



An exploration of the pedagogies employed to integrate knowledge in work-integrated learning in New Zealand higher education institutions

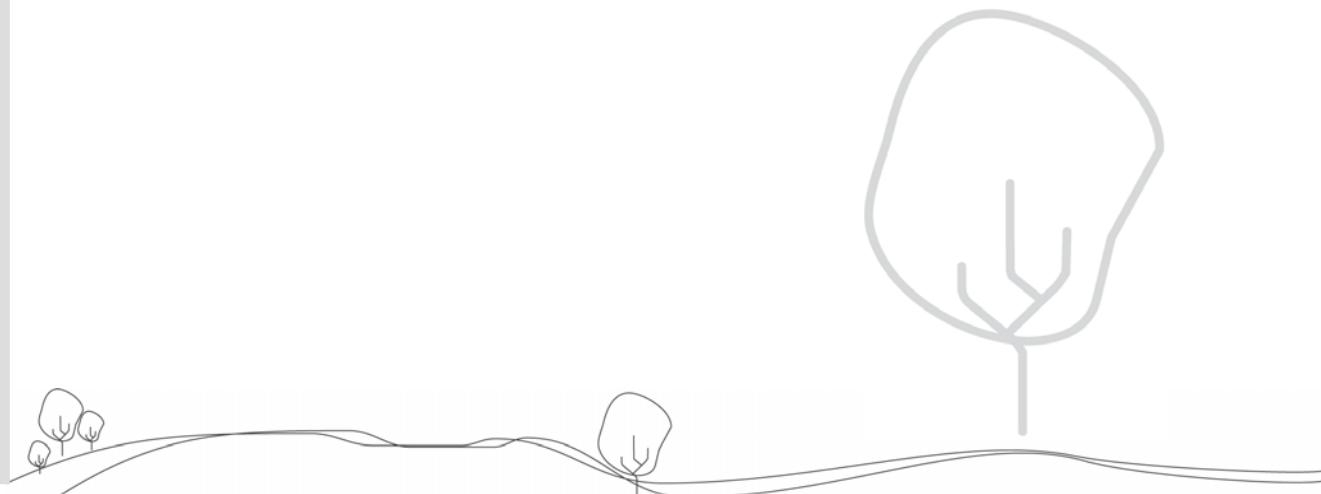
Richard K. Coll, Chris Eames, Levinia Paku, Mark Lay

Diana Ayling, Dave Hodges, Shiu Ram, Ravi Bhat,

Jenny Fleming, Lesley Ferkins, Cindy Wiersma,

and Andrew Martin

April 2009



Teaching & Learning Research Initiative

P O Box 3237

Wellington

New Zealand

www.tlri.org.nz

© Crown, 2009

Acknowledgements

The entire research team wishes to acknowledge the generous support of the TLRI funding which made this project possible. We also gratefully acknowledge the contribution made by the participants: students, employers, and practitioners, all of whom willingly gave up their valuable time to help us with our research. We also would like to thank our research advisers: Chris Eames, Diana Ayling, and Cindy Wiersma for their valuable input and insightful critique of this work.

Table of Contents

Acknowledgements	i
Context of the research and review of relevant literature	3
Definition of WIL/co-operative education	3
Stakeholder perceptions of the benefits of WIL/co-operative education	4
WIL/co-operative education and learning	6
Assessment of learning in WIL programmes	10
Research design and methodology employed	13
Research design	13
Research phases	13
Ethical considerations	14
Research quality measures	15
Research findings	17
Case study sector 1: Science and engineering	17
<i>Students</i>	17
<i>Practitioners</i>	22
<i>Employers</i>	25
Case study sector 2: Sport	29
<i>Students</i>	29
<i>Practitioners</i>	32
<i>Employers</i>	36
Case study sector 3: Business and management	39
<i>Students</i>	39
<i>Practitioners</i>	46
<i>Employers</i>	54
Summary, conclusions, and discussion	59
Implications for practitioners	61
Limitations of the project	65
Relevance to TLRI principles	67
Bibliography	71

Tables

Table 1 Reported benefits of WIL/cooperative education for employers
(Braunstein & Loken, 2004)

5

Figures

Figure 1	A model for integration of WIL/cooperative education programmes in a resource planning programme	9
Figure 2	Portfolio model for the assessment of workplace learning in a business programme	11
Figure 3	A framework for learning, based on enhancing student self-efficacy	63

Appendices

Appendix A:	Interview protocol—students	79
Appendix B:	Interview protocol—Practitioners	81
Appendix C:	Interview protocol—Employers	83
Appendix D:	Document examination protocol	85
Appendix E:	Project team and roles	87
Appendix F:	Publications arising from this project	89

This TLRI project sought to develop the research base of education in work-integrated learning (WIL)/co-operative education. In particular it was concerned with the *integration* aspect of WIL.

The aims of this research project were:

1. to inform education practice in WIL and co-operative education programmes in the New Zealand higher education sector
2. to build the research capability of WIL practitioners, and emerging researchers in WIL/co-operative education
3. to widen the understanding of WIL/co-operative education as an educational strategy and inform WIL practitioners and academics involved in WIL/co-operative education in the New Zealand higher education sector.

To achieve these aims, the following objectives were established:

1. The project would investigate which pedagogical approaches in WIL/co-operative education programmes are currently used by practitioners in terms of learning and the integration of academic and workplace learning. WIL practitioners conducted the research in partnership with senior researchers. Together the parties investigated their WIL programmes and the use of pedagogical approaches within them.
2. The senior researchers would work alongside WIL practitioners and emerging researchers to scaffold their research capability into their WIL programmes. Through their partnership with WIL practitioners, the senior researchers modelled an interpretive research process (see below for details), and gained the practitioners' full participation. This process contributed to the practitioners' understanding of research and informed both parties about the integration of academic and workplace learning as practiced in the New Zealand higher education sector.
3. The research team would use the findings of the research to inform the educational aspects of WIL/co-operative education programmes in New Zealand higher education institutions. This objective was achieved as the WIL practitioners developed research-informed practice which they disseminated through other higher education institutions they worked with; through the whole research team sharing their findings with the national body for WIL (the New Zealand Association for Co-operative Education, NZACE); through the practitioners sharing their experiences with their colleagues at the annual NZACE conference; and through the research team jointly disseminating their findings through conferences and published articles (see Appendix F for a list of publications arising from this project).

The research question addressed in this study is:

What pedagogical approaches are used in New Zealand WIL/co-operative education programmes in terms of integration of student knowledge, and what impact do these have on student learning?

Although the context for this research is New Zealand WIL programmes, the findings are relevant to other countries. Additionally, the research methodology could be adapted to any subject area

and any higher education institution worldwide, and implications may arise from the research for WIL programmes that lead to improvement in our understanding of student learning—locally and internationally.

Context of the research and review of relevant literature

Definition of WIL/co-operative education

Work-integrated learning/co-operative education is an educational strategy in which students undergo conventional academic learning at a higher education institution (HEI), and combine this with some time spent in a workplace relevant to their programme of study and career aims (Houshmand & Papadakis, n.d.). WIL goes under a number of names internationally. In the United Kingdom the well-established term is *sandwich degree* (Ward & Jefferies, 2004), but in the USA and worldwide *co-operative education* and *internships* are the more common terms (Groenewald, 2004; Sovilla & Varty, 2004; Walters, 1947). The name *co-operative education* reflects the tripartite nature of WIL in which the student, HEI, and workplace work together collaboratively to develop a comprehensive skill set in students (Coll, 1996). Recently the world body for co-operative education—the World Association for Cooperative Education (WACE) added a tag line to its name—*work-integrated learning*—to reflect a broader perspective of the nature of WIL, which can include capstone programmes, internships, sandwich degrees, and work-based learning via industry projects (Franks & Blomqvist, 2004).

Co-operative education or WIL has waxed and waned somewhat in terms of political status. It has been in formal operation for over 100 years (Houshmand & Papadakis, n.d.). From the late 1950s to the mid-1980s it went through massive worldwide expansion led by the USA (Sovilla & Varty, 2004), but this expansion was more about income generation for HEIs than about enhancing learning. The expansion was followed by contraction, and in more recent times WIL is in a second major growth phase. This recent growth is related to perceptions of shortages in labour for particular areas, such as engineering and information and communications technology (ICT). WIL has a long history and is now widespread in New Zealand (New Zealand Association for Cooperative Education, 2008), and internationally (Coll & Eames, 2007), and represents a key strategy for the development of work-ready graduates exiting the higher education or tertiary sector. Additionally, many so-called developing countries also have adopted WIL to enhance economic development and join the knowledge economy (Coll, Pinyonaththargarn & Pramoolsook, 2004a, 2004b; Taylor, 2004).

In this project we consider WIL in the context of full-time undergraduate students undertaking WIL as part of their programme of study. It is important to distinguish this situation from, for example, a WIL model that involves part-time, in-work students who engage with WIL by

focusing on theoretical concepts and models that underpin and help inform their work practice. Pedagogical approaches in this model will be quite different to the models employed for full-time, *work-inexperienced* students that form the focus of the present study.

Stakeholder perceptions of the benefits of WIL/co-operative education

There have been numerous studies showing that WIL programmes of study provide important benefits for students (Dressler & Keeling, 2004), employers (Braunstein & Loken, 2004), and HEIs (Weisz & Chapman, 2004). A key purpose of WIL is the notion of providing graduates with a comprehensive skill set desired by potential employers. The literature notes that it is problematic for higher education providers to provide students with such skills, especially behavioural skills—the so-called soft skills (Burchell, Hodges & Rainsbury, 2000; Coll & Zegwaard, 2006).

Braunstein and Loken's (2004) report of a survey of studies about *employer experiences* of WIL/co-operative education revealed there are more studies of employer *perceptions* than research-based studies of employer *benefits* of co-operative education. However, there is overlap in the overall findings. Both types of studies identify approximately 10 areas as being those most often mentioned by employers as *reasons for participating* in WIL/co-operative education. These areas are: (a) company image, (b) recruiting, (c) savings in time and dollars, (d) employee productivity, (e) cost in time and dollars, (f) retention rate, (g) position level, (h) career advancement, (i) affirmative action, and (j) new ideas (Hurd & Hendy, 1997). Research similarly points to a variety of benefits of employer participation in WIL/co-operative education and these are listed in Table 1.

Similarly, Weisz and Chapman (2004) summarise the main benefits WIL/co-operative education is reported to accrue in the case of *higher education institutions*. These are: student recruitment and enrolments; enhancement of student qualities in relation to the institution (i.e., self-esteem, academic performance); curriculum development (i.e., curriculum relevant to employer needs, skill development in students); the internationalisation of the institution (i.e., through educational exchange of WIL students international reputation is enhanced); staff development (i.e., staff motivated and funded to do industry-based research and consultancies as result of enhanced industry contact); and financial benefits (via links with industry).

