Lohman also found that IT professionals tended to turn to more interactive activities such as talking and sharing resources with colleagues only if their learning needs could not be addressed via the computer. Drawing on her findings suggests that the IT professionals involved with our co-op students may expect the student to ask for help when their researching of independent avenues failed. Yet I noted that a number of students in my study were not inclined to approach their supervisors and/or work colleagues with questions or requests for assistance, particularly in the early stages of their placement. On the occasions when students did ask for assistance they often found support was not always forthcoming. One student excused his supervisor “You have to understand that Peter [his supervisor] is very, very busy, we have a small department for 400 users”.

Students starting co-op and with no previous work experience were unaware of the importance, depth and breadth of ‘know-how’ held within individuals in the workplace. The students who had worked previously were more likely to approach colleagues for answers: “I ask my manager for any hints, people around me … they will know everything and anything …So you just ask questions”.

In the absence of organisational support students turned to indirect guidance methods such as observing, listening, utilising models, pattern recognition, clues and cues about work (Billett, 2007). Tacit knowledge was gleaned in the practice
of carrying out tasks. Through repetition, trial and error and making mistakes individual performances improved and expectations increased. These renewed expectations are reflected in one of the student’s comments (“...he knows I’ve done a few things more than once so he would...he expects me by now to remember and not to make the same mistake again”).

Some of the supervisors commented on various characteristics the promote learning, qualities such as an open mind (“open to the process of learning so they do seem to learn our requirements quite easily”), together with a love of learning (“excited and eager to learn”) were the most successful. Dispositions such as good social skills, outgoing personalities and self-confidence were an advantage together with good research and interviewing skills (Eraut, 2007). Initiative, integrity and teamwork ethics were seen as much needed assets of a professional and if not found initially could be developed over time. Lohan (2008) found a similar list of qualities of what motivated IT professionals to engage in informal learning.

As some of the students became more competent and confident in the execution of their tasks, there learning strategies were refined. For example some became more willing to ask questions and contribute their thoughts to discussions. Vygotsky in Valsiner and van der Veer, (2000) observed this development of agency extended their prospects for further learning. However some learning strategies disappeared altogether where students became de-motivated due to the lack of opportunities offered by their organisations.

5.5.2.2 Individual motivations

Over the years, I have found students have a variety of goals and expectations coming into the co-op placement: to complete it [co-op year] as a mandatory part of BBBIS the program structure (qualification), to apply university-learnt knowledge and skills and develop new ones in order to get a good job on graduation (employability), to develop expertise in a particular area of interest (expertise), on-going employment within the placement organisation (employment) and/or to experience IT-based work opportunities to set future career directions (“a stepping stone towards benefiting my career”) (career direction). These motivations were seen to be influential in how they chose to approach the tasks in terms of their interests and enthusiasm, the learning
strategies they employed, the extent of effort they applied and their confidence in making decisions.

In the early part of their placements students were happy to complete routine and less challenging tasks as long as they perceived it had some value to the workgroup and the company. These findings support those of Billett (1996) who claims an individual will develop knowledge further if he thinks it will be useful to others and recognised as useful. An explanation of the significance of the task to the workgroup/organisation was found to contribute to their motivation to complete the task (“I know it’s an important job”). As their confidence grew and they became familiar with their surroundings, students were keen to experience a variety of different tasks, of increasing complexity and levels of difficulty. The timing of task difficulty varied with each individual as one supervisor observed: “Everyone’s got a different pace sometimes it can be a matter of confidence if they’re really lacking in confidence, they can be slower to develop”.

Co-op jobs taken on by the BBBIS students vary from being highly technical to less technical but highly client-focused. The study found a low regard for helpdesk jobs (refer to as “Mickey Mouse”) as they were seen to offer little opportunities for developing IT knowledge and skills (“[Working] in the helpdesk did not really given me more exposure on what I’m studying apart from customer service and knowing a bit what working in an organisation is like”). This student’s view was duplicated in some of the comments from academics and highlighted a perception that IT knowledge and skills are of more valuable than the problem solving skills, client empathy and communication skills the students develop through the job. Yet the industry research stresses the importance of these skills and attributes for survival in the workplace and vital for enabling improvement (Te Waita, 2006). Many claim university agendas drive pedagogies, curricula and assessment that perpetuate a narrow view of learning with many students’ minds linking learning to classrooms and not recognising workplaces as sites for learning (Eraut, 2007).

5.5.2.3 Organisational and university affordances
Talking to the various stakeholders in the sample it emerged that organisations differed in the structures, processes and cultures conducive to student learning and development. There was evidence of well-planned induction programs and work performance plans that drew on “buddy systems” to induct the students and support their personal wellbeing; of supervisors actively guiding their students
through the placement; and of workmates to provide the support (“to bring them up to speed”). However as Down (2006) observed not all organisations offered such learning environments and there was no guarantee learning would take place. Yet my study did find that a conducive learning environment had the potential to motivate the students through: (a) its learning opportunities, (b) the quality of its supervision; and (c) opportunities for membership to teams and/or workgroups.

(a) Learning opportunities
Students spoke of learning the most through interacting with others, in particular (i) working alongside others such as buddies and workgroup colleagues for on the spot information and feedback; (ii) working in teams for seeing other perspectives; and (iii) getting feedback on work performance.

(i) Working alongside work colleagues. Many students talked of the value of working with colleagues in becoming aware of their tacit knowledge (“you wouldn’t believe the amount of knowledge my work colleagues have”).

(ii) Working in teams. A number of supervisors spoke of the value of placing students in large teams to increase their knowledge base with others perspectives (“the value of working in large teams...subject matter experts come in and fade out again”) and develop interpersonal skills (“They [the students] learn how to do the communications ... there are a lot of complex interactions”)

(iii) Getting Feedback. Students spoke of wanting and needing their supervisors and/or colleagues to give them feedback on their performances as to: whether they were doing well (“So if I’m doing something wrong, I want to know about it”) and meeting standards (“I can see the kind of standard he expects, like the standard he expected from me at the beginning is not the standard he expects from me now”), how to fix mistakes (“Instead of pointing the mistake at me, he goes through the module with me”) and how to improve (“So if I’m doing something wrong, I want to know about it”).

Many students commented on their supervisors being “very very busy” and being disappointed about not receiving feedback from their supervisors (“I didn’t get any feedback which is very bad”). These findings support other studies that identified supervisor feedback is generally difficult to obtain due to lack of motivation of supervisors to do it (Reeders 2000, Cates and Lemaster, 2006,
McNamara 2008). The process of giving feedback was seen as confirming that their work was important (“Just a small bit of feedback makes you feel good, like your work is actually worth something to the company”) and they were valued (“they believe in me”). Without regular feedback students became de-motivated with one student observing “But there’s no regular ongoing assessment. So it does make it hard, and motivationally it’s not the greatest politics”). Eraut (2010) found lack of feedback and encouragement can potentially de-motivate students in their work.

(b) An engaged supervisor

Groenwald (2004), Forbes (2007), Loken and Stull (1993) and others identify that workplace mentor/supervisors are critical to the success of workplace placements. What emerged from my interviews and a close analysis of the data was the quality of the engagement of the supervisors with our students. I found the majority of the supervisors being quite proactive in their role: (a) seeking knowledge from managers, human resources staff, the University and their students to get a clear understanding of their roles and responsibilities; (b) negotiating with the students to maximise their goals within the frameworks of the organisations purposes (“We also need and do recognise that these people are trainees, we have a requirement to fulfil some outcomes they’re expecting”); (c) developing work plans to develop students’ abilities and confidences (“It takes usually around 3 months for them to be properly orientated and feed their confidence and give them a series of tasks to learn”); (d) allocating and sequencing tasks terms of complexity and student ability (“he gives me the assignments, the little jobs I do. In the beginning, he was very flexible with me”); (e) adjusting the pace to suit the student abilities (“We work out what pace he could go at”); (f) giving feedback on task performances; (g) giving encouragement (“he gives me a little push in the right direction”); (h) gradually increasing student freedom and responsibly (“I was a bit more free to make your own decisions”).

The literature supports the positive effects on students of having engaged supervisors providing direction, guidance and support (Eraut, 2007). However not all students want the control that comes with a structured program. The degree of supervision and direction needed or wanted by students will vary. One alumnus felt he hadn’t needed or wanted a supervisor but enjoyed the freedom and challenges to become a contributing member of the organisation:
My nature was suited to being in such a chaotic environment... If they [the organisation] had somebody else [another student] who was more... had to be organised and things had to be structured like administrative sort of things, quite the opposite to me, then may not have worked out.

However this student had a working history, confidence in his abilities, an outgoing personality and the motivation to get the most out of his time in the placement. However his example supports the findings of Billett, McCann and Scott, 1998 in Billett (2009) that the most uninviting environments can be rendered effective by the actions of agentive learners.

(c) Membership in a workgroup/team

Membership in a work group has the potential to encourage an individual to view working life from different and shared perspectives; and direct that individual as a peripheral participant to becoming a central, skilful participant in a community of practice (Beckett, 2011). What emerged from my analysis were various examples of how students chose to exercise their agency within teams: to access expert knowledge and other perspectives (“subject matter experts come in [to their team]”), to get assurances for decisions made (“as someone who has never worked before I’m thinking…”), to understand teamwork (“the dynamics between people and the way that people work with each other”), to develop communication skills (“learn how to do the communications ... there are a lot of complex interactions”), to get motivation (“they believe in me”) and to become self-efficacy (“I believe in myself”). Being part of a team was found to have a great impact on students’ attitudes and motivations. One case in point is where an unhappy student was moved to a different desk where he then felt part of a team: “From that moment, there was an enormous difference in his overall attitude but also in his throughput” (Shirley, Manager).

The discussion in this sub-section highlights the uniqueness of each placement due to the diversity of the individuals involved, the contexts in which they work and the choices they make to interact and engage with others. Each individual experiences co-op differently and the learnings they take away are subjective. Adult learning charts a philosophy that embraces the diversity of each situation by acknowledging the interrelatedness of learner and educator within a context that is “active and dynamic” (Fenwick and Tennant, 2004, p. 55) and offers a particularistic approach where learning can be tailored to suit the context and the
people involved. Also, adult learning principles indicate that individuals learn best when they can take responsibility for their own learning.