Table 1 **Reported benefits of WIL/cooperative education for employers**

Preprofessional employment, recruitment yield, permanent employee performance
Wage, salary, and employment-related costs less; progression faster; work performance better; higher equal employment opportunities and recruitment yields
Better prepared to assume management roles; meet affirmative action commitments; useful for recruitment roles
More cost-effective recruitment
More motivated and enthusiastic; better recruitment, progress faster; less training required
Evaluating and recruitment; high-quality work and better at difficult assignments; improving organisational image on campus
Generally positive experiences
Better skills and more flexible employees
Better at communication, problem solving, values clarification, functioning in social institutions, use of science/technology/arts
Develop better mentoring relationships; work success
Ability to hire short-term employees; recruitment efficiencies; more committed
Enthusiastic and motivated; high-quality outputs

(Braunstein & Loken, 2004)

At the governmental level, an interesting and perhaps unexpected advantage of participation in WIL/co-operative education is that producing a greater proportion of work-ready graduates leads to more rapid recruitment or job placement (100 percent 6 months after graduation compared to 85 percent for non-WIL graduates), and subsequent cost savings in terms of welfare benefits (Weisz & Chapman, 2004). Hence, from a macroeconomic standpoint the benefits of WIL/cooperative education may be substantial.

Likewise, Dressler and Keeling (2004) summarise student benefits of WIL/co-operative education. Braunstein and Loken (2004) claim that there is little research in co-operative education, however there is now a substantial base of research about student benefits. These fall under four broad categories: *academic benefits* (e.g., increased disciplined thinking, improved motivation to learn, improved classroom performance, etc.); *personal benefits* (e.g., increased autonomy, improved time management, improved interpersonal relationships, increased initiative, increased self-efficacy and self-confidence, etc.), *career benefits* (e.g., career clarification and identification, discipline-specific practical experience, increased salaries, employability and career progress, etc.), and *work skill development benefits* (e.g., positive work ethic, knowledge of organisational culture, broad exposure to industry, increased international focus, etc.).

In summary, as noted above, benefits have been reported for all three stakeholder cohorts, which are mostly pragmatic or operational in nature. However, it seems little is known about student learning—how this learning occurs and how it might better be facilitated or supported.

WIL/co-operative education and learning

Eames (2003a) notes that whilst there is a rich literature on the success of WIL programmes, such research is almost entirely concerned with what he terms “operational outcomes”. So, for example, it has been reported that compared with conventional graduates, students who participate in WIL programmes gain employment more easily, fit in better in the workplace, advance more rapidly in their careers, and so on (Dressler & Keeling, 2004). But Eames notes there is a serious paucity of research into what WIL students *learn*, how they learn, and whom they learn from (Eames & Bell, 2005). This gap is consistent with criticism by Ricks and coworkers who lamented the situation in the 1980s, saying much research into WIL lacks a theoretical basis or links to theory, even when ostensibly investigating educational outcomes (Ricks et al., 1990). Recent commentary by Bartkus and Stull (2004) suggests little has changed.

In recent years WIL practitioners (i.e., those charged with the operational management of WIL programmes) and researchers have strived to develop a theoretical basis to the *educational* aspect of WIL (Apostolides & Looye, 1997a, 1997b; Van Gyn, Cutt, Loken, & Ricks, 1997; Wilson, 1997). Recent progress has been made and Eames’s work in particular has significantly advanced our understanding of how, and what, students learn (Eames, 2003a, Eames & Bell, 2005). The emphasis that these views place on social context permit an understanding of learning as a social process, in which students engage in learning through being situated in a community of practice on placement. According to Eames and Bell (2005), a sociocultural view of learning distinguishes the university setting from the workplace in ways that allow an acknowledgement of learning in each that is different but complementary. Hence, the learning that occurs in the workplace is seen to occur through “the mediation of instruction, participation, and scaffolding through the use of language, instruments, stories and other tools that constitute the everyday practice of the workplace” (p. 166).

Eames and Bell (2005) conclude that WIL work placements are valuable learning strategies but note that for this learning to occur in a measured fashion, placement practitioners must design programmes and placement structures that encourage learning as a situated, participatory, and socially mediated activity, and focus on assessing learning outcomes consistent with such a view. Of particular relevance to the present study, Eames and Bell further comment that “students in such programmes in science must be orientated to the potential of the placement to *complement* [italics added] their classroom learning in contributing to their understanding of what it means to practice in science” (p. 166).

Haigh (2008) comments on an interesting aspect of WIL workplace learning which he distils into two types of knowledge: people’s public general knowledge and their personal practical

knowledge. Public general knowledge already exists and is quite widely known. It is thus potentially accessible to everyone and is the sort of thing likely to be acquired in formal education contexts or indeed in the workplace (e.g., during inductions, and in shared documentation). Such knowledge is usually assumed to be useful to many people and in more than one situation. In contrast, personal practical knowledge is a by-product of personal action and personal experiences (e.g., in a workplace). It is knowledge that has typically been reflected on, and learnt from as a consequence. It is typically self-directed, and of immediate relevance to current personal circumstances. Allen and Peach (2007) observe that gaining this personal practical knowledge has been the intention of the teaching practicum for many years, and suggest this knowledge is in fact gained. It is worthwhile to note here, however, that teacher training, as a form of WIL, has a substantial government-run and funded bureaucracy at its disposal to integrate knowledge and facilitate knowledge transfer between on- and off-campus learning (see Coll, Taylor, & Grainger, 2002).

Haigh's (2008) notion of public general knowledge and personal practical knowledge fits in with modern theories of learning. Eames (2003b), for example, argues WIL should encompass a broader notion of learning that emphasises learning as a social process (Salomon & Perkins, 1998), occurring within a culturally determined community of practice (Lave, 1991). In such a view the student undergoes a cognitive apprenticeship (Brown et al., 1989), where they attempt to access the personal practical knowledge of more learned individuals such as working scientists and lecturers. Such an approach to learning in WIL programmes would go some way to address Allen and Peach's (2007) concerns about WIL being purely for the preparation of work-ready graduates—ensuring instead that WIL encourages “engaged scholarship that enables students to develop skills as lifelong learners”, something advocated by Boud and coworkers (see, for example, Boud, 2000, 2005; Boud & Falchikov, 2006). Haigh's notion of personal practical knowledge is also consistent with the notion of distributed cognition (Brown, Collins, & Duguid, 1989). Distributed cognition posits that knowledge is not resident in an individual or place, but rather it is *distributed* around an organisation. As an example, in a government scientific research institute, knowledge of research and detailed scientific knowledge might be held by a scientist; the intricacies of a specific scientific instrument and its operation might, however, be held by an experienced science technician; and knowledge of occupational safety and health issues associated with handling toxic chemicals might be held by the institutional safety officer or in manuals or specification sheets held in the office. Hence, Eames (2003b) and Eames and Bell (2005) report that WIL students can, and do, learn from a variety of people, and utilise a variety of these Vygotskyian psychological learning tools.

A key aspect of WIL/co-operative education then is the notion that it entails the *integration* of knowledge and skills gained in the HEI and in the workplace. It is the integration aspect of WIL that distinguishes it from *workplace learning* (i.e., simply what a student or employee learns whilst resident in the workplace, see Boud, 2000, 2005). By integration we mean in what way does the student take what they have learnt into the workplace, and conversely in what way does what the student learns in the workplace become related to, or incorporated into, the next phase of

academic learning when they return to the HEI after completing a work placement or work experience?

There is some literature on integration, although much of it is rather oblique in nature (i.e., it does not address this issue explicitly, but some findings or discussion are presented which are related to the issue). For example, there are two studies—by Van Gyn et al. (1997) and Parks (2003)—which report that students say that their WIL/co-operative education experiences allowed them to see how to put theories learnt in the classroom into practice when in the workplace. Eames (2003b) reported similar findings—so a student that learnt about the theory underpinning the use of chemical instrumentation, for example, found this theory essential when trying to use and do troubleshooting when using such instruments in the workplace on placement.

If little is reported about taking knowledge learnt at the HEI into the workplace during WIL placements, then even less seems to be known about transfer of knowledge and experiences in the opposite direction, that is, from the workplace back into the classroom. We see only a few comments in the literature, with, for example, Wong and Coll (2001) noting that a student learnt the use of a discipline-specific statistical package, which was subsequently found useful upon return to the HEI.

There have been calls for more integration of on-campus and off-campus learning (e.g., Grollman & Tutschner, 2006; Stenstrom et al., 2006), and there are some reports about integration (e.g., Fink, 2001), but on closer examination these represent descriptions of current practice rather than research into the integration of classroom and WIL. A few items or topics have been identified as *likely* to be integrated as a result of WIL/co-operative education. These are, as might be expected, mostly generic skills such as the application of theory (Furco, 1997), increased discipline thinking (Cates & Langford, 1999; Rankin, 1984), problem-solving (Burchell et al., 2000) and behavioural skills (Carrell & Rowe, 1994), time management (Parks, 2003), and teamwork and co-operation (Burchell et al., 2000; Weisz, 2000).

Although the research about integration of WIL/co-operative education is sparse, Apostolides and Looye (1997b) provide a model for integration in their example of a resource planning programme. They suggest a combination of course work (i.e., classroom or on-campus learning) and co-op experiences (i.e., workplace learning) that has three stages, as shown in Figure 1.

Figure 1 A model for integration of WIL/co-operative education programmes in a resource planning programme

	Early stage	Middle stage	Late stage
Course work	Liberal arts General education Communication Computer graphics Critical-thinking skills	Institutional/planning Processes Methods Computer analysis Geographical information systems Planning theories Spatial structure History of urban form Law	Specialisations Electives Implementation Mediation Finance & budgeting Thesis (integration of previously developed skills)
Co-op experience	General/comprehensive Exposure to profession Computer skills	More participation in processes (Writing & presentation)	More responsible role Continued emphasis of technical computer skills

(Apostolides & Looye, 1997b)

A model of this nature might readily be adapted for other programmes of study, and incorporate ideas from Branton et al. (1990) in terms of assessment for the programme as a whole. Related to this development is the notion that assessment of student learning might well need to incorporate assessment of integration.

The only other literature about the integration of WIL is based on the notion of critical reflection. Such a strategy is designed to enhance learning *per se*, rather than to foster integration, but detailed examination of the research on reflection indicates it fosters integration, if for no other reason than that it makes students more self-aware and helps them to engage in metacognition. Gray (2007), for example, talks of facilitation of learning of management in the workplace via critical reflection tools such as reflective metaphor, reflective journals, and critical-incident analysis. Paku and Lay (2008), however, report that science and engineering WIL students exhibited limited capacity for critical reflection in spite of the direct use of such tools to drive critical reflection. Eames (2003c), as part of a larger study, examined the notion of integration between on-campus and off-campus learning, again for science and engineering students. He reported that a large proportion of participants (some 20 out of 22) felt they were able to apply at least some of their university-learnt knowledge or skills in their work placements. This application is perhaps not surprising; one might well expect, say, a chemist to use chemistry knowledge in a placement in an analytical chemistry laboratory! This integration was subject-specific, and there was no great evidence that students were able to carry over ideas from one

domain to another. Paku and Lay (2008, p. 3) reported this transfer can occur, but to a limited extent:

Where students have been in placements unrelated to their field of study, they were still able to make links between theory used and that taught at university. For example, Adam [a pseudonym] was completing a materials degree and did a placement with an electricity company. He found that the principles behind electricity theory were very similar to processing concepts such as mass balances; the equations were similar but needed different numbers, units and symbols. This reflected the student's ability to see the similarities between mass and electricity theory.

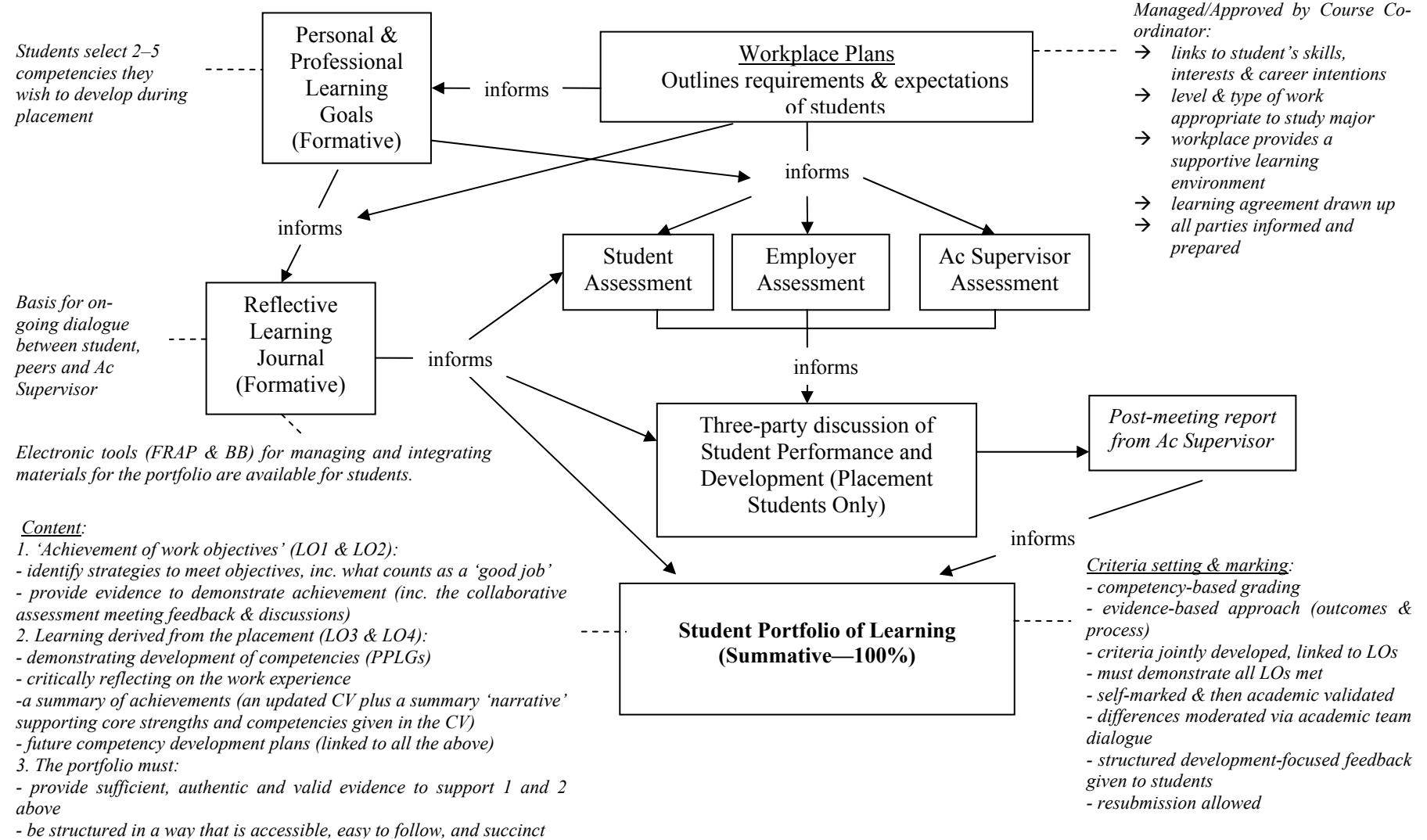
What is more surprising is that Eames (2003c) reported a high proportion of his students (17 out of 21) reported that they felt their learning on placement *had* influenced their learning upon returning to campus after a work placement. In some cases this learning was a specific technique or use of a particular scientific instrument, but more commonly it was more generic things such as attitude, study skills/habits, timekeeping, and the like, and interestingly some insights into research: "An appreciation that things didn't always go right first time" (p. 56).

There is some mention of facilitation of the integration of on-job and off-job training in the vocational and technical training literature. For example, Hodkinson and Hodkinson (1995) mention the use of liaison officers "who were responsible for the day to day progress of trainees" (p. 214). But it remains unclear as to what effect this facilitation had, or how it was manifest.

Assessment of learning in WIL programmes

Hodges (2008, p. 1) comments that "Assessment has often been described as a 'thorn in the side' of co-operative education practitioners. This outcome is largely because workplace learning is complex and uncertain", and goes on to note that the main reason for this situation is that HEIs often seek to "package learning into neatly proscribed and specific learning outcomes", something he notes is highly problematic for learning that occurs in the workplace. A number of authors have attempted to address assessment issues. There is strong consensus that the placement needs to be assessed (see, for example Coll, Taylor, & Grainger, 2002), that this assessment needs to take account of development of skills valued by all three stakeholder groups (Coll & Zegwaard, 2006), and that assessment needs to be holistic in nature (Hodges, Hopkins, Ling, Malcolm, & Yau, 2004). Hodges (2008) has developed a sophisticated portfolio model for the assessment of placement learning within business programmes, and this model, whilst relatively complicated, also has the flexibility to incorporate assessment of integration (Figure 2).

Figure 2 Portfolio model for the assessment of workplace learning in a business programme



(Hodges, 2008)

Hodges (2008, p. 1) says “The model takes a holistic approach by making explicit connections between each of the course’s four learning outcomes and also between formative and summative methods.” The two key features of the model are that it is *evidence based* and that it attempts to contribute to a student’s preparation for being an effective employee and a *self-regulating professional*. The basis to the model is to develop student capability in self-assessment, drawing on Boud’s ideas about future-proofing learning (see Boud & Falchikov, 2006). That is, rather than assessing what the student *can do now*, we need to consider what the student might also *be able to achieve in the future*. Key to this is self-assessment and negotiation, and a combination of formative and summative assessment, which in turns leads to reflective practice.

Research design and methodology employed

Research design

This study was one year in duration and it employed a collective case study methodology (Bassey, 1999; Merriam, 1998). A collective case study design permits researchers to gain an in-depth understanding of the issues of interest and to explore meaning from a number of angles (Merriam, 1998), and across different educational contexts. Case studies are a very common methodological approach used in WIL research because of the highly contextualised nature of such programmes (Coll & Chapman, 2000).

The research thus constituted case studies from three important areas of higher education in New Zealand, representing the background and expertise of the senior researchers and research partners (see below). These areas are: science and engineering; business and management; and sport. The study involved researchers and practitioners working together in the investigation of WIL programmes in three HEIs. The work was informed by a literature review carried out by the research team (see above).

The researchers in this study all are WIL practitioners who currently or in the recent past have acted as work-placement co-ordinators. Such co-ordinators work with their HEI to secure or facilitate work placements for WIL students, provide support in the delivery of WIL, and provide career advice. In New Zealand, as worldwide, much of such practice is not well informed by research (Bartkus & Stull, 2004), although this situation has improved in recent times. This study thus represents an excellent opportunity to enhance the research culture in WIL practice. Each senior researcher identified WIL practitioners in their HEIs who were willing to partner them. Additionally, for each discipline area, we employed as part of the research team an adviser—an individual experienced in the practice and research of WIL. The intention of this role was to provide independent input to aid interpretation of the research findings and monitor the study for research quality.

Research phases

In the first phase of the study, the WIL practitioners and the senior researchers met with the research director to discuss the particular case study methodology to be employed in the project, and agree on a consistent approach to the research. They also reviewed relevant literature to inform the next phases of the research.

In the second phase of the research, each WIL practitioner met with some practitioner colleagues to discuss the project aims. Each WIL practitioner then invited their practitioner colleagues to participate in an interview, which involved initial discussion of current pedagogical strategies used to facilitate student learning in the HEI and in the workplace. The interview protocol used was developed by the senior researchers in conjunction with the WIL practitioners, the details of which were negotiated in face-to-face team meetings. The interview drew upon relevant literature (see above), particularly the work of Eames (2003a). The WIL practitioners subsequently conducted a focus-group interview with a selection of WIL students from the relevant discipline about their teaching and learning experiences at both the HEI and in the workplace, using a similar protocol. Together the senior researchers and WIL practitioners gathered and analysed relevant documentation (i.e., course/paper outlines, graduate profiles, etc.) to provide data triangulation.

In the third phase of the research, each WIL practitioner met with a selection of employers of WIL students, first to discuss the project aims. Each WIL practitioner then invited the employers' colleagues to participate in an interview, which involved initial discussion of current pedagogical strategies used to facilitate student learning in the workplace. The interview protocol used was again developed by the senior researchers in conjunction with the WIL practitioners. Again the interview drew upon relevant literature, including the work of Eames (e.g., Eames, 2003a; Eames & Bell, 2005).

In the final phase of the research the WIL practitioners, advisers, and the senior researchers met face to face to discuss the findings of the collective case studies, and synthesise general conclusions.

Validity and reliability were enhanced by the multiple methods used as detailed above. The advisers provided critique, and the project followed the human-research ethics regulations for each HEI, and the ethical guidelines of the New Zealand Association for Research in Education, including the principles of informed consent, privacy, and confidentiality. These are detailed below.