Some of the students in my study demonstrated that they learnt and developed, in spite of their surroundings, due to exercising their own agency for learning and paralleled research studies that found the development of a ‘sense of self’ through work (O’Doherty and Willmott, 2001 in Billett, 2008). Yet building individual capacity is not solely individually driven but powerfully influenced by others. My findings support this socially located and driven agency and suggest support for Beckett (2010) with his broader definition of agency that locates the individual “amidst the inter-subjective messiness of daily work life” and the process of self-determination is, “less of me, and more of us” (p. 118).

The next section discusses the emergence of the interdependent identities of the student the “ME”, “YOU” and “US” that together represent the self that develops over the period of the co-op placement.

### 5.6 Emergence

Over the course of the co-op year, students appear to develop various identities to accommodate the demands of their contexts and personal ambitions. These findings support Gee (2001) who noted people have multiple identities connected to their performances in society. In my study, I identified a number of interdependent identities similar to those found by Smith (2006) that in concert suggest that student developing in the workplace: (a) the “ME” identity, the self that continues to grow through life-wide experiences; (b) the “YOU” identities that develop in the relationships with others; and (c) the “US” identities that emerge through participation and engagement in workplace practices. The self is multiply constituted through identities that by interaction and transformation represent the continuing development of the life-wide learner.

#### 5.6.1 The “ME” Identity

The student arrives into the co-op work placements with a unique set of motivations, expectations, skills, knowledge, dispositions, personal history and experiences. Evidence from the study found students had changed over time ([where] “some students drastically change”) through their work practices in terms of their skill set (“My skill set has definitely expanded, so in terms of that
I’m sure that my employability is probably a bit more appealing”), attitude (“I also changed. Not thinking of myself as first’), social skills (“through experiences here, verbal confidence and communication has been improved”), attitudes to others (“supportive”), (“take[ing] pride”) in their work, confidence (“I’ve got some good ideas”) and career directions (“this experience has shown me that I don’t want to be in a technical role, I want to go another path of business”). Students also spoke of an emerging sense of self (“I became less of a uni student, more of an aspiring professional”) which in turn reflected on other aspects of their lives (“I’ve started working out since I’ve been here and I just feel a lot healthier and more energetic”). These findings suggest for support Beckett (2006) that self-determination generates and re-generates identities.

Even within this small sample of students and alumni, I found differences in the extent of their self-awareness and selfhood. What emerged was that those students who had worked prior to their Co-op placement work, were better able to articulate their strengths and weaknesses, their expectations and co-op goals. One supervisor commented that he had found most of the students coming the placement year had no idea what to expect and what they wanted from the co-op year (“The students need to understand what they can get out of the placement and how to apply their theory to the practice”). Henschke and Richardson (2010), Wyn (2009) and others propose universities can do more to facilitate student career preparation and transition into the workplace. This was confirmed by supervisors in my study: (“They [the students] need to come to work with a better understanding of the expectations an employer has of employees in the work setting [and] to understand what commitment they are making to the employer”).

The adult learning literature proposes the importance of reflection as a strategy or tool for promoting active, self-directed professional growth. Within the study sample, students were required to maintain a weekly journal to record learnings and to chart progress together with writing learning reflection papers at the end of each 20-week block. Most students commented positively on the learning reflection papers (“because you look over what your expectations were, where you are now, the journey you’ve been on, and that was really rewarding to look back”) and with less enthusiasm on the maintenance of the weekly journals having little appreciation of their value (“the journals, that took a lot out of me because to keep up and to write down things that I used to do repeatedly
throughout the weeks”). With the students interviewed, there appeared to be a lack of understanding as to why or how self-reflection actually impacted on their learning. Huber and Hutchings (2005) and others suggest intentional learning on reflection and how to learn makes students more purposeful in their studies. Hayward et al. (2007) propose that teaching and exposing students to methods to acquire knowledge in the workplace using reflective practice, better prepares them to learn new things in the workplace, especially through inquiry with others. My claim is that the inclusion of intentional reflection exercises promotes workplace learning.

Some students in the interview sample made connections to knowledge learnt at the University (“I thought wow this is exactly what we were learning about”). However, a number of students could not connect learnings from University with the tasks they had to do at work. One academic commented that “they may have some theory about roles but they don’t try to transfer that theory into any sort of meaningful practice”; while another academic noted that students often “can’t make connections between courses delivered from one semester to the next, let alone between courses and work experiences!” Davidge-Johnston (2007) in Sator (2007) states that students, left to their own mean-making, typically do not make these connections and often report no workplace-related learning occurs in classroom and vice-versa. Davidge-Johnston proposes co-op preparation curriculum be designed so as to explicitly engage students with the thinking to recognise, access and value the various learning they will encounter and foster the thinking necessary for students to learn on the job prior to the work placement. Again I claim my findings support intentional planning of program curriculum and pedagogy.

Nevertheless, there was evidence to suggest that students over the course of the placement improved their learning abilities, and developed a greater interest in learning how to improve on practices and performances. Most of the academics found students returning from co-op to be more directed and focussed (“The fantastic thing really [about co-op experience] is the kids find themselves during co-op”) and consequently more enthusiastic and interested in learning (“I thought there was a significantly higher level of enthusiasm from the co-op students than from the second year students that I’ve been teaching ”). They commented on students being more articulate and thoughtful in “the questions they ask”; and
holistic in their thinking (“they [the students] actually understand the context of what you’re teaching them...which means we can do quite a bit more advanced things than we could have if they didn’t do the co-op year”). Most of the students had exhibited signs of developing a learner identity growing out of their participation in the workplace.

Evidence of emergence of self-awareness and self-belief as a consequence of interactions and engagements with others, was also uncovered by O’Connor et al. (2007), (Beckett, 2011) and others. The nature and influence of student’s relationships with others is discussed in the next sub-section.

5.6.2 The “YOU” Identity

The identity of an individual is both how the individual sees his/herself as well as how others identify with that individual in various social contexts (Gee, 2001) and how they see ‘You’. During co-op placements, students interact with a number of individuals: their supervisors, work colleagues, managers, clients, work-based mentors, other students, academics and/or co-op administrators, in multiple settings and across varying timeframes. In the study, various relationships were found to form in the workplace through job necessity (had to), individual motivation (wanted to) and psychological and social well-being (needed to) on the parts of both the students and the employers. There was evidence that students selectively looked to and/or sought out individuals (Baldwin in Billett, 2008)) that could provide the knowledge, guidance and support to carry out and complete tasks, for modelling professional behaviour and communication, for feedback to improve on performances, for acknowledgement and encouragement they “were doing things right”. Relationships were built over time through social interactions and work practices. Where there were good inter-personal communications between students and work colleagues, working relationships were found to be more effective (Te Waita, 2006). Some students took longer to develop socially (“if they’re really lacking in confidence, they can be slower to develop”); however with time, personal persistence, task successes and encouragement their confidence grew and they became more social and agentive.

Self-determination was seen to develop through the engagement in relationships with others rather than simply through individual direction. Some students spoke with pride of their abilities recognised by others (“they believe in me, so I believe
in myself”), of increased responsibilities (“I’m the only web developer [in the company] and now I can set up everything for the website”) and greater autonomy (“I was a bit more free to make my own decisions”).

The study found employers initially placed the new co-op student in one of a number of roles: a worker (“get them up to speed”), a work experience student (“adjusting to the world of work”), a student-worker (“[that] recognise[s] that these people [students] are trainees”) or a potential employee (“the employee needs to potentially understand what the expectations are moving forward”). Each perceived role carried certain expectations and to varying extents provided or limited organisational affordances. However there was evidence of initial perceptions of students changing because of their performances (“I am pleasantly surprised when we see people like Lauren and Diana actually contributing to the business in the first few months of being here”) with position requirements being re-defined and task responsibilities increased as one student observed (“it’s totally different [at work] now”).

Relationships between students and work colleagues were found to be reciprocal. Employers spoke of students having a positive impact on others. My study found students influenced their colleagues and work practices with their energy (“[The students are] very dynamic”, their enthusiasm motivates staff (“Having people that are fresh and new and excited and eager to learn, that rubs off. Certainly you put a person like that into a team and it can be infectious”), and their knowledge of the latest IT knowledge (“I was giving presentations to real estate agents about what the Internet was and how they could use it in their business”).

Overall, the study found that within the one-year placement, most students were eventually recognised as actively contributing to the organisations and were increasingly seen as ‘You’ – the productive worker.

5.6.3 The “US” Identity

The “US” identity was seen to emerge from the students’ ongoing participation and engagement in work practices in the placement organisations (Smith, 2006). Over time, students moved from being observers (“they asked me to be at the meeting so I can sort of learn what they’re doing”), to participants (“chairing the meeting”) to, in many cases, becoming central, skilful participants in a community of practice (“if [we] don’t know something...we’ll try to work it out”). During the
interviews students were found to be using words such as “we” and “us” when talking about their work suggesting the emergence of a sense of self located within the group/team/organisation. The emergence of the ‘Us’ identity was evidenced where students were shoulderering and accepting more responsibilities (“We’re expected to respond within a certain amount of time”), making decisions (“be able to handle most issues without having to seek guidance from others in the organisation”), communicating with co-workers (“you’re always communicating with someone”), contributing ideas to improve current work practices (“I’ve put forth proposals to Laurie in terms of improving the ways we do things”) and changing practices (“and some [of my ideas] have been taken on”).

The interviews highlighted further evidence of students having a sense of self as a continuing member of the University community of practice (student body), expecting and wanting to participate and engage with academics and other students in a number of ways: for support (“It was pretty disappointing that we didn’t hear from any [University] mentors until yesterday”), for assurance (“the monthly seminars where all the Co-op students come together formally...are very, very good. They kind of help you to share the experiences with other”), to facilitate learning through comparing experiences in different workplaces (”[to] ask everyone - so how’s it working there? What’s the bad thing there?”) and for further guidance (“to help us towards determining what specific areas we might feel capable to take on as our specialty”). However the study found that academics and university management appeared ambivalent about the extent of involvement and engagement of the University with students on co-op.

The study also found indications that employers implicitly identified with an “US” identity that located themselves and their organisations as part of a co-op community of practice. A number of supervisors sought “to give undergraduates a good working experience and to accelerate their studies” as well as reaping the potential benefits for their organisations. There was evidence of negotiated work and learning plans, close monitoring of student’s progress (“we catch up every month for lunch [and] impromptu calling by and seeing how they’re going.”), performance (“I also catch up with the managers informally and formally throughout the year”) and well-being (“Whenever I catch up with them over lunches, it’s like what are you working on at the moment and are you enjoying
that and is it challenging)”. Beckett’s (2011) suggests that opportunities offered in socially-located relationally-tacit practices are how professionals are shaped.

Grosjean (2004) saw co-op placements as opportunities for students to enter a community of practice and undergo a process of enculturation into the professional environment. Interestingly, none of the workplace supervisors interviewed were members of the ACS, the IT professional body, and showed no particular allegiance to the profession. This is borne out by Fincher, Clear and Wieck (2004) who found structures of professionalism lacking within the IT discipline. Henschke and Richardson et al. (2010) found that where disciplines had a strong association with the knowledge structure of the professions (e.g. social work), workplace supervisors felt a strong sense of responsibility for producing future professionals within the field or discipline. Patford (2000) and Bates (2007) note that a positive or a negative learning experience in work placements may influence a student’s decision as to whether or not to stay in the profession. The study suggests an opportunity for universities and the ACS to leverage off co-op placements to grow the IT profession.

Drawing all three identities together students were found to develop senses of the self through actively engaging in the co-constructed (Valsiner, 1994), co-participative (Billett, 2001) and reflexive practices of exercising agency (Smith, 2006) to emerge as budding professionals.

5.7 The Emergence Model for Professionally Engaged Learning

Although the research literature is rich in documenting the many benefits of co-op programs to various stakeholders at different levels across organisation and university boundaries, there appears to be no delivery model for co-op that draws together and maximises the range of opportunities for learning, industry engagement and knowledge building uncovered in my study. Current models of co-op appear to focus on individual learning and transformation without acknowledging the social and contextual dimensions of learning, engagement and influence present at a number of levels. At micro levels there was evidence of students developing a number of identities in relation to the work-related knowledge and skills gained, the relationships developed and through their membership in various workgroups, organisation and the profession. At macro levels affordances offered by both university and organisations to the student,
supervisor and academic have an impact on the nature of the work placement experience and are tied to responsible strategic decisions, appropriate learning cultures, suitable implementation structures, processes and management.

A holistic, relational, model of co-op is therefore proposed that encompasses the individual, social and professional dimensions of work-based learning, encourages individual and social agency to engage in mutually satisfying and rewarding workplace relationships and promotes work-related knowledge construction and re-construction through nurturing and growing communities and practice. The Model is contextualised within the university program, yet draws on resources (human and non-human) from various levels within the university, host organisations and various communities of practice.

The proposed Model supports the educational goal of developing ‘authentic’ human beings (Barnett, 2006) who have the capacity for engagement with the world, are empowered to negotiate risk, reflexively construct their identities, make choices (Furlong, 2009) and grow to become valued, respected members of their communities of practice. A learning-directed approach is proposed that seeks to maximise the learning opportunities of placements through making available the necessary arrangements and resources that empower, enable and grow relationships between individuals within groups and communities.

The Model is designed around three inter-related, interdependent activities: Work-based Learning (WBL), Workplace Engagement (WPE) and Work-related Knowledge Construction (WRKC) sustainable through connecting these activities: (1) developing mutually satisfying and rewarding relationships between stakeholders (relationship development), (2) growing communities of learning and practice (network development) and (3) constructing and re-constructing work-related knowledge bases (knowledge development). Fig 5.1 provides a diagrammatic view of the proposed Emergence Model of Professional Engaged Learning (EMPEL). I propose the term Professional Engaged Learning (PEL) to draw together the three interdependent activities of professional practice knowledge construction (P), workplace engagement (E) and work-based learning (L).

5.7.1 Relationship Development

Universities and organisations are driven by different imperatives, universities on learning, and organisations on productivity, delivery and service. Building mutually
satisfying and rewarding relationships the university and the organisation requires (a) clearly defined roles and responsibilities for all participants, (b) stakeholders able to negotiate the terms of engagement, (c) planned, purposeful engagement between participants.

(a) Clearly defined roles and responsibilities

It is proposed that at a minimum each co-op placement be based on a three-way partnership between a student, his/her workplace supervisor and a suitably qualified university placement advisor/mentor. Relationships are built through a combination of face-to-face meetings, phone calls and emails, ideally involving the same individuals in order to build trust and forge good working and learning relationships. Going into any new relationship requires all participants to have clear guidelines of their roles, responsibilities and risks. Both students and workplace supervisors need to be inducted into Co-op. Students should be inducted by both the university (responsibilities and expectations of the university) and by the workplace (roles, responsibilities and expectations of the organisation). Workplace supervisors may be inducted as to what is expected of them by the university through a combination of written guidelines, university-located workshops and/or on-site consultations. Supervisor induction can include guidelines on what conditions promote student work performance, learning and well-being. Host organisations also have responsibilities for the duty of care and to provide students with suitable induction programs into the company, experienced and motivated supervisors, reasonable working environments and appropriate structures, processes and resources to support both the supervisors

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**Fig 5.1 The Emergence Model of Professionally Engaged Learning (EMPEL)**

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and students. Agreements signed by both the host organisation and the university, show acceptance of their respective responsibilities.

(b) Negotiated terms of engagement

Each work placement involves a set of unique individuals: students and their supervisors, each individual bringing their own views, expectations, experiences, capabilities, dispositions, values and motivations, located in a unique setting. Individual imperatives for co-op may differ. It is proposed that agreements be negotiated between the three parties so that university’s learning objectives, student’s interests and supervisor’s imperative can be discussed, placement goals developed and roles, responsibilities and rules of engagement documented and signed by the three parties involved. A professional development/action plan could then be drafted to implement the agreed goals and set performance and achievement criteria. Supervisor valuation of student performance across the span of the work placement year could be incorporated into mid-placement and final assessment tasks.

(c) Planned, co-ordinated program of engagement

Much can happen (or not) over a 12 month placement. It is therefore proposed the university monitors the nature and development of the student-supervisor relationship throughout the placement (start, middle and end). The first consultation negotiates and sets up the rules of engagement. A mid-placement consultation reviews the student’s personal and professional development, situation and well-being. A pro forma listing attributes, qualities dispositions and skills required of IT professionals, can be used to review student’s professional development and promote discussion between the tripartite to review goals and action plans (if required) for the remainder of the placement. The task difficulty, challenges, support and learning environments provided to the student is also investigated at this time and re-negotiated accordingly. The final debriefing session can be designed as a required, measurable assessment outcome of the work placements. It is also an opportunity for the student to showcase his/her achievements to work colleagues and university staff, reflect on individual learning and professional development and offer feedback to both university and the organisation.
However, the extent of involvement and support by the University with each work placement needs to be flexible and dependent on the experience of the supervisor, the student’s personality, capabilities and motivation, the nature of the work the student is required to perform and the affordances offered by the organisation. Some organisations have strong learning cultures with well-developed recruitment, induction and graduate programs and require little direction by the University; while other organisations are productivity-driven and rely on individual agency and autonomy and students are often left to their own devices. Some students accept the challenges and shine, while others become anxious, withdrawn and unhappy. Preparing students with the knowledge and skills in the first instance to recognise organisational cultures through organisation profiles and job interviews will enable students to make more informed decisions regarding the nature of the working environment.

Opportunities and arrangements can be made to recognise the contributions of workplace supervisors, human resource personnel and managers to support students and the placement program. Letters and certificates of appreciations and university-run industry award evenings provide avenues to thank individuals and host organisations that in turn can lead to further opportunities for placements, research projects, collaborations and partnerships.

5.7.2 Network Development

Network development in co-op programs can occur at different levels, across different cohorts of stakeholders, for different purposes through (a) a program of purposeful events and targeted conversations, (b) intentional course design and delivery and (c) program accreditation.

(a) Purposeful events and targeted conversations
Arrangements can be planned to promote conversations between and across cohorts or students, alumni, post co-op students, workplace supervisors, recruitment personnel and IT experts. Events such as breakfast forums, seminars and social gatherings offer great potential for promoting targeted and general discussions, sharing knowledge, providing motivation, promoting University marketing efforts, developing partnerships, building new knowledge and investigating applied research opportunities. Cocktail evenings for all stakeholders involved in the year’s placement program provide opportunities for the university
to acknowledge industry contributions and forge continuing relationships. Systems and resources need to be in place to facilitate these arrangements and provide support at the levels of involvement.

(b) Course design and delivery
Courses can also be designed to promote networking opportunities. For example, arrangements can be made for pre-co-op students to talk to current co-op and post co-op students, experienced supervisors, human resource and industry personnel within university and organisational contexts. Students are encouraged to develop oral communication and networking skills within active learning environments and to participate in industry-based events. During co-op placements, face-to-face forums that offer peer-support and reflective learning structures set the groundwork for future career networks. Assessment requirements can see students at the end of their placements making presentations to work peers and university staff on their accomplishments, achievements and learnings.

(c) Program accreditation
Accreditation of programs with professional bodies provides an opportunity for academics, the profession, practitioners and program alumni to forge alliances that ensure program relevance, credibility and sustenance.

5.7.3 Knowledge development

Co-op programs provide a range of knowledge sharing, construction and reconstruction opportunities that can be lead to individual knowledge development, course and program renewal, provide opportunities for applied research project. The proposed Model promotes (a) the integration of work-related knowledge within program-wide curricula, (b) supports active learning techniques in a variety of contexts and (c) recognises all forms of informal, formal and incidental learning through reflective conversations and critical thinking assessment practices.