Ethical considerations

The research team comprised senior researchers from three disciplines (Richard K. Coll, Dave Hodges, and Jenny Fleming), research advisers (Chris Eames, Diana Ayling, and Lesley Ferkins), and six practitioners (Levinia Paku, Mark Lay, Shiu Ram, Ravi Bhat, Andrew Martin, and Cindy Wiersma). Each of these people was a formal part of the team and committed to the project as indicated by signed partnership agreements. The participants consisted of staff, students, and employers from the institutions in which the research-team members are employed. As noted above, the methodology was that of a collective case study and specific methods used included interviews, document examination, and further interviews. Ethical issues identified included potential conflict of interest, in that some team members were in positions of authority over

institutional staff and students; confidentiality of participant identities, institutions, and participant discourse (e.g., interview transcripts); data storage; use of data; minimisation of harm; and informed consent. Robust ethical procedures were developed to address all of these issues, including development of a full ethical proposal that was subsequently evaluated by the University of Waikato's Centre for Science & Technology Education Research Human Research Ethics Committee. The team members then sought approval from relevant ethics committees at each of the other institutions involved in the work.

Research quality measures

The research was interpretive in nature and philosophy. Key issues to do with quality in interpretive research are well documented in the literature (see, for example, Guba & Lincoln, 1989, 1994; Merriam, 1998; Peshkin, 1993), and mostly comprise things such as potential for researcher bias, generalisability of findings, and reliability, many of which apply to research in co-operative education (Coll & Chapman, 2000). The traditional means of judging the quality or rigour of a research inquiry is by reference to the four criteria of internal validity, external validity, reliability, and objectivity. Guba and Lincoln (1989, 1994) provide a comprehensive framework for dealing with quality issues in interpretive research, and suggest the traditional criteria identified above (which are associated with a positivistic approach to educational research) are not appropriate for interpretive inquiries. Guba and Lincoln propose that credibility replace internal validity, dependability replace reliability, confirmability replace objectivity, and transferability replace external validity.

This framework formed the basis of quality assurance for the study. First, credibility was enhanced by prolonged engagement, persistent observation, peer debriefing, negative case analysis, member checks, and progressive subjectivity.¹ Second, dependability, which is concerned with the stability of data over time, was indicated by the increasing maturity of the inquiry, and the changes and shifts in constructions were clearly identified and fully described.² Third, confirmability, which seeks to ensure that the results of an inquiry have not been subject to influence by the investigators, rests on the data themselves. Hence, the raw data and process used to compress them are made available in this report for scrutiny by the reader (see research

¹ Negative case analysis involves revising the “working hypothesis” in the light of hindsight; in other words, an inquiry is seen as a dynamic rather than static process. Member checks; that is, the process of negotiation with stakeholders, provides participants with the opportunity to offer additional information to that gained from, for example, interviews, and allows participants the opportunity to confirm individual data. Finally, progressive subjectivity serves to remind the inquirer that interpretive inquiry is a shared activity between researcher and participant.

² Interpretive inquiries are considered to mature as the researchers constantly re-examine their thoughts about the inquiry. It is critical that the changes and shifts in these thoughts are clearly identified and fully described (Guba & Lincoln, 1989).

findings). This process provides an audit trail which is intimately linked with the tracking process necessary to assure dependability. Finally, transferability is the interpretive equivalent of external validity or generalisability. This involves a shift from the author to the reader, meaning it is up to the reader to judge if the research findings are applicable in their own setting. Transferability is enhanced here by the provision of a “thick” description (i.e., a very detailed description, see Merriam, 1998), which details the context, methodology, and data-analysis procedures.

Research findings

The presentation of the research findings addresses the research question that was presented in the proposal, namely:

What pedagogical approaches are used in New Zealand WIL/co-operative education programmes in terms of integration of student knowledge, and what impact do these have on student learning?

This question is now interrogated for each sector in turn, followed by a summary cross-case analysis. In each case, as detailed in the interview protocols (see appendices), the participants outlined their background, described the context of the learning, and discussed what they felt students learnt, what they should learn, how they should learn, and, finally, what processes or approaches were used to help students learn.

Case study sector 1: Science and engineering

Students

Two cohorts of engineering students and one cohort of science students were interviewed in focus groups of 3–4 students each time. The participants came from science and engineering programmes in a science and engineering school, and were doing either a four-year Bachelor of Engineering (BE) degree—comprising four full-time years of study along with two three-month placements done in summer vacations—or a four-year Bachelor of Science (Technology) (BSc(Tech)) degree—comprising three years of academic study and two placements, one of three months duration, the other of about nine months duration. They were a mixture of second- and third-year students comprising engineers doing specialised programmes in mechanical engineering or materials and process engineering, and science students doing biotechnology. All had come into study directly from school, and had come to this particular institution for pragmatic reasons, such as proximity to home (“because it’s close”) or the appeal of the lifestyle in a smaller city (“I don’t like big-city life”). All participants envisaged careers in engineering, engineering-related, or applied sciences, mostly because they considered the career prospects to be good: “We’ve been told that engineering, the job opportunities for engineering, are continually growing” and that the prospects were better than for the sciences: “I thought engineering would be a good way to go in terms of particular jobs, that you can have projects on site, and maybe engineering would take me around the world a bit better than perhaps a science position would.”

It seems none of the engineers came because the WIL programme was offered, and they were ostensibly unaware that their degrees involve placements that were centrally managed for them. The fact that placements are found for students in the BE programme is noted in a variety of documents; for example, the paper/course outline states, “The work placements are secured for you by the Cooperative Education Unit.” In contrast the BSc(Tech) students came to the institution specifically because the science degree offered work placements (a similar promise to that of the BE students is made to students in the paper/course outlines): “I did the BSc(Tech) ‘cos of the work placement, that was the main thing, that attracted me … I don’t want to be fresh out of uni and get shoved around because I’m inexperienced.”

The engineering participants’ perceptions of the programme aims were limited to the career expectations mentioned above, and they saw the programme as being all about skill development for the purpose of career enhancement: “It’s a good degree, and it’s been a good stepping stone into the future.” Likewise, the BSc(Tech) participants focused on the way the placements might enhance skill development, and their career aspirations:

I wanted to be in co-op [i.e., WIL] to learn everything … I wanted to learn how to use equipment … I wanted to learn how to communicate with scientific people, I wanted to learn about companies … there’s the whole office politics going on as well.

Participants reported experiencing traditional pedagogies on campus—lectures, tutorials, and laboratory classes—and in some cases off-campus field trips, and the like. This finding is consistent with documentation such as paper/course outlines, which specify for engineering and science papers that students will do lectures (2–3 per week) and practical classes (typically six weeks of three-hour laboratory classes). Not surprisingly, they felt they learnt theoretical material in lectures and practical work in laboratories: “The engineering lectures they cover practical things, but just the theory of it. You learn more from the labs.” Consistent with this finding, they felt the things best learnt on campus were theoretical things, not that this was necessarily seen negatively. Indeed, lectures were seen to serve a different purpose, in that the lecturer was able to cover a wide range of material: “I took a range of biology papers and a range of engineering papers and they are all very different … it was the variety of information that was put into the lectures.” The lectures were seen to complement the laboratory classes, and the students felt university teaching needed this link: “Lecture based, well that’s where we first see it being taught, but then through like the assignments and stuff as well, and then the labs just reinforce that again.”

As might be expected, the participants felt the things best learnt on placement were practical skills, in a more substantive fashion than even laboratory classes on campus might provide, and in particular using scientific or engineering equipment: “Using different equipment and set ups and stuff, and practical stuff we don’t get a chance to cover everything in our labs. So [we] learn new techniques.” This feeling was linked to a perception that even in these rather applied degree programmes, the type of practical work covered on campus was not “real world” in nature:

I think the placement papers help to get some practical skills. It depends on what kind of practical skills you want. From our workshop papers [i.e., on campus] it helps with getting some practical skill, but it's probably not going to be applied to jobs to a certain extent.

An interesting example was provided by a BSc(Tech) student about trust in using equipment. The student reported feeling trusted on placement in contrast to on campus when using scientific equipment:

When you are new in an environment, you don't know much about things. Like being in a lab, you know when they say 'Don't touch that, don't touch that!' You know, sometimes they don't have time to tell you ... Or when using equipment, 'Don't do that or you will muck it up and it's going to cost', you know. And in the labs in uni I don't think they expose you to that kind of risk, you know. Most people go 'Oh don't give that to the students they most likely to crap it out.' So, you know, in these commercial companies, you know, real scientists use them, and you just have the privilege of being able to use it.

This ability to learn on placement was tempered somewhat by the duration of the placement. The engineering placements being three months duration (according to paper/course outlines), were seen to provide a different experience to that of an ordinary employee:

I think the placement is slightly different to having a proper job with the company in that when you do get the job then they've got more time to invest in you, so the skills that you've learnt, this is my understanding, they're slightly greater than what they can just throw at you in your three months because they know that you've got good learning skills, you've got to apply them and you've got to process to get the result. So the amount of what they can teach you is somewhat limited by that.

There were some things the participants felt needed both on- and off-campus learning experiences to achieve. Principally these were described as "research skills", something seen quite holistically, and something requiring the student to be an active participant in learning:

I think what's really important maybe to me is researching skills, background research ... when it goes to the placement, it's good as well you tend to do your own research, you just want to know more, and you don't need the employer to go 'Oh go and read this up, go read that up.' And you can sort of impress them as well, you go like 'Oh yeah, I did my reading on that', and they go 'Wow, we can save time on extending that to you and you can move on to the next step.' So a lot of reading, and a lot of research.

The participants had few expectations that there would be integration of on-campus learning with off-campus or on-placement learning (and there is no direct mention of this integration in paper/course outlines—see below). The students did expect some of what they had learnt on campus to be of use to them on placement. Interestingly, they mentioned generic skills and personal attributes rather than, say, theoretical knowledge and technical skills: for example, "Enthusiasm to learn a bit more." One reason for this situation seems to be related to the perception that the work done on placement may not necessarily be in exactly the same area that the students studied while at university: "I might focus on one thing at uni, and I know there is a chance of what I want in uni I won't get it in my placement." This view contrasts somewhat with

paper outlines which specify that “The work experience will be with an approved organisation, be relevant to your studies and often involves a ‘real’ applied science project.”

In contrast, the participants reported that they expected there would be integration of off-campus or on-placement learning with what they learnt when they returned to continue with their university studies. This comprised some practical expertise and hard skills: “When I was doing my placement and it was the same thing, and I was pipetting again [a technique for transferring liquids using a glass vessel called a pipette], you learn, just a slightly different technique, yeah and so then you are applying that this year.” In some cases this was about new techniques entirely, which subsequently meant the students felt they were a step ahead of where they thought they otherwise might be when they returned to campus to study:

For the first placement it was good, just to be able to work on those things on paper that applied to the dairy industry, and I could see the same about the [local paper mill] placement as well. And I learnt a lot about simulation programmes and been learning more recently about what I didn’t know when I was doing it, especially from the, like, the control paper that I’m doing, learnt about controllers and they were a particular hassle when I was doing a simulation, so it’s been good to pick up on that even though it’s going to be very useful.