(a) Intentional integration of program and workplace curricula
Each individual (student and workplace supervisor) involved in co-op comes with his/her own histories, characteristics and motivations. Within a placement, they draw on their resources from within and what is available to them. It is therefore important that each individual has the necessary knowledge, skills and
dispositions to be able to respond to whatever situation they are in as it is with knowledge comes the confidence to make decisions for action. Both discipline-based knowledge and skills in concert with generic attributes such as communication, self-management, interpersonal, business context awareness and positive attitudes, are necessary for the development of the embodied (cognitive, affective, social, ethical) individual. Students need to have a sense of self-awareness of their strengths and weakness, their interests and motivations and be encouraged to draw on past experiences, reflect on present circumstances and consider and plan future career and life directions. Career planning, learning theories and strategies to transition smoothly into any new workplace should intentionally be integrated into program structures and course curricula.

In order to design and deliver a planned, intentional learning curriculum that encompass both university and workplace contexts, staff involved in designing and delivering courses need to be kept current of industry developments, issues and trends. Communications systems between students and industry together with formalised processes can monitor the strengths and weaknesses of programs and provide feedback to teaching academics and program teams for course and program renewal.

(b) Active learning environments
Active learning environments prior to placements encourage students to become engaged in learning and promote capable, agentive, proactive individuals. Preparing students for work placements presupposes students have access to knowledgeable, capable individuals prior to co-op who have an understanding of world of work and the nature of workplace learning. Yet most teaching academics still reflect traditional learning views that do not acknowledge the value of generic skills and tacit knowledge, lack understanding and skills of active learning techniques and how to employ them within curriculum design and in most cases have no experience of workplace learning and practices. Often assessment tasks lack imagination and relevance to learning objectives and are seen as meaningless “busy” tasks. It is essential that University reward and promotion structures encourage academics to embrace new paradigms of learning and to have access to the training and resources to enable them to deliver meaningful courses.
(c) Critical reflective thinking and conversations
It is advocated that adult learning principles be adopted to develop reflective, self-directed learners through planned programs (events and assessments) to encourage critical reflective thinking and conversations between and within stakeholder groups. Left on their own, students’ reflections in learning journals can be quite superficial. Guided questions can prompt deeper reflective thinking and reflexivity. Better still are the reflections that occur as a consequence of interactions and engagements with others such as work colleagues, student peers and within various communities of practice. Regular face-to-face forums for students on placements provide opportunities for students to share and discuss experiences and critically reflect on what learnt about organisation, work and themselves. These conversations can also be directed towards practical theorisation (Hagger and McIntyre, 2006) where ideas in practice are evaluated against propositional knowledge. Purposeful meetings, workshops and social events that promote conversation between co-op students, staff and supervisors, provide further opportunities for knowledge sharing and creation, and input into course and program renewal processes.

5.8 Conclusions
Narrow views of learning, lack of sensitivity to industry imperatives and limited knowledge of professional practice at macro, meso and/or micro levels of university hierarchy, see co-op programs side-lined from mainstream university operations. Although the rhetoric for WIL exists in most university strategy and policy documents, co-op programs continue to be poorly resourced, isolated within programs and academic staff involved are rarely recognised in promotion structures. Also increased competition from other universities and reduced federal funding see universities focussing on economic measures and relying on past reputation for its sustenance. The proposed Emergence Model of Co-op involves organisations and the University; at workgroup and program levels to promote a learning as becoming mindset that crosses formal and informal learning dimensions; at micro levels invites individuals with the willingness, capacities and freedom to be actively engage in developing relationships, growing professionally and effecting change; and at macro levels of organisations and the University advocate strategies, structures and processes that encourage,
recognise and support individuals involved in co-op programs as the means to progress organisational and university sustainability and growth.

The management and operations of these relationship, network and knowledge development activities relies heavily on the co-ordinated and close workings of teaching academics, practitioners and professional staff that together can provide the necessary educational and working knowledge, teaching and working experience and mix of interpersonal and communication skills. Efficient processes are needed to track progress, highlight issues, escalate problems and increase responsiveness to students and organisations. Good recording, communication, tracking and reporting systems provide the tools. While the recognition of academic, professionals and practitioners involved with placement activities through university reward and promotional structures and resource funding, will encourage a higher level of participation and involvement in co-op programs.
6 Conclusions and Recommendations

6.1 Introduction

This final chapter revisits the research objectives presented in Chapter 1 and offers responses to the research questions posed. Recommendations are given as to how the co-operative education placement program within the BBBIS undergraduate degree can be improved, sustained and grown through the involvement of various levels of organisations and the University. Limitations of the Study are discussed and further avenues of research activity proposed. The chapter concludes with some observations on future directions and opportunities possible through co-op placement programs.

6.1.1 Research Objective

The study explored the extent to which the Co-operative Education Program in the Bachelor of Business in Business Information Systems (BBBIS) degree at the RMIT University in Australia develops employability skills to the meet the changing needs of the ICT Industry.

6.1.2 Research Questions

The following questions were addressed:

- Who are the key stakeholders; what are their perceived needs and expectations; and what are their actual outcomes of co-op programs?
- To what extent do generic employability skills offer a way of engaging the expectations of key stakeholders?
- What processes can be implemented for sustained improvement of co-operative education programs?

6.1.3 Summary of Methodology

A single case study approach was selected with the Co-op program within the BBBIS as the unit of analysis. The study adopted an inductive design and engaged ethnographic techniques to guide the capture, interpretation and analysis of individual perspectives of a sample of stakeholders drawn from across academia,
industry and the student body. The validity of findings was addressed through the triangulation of the multiple perspectives from the diverse set of stakeholders.

6.2 Response to Research Questions

6.2.1 Who are the key stakeholders; what are their perceived needs and expectations; and what are the actual outcomes of co-op programs?

There are a number of stakeholders involved in co-operative education programs: the employers who recruit the student for the period of the co-op program; the students who take on the job; the workplace supervisors and immediate work colleagues who advise, guide and support the students, the co-op management who develop and maintain the relationships between the employers, the students and the University; the mentors who guide the student at the workplace; the academics who teach the students before, during and after the co-op year; the university that offers the program; the professional bodies who accredit the programs; and government that may fund the Universities. The Study highlighted the diversity of perceived needs, expectations and outcomes of co-op programs across and within the stakeholder groups.

Individual needs are driven by personal and contextually driven imperatives. Generally speaking students want to develop the skills and experiences to make them employable in a satisfying, well-paid job. Productivity and/or customer service drives employer agendas; while universities seek to deliver ‘work-ready’ graduates and gain research funding for sustainability.

Individual expectations are based on previous experiences, personal histories, capabilities and motivations, and the extent of information provided. The study found academic views were reflected in the expectations of many students at the start of their placements, with assumptions that university-learnt IT skills were enough. Workplace supervisors’ expectations varied depending on previous experiences with co-op students. Expectations of supervisors new to the program were reflected in what they perceived was the purpose of the students’ employment: short term to complete a project, long term as a prospective employee or merely for “work experience”.

Although the sample for the Study was small, there emerged a range of actual outcomes from co-op programs within and across the stakeholder groups. Of
particular note was the emergence of professional and individual identities, new learning relationships and rich sources of practice knowledge. Most students were found to develop better interpersonal and communication skills and more confidence that led to greater autonomy and agentive behaviour. Of note was the emergence of the students’ sense of selves in terms of their capacities, their relationships with others and becoming members of various communities. Most supervisors were seen to take an active interest in the students’ progress and development. Informal feedback from supervisors and students saw some working knowledge being fed back to the Program.

A great number of individual, social and contextual factors influence the outcomes of co-op: individual characteristics and experiences, quality of relationships reflected in the extent of knowledge shared and support given, the nature of the work, and the extent of both the organisational and university affordances. Actual outcomes were found to range from those with minimal impact to those that exceeded expectations. Opinions as to what outcomes were considered of greatest importance also varied.

It was concluded that any model proposed for the delivery of co-op needs to acknowledge the variety of individual needs and expectations, and the diversity of organisational and university contexts. Although differences in individual perceptions and diversity of organisational contexts have been highlighted in the co-op research literature, these factors do not appear to be addressed in current delivery models of work placements.

6.2.2  To what extent do generic employability skills offer a way of engaging the expectations of key stakeholders?

A review of the research and industry literature, together with comments from this sample, suggests generic employability skills hold different meanings to various individuals. In discussions, the generic skills, personal attributes, dispositions and values that make up employability skills tend to be grouped together. However, in practice, employers, co-op students and graduates do not talk of “generic skills” or “soft and hard skills” but of specific capacities, qualities and attitudes such as good oral and written communication, teamwork skills and the ability to learn and adapt quickly in a dynamic, working environment.
Opinions differ as to what aspects of generic employability attributes are most worthwhile, how such skills are developed and who is responsible for their development. Co-op students and alumni found most valuable the oral communications, interpersonal and business skills that gave them the ability to survive the first few months and to eventually become contributing members of their respective organisations. Which particular generic employability skills that workplace supervisors considered essential varies. This is influenced by their own histories, abilities, work pressures and organisational factors. Where students are employed as a short term proposition to complete a project, then technical and non-technical skills, together with their abilities to “hit the ground running” are highly regarded. Where the inclusion of co-op students falls within the company’s recruitment strategy, the students are closely observed as potential employees and were found to be offered greater leeway in terms of receptivity to work pressures, time to adjust to the working environment and better quality of supervision. These students were also generally afforded greater opportunities to test skills, knowledge and abilities.

Most supervisors, students and alumni observed students were ill-prepared through their university courses with work-useful skills. Yet academics felt such work-useful skills are best developed in workplaces and are the responsibility of students and their organisations. However students may have difficulties in assimilating into a new environment without an arsenal of practical generic attributes. The shifting of responsibilities between university and the workplace is partly due to a general lack of understanding across all the stakeholder groups regarding the embeddedness of generic skills within tasks and contexts. The Government, the IT professional association and university literature describe employability skills as a list of attributes, as discrete competencies to be mastered. However the holistic and relational nature of skills cannot best be developed by instruction or osmosis but through participation in a variety of social, educational and work contexts.

Co-op programs offer more than the development of generic attributes. They have the potential to not only grow proactive, agentive individuals that through their experiences and learnings can develop self-determination and professional identity. The focus on employability skills development is limiting the scope of co-op to merely getting a job. The study supports broader definitions of learning for,
in, and through the workplace that moves the focus beyond employability to lifelong learning.

6.2.3 What processes can be implemented for sustained improvement of co-op program?

An exploration of the BBBIS Co-op program, together with an extensive review of the literature, suggests this Co-op program can be sustained and improved through a set of interdependent, relational processes that promote and support: (a) rewarding, satisfying relationships between stakeholders, (b) ever-expanding relational webs of practice and (c) continuing practical knowledge construction.

(a) Processes that develop mutually rewarding and satisfying relationships

The diversity of organisations and the uniqueness of individuals involved within each placement call for approaches that promote deep relationship development at a number of levels across university and organisational contexts. At the local level, key stakeholders involved in the work placement (student, supervisor and university advisor) negotiate the rules of engagement, and together, monitor and review students’ progress and well-being; at the BBBIS program level, partnerships are forged with the professional bodies through accreditation processes, and long-term industry collaborations and research partnerships with major organisations may be negotiated across higher management levels.

(b) Processes that build networks and communities of practice

Work placement programs have the potential to provide useful feedback to the BBBIS program team for course renewal and program accreditation and identify emerging industry trends requiring further research. Also, students located within organisations connect universities with organisations and become their ambassadors. Processes are required to promote the development of knowledge sharing and building networks across various cohorts of stakeholders, at different levels, for different purposes. For example the University should provide opportunities for connecting students with students, alumni and industry personnel for more informed co-op preparation, promoting discussions between workplace supervisors for knowledge sharing and encouraging conversation to construct and reconstructing practice knowledge. These opportunities may develop into further research partnerships and industry collaborations.
(c) Processes that construct and reconstruct practical knowledge construction

Universities should implement processes that engage all stakeholders in practice knowledge construction and reconstruction before, during and after co-op placements. Universities can design and deliver programs and courses that intentionally inform and prepare their students and processes and resources that can guide organisations in planning for co-op. The curriculum design should be such that students are encouraged to take ownership of their own learning and development. Active learning environments have been found to be conducive to the development of proactive, agentive students. However, the design and delivery of such courses and conditions requires informed, capable and engaged teaching academics that have the relevant training and experience for designing curricula that incorporate work-related knowledge and delivery techniques that promote active learning environments. Processes should be in place during co-op placements that intentionally guide learning and promote reflective conversations between the various stakeholders. Planned, regular interactions between various cohorts during the placement can ensure that continuing learning and development stay at the forefront of placement agendas.

The successful implementation of these processes requires the involvement of individuals that cover various knowledge bases (such as information technology, professional formation, adult learning, teaching, workplace learning and organisational behaviour), working and teaching experiences and the necessary expertise to plan, design and implement and manage the above processes. The scope of knowledge and skills required may best be accommodated by a multi-functional, multidisciplinary team. In addition, the individuals (and the Team) need to be motivated. Recognition through promotion and reward structures offered by the University and by the respective organisations plays a major part in the extent to which both teaching academics and workplace supervisors become engaged in work placement programs.

6.3 Recommendations

This section provides recommendations for improving and sustaining the practice of the Co-op Program within this University’s Bachelor of Business (Business Information Systems). I claim that the University, industry, the IT professional body and the Government must share responsibilities for providing the necessary
resources, support and opportunities that enable students to become contributing members of their professional and society. It is recommended the Emergence Model of Professional Engaged Learning (proposed in Chapter 4) be adopted to engage various levels of stakeholders across university and organisation contexts. I believe it is through such an integrated, relational, holistic model that encompasses all three areas of activity – relationship, network, and knowledge development, that University degree programs can remain sustainable and be responsive in the current environment.

6.3.1 BBBIS Program level

The Program Team should design, deliver and develop the BBBIS program curriculum that promotes the development of the whole person. An integrated, whole-of-program approach is required that crosses course, university and organisational boundaries. Opportunities for formal, informal and incidental learning across university and workplace contexts should be encouraged. In particular it is recommended the BBBIS Program Team:

- Continue to promote and support mandatory work placement year with the whole of program design.

- Design and deliver curriculum and appropriate assessment that recognises the importance of the range of generic skills, abilities, attitudes and values and integrates their development within the context of a variety of tasks and situations.

- Introduce a core course into the BBBIS program that encourages students to develop self-awareness, career development and learning skills, awareness of the code of professional conduct, ethics and practice and the skills and learning strategies necessary to transition smoothly into the world of work.

- Encourage teaching academics to develop capabilities that incorporate adult learning principles in course design and delivery.

- Promote knowledge development and learning through planned encounters (e.g. courses, workshops, events) between various cohorts of stakeholders (academics, workplace supervisors, students, alumni).
• Plan, design and incorporate feedback processes from a variety of sources involved in co-op programs as an avenue to keeping courses and the program relevant.

6.3.2 Co-operative Education Program Team level

The Co-op Team should plan and arrange opportunities, resources and support that ensure the ongoing, intentional involvement of various stakeholders before, during and after co-op placement in order to build relationships that promote ongoing learning and development. In particular it is recommended the Co-op Team:

• Prepare resources and plan interactions to build awareness of the professional formation and individual development value of co-op with pre-co-op students, workplace supervisors and university staff.

• Provide guidelines for the roles, responsibilities and expectations of all parties at individual and management levels across organisational and university contexts through resources and interactions.

• Plan and organise interactions between various cohorts of stakeholders that engage all stakeholders involved. For example, fourth year students and alumni can be engaged as mentors to pre-co-op and co-op cohorts of students, sharing their experiences, giving advice and developing their own leadership skills. Also arrangements can be made for students on co-op placements to share stories, reflect on experiences and do some practical theorising through face-to-face meetings and online team blogs.

• Plan, deliver and track a program of intentional engagement throughout the co-op placement year that promotes the development of professional skills, attributes and qualities and maximises opportunities for learning. Much can happen (or not) over a 12 month placement, so the University monitors the nature and development of the student-supervisor relationship throughout the placement (start, middle and end). The first consultation negotiates and sets up the rules of engagement. A mid-placement consultation reviews the student’s personal and professional development, situation and well-being. At the final visit the student delivers a presentation that showcases their achievements to work colleagues and university staff, reflects on individual
learning and professional development and provides feedback to both university and the organisation.

• Design flexible placement learning objectives and assessment tasks that can be negotiated locally and recognised by the measures agreed to by the student, supervisor and university advisor.

• Provide opportunities for interested staff to be mentored and coached to become advisors to students and work placement supervisors.

• Implement regular feedback mechanism to BBBIS Program Team on insights gleaned from interactions with students, workplace supervisors and industry personal on new practice knowledge, changing requirements of industry and current industry trends and developments.

6.3.3 School and College levels

The management at School and College levels should employ the necessary resources (human and non-human), budgets and arrangements to support, facilitate and deliver work placement programs. In particular, it is recommended management at School and College levels:

• Continue to promote, support and resource a mandatory work placement year with the whole of program design. Removal of the mandatory completion of a 12 month placements will not only lessen the appeal of the BBBIS, but reduce the richness of the learning and the quality of graduates.

• Develop an understanding of the depth and breadth of the value of co-op (beyond economic and employability skills levels) in order to make informed decisions. Such understanding is developed through multidisciplinary research, experience and discussions with suitably experienced individual.

• Engage suitably experienced teams of individuals to co-ordinate work placement activities namely: (1) industry engagement personnel to track and monitor active placements, seek out new opportunities, make arrangements to build relationships, support students, organise events to link various cohorts within and across university, organisations and professional bodies, and seek out further opportunities for placements, research projects, collaborations and partnerships across the College, (2) professional advisors with work experience and professional development backgrounds, to build
mutually satisfying and rewarding relationships between students and their supervisors; (3) academics with an understanding of how to design and deliver courses that incorporate generic skills development, promote workplace learning, professional development and self-determination.

- Acknowledge and recognise the contribution of workplace supervisors and involvement of industry and the professions.

- Encourage academic involvement and professional development in co-op programs through recognising time commitments in workload allocations, and further training through workshops and staff mentoring programs.

- Ensure budget and resources are in place to support the processes, communications and reporting structures required to deliver placement programs.

6.3.4 University management levels

At University levels, consideration should be given to going beyond the rhetoric regarding work integrated learning to implementing processes and structures that promote sustainability through developing a learning culture that supports and acknowledges both formal and informal learning. In particular it is recommended executives at University level:

- Design and implement internal promotional structures that acknowledge, recognise and reward teaching, industry engagement and professional staff involved in building partnerships and collaborations with industry and the professional bodies.

- Employ teaching (and non-teaching) academics and professionals with a wide range of skills, experiences and knowledge to enrich programs, processes, structures and relationships.

- Initiate professional development workshops and programs to upskill current staff that incorporate opportunities to engage with industry. For example, all teaching academics (with no teaching and working experience) could be encouraged to complete postgraduate higher education programs that incorporate a work placement component within an organisation.
• Promote a learning culture that encourages construction and reconstruction of both propositional and working practice knowledge. Developing professional doctorates that encourage workplace supervisors and industry contacts to do applied research and add to the body of practice knowledge would be a fine example of such promotion.

• Ensure quality feedback processes and reporting mechanisms are in place, and drawn on, for course and program renewal.

Diversity of organisational contexts, complexity of work placement relationships and individual value differentiation within and across stakeholder groups suggest no two placements are alike. I propose a flexible, relational model be adopted that is intentional in design and delivery. The University and industry should take responsibility, not only providing resources, support and opportunities to enable students to become contributing members of their professional and society, but for affording their own staff with resources, support and opportunities with the skills, knowledge and experiences to be involved in university-industry engagements such as work placements.