This finding occurred in both sciences and in engineering:

My last placement actually helped a lot ’cos it was on assays, protein assays, and it so happens that my current supervisor is making me do protein assay as a part of my research and so when he went ‘protein assay’ and started explaining, I say, ‘It’s alright, I’ve done it before.’

They also reported learning about how to learn:

The first week of my placement was my biggest thing of where you are put into a new situation and I had no understanding of. I had some understanding of the basics, but I didn’t know the research topic, and so really I had to do all this extra work, and then look up all the techniques and coming to grasp with all these new ideas and, um, terms and stuff that you just have to learn. The development of that then becomes much easier and you pick up on things much faster, like, I’d never really used research databases before and having to do that, and then realising the amount of work that goes into doing a journal article, everything is built up on itself and so your research is built up on a hundred other people’s research.

There was no perception that any integration was an intended outcome in the WIL dual-mode of learning, that it was managed in any shape or form, or that anyone actually facilitated the integration of learning. There is no mention of integration in paper/course outlines or in the placement guidelines. However, placement guidelines address this obliquely, suggesting students engage in “reflection and review”. The guidelines for this reflection and review talk of “setting placement objectives” which seem to seek to extend learning (i.e., by gaining new skills) rather than integrate on- and off-campus learning. Any integration is thus implicit: “Has your work ethic changed?” and “Are there any technical or soft skills (e.g., communication) skills that you have gained or improved?” Such skills are generic and assuming one gains, say, communication skills,

then subsequent communication would be enhanced upon return to on-campus learning. Interestingly, it seems the students felt it was their responsibility to connect their learning:

I think it's just, if you're a practical person and if you are a person who knows what you want in life and you see your goals and you're positive and self-motivated. Well, I don't know about other people, just comes naturally to me 'cos I'm sort of person who wants to do something and make it worthwhile, I wouldn't go into a placement and then not use things that I already know from uni, to enhance my experience there, it's a bit pointless.

They did not, however, consciously set out to make this connection, rather it seemed to happen naturally: "To be honest, I don't make a conscious effort, I don't go, 'Okay I've learnt this, let's use it.' But I tend to use it by coincidence and convenience."

The participants reported learning from a variety of sources and in a variety of ways. First, not surprisingly, they reported learning from people—their lecturers, naturally, but also others, such as technicians and office staff—whether on campus or off campus: "My supervisor gave me what to do, he told me what to do, and then he gave very informative pointers. But when it came to skills it was always the other lab technicians because they were there longer."

They reported learning from people by asking "a hellva lot of questions ... you just pester them until they get sick of you", and by "sitting down and reading a book" when people were not helpful or when they could not understand what was being said.

What drove the learning; what are the reported assessment experiences? Examination of paper/course outlines indicates that these science and engineering students are required to complete a report, which forms the bulk of the grade (50 percent). This assessment was typically combined with an employer evaluation (25 percent), and interviews with employers during site visits (25 percent), to provide an overall grade for the placement. A second factor to emerge from examination of placement guidelines (and evidenced in placement reports—described in more detail in Paku & Lay, 2008) was that placement co-ordinators attempted to drive learning by getting students to set placement learning objectives before placement (or at an early stage of the placement), and to critically reflect on the achievement, or otherwise, of these in placement reports. In general students have difficulty reflecting on their work placement experiences, evidenced by the lack of detail in their reflections, and failure to elaborate on skills obtained. This outcome could be due to student laziness, because students lack effective reflective skills, or because students do not perceive reflection as being important. However, a few students wrote detailed and thoughtful accounts of what they felt they had learnt during their placement. These students appear to have gained valuable appreciation of things such as how the company functions, and hard and soft skills they felt they gained. They also reported finding they could apply theory learnt at university in an industry setting. For example, in his placement report one student talked about "designing heavy apparatus" in which he "applied basic design fundamentals and CAD skills" taught in his courses on campus.

In summary, the science and engineering students did not necessarily come to their institution because it offered WIL, but did see it as a form of career enhancement. They felt they learnt

content knowledge on campus, and more practical skills—including research skills—on placement, and especially valued the opportunity to get more hands-on experience with technical/scientific equipment. They had no great expectations for the integration of on-campus and off-campus learning, but felt they learnt from a variety of sources and individuals.

Practitioners

There were two cohorts of placement co-ordinators interviewed for this research in focus groups of three staff each time. They came from science and engineering programmes in the same science and engineering school as the students mentioned above. All were experienced placement co-ordinators (their experience ranged from 4 to more than 12 years), and they identified their roles as being to secure placements for engineering and science students and to supporting students in their BE or BSc(Tech) degree.

The placement co-ordinators held common views as to the aims for their WIL programmes, which they saw as predominantly to do with career clarification:

For me it's, it's to enhance the university learning so it should build on what they have done and help them clarify a career. Give them a go at what they think they might like, and find out what works and doesn't work for them.

They also felt it was about providing good learning opportunities for their students:

I think they're, give examples or give opportunities to students to see what work as in very aspects aligned with what they are studying so it gives them opportunities to see where they would like to go when they finish. I think it gives them an opportunity to see what skills are needed out in industry, which they don't have and which then they can appreciate what they do learn and also vice versa they get to see if they can use some of their information perhaps, hopefully to suggest to the places they are placed at how things could be done differently.

They did see learning consisting mostly of acquiring skills. This was a combination of hard and soft skills, with “a small opportunity to apply some of your hard skills”, but mostly soft skills associated with things such as team work, co-operation, and responsibility for work outputs:

I think the main thing for me would be for them to see what it's like outside the university and learn some responsibility different from a lecturer expects of you, and to develop the soft skills. I would have thought that those would be the important ones.

I certainly see it as the opportunity where they realise to work they have to get on with people and be responsible, whereas at university, well, if you don't hand in your assignment, it's only you that gets penalised, well maybe your team, but it's not a big deal, just a few marks lost.

Things best learnt on campus were fundamental science and/or engineering theory: “The nuts and bolts ... that pure stuff which the university deals with.” The students also were expected to learn at least some basic practical skills:

In addition to the theory they must have some basic practical skills to be useful at the end of the work placement, I mean the electronic engineer who can't solder, there's plenty of those around, some jobs they just can't do.

Consistent with the students' views, the placement co-ordinators indicated they felt the students would learn practical skills along with values associated with work etiquette and the importance of accuracy: "Repeatable, accurate ... if you work in an analytical laboratory, you see how to validate stuff. A number of people around here [i.e., at university] never validate anything." But a key thing was work values and an appreciation of workplace culture:

I think responsibility in all its variations, you know, they have to be personally responsible, from turning up on time every day and to do personal responsibility for work space, um, working in with others, doing what they're told, doing what they are asked to do, and then graduating from that to being able to use their initiative to develop initiative, yeah. Being able to be relied on, employers have taken those people on, because they are too busy and they've got no one else but the time available to do this project.

A number of things were identified as needing both on- and off-campus learning experiences. There was an issue in that there was not necessarily a match between on-campus and off-campus learning (as noted by the students, and contrasting with paper/course outlines—see above), and that they learnt about business per se, about their roles and contributions:

I find that a really difficult thing because we're not training people for specific industries, so if we are going to teach them a skill, does that mean half of the class is never going to use that skill that we spend a lot of effort in? Also, I think I'm reflecting on the fact lots of people get degrees and have skills, no practical skills when they go out, so if we say that 80 percent of people never have worked co-op [i.e., WIL] and they survive or we can say our students are better prepared, but are there any things? Well, I must admit if you haven't taught them to solder [i.e., electrical soldering using a soldering iron] before they went out there, it would make them a bit of a handicap to them in industry.

I suppose the other thing I think students need to do when they sort of feel that they should be paid tonnes of money, they really need to realise that they're being employed as a start-up person for their company. That person is actually going to put a lot of training into them. I'm not sure whether we ever say your work placement, actually the company has put in perhaps half, your placement may be unproductive to the company, in terms of they've got to train you.

There was a strongly held view that students learnt a lot when on placement; that they matured, and that they changed in behavioural terms, meaning the learning was seen in mostly in terms of student personal growth:

Yes, well, one of mine, this summer, he barely, well he could come and see me in my office but he wouldn't talk very much but he wouldn't look me in the eye. He would just look kind of nervous ... [laughter]. He is entirely different in that second interview [i.e., after the placement] you know he was very voluble, his arms are going. He's telling you about what he's done and where's he been, you know, just, just different, very confident.

The placement co-ordinators had few expectations of integration of on-campus learning on placement. It was considered the students would take and use content or factual material into the workplace: “It’s the knowledge, fundamental principles.” Additionally, it was thought they should have developed a “work ethic” on campus that was carried into their placement experiences:

I guess I would hope that they, hope that they would take work ethic, the ability to learn things quickly. I presume if I was in, say, chemistry lab I would expect there are people that have some understanding of chemistry and if I was in a processing place I would want them to understand a little about industry, but not specifically my industry because, if I went and got the general person, it went and employed somebody out of the workforce, obviously in my selection I would look for people who had experience but I’d balance it up with whether they had initiative or whether or had a willingness to learn. So I wouldn’t expect to take somebody who was electronics and put them into chemistry or vice versa necessarily.

There was, in contrast, an expectation of integration of placement learning upon returning to campus. The “work ethic” surfaced again as did “personal responsibility”, and “some nous, well some practical thinking, thinking ability and how to organise themselves and how to, you know, to think to reason”, with an expectation that these sorts of attributes would be more developed after the placement experience. Views about the hard/technical skills were mixed, with some saying workplace skills would be “too specific” to the workplace, but others feeling they would gain some transferable technical skills: “Yeah I think if they have had an opportunity to be working in a [engineering] workshop they certainly would come back with lots of skills which will help them.”

The placement co-ordinators saw responsibility for integration of learning lying with the student. It was felt that this responsibility was an intrinsic feature of the WIL programmes; in a particular programme that involved alternating periods of on-campus and off-campus learning:

Quite likely the project that the student is working on in the workplace will kind of facilitate that automatically. So if an Earth sciences student is out in the mine doing rock identification, then obviously they are going to draw upon their analytical skills that they have picked up, and also they have picked up in the labs. So the project itself or the work itself will draw some of that out.

This integration, it was felt, was more likely to occur if the placement and student were well matched:

I think that the match of student to placement here becomes really important as well. If you match it up well then it will all happen more readily. So a biology student doing data entry might not, wouldn’t be a match, and that would be an example where that knowledge transfer is not occurring.

Integration was facilitated somewhat by the instructions in student guidelines about report writing (as noted above). Placement guidelines supplied to all students before placements were examined using the document analysis protocol (Appendix D). They contain a requirement for students to set placement learning objectives (e.g., hard and soft skills—examples are given) before going on placement (or early on in the placement, in negotiation with employers), and to complete a

reflection and review section at the end of the placement. This is consistent with interview comments made by the placement co-ordinators:

Through their reports, through their reflection their review part, yeah, they actually ask themselves what have I got out of this and how is it going to help? How is it going to help my university studies? So maybe they themselves facilitate it, for themselves, you know.

In summary, the placement co-ordinators felt the students learnt a combination of hard and soft skills, but mostly soft skills, including aspects of research and its context in New Zealand. They felt some integration occurred and that this was self-directed; although it was aided somewhat by the use of Vygotskian psychological tools such as reflection and review, the placement guidelines, and the reports about placements.

Employers

There were two employer interviews conducted, both done as face-to-face focus groups of three employers each time. The employers interviewed in this work were all experienced scientists or engineers in medium-sized companies (by New Zealand standards, ca. 100 employees). They mostly had 4–5 years work experience, with one participant having spent 22 years with the same company, and all were involved in research and development. In some cases their experience was specifically in product development or manufacturing, but in all cases the employers had prior experience of WIL students, having taken a number of students for work placements.

They dealt with a variety of HEI for the recruitment of WIL students—depending on need/skills provided. For example, WIL engineering students came from different universities, since these institutions provided different programmes and thus student cohorts. Subjects the WIL students were studying included “chemistry”, “materials [engineering]”, “mechanical engineering”, the “Earth sciences”, and “psychology”. Reported experiences varied, with one New Zealand university deemed unpopular because of “quite a difference in caliber ... I don’t know if it’s the way they are lectured, or how they are mentored ... there is a big difference.”

Particular WIL programmes and students were thus chosen based on skill needs and past experiences. Proximity also was seen as advantageous for purely pragmatic reasons: “It’s easy for me, they’re close, and they are just across the hill for any meetings or interviews.” Some employers also expressed a desire to be a partner in the education of WIL students, at least in part because, for their specialty areas, there was no formal academic pathway in New Zealand; hence WIL was seen as necessary, with the employer working with the HEI:

The opportunity to really show them what industry is all about. Give them a real good grounding and how they might apply some of the things they learnt in their studies to the real world, so those are the attributes.

I guess in the case what you’re doing [Name] and what we’re doing down there, there is no formal qualification in product development in what we do. Formulation chemistry is not

something that is taught in any university at all, and so unless we can teach them something and open their eyes to what formulation is all about.

I guess ours is sort of similar in a way that I guess the best thing to, like, have a bigger or greater knowledge of the industry that we are, that we play in I guess, the dairy industry and that, yeah, is sort of the main thing really because it is quite difficult with us. It depends if we take students on, it depends a lot of the time what projects we have got on the books and at what stage of those projects are at, at a particular time. So I guess that is the main thing, is a better understanding of the industry as a whole. And the opportunities that are there.

Interestingly, none of those interviewed talked about the use of WIL programmes in terms of graduate recruitment specifically for their organisation:

So it would be nice, unfortunately the size of the organisation I work for, we don't have the capacity to take them on once they're graduated, but we stay in contact with them so they go through our programme before that, we tend to like to stay in contact, and no doubt if a position did ever become available we would make an offer to one of them and students that have been grounded in that area [with us].

The employers commented on their perceptions of student attributes when first joining the organisation as part of the WIL programme. Here they were most interested in student personal attributes, such as initiative and willingness to learn, rather than possessing a particular skill set or content knowledge—although some mentioned “maths and computer skills”, most focused on affective variables:

Yeah they have to be a self-starter, in my case anyway, who can just go off with minimal instruction and explore something, basically. If they are not at all inquisitive or intuitive then, if all they have ever learnt is how to mix things together in a test tube and read a book then as far as I'm concerned they're useless. We want someone who we can, I don't know, spend time teaching them a few things but then once the programme of work is outlined, you expect them to ask questions of the operators, them to ask questions of other people, not continually come back and ask me to then and go ask the questions.

The employers felt many WIL students needed basic social skills: “They've got to learn some social skills within the entire range of people that they're going to come across in the environment that I work in”, and someone who would fit in:

We have a very strong culture of humour down in the engineering group over here, and [we want] someone who fits in and does go off and asks questions. And 99.99 percent of the cases we have had people come in—and they may not have been able to find something in a textbook—but will go and find the appropriate person and say ‘Can you help me with this?’

The students were thus expected to be “people with energy and good attitude”, self-starters who had initiative combined with the personal attributes to deal with others when they needed to find out things for themselves:

From my point of view, self-starters are important, I've got less and less focus, less and less focus on grades just through the grad programme where basically we employed the services of an external recruitment company to advertise the graduate programme which [our

company] supports, and they go around and what seems to be presented to me are people that are only, if they've got a B, then they're out and I am quite concerned that lots of people are slipping through the gaps that would be far more suitable. They've got an enquiring mind, they are able to apply themselves better and, yeah, I know that generally people put a lot of focus on grades, but for us we want practical people with enquiring minds and as they get on with people.

Interestingly, the employers indicated that students who were more adventurous, who were prepared to take risks and do something different were of interest:

I must admit when I'm looking at candidates now as well, you skip through what they're doing with their courses, you look for their weird things they do as well, like if they're a chemistry graduate, you might find they do a bit of Earth science, or they've done a bit of management, accounting, or whatever else. That tells you a little more about what they're thinking, and then you look at their recreational activities ...

Absolutely!

And if they've been bloody parachuting and kite surfing and skiing they get the job, if they can list 20 types of beer they get the job straight away [laughter] ...

I sort of go darts and snooker, but if they say kite surfing, wind surfing, sky diving, you got it!

Reported approaches used to help students learn on placement consisted of induction and mentoring (the latter, typically by the participants themselves). Induction was an organisational-level activity such as any new employee would engage in: "I'm talking about the whole induction as the employee would so they go right through as an employee would, they get email access, and they get to access to all the stuff." But induction also was about seeing the company in a more holistic fashion:

Well, across the company it is separate that the students get to putting a lot more emphasis on induction processes, giving people irrespective of where they are working, putting them through different parts of the business in terms of working on the shop floor, even if they are in the office.

The mentoring tended to be informal rather than formal, typically introduced during the induction process, but eventuating as more of a "buddy system":

We don't have a process in terms of mentoring, like in my department. What we would do is give them, they would be allocated to a couple of engineers, and then they would be handed projects, or minor projects or parts of minor projects and they would undertake certain tasks with objectives and then do those to completion, and be measured accordingly, so, um, they're not just left out there willy-nilly.

Mentoring is through the induction process. It's a buddy system, we actually name a buddy that then supports this new person and they should take them through all those initial aspects and then through the technology placement the mentor would probably be the buddy anyway. So there is a mentoring sort of buddy system.

Things best learnt on placement included soft skills such as “general people skills” that were deemed lacking before the WIL student began their placement. Again teamwork and social skills were identified, as was respect for other workers, particularly process workers:

Social skills more than anything. To understand that in any working environment it's the effort from the whole team so you don't go pissing off one half of the team and we've had the occasional student who we have never had back, not speaking from my area, it was from the engineering field, who were so arrogant and looked down upon the process workers who were the people that were going to have to work with whatever kit that they made, that we just simply banned them from coming back on site, and unfortunately these were people who were related to staff members and directors and it reflected badly, basically. So we want them to develop some sort of understanding that when they're working with any large organisation it's a whole group effort and that you don't go slagging off the others, or handballing things across from my area to theirs.

Some pointed to students learning an appreciation that this is the real world and learning about consequences to actions that were more severe than at university: “This is the real world, if you stuff something up and it costs \$15,000, that's real money.”

Things best learnt on campus were about process and attitude rather than about content knowledge as such:

Learning how to learn, that's one thing you know. The aim is, find out about some theory and going off and knowing where to look and knowing how to interpret those results, the other thing is learning the lingo that is associated with your area.

Generic research skills, and the personal attributes associated with research, such as independence, also were strongly emphasised:

Leaving home and the comforts of home, potentially being forced into an environment where it's you and only you, and accountability, and having to learn how to budget and having to learn, so it's quite a daunting role going off to uni from that point of view. So I think you learn a hell of a lot of life skills, I think it's your first sort of really understanding life skills unless you're born with a golden spoon, which there are a few of those around. Then following that I think that it does come down to social skills and really fitting in with people and fitting in with your lecturers, you know and understanding that there are positions, people that should be respected. Well respect is earned and that sort of thing, but there are key people that you should go to get to gain knowledge and gain understanding of processes and things like that ... And then research certainly that's a vital component at university being taught first principles, and yeah please teach it more so they don't come and ask me [laughter].

In summary, the science and engineering employers felt students learnt a variety of things from both on- and off-campus learning experiences. They learnt these things from a variety of people in a variety of ways. But more emphasis was placed on soft skills such as team work and interpersonal skills in the off-campus learning. They were mentored in their learning in the workplace by formal induction processes and by means of informal mentoring. Evidence for

student learning came from the fact that they gained in these skill/learning areas, and that they were able to complete tasks or projects to the employers' satisfaction.

Case study sector 2: Sport

Students

Two cohorts of recent students were interviewed in focus groups of 3–4 students each time. One cohort was from a three-year Bachelor of Sport and Recreation (BSR), from majors in Outdoor Education, Physical Activity & Nutrition, and Exercise Science, at a New Zealand university. The WIL placement experience here (as described in course/paper outlines) consisted of 350 hours within one organisation throughout the final academic year. This was generally undertaken two days per week. The other cohort was from a three-year Bachelor of Business Studies (Sport Business Management) (BBS) or Bachelor of Sport & Exercise (Management & Coaching) (BSE) from another New Zealand university. Their double-semester “practicum” consisted of approximately 180 hours (as described in course/paper outlines). As part the WIL experience of both cohorts, the students had to complete a project that would be beneficial for the host organisation (Fleming & Martin, 2007).

The sport students felt that the aims of the WIL experience were to “take what we learnt at uni and all the theories and all the classes and put into practice”. Overall the aims were to prepare students and to gain exposure to the real world, provide opportunities for networking, and to understand how organisations are run. In addition, the WIL programme for the BSR was seen to enable students to “learn about research and to apply that into our industry … through the written work associated with co-op it teaches you to critically evaluate your own performance”. The WIL experience was thus seen as “more than just developing skills but developing an understanding of the importance of them in an industry context”. The student comments were consistent with the overall aims as stated within the course descriptions.

Students reported that they had experienced the traditional pedagogies of lectures and workshops on campus. Students also commented on the importance of group sessions within classes due to the interactions with other students and lecturers:

The classes seem to be more group-oriented with people having group support … It was kind of a good opportunity for classmates to discuss what was going on in each other's [projects] and provide support for problems or issues.