However, despite all the best of intentions of universities and organisations, without student engagement the work placement experience may still fail. Student motivations are influenced by individual interests and desires, histories, personalities and external factors. But universities and organisations can do much to motivate, challenge and excite students through affording opportunities to develop self-awareness and self-determination in a variety of social and professional contexts.

### 6.4 Research Limitations

The Study explored the extent to which the Co-operative Education Program in the Bachelor of Business in Business Information Systems (BBBIS) degree at the RMIT University in Australia develops employability skills to the meet the changing needs of the ICT Industry. The research sample was small and confined to a 12 month work placement program, within a particular undergraduate degree in the business computing discipline area within a Melbourne-based university. Interviews were conducted over a six month timeframe giving me just a snapshot of the program within a short timeframe. Data collected over a longer period of time with a wider population across disciplines and universities, would
increase the trustworthiness of the conclusions and recommendations made in this study. The institutional cultures of universities, their histories, together with the power held by discipline-based profession bodies, may play a part in influencing the views of stakeholders.

As would be expected my involvement in this co-operative education program for the past 6 years together with a further 15 years within the BBBIS program, and 15 years working in industry, will have some impact on the research outcomes. However the methodology selected was closely observed and all attempts made to maintain data integrity and validity.

### 6.5 Further Research Opportunities

It is proposed that the Emergence Model of Professional Engaged Learning provides a framework for the design, implementation and sustainability of any work placement program that involves a 12-month period of time working in an industry. Further research endeavours could consider:

- Extending the Study to other Schools within the College, across the University and other Universities.
- Assessing the value of the Model as a framework for analysing and evaluating other placement programs.
- Applying the Model to provide a guide for implementing new placement programs or growing existing ones.
- Investigating the value of this model for shorter placement programs.
- Determining performance measures to ascertain the value-add of this Model to university programs sustainability and growth.

Further it is proposed the Emergence Model of Professionally Engaged Learning can be used at strategic, implementation and quality improvement levels as the Model is strategic in direction, intentional in design, responsive in implementation and sustainable in practice.

Of interest would also be research investigating what it means to be a business information system (IS) professional. Without a shared vision of the profession, it would be difficult for courses designed, delivered and sustained to promote the development of budding professionals.
This research journey has revealed great strengths and challenges in the nexus between academia, the world of business and IT, and students’ lived experiences. At the very least co-op programs allow students to experience the world of work. More optimistically, my study suggests co-op placements have the potential to develop work useful skills, encourage professional formation and promote the emergence of multiple identities. The engagement of stakeholders in mutually satisfying relationships before, during and after co-op placements lay the foundations for relational webs of communities of practices. These communities in turn create bodies of new practice knowledge that sustain and grow university programs, strengthen the professional bodies and thereby enrich Society.
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Appendices

Appendix A – Profile of participants in data collection sample

<table>
<thead>
<tr>
<th>Participant</th>
<th>Stakeholder type</th>
<th>Location</th>
<th>Company profile</th>
<th>Job position</th>
<th>Cultural background</th>
<th>Gend er</th>
<th>Involvement in co-op</th>
</tr>
</thead>
<tbody>
<tr>
<td>Charles</td>
<td>Work placement Supervisor</td>
<td>City</td>
<td>Large State Government dept.</td>
<td>IT Manager</td>
<td>Aust</td>
<td>M</td>
<td>Has supervised placement students for nearly 20 years</td>
</tr>
<tr>
<td>Mike</td>
<td>Work placement Supervisor</td>
<td>Outer Melb</td>
<td>Medium sized IT company</td>
<td>General manager</td>
<td>Aust</td>
<td>M</td>
<td>Has supervised co-op students for 10 years.</td>
</tr>
<tr>
<td>Shirley</td>
<td>Work placement Supervisor</td>
<td>City</td>
<td>Medium-sized Health services</td>
<td>Human resources manager</td>
<td>Britain</td>
<td>F</td>
<td>Recently become a supervisor to a co-op student in a company who has never been involved in co-op</td>
</tr>
<tr>
<td>Laura</td>
<td>Work placement Supervisor</td>
<td>City</td>
<td>Large Aust Government-owned company</td>
<td>Graduate Recruitment Manager</td>
<td>Aust</td>
<td>F</td>
<td>Set up placement program within her organisation. Been involved in co-op for 5 yrs</td>
</tr>
<tr>
<td>Pete</td>
<td>Work placement Supervisor</td>
<td>South Melb</td>
<td>Small-medium IT business</td>
<td>Company director</td>
<td>Aust</td>
<td>M</td>
<td>Owner, alumni &amp; has employed &amp; supervised placement students intermittently</td>
</tr>
<tr>
<td>Barry</td>
<td>Senior management</td>
<td>City</td>
<td>Global university</td>
<td>Executive Teaching &amp; Learning</td>
<td>Aust</td>
<td>M</td>
<td>Develops policy around WIL. Has industry experience</td>
</tr>
<tr>
<td>Harry</td>
<td>Academic-industry advisor</td>
<td>City</td>
<td>Large global university</td>
<td>Co-op Advisor</td>
<td>Aust</td>
<td>M</td>
<td>Facilitates relationship b/w supervisors &amp; students on-site</td>
</tr>
<tr>
<td>Faye</td>
<td>Senior management</td>
<td>City</td>
<td>Global university</td>
<td>Assoc Dean, Bac College</td>
<td>Britain</td>
<td>M</td>
<td>Implements policy. No industry experience</td>
</tr>
<tr>
<td>Pete</td>
<td>Senior management</td>
<td>South Melb</td>
<td>Small-medium IT business</td>
<td>Company director</td>
<td>Aust</td>
<td>M</td>
<td>Has employed &amp; supervised placement students intermittently</td>
</tr>
<tr>
<td>Charles</td>
<td>Senior management</td>
<td>City</td>
<td>Large State Government dept.</td>
<td>IT Manager</td>
<td>Aust</td>
<td>M</td>
<td>Recently joined the RMIT co-op placement program. Previously involved with other universities</td>
</tr>
<tr>
<td>Harry</td>
<td>ACS Vic</td>
<td>Vic</td>
<td>Professional Association</td>
<td>Executive</td>
<td>Aust</td>
<td>M</td>
<td>Involved with the IT professional body for ~ 20 yrs. Worked in IT industry for over 30 years.</td>
</tr>
<tr>
<td>Dave</td>
<td>Academia</td>
<td>City</td>
<td>Global university</td>
<td>Lecturer</td>
<td>Aust</td>
<td>M</td>
<td>Teaches students before and after co-op. Trained secondary teacher. Over 30 years teaching experience</td>
</tr>
<tr>
<td>Vlad</td>
<td>Academia</td>
<td>City</td>
<td>Global university</td>
<td>Lecturer</td>
<td>European</td>
<td>M</td>
<td>Teaches students before and after co-op. Has worked in IT industry. Active member of ACS</td>
</tr>
<tr>
<td>Paul</td>
<td>Academia</td>
<td>City</td>
<td>Global university</td>
<td>Co-op admin &amp; academic</td>
<td>Aust</td>
<td>M</td>
<td>Involved in running the co-op program for over 10 yrs. Has worked in industry</td>
</tr>
<tr>
<td>Nick</td>
<td>Academia</td>
<td>City</td>
<td>Global university</td>
<td>Lecturer</td>
<td>European</td>
<td>M</td>
<td>Teaches students before and after co-op. Worked in IT at uni. No industry-based work.</td>
</tr>
<tr>
<td>Dillon</td>
<td>Academia</td>
<td>City</td>
<td>Global university</td>
<td>Program co-ordinator</td>
<td>Aust</td>
<td>M</td>
<td>Teaches students before and after co-op. Has worked in IT government dept</td>
</tr>
<tr>
<td>Henry</td>
<td>Alumni</td>
<td>St Kilda</td>
<td>Large international-based IT company</td>
<td>Software engineer</td>
<td>Indonesia</td>
<td>M</td>
<td>Completed co-op 6 years ago. Worked in IT position at uni; now working in IT industry</td>
</tr>
<tr>
<td>Scott</td>
<td>Alumni</td>
<td>City</td>
<td>Large IT company</td>
<td>IT manager</td>
<td>Aust</td>
<td>M</td>
<td>Completed co-op 10 years ago. 3rd job since graduation</td>
</tr>
<tr>
<td>Suri</td>
<td>Alumni</td>
<td>City</td>
<td>Large Australian bank</td>
<td>Business analyst</td>
<td>Malaysian</td>
<td>F</td>
<td>Completed co-op 2 years ago. 2nd job since graduation</td>
</tr>
<tr>
<td>Pete</td>
<td>Alumni</td>
<td>South Melb</td>
<td>Small-medium IT business</td>
<td>Company director</td>
<td>Aust</td>
<td>M</td>
<td>Completed co-op 10 years ago. Worked in large IT companies. Now runs his own business</td>
</tr>
<tr>
<td>Laura</td>
<td>Alumni</td>
<td>City</td>
<td>Large national postal co.</td>
<td>HR Manager</td>
<td>Aust</td>
<td>F</td>
<td>Complete co-op 3 years ago</td>
</tr>
<tr>
<td>Rick</td>
<td>Student</td>
<td>South Melb</td>
<td>Large national shipping co.</td>
<td>Customer support</td>
<td>Greek</td>
<td>M</td>
<td>Currently completing co-op year. Has had pt/t jobs for some time</td>
</tr>
<tr>
<td>Rae</td>
<td>Student</td>
<td>City</td>
<td>Large Australian bank</td>
<td>Security officer</td>
<td>Italian</td>
<td>F</td>
<td>Currently completing co-op year. Has had pt/t jobs for some time</td>
</tr>
<tr>
<td>Lisa</td>
<td>Student</td>
<td>Geelong</td>
<td>Small web company</td>
<td>Web developer</td>
<td>Chinese</td>
<td>F</td>
<td>Currently completing co-op. Had never worked in industry</td>
</tr>
<tr>
<td>George</td>
<td>Student</td>
<td>North Melb</td>
<td>Small software programming co.</td>
<td>Programmer</td>
<td>South African</td>
<td>M</td>
<td>Just started co-op year. Had never work worked in industry</td>
</tr>
<tr>
<td>Raje</td>
<td>Student</td>
<td>City</td>
<td>Large consulting firm</td>
<td>Junior IT Consultant</td>
<td>Indian</td>
<td>M</td>
<td>Just started co-op. Had never work worked in industry</td>
</tr>
</tbody>
</table>
Appendix B – English language statement

18th June, 2008

Dear Liddy

“Working to Learn: The contribution of co-operative education programs to the formation of ICT Professionals”

The purpose of this letter is to explain to you the aims of my study and your involvement. This research contributes to my doctoral studies within the Faculty of Education at The University of Melbourne and has been approved by the Human Research Ethics Committee. Also I intend to implement my findings in our co-op program.