Students identified that they learnt from supervisors and work employees as well as from their peers who were doing WIL at the same time. The WIL experience caters for different types of learners. “I'm pretty kinesthetic so I'm hands on—so [the WIL experience] was a major for me.” Group interaction was identified as an important learning strategy while out in industry: “Being in

that kind of environment [i.e., placement] you have the opportunity to use all the people around you to learn well so you have got someone to bounce ideas off or get a piggy-back from.”

The reflective journal and written assignments were identified as a significant way to facilitate learning within the WIL experience. The learning contract was seen as important in identifying the learning outcomes that shaped the overall learning direction for the experience. The assessment strategies outlined in the course descriptions for the two WIL programmes included learning contracts, industry evaluation forms, logs and reflective journals, oral presentations, written critical reflections, a project proposal, and a final written report. For further discussion on how these strategies facilitate student learning see Fleming and Martin (2007).

With all the written work it teaches you to critically evaluate your own performance.

Your professional learning outcomes and personal learning outcomes form the basis or structure of what you'd be doing, like a foundation.

However, the students did not always understand the importance of the reflective journal, and for one participant the way he had learnt at university was not seen as being as effective as what was learnt in the workplace: “I got in the habit, when it came to university, almost to rote learn information and when it came to the workplace it didn't really work too well. Actually I had to think, be innovative of what needed to happen.”

On-campus learning exposed the sports students to a range of different topics and themes depending on the nature of the major the students were undertaking. Students commented that they felt they needed to go into the WIL experience with a base level of knowledge and skills that they had gained while at university:

You need a certain amount of skill that you are of use ... you need a foundation and then you can build on it when you are there.

As sport and recreation is so big they are trying to give us broad information so that it covers everybody—someone might only use a tiny bit and someone may use much more.

It wasn't necessarily the sport-specific subjects that you could take into your [WIL experience] but it was more the theories that you learnt from the core papers—the underlying foundation kinda stuff.

The students highlighted differences in that some majors gain more hard skills on campus than others (e.g., computer skills for sport management, fitness-testing techniques for exercise science). In the outdoor-education major learning new hard skills would begin in the classroom followed by further experience in the outdoor classroom, and then WIL placements provided further development opportunities. The following comment is typical, and illustrates how on-campus learning was perceived:

I learnt in class a way of thinking, we were introduced to different ideas and theories and it gave us the opportunity to have a broad way of looking at things. In sociology we learnt some theories and that helped me to shape the way that I then go into the outdoors and look at different industries and look at different people and situations.

The students felt that they needed to learn how to reflect critically prior to going on placement. The document analysis identified that in sport management, the prerequisite paper for the practicum (sport planning) is intended to help students to develop this capability. BSR students felt that it was important to learn about the research process prior to undertaking their projects during their co-operative and this needed to be done initially on campus but reinforced within the WIL experience. BSR programme documents identified that the paper “Industry Experience and Research” was a prerequisite for the WIL experience. It was felt that there needed to be some understanding by the industry of what knowledge the students had prior to entering the WIL experience. Expectations as to what the students could do needed to be clear but there still needed to be flexibility so “students did not miss an opportunity to do something that is a great learning experience”:

You have done all this learning, you must be able to do all these things, but I had done all this learning and co-op [i.e., WIL] was my opportunity to start applying it but not my opportunity to be put right out on the edge and to say ‘Oh, here’s a group, you take it, off you go.’

As might be expected, the students thought that professionalism was best learnt on placement as they got “the whole work ethic and the understanding of what it is about is when you go to work”. This was particularly important for students that had come to university straight from school: “If you hadn’t been out in the real world before it’s that whole exposure thing.” The off-campus WIL experiences were considered the best place to improve the soft skills that are also transferable skills, consistent with previous studies with sport students (Fleming & Eames, 2005; Martin & Leberman, 2005). People skills and confidence were identified specifically: “You get confidence from what you were doing and what you were achieving that you kind of take it away with you and put it into other aspects of your life.”

When returning to university, it was identified that the soft skills were able to be transferred back into the classroom learning environment:

I took back fluency of communication, written communication skills I can use in my future assignments, time management, and organisation.

You have more respect for organisations as now you know what they do. The real-life examples help. You can then apply what you are learning back on campus to the experiences you have had.

It was suggested that communication skills, should first be learnt at university through case studies, but then students need to follow up this learning through experiences while on placement “Where there are real situations, as there are no consequences in the classroom.” Students commented that there was an expectation that there would be some degree of integration of on-campus learning on placement. It was acknowledged that the degree of integration of theory and practice was variable, and that it depended on the type of organisation and work activities the student was involved with, as well as the selection of papers that the student had undertaken prior to entering the WIL experience. However, several participants, when asked in the focus group,

found it hard to separate the on-campus and placement learning, and they felt that the WIL experiences “make a lot more sense” of what they had learnt on campus, and highlighted to the students the value of the on-campus learning:

I did learn a lot of things before co-op [i.e., WIL] and during co-op. I was able to put them into practice and while I was putting them into practice new things came up. It’s hard to separate them and say this was before and this was during and this was in the classroom or this was in co-op.

While you are sitting there in lectures and you are learning what you are learning but you don’t know what it is you need to know. When you go into your [WIL experience] then you learn what you need to learn. You don’t realise the value of the information you are given until you get there.

However, one participant in the focus group could not see how integration of workplace learning with on-campus learning could occur: “I could not see that practicum would help them pass their exams—I think they are completely different, I don’t really see how they relate.”

Sociocultural aspects have been identified in previous research as important in student learning in the workplace (see, e.g., Eames, 2003a; Fleming & Eames, 2005). WIL experiences in sport often involve students learning by working alongside others and in teams. Through the experience of this type of learning during WIL it was identified by the students that this was a good way to learn back on campus: “Social interaction inside the classroom is kinda easy way to learn as you kinda draw on the ideas of others.”

The students felt that supervisors (both academic and industry) were important in facilitating the integration of learning: “You, as the student, need to make sure that both industry and academic supervisors are there for you.” However, the student needs to have the most significant role: “The student needs to be in the driver’s seat, like in quite a strong way. You don’t know what you are going to be doing until you start getting in to it.”

In summary, the sport students felt they learnt content and basic skills on campus and subsequently developed their soft skills and a sense of professionalism on placement. Reflective journals and assignments helped developed the capacity for metacognition. They felt integration of on- and off-campus learning could be better facilitated by their academic supervisors, but that this should be student driven.

Practitioners

There were two cohorts of practitioners—placement co-ordinators—interviewed in this work, in focus groups of three staff each time. They came from the sport management or sport and recreation programmes in the same universities as the students mentioned above. All were experienced placement co-ordinators (experience ranged from 3–12 years). The practitioners indicated that the aims of the WIL experience were to provide practical application of classroom (theory) learning and to give students a “foot in the door” by providing networking opportunities

in the sport and recreation industry (Martin & Leberman, 2005). For on-campus (often younger) students, it provided an opportunity to launch them into the job market and provide a taste of roles in the “real world” of the work environment:

We want to try giving them something that will give them an edge ... get their foot in the door ... make them stand out from all the other CV ... If you can say you did this project and this is what you achieved, and [employers] can see that you also got good grades then you are going to have added value.

They are going out into industry—you get an opportunity to see what industry actually requires.

For distance-based and postgraduate (often older) students it may also be about changing profession:

They want to get into sport industry but they might have been a teacher, or a lawyer, or an accountant, whatever it is, and they’re not in the sport industry. They tend to be older, and there the aim for them is different.

Theoretical classes (lectures, tutorials, seminars) are made as practical as possible and aim to lead or staircase towards the capstone WIL project involving the placement organisations (Martin & Leberman, 2005). One practitioner commented that “It’s seen as a part of a whole course of study; it’s like the culmination of what’s happened.”

Lecturers reported that they often provide classroom models or frameworks for students to reflect on during practical situations later, for example, by having them work through and problem-solve real scenarios, deliver a lecture on theoretical concepts, or present on their WIL experiences:

It’s those kinds of practical elements that come into the courses that are, for me, that allow them to take those experiences into their [WIL experiences] and later on into the workforce. And at least they have had some kind of experience with those things before they get out there.

At 300 [i.e., advanced] level my students in the second half of the semester have to actually run a lecture, so they are expected to develop a lecture in terms of their PowerPoints [i.e., presentations], for example, and deliver it in a form that is acceptable for a larger group.

Assignments are focused on developing critical-reflection skills. The reflective journal in particular is “an integral part of our assessment” undertaken throughout the learning process:

I like to say that what the students learn is how to think critically and in the kind of world that we live in now where theories are changing ... there’s so much information. I like to think that I prepare them to think critically about what they’ve been presented with and then they can go and have a look and find more information if they want to, they can reflect and then make decisions in terms of leadership and management.

Group meetings/seminars/tutorials provide the opportunity to share student experiences. Initial one-on-one meetings with practitioners and students enable a focus on individual needs and matching students to projects and supervisors:

For the extramural the postgrad students ... I will talk to my students and ask them what their skill gap is, because they're people who have, generally bring life skills with them.

This is consistent with Martin and Leberman (2005), who highlighted the importance of managing both student and organisation expectations.

Inviting staff and graduates from the sport industry to talk about their experiences in classes is another way practitioners sought to link theory into practice:

We have somebody coming in who has put that theory into practice in the industry. So [the students] may not necessarily get a chance to do the hands-on stuff, but they listen to somebody else that has, who then shares their thoughts on how good the theory is, or isn't.

The focus is on developing, in conjunction with the workplace supervisor, a project and range of organisational experiences that provide opportunities for the student to build relationships: "It's based on your relationship. If you can build that relationship before you actually go to the workforce, then you are in a hell of a lot better position."

Practitioners indicated that the workplace supervisors (i.e., employers) provided both formal and informal verbal feedback and written evaluations of the students' learning: "Supervisor evaluations give us sometimes a pretty good indication of where [the students] are at in terms of where their skills are lacking, etc. Or whether they actually really moved ahead, or progressed on."

There is a focus on developing graduate competencies, as part of a whole course of study (Martin & Leberman, 2005), involving both hard and soft skills. This was confirmed by document analysis of course and programme outlines. The hard-skills focus is on specific area content (e.g., event management), whereas soft skills are related particularly on developing aspects of communication (e.g., verbal & written skills):

It's like part of a coherent course of study so and I think particularly, the introduction of the sport management planning paper at 200 level has assisted with that because now you're not trying to cram everything into one paper in the third year, so it actually preps them and gives them some understanding of what they actually need to do ... how to manage a project, so they're gonna get skills around financial planning, budgeting, running a project, risk management, writing press releases.

The practitioners indicated that the WIL experience provides an opportunity to put theory into practice:

They learn through this [WIL experience] that practice and theory actually are relatively close together. So often what happens is that you have these people in the workforce who go, 'Um, oh this is ...' because it's real world but because these students are able to connect back to theory, then they are able to in other situations ... go back to theory again.