The study seeks to explore the contribution of co-operative education programs to the development of professionals to meet the changing needs of the ICT industry. The study collects data from 30 minute interviews with final year students, co-op employers, academics, alumni and senior management in industry, government and the academy. These interviews seek to articulate views on the value of co-op to industry, its contribution in the development of professionals; and its sustainability in the future.

The interviews are audio-taped and you will be provided with a transcript of the interview to correct/sign off as a true and accurate record. Once the results have been collated you will be invited to a focus group meeting with other participants of the study to validate the findings. The confidentiality of the information you provide will be safeguarded subject to any legal limitations. As the sample size is small and your confidentiality is important, you will be referred to by pseudonym in any publications arising from the research.

Once the thesis arising from this research has been completed, a brief summary will be available to you on application at the School of Business Information Technology at RMIT University. The findings from this research may be presented at academic conferences.

Please be advised that your participation in this study is completely voluntary and you are free to withdraw at any time up to the point of processing of data arising from the interviews.

Looking forward to meeting up with you

With kind regards

Kathy Henschke
Appendix C – Consent Form

Consent form for participants involved in research project

PROJECT TITLE: WORKING TO LEARN

Name of participant:

Name of investigator(s): Kathy Henschke

1. I consent to participate in the project named above, the particulars of which – including a one-on-one interview and focus interviews - have been explained to me. A written copy of the information has been given to me to keep.

2. I authorise the researcher to use for this purpose the data collected in the interview and focus interviews referred to under (1) above.

3. I acknowledge that:
   (a) The possible effects of the participating in the interviews have been explained to me to my satisfaction;
   (b) I have been informed that I am free to withdraw from the project at any time without explanation or prejudice and to withdraw any unprocessed data previously supplied;
   (c) The project is for the purpose of research;
   (d) I have been informed that the confidentiality of the information I provide will be safeguarded subject to any legal requirements.

4. I consent to the interviews being audio-taped and acknowledge that notes from the transcripts will be returned to me for verification. I understand my comments will be referred to by pseudonym in the thesis documentation and any publications arising from the research.

Signature Date

( Participant)
### Appendix D - Fieldwork calendar

<table>
<thead>
<tr>
<th>Date</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>10/08/2007</td>
<td>Mike (Senior manager and experienced supervisor) was interviewed on-site in a meeting room</td>
</tr>
<tr>
<td>17/08/2007</td>
<td>Raj (starting co-op student) chose to meet me at RMIT</td>
</tr>
<tr>
<td>17/08/2007</td>
<td>Pete (Owner of IT company and alumni) chose to be interviewed in a coffee shop</td>
</tr>
<tr>
<td>20/08/2007</td>
<td>George (starting co-op student with no work experience) chose to meet me at RMIT</td>
</tr>
<tr>
<td>23/08/2007</td>
<td>Charles (IT manager &amp; experienced supervisor). Interviewed on-site in meeting room</td>
</tr>
<tr>
<td>30/08/2007</td>
<td>Rae (co-op student) chose to be interviewed in a coffee shop</td>
</tr>
<tr>
<td>31/08/2007</td>
<td>Rick (co-op student with some IT work experience). Met student on-site in meeting room</td>
</tr>
<tr>
<td>5/10/2007</td>
<td>Paul (Co-op administrator &amp; practitioner) interviewed in meeting room at RMIT</td>
</tr>
<tr>
<td>29/10/07</td>
<td>Nick (academic) interviewed in meeting room at RMIT</td>
</tr>
<tr>
<td>8/10/2007</td>
<td>Suri (alumni and non-IT practitioner) chose to be interviewed in meeting room at RMIT</td>
</tr>
<tr>
<td>9/10/2007</td>
<td>Dillion (BBBIS program director &amp; practitioner ) interviewed in meeting room at RMIT</td>
</tr>
<tr>
<td>9/10/2007</td>
<td>Vlad (senior academic &amp; practitioner) interviewed in meeting room at RMIT</td>
</tr>
<tr>
<td>21/12/2007</td>
<td>Laura (HR, experienced supervisor and alumni). Chose to have interview in uni meeting room</td>
</tr>
<tr>
<td>24/1/2008</td>
<td>Shirley (HR &amp; new workplace supervisor in health). Interview held in her office</td>
</tr>
<tr>
<td>18/01/2008</td>
<td>Harry (professional association representative &amp; IT practitioner). Chose to have interview in uni meeting room</td>
</tr>
<tr>
<td>24/01/2008</td>
<td>Dave (academic &amp; experienced teacher) interview in uni meeting room</td>
</tr>
<tr>
<td>1/02/2008</td>
<td>Scott (alumni 10 years ago working as IT practitioner &amp; manager) chose to be interviewed in meeting room at RMIT</td>
</tr>
<tr>
<td>14/04/2008</td>
<td>Faye (senior academic). Interview held in her office</td>
</tr>
<tr>
<td>16/04/2008</td>
<td>Lisa (co-op student) chose to be interviewed in meeting room at RMIT</td>
</tr>
<tr>
<td>16/04/2008</td>
<td>Barry (senior academic &amp; sociology practitioner. Interview held in his office</td>
</tr>
<tr>
<td>22/04/2008</td>
<td>Henry (alumni &amp; IT practitioner). Chose to have interview in uni meeting room</td>
</tr>
</tbody>
</table>
**Appendix E – Interview questions (from Ethics application)**

**INTERVIEW QUESTIONS**

**Co-op Student Interview Questions**

1. What is your job? What tasks do you perform?
2. How do you know what to do when? What events constitute an average day? Who do you come in contact with?
3. What knowledge and skills do you need to be able to do your job? Do you have the necessary knowledge and skills? Did your study at uni help you in preparing/not preparing you for co-op?
4. Have you learnt anything new? How did you learn it? What resources do you use?
5. How do you know how “they do things around here”? How did you get to know this? Were you oriented/inducted into the organization? Read about it? Did you ask? Or just learnt about it on the job?
6. Tell me about a time you were given a new assignment/task to complete? How do you go about completing a new assignment? What are your thought processes? How do you decide what to do?
7. When you need to make a decision, how do you decide on the steps you are going to take?
8. Do you think you are doing a good job? How do you know? What do you do when you have a problem?
9. Do you think the co-op year so far has changed you? In what way?
10. What were your initial expectations of the co-op year? Have they been met? What more do you hope to get out of the co-op year?
11. What skills and knowledge do you think you need to have to be employed as an ICT professional?
12. In the context of the BBIS program and what you have completed to-date, to what extent do you think you are being shaped as an ICT professional?

**BBBIS Alumni Interview Questions**

1. How long ago did you finish the RMIT’s BBBIS degree? What jobs have you had? What contributed to you getting these jobs?
2. Where did you complete your co-op placement? Were you prepared for the co-op year? Why/why not? How could’ve the preparation be improved?
3.Was the co-op year a satisfactory/not satisfactory experience? What made it good/bad? How could it have been improved?
4. Did the Co-op year change you in any way? In what way?
5. What did you learn from co-op? How do you know?
6. What were your expectations of co-op? Were they met?
7. Did the Co-op prepare you for work? In what way? For being an ICT professional? In what way?
8. What skills and knowledge do you think you need to be employed as an ICT professional? Has the BBIS program as a whole developed these employability skills?

**Co-op Work-based Supervisor/Mentor Interview Questions**

1. How long has your organisation been involved in the co-op program? Why is your organisation involved? Is the employment of co-op students part of the organisation’s strategy?
2. How long have you been involved? How many co-op students have you supervised? Why are you involved? What do you see your job is?
3. What attributes, skills etc. do you look for when hiring a co-op student?
4. What are your expectations of these students once they start? Are they being met? Do you think the University’s preparation could be improved in some way? How?
5. Have you found students changed over the time they are in co-op? In what way? What contributed to this change?
6. What do you think the students learn during their co-op year? How do they learn?
7. Do you think students learn by just being in the workplace setting?
8. What steps do you think could be taken to maximise student learning in the co-op year? By the university? By your organisation?
9. What could the university have done to assist you in supporting/mentoring the students?
10. By the end of their co-op year, would you say the students are employable as ICT professionals? Why/why not?
11. What skills and knowledge do you think you need to have to be employed as an ICT professional?
12. How could the delivery of co-op (in the context of the BBIS degree) be improved?

**Academic Interview Questions**

1. What do you teach? What year level students? How long have you been teaching uni students?
2. What do you think the co-op experience should give students? Are these being met? How do you know?
3. What is the impact of co-op on students? How do you know?
4. In what way does the co-op year confront how you teach on campus? Before the co-op year? After the co-op year? Do you teach students differently before & after co-op? If so, in what way?
5. Do you know whether the BBIS prepares students for employment as ICT professionals? How do you know?
6. What skills and knowledge do you think students need to have to be employed as an ICT professional?
7. What support do students need during co-op? From the Uni? From the work place?
8. What do you think is the value of including co-op within the BBIS program? Can the co-op program be improved?

**Executive-level Interview Questions**

1. How do you see the labour market evolving? What are the implications of these changes on the labour market - current and future? What are the implications of these changes on your organisation? On society?
2. How has your organisation been responding to market changes and environmental pressures?
3. What skills and knowledge do you think individuals need to develop to be employable as business professionals in a dynamic environment?
4. Have any strategies, policies and structures been developed to promote professional learning and development?
5. What part do you see universities playing in responding to the changing demands of industry?
6. What value does your organization place on work-integrated learning programs such as co-op?
7. What ways can Universities and Industry work together in developing a professional workforce?
Appendix F – Transcription sample

Interview with XXXX (Mike on 10th August, 2007)

Thank you very much XXX for giving me the time. Maybe it might be an idea just to start off with talking generally about your involvement in the co-op program. How many years has it been?

We first employed somebody from RMIT who was a postgrad, that was about 13 years ago, and through our relationship with Stas and other people, and you, we became aware of the co-op program. About 8 or 9 years ago, we started to employ co-op people and pretty much did that consecutive years for a while and currently we’ve got 4 people out there of different lengths of time that have come to us from the co-op program. I think Ken Tan’s probably been there 7 or 8 years and Andrew Dew’s?? been there 6 or 7 and Diana’s been there about 4. We did employ some others through the co-op program back in about 1999, and they didn’t seem to fit culturally.

They were from our program?

Yes, I don’t remember the names of the individuals. Interestingly enough, we do seem to have more success with our Asian intake on the co-op program than the non Asian intake, not that I look to differentiate between any of that but that seems to be the experience. There was a couple of young fellows back in 1999 that were there for 6-8 months or something and decided to move on.

Interesting because when you get an international student, do they tend to then go back to do the final year?

Yes all the people we’ve got here now did go back and complete their final year part time for that final year and then came back full time afterwards.

How many of those students that you had would you have employed roughly? The majority 75%, 50%.

The majority.

What was the initial reason for taking on the co-op students, or the company’s initial reasons?

Many of our people are getting on in years, so to provide longevity for the business and continuity, we want to bring people in at the bottom end, as in bring them up through the organisation as opposed to going out and looking for more senior people who are often fixed in their ways as well. So that was the primary reason.

Has it changed?

No, it’s still the way we work today.

Have you found the nature of the students that are coming in have changed, are they prepared to stay here for the longer haul or are they... you know, the whole x generation business...?

Prior to taking on Lauren Wilson in December 2007, had been about 3 years before we’d taken on a co-op student. But those 3 previous people, Ken, Andrew and Diana, have stayed with us. So we’ve had a good success rate.

Has the reason for taking on co-op students varied in any way now? Are there any additional things you’re looking for? You said it was mainly for the longer haul, getting people to come in, are there any other reasons why you might take on co-op rather than graduates for example?

We’ve really been happy with the co-op students. I haven’t even thought about... when I have an opportunity to take on somebody, I’m happy for it to be a co-op student, I haven’t though graduate instead.

Have you seen any change in the market as such, in the IT industry in terms of the viability of students or graduates or anything? Have you seen any pressures?

Generally we don’t have problems finding people. We do have some other businesses we own, a web design studio, we own an ISP business, and so we do have other activity outside of the WORD commercial software business, so we’re regularly employing for those as well. We don’t seem to have trouble finding people, WORD seem to be out there. I have noticed generally in the marketplace in the last 2 years, competent c sharp programmers and the dot net framework seem to be putting some price tags on themselves, and we have taken on a couple of people to do c sharp programming. Both of those individuals have been recent arrivals into the country from China, and therefore we can employ them at a price that we feel is more suitable than some of these others that have got tickets on themselves.

What do you think the students bring to the... do the students bring anything to the...?
They bring new skills that our old staff don’t have. They seem to be very quick on the uptake, so even the WORD technologies they learn them very quickly as well as current knowledge of new technologies. But generally they seem to be very bright people, and to take on an old... what’s the saying, the old dog, you can’t teach them new tricks, there’s some truth in that. The younger co-op people are... probably because they’ve been used to the process of learning, so open to the process of learning so they do seem to learn our requirements quite easily.

Do you see any changes in the student from the start to the time they finish?

Yes, it’s quite a joy to watch them. They generally all seem to be very quiet people and studious. It is fun to watch them start to open up with other staff, and for the first month or so they’ll sit there and they won’t say boo to anybody and then you’ll see them in the lunch room one day and they’ll start to talk to somebody. So you see them starting to mature socially, and that probably comes from also gaining confidence with the workplace they’re in and the technology they’re now learning that they feel perhaps on a par to be able to have those conversations.

Do you see any development of any other skills?

Certainly their technical skills develop, that’s a necessary requirement. Their telephone skills, handling customers, that improves with time.

You hit the nail on the head when you say it’s the confidence and really adapting to culture and stuff like that.

Well Lauren’s only been here since the start of December and we’ve already got some customers ringing up and asking for Lauren when they call, which is a fabulous thing.....
Appendix G – Coding sample using NVivo– first pass

come back from co-op always strive for the high distinction levels. The ones that haven’t done the co-op, they always strive for the pass level, and that’s really quite interesting, they’re minimalists. The other thing about co-ops is that they know that a lot of WORD they have to go out and dig for themselves, they don’t get it on a plate. And that’s the other thing that separates the ones that haven’t done co-op and ones that have, they know how to learn.

In what way does the co-op year confront how you teach your subjects before co-op and how you teach it then after co-op?

Before co-op what I try to do is I try to get them focussing on how businesses work and I try to get them thinking, as I teach in networks and operating systems and security space, I try to get them to see why these things are important in a business context and get them thinking. I teach this because this is done in business, I teach this because you have to be aware of these things in business. And I focus it that way. Where I become theoretical and have to discuss theory, I always tie the theory back to business practice. I don’t actually teach any theory that doesn’t have an application. And when a student has done co-op, the teaching then is almost more reflective. So what I have them do is I say well, as we know in business these are key prerogatives, now look at how we deal with some of these issues. So it’s a lot more advanced. For a student who hasn’t done co-op, has absolutely no idea what I’m talking about and they’re really in difficulty and they just simply don’t understand the application of that theory, they see the theory but they can’t see the application because they have no experience of business. And consequently, WORD that theory to manifest as a reality in their head or for the paradigm to be accepted, they can’t do that.

What skills and knowledge do you think students need to have to be employed as an ICT professional?

I still assert that students need to understand systems.

Systems meaning?

Meaning how systems work, how businesses operate, the nuts and bolts of how business works. I think they need to understand those nuts and bolts, how do you program, I think they need to understand how computers work, and I believe today they need to understand how networks operate. So it’s basically systems, it’s the
### Appendix H – Coding matrix (sample)

<table>
<thead>
<tr>
<th>Focus of co-op delivery</th>
<th>what learning valued</th>
<th>how learnt</th>
<th>what learnt (explicit &amp; implicit in varying degrees)</th>
<th>Possible measures of success</th>
<th>Perceived Responsibilities/expectations</th>
<th>Outcomes</th>
<th>Influencing factors</th>
<th>Risk</th>
<th>literature evidence of approach</th>
<th>Uni preparation for co-op</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vocational (preparation for work) [contextual]</td>
<td>throug th experiencing work &amp; work context</td>
<td>Explicit - experience of having to adapt to organisation’s rules &amp; practices; doing &amp; completing tasks in a variety of situations. Implicit - other possible learning (generic), business knowledge, business skills developed: working under pressure, time management, managing priorities. Observe complexity</td>
<td>Awareness of context. Academic assessment out of step with experience. Often report (including some research). Recently inclusion of journal &amp; reflection paper on experience (however many students hate writing them. Don’t see the value.</td>
<td>With employer (supervise student with relevant work); role (administrator and guide); university (safe environment). Hands off policy from university. Student expected to fit in and do tasks</td>
<td>Hit &amp; miss. Both good &amp; bad</td>
<td>depending on student history (ability to observe, learn, adapt), social skills, supervisor history and engagement (buy in), extent of organisational affordances, short/long term job prospects; student not challenged; paid: length of placement</td>
<td>Potential high risk for student Student privileged to be working with employer. Don’t cause any waves Thrown in the deep end. student at mercy of employer; often treated as work experience student Shy, students with no work experience, international students potentially disadvantaged. Evidence of anxiety, stress, bad experiences</td>
<td>enculturati on; socialisation;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Skill Development [task performance &amp; participation (generic skills)]</td>
<td>throug h doing variety of tasks; participation ??</td>
<td>Explicit - discipline-based &amp; generic skills (sometime implicit) through doing a variety of tasks in a number of different situations Implicit - generic skill development, develop autonomy, complexity</td>
<td>Improvement. evidence of development of discipline-based skills; journal &amp; reflection paper (skills learnt)</td>
<td>Supervisor role to provide variety of tasks (supervisor, coach); university (safe environment doing discipline relevant tasks). Student expected to improve</td>
<td>Varied set of skills. Where non-generic often not acknowledge d in courses post co-op</td>
<td>Variety of tasks of increasing complexity; meaningfulness of tasks resources, support, standards required to do job review &amp; feedback, recognition; ongoing challenges paid; length of placement</td>
<td>Potential high risk for student Student privileged to be working with employer. Don’t cause any waves abilities (to perform, learn, improve) Evidence of anxiety, stress, bad experiences</td>
<td>work plan, supervisor’s report, evidence of projects &amp; work completed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Uni preparation for co-op</td>
<td></td>
<td></td>
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<td></td>
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</tr>
</tbody>
</table>

*Note: The table above summarizes the focus of co-op delivery, the learning valued, how learnt, what learnt (explicit & implicit in varying degrees), possible measures of success, perceived responsibilities/expectations, outcomes, influencing factors, risk, literature evidence of approach, and Uni preparation for co-op.*
### Appendix I – Final coding under 9 main categories (sample)

<table>
<thead>
<tr>
<th>Tree Notes</th>
<th>Name</th>
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<th>Concerns</th>
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### PROJECT REFERENCE DETAILS

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Author/s:
HENSCHKE, KATHLEEN

Title:
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Date:
2011

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