However, it was noted that they were not sure of the students' ability to actually link their work experience to theory, despite being confident of their practical skills learnt in the workplace: "That is where they still struggle the most when they write their reflective diaries ... it's a lot

about what they've done and then they go and try and find something to meet that criteria, whether they would do it I'm not sure."

It also provides an opportunity to develop life skills of communication, confidence, and self-esteem. These real situations require students to be professional, meet deadlines, be flexible, adapt, and use their initiative on specific industry tasks:

The focus of it for me is to build their self-esteem ... to enable that they match their graduate profile, that they are set, which is all of those kinds of skills, like confidence ... to build on those skills.

In the sports industry particularly you are always dealing with people and you need to be able to talk to people and convey ideas.

There was a particular focus noted by all practitioners on making on-campus learning as practical as possible so that it linked to the WIL experience:

Because the things that you teach them on campus are putting them into sort of practical experience situations so that when they inevitably do go off campus, they've had some of those experiences already ... it's like working with an athlete, you teach them the techniques, and then the actual sport itself is applying it in competition. And so it's the same sort of scenario.

It was also noted that this works in reverse, where the experiences from the placement are discussed and reflected upon back on campus. This opportunity was felt to be particularly valuable, with this cycle of "reflection-on-action" (see, Schön, 1991) being able to be repeated:

Often they will go out and do their thing when they're out on placement and they come back into the class and we discuss what they experience and we reflect on it so it's about, giving them the theory, letting them go out there and have a go at it, and then when they come back they discuss it and that's where the most learning happens is when they come back. 'Cos they don't have time to reflect when they're out in the work environment often, so this on campus provides them with this opportunity.

I think it's not necessarily, you must stay on campus and do all this learning and then you go on your [placement] and that's it, I think it's more integrated than that. They go, they come back, they go, and they come back.

You put them into less threatening situations and give them some context before they get into that environment. And then you can come back and reinforce that reflection of those of the things that did matter and it's easy to pick up on the little bits of pieces that you may have not guided them in.

In summary, the sport practitioners felt students learn how to apply or transfer knowledge gained on campus into the workplace setting, and that the main purpose of WIL was to enhance careers. There was a focus on the development of graduate competencies and whilst they saw integration as important did not feel students were particularly capable at this. They felt even the on-campus learning activities were very much practically oriented, and saw the reflective journals as a key learning tool in terms of integration.

Employers

There were two employer interviews, conducted as face-to-face focus groups, consisting of four and five employers, respectively. The employers interviewed were all experienced professionals in the sport and recreation industry, and all had prior experience as supervisors of WIL students over a number of years. Each employer focus group had a WIL relationship with the same universities as the students. Some of the participants had also taken on WIL students from other HEIs.

Backgrounds within the focus groups and the type of organisation represented varied, with one member representing a school sports department, another from a national sport organisation, several from regional sports organisations, one from a medium-sized sport and health business, and one from a medium-sized outdoor-recreation business. Therefore, the participants' organisational contexts ranged through the public, not-for-profit, and commercial sectors of the wider sport and recreation industry. Several of the employers were graduates of the university programmes involved and therefore had previously completed the WIL experience as students.

Particular WIL programmes were chosen by the employers based on one of three things: approach by a student to the employer, approach by the university to the employer, or approach by the employer to the university—based on their needs, or opportunities they could offer students. Several of the employers selected WIL students based on students' CVs and an interview-type process where there was competition, others selected students based on whomever was available and interested at the time, with only an informal meeting or discussion with the student. Most employers did not pay WIL students for their work-experience hours, although one employer paid for some work hours and several others offered paid positions to exceptional WIL students at the completion of the placement, or outside of their work-experience hours.

The employers commented on their perceptions of student attributes when first joining the organisation as part of the WIL programme. Employers were most interested in the students' personal attributes, such as willingness and eagerness to learn, good communication skills, initiative, and common sense. Comments were made that were consistent with Fleming, Zinn, and Ferkins's (2008) study of sports organisations and the desired competencies for a WIL student, with employers from the present work saying they wanted: "Common sense, enthusiasm, and a will to get stuck in and learn whatever they can."

The ability to write in English, computer literacy, good time management, and some theoretic knowledge of event and project planning were also seen as important: "Ah, skills, for me, is a grasp of the English language, oh and in particular probably written, written more than anything ... and they need to be computer literate."

Most of the employers were not familiar with what pedagogies are used on campus, but reported that approaches used to help students learn on placement consisted primarily of exposing students to a wide range of tasks and activities and, in some cases, letting a student experience a full planning process from start to finish:

I made sure last year, for example, I had [a student] go through the whole, the whole action plan of the event so from ... pre-event to post-event. And then also setting the budgets and things like that, so, they were involved from the beginning of a process of the event.

Empowering them as an employee and giving them the opportunity to take charge of something, making mistakes, learn from that.

It also was reported that students were included in weekly meetings and workshops being offered, and were exposed to some form of induction and/or training as would occur with any new employee. In some cases a detailed job description was provided to the student. Ongoing supervision and regular progress meetings were also mentioned as approaches used to help students learn while on placement. Several employers provided formal performance evaluations for their students as they did with full-time staff.

The employers reported that those things best learnt on campus included theory, specifically basic event-management theory, knowledge of organisational structure and function, planning and project-management processes:

Some sort of theory on the principles of planning and project management.

Some sort of background knowledge of organisation structure and how an organisation is structured and functions. Then when they get onto the practicum they can see that part of it.

One employer, who had a background in sport sociology, felt that some understanding of sport in a social context should be taught on campus. Basic computer skills, written communication skills, and research or fact-finding skills were also reported as important on-campus learning.

According to the employers, learning on placement came from being exposed to a range of experiences and being supervised and guided through that process. When asked about the things that students have learnt while on placement, employers reported soft skills such as self-confidence and communications skills, as well as multitasking, prioritising, and time management: “One of the things that struck me is that opposed to learning the actual nuts and bolts and operational stuff was the development as people ... so self-confidence, self-belief ... communication skills.”

The employers also reported that key learning outcomes related to a better understanding of what really goes on in a job (i.e., how an organisation functions and the culture of the organisation—a reality check):

That one thing doesn't happen after the other, five things happen at once ... I don't think they realised the amount of paper work that happens, they thought they would be out there on the front line, coaching and taking teams as opposed to doing all the stuff that happens before that ... there are very few jobs in life that don't have a tedious, boring, pain-in-the-ass element to it ... they won't really have any understanding of what goes on behind the scenes—I think they definitely have an appreciation of that now.

They must pick up the culture of the organisation in terms of their attitude with punctuality and work ethic, all those sorts of issues that you would pick up in any sort of workplace and they all differ from workplace to workplace.

Other comments about on-placement learning related to customer-service skills, and the importance of attention to detail:

How does your particular organisation ... how do we treat our ... members ... how we treat our clients, group of school kids who were doing all sort of activities, or whatever it might happen to be.

You have to pay a lot of attention to detail, and that's something that's sort of missed out when you only focus on theory.

When asked how they know that the students have learnt from their placement, the groups had difficulty responding. They referred to intuitive knowledge such as knowing in the end which ones they would employ and which ones they wouldn't, but acknowledged that often came down to the personality and initiative of the individual rather than something they specifically learnt while on placement. They also reported that the student's ability to successfully undertake a task at the end of a placement was an indication of their learning: "Can they, when left to their own or asked to complete a task that you've shown them or have learnt through exposure, can they get in there and do the job that you asked them to do?"

The employers identified both soft and hard skills as important for on-campus and on-placement learning:

Life skills, you learn them at work and at uni ... it's one of those things it doesn't matter where you are learning them.

Rather than learnt, perhaps there is a crossover between the both in terms of embellishment of what's already been taken on board if you like, so each is supporting the other, in other words, the computer skills and the hard skills and the research skills and so forth that they have learnt here will be embellished and further practiced and refined, whatever, applied to the knowledge ... it's a two-way process.

The employers felt that students learn a variety of things from both on- and off-campus learning experiences and that these two complement and reinforce each other. While theory may be learnt on campus, a greater understanding occurs when putting that theory into practice during a work placement. The employers also felt that the placement gave students a better understanding of how organisations work and more realistic expectations. Soft skills were highlighted as important for those beginning a work placement although employers suggested that these skills are not necessarily taught on campus or on placement, but result from the individual's personality and a lifelong process of learning. Overall, all of the employers felt that the WIL experience gave students an advantage over others for future job prospects, based on the wide range of experiences and networking opportunities provided: "The experience they've gained, the people they've worked with, the knowledge they've gained, I mean they have to recognise that as a launching platform ahead of others that haven't done that sort of thing."

In summary, the sport-management employers saw students coming to them with a range of skills and abilities but with basic content knowledge, and saw their own role as exposing students to a wide range of tasks and activities. They tried to facilitate learning by treating students much the same as other new employees, and felt they learnt soft skills such as self-confidence and communications skills, as well as multitasking, prioritising, and time management along with gaining an understanding of workplace culture.

Case study sector 3: Business and management

Students

There were two cohorts of Bachelor of Business degree (BBus) students interviewed for this study. Both cohorts had completed their industry-based learning (IBL) placement at the time of interviewing. The IBL course is a compulsory final-year course, and involves a three-month work placement (two days per week in a semester—as detailed in paper/course outlines). The first cohort of participants was interviewed as a focus group, involving five students. An individual interview also was held with a part-time mature student who had recently graduated. The second cohort included five individual interviews with students. The focus groups and interviews comprised students who were full-time, including some international students, and others who were part-time mature students with work experience.

The full-time students chose their majors for various reasons. One student assumed marketing was “all about advertising” and had seen advertisements that he felt he could improve upon—this despite the paper/course outline not mentioning advertising but saying a key objective is “to provide a sound knowledge of the wide body of *marketing* [italics added] principles and concepts”. Two students commented on their choices: “The reason I chose the Human Resources is [because] I like working with people, yeah, to do anything with people”, something supported by documentary analysis.

The other student indicated that his programme choice was motivated by career enhancement: “I like calculations and I think every firm needs accountants, so I think this might be an easy [area] to find a job, so that is why I choose accounting.”

A majority of the students commented on the convenience of the location of the HEI in which they studied: “Ah, location, I use to working the city so it was like in between my home which is West Auckland and the city so it was half way … And the parking, yes.” Others commented on the nature of the campus: “Well, I think the campus of [the HEI] is very beautiful, so the study environment is very, very good for me.”

The full-time students appeared to have only a vague idea of the programme aims prior to enrolling for the placement, and mainly commented on the aim to obtain work experience:

I think that it's about the whole experience, like, you get to meet new people and then you get to deal with them, like if there's any issues you got to deal with them rather than just being with people you always know, and that's easy, so, like, being in the work environment, you get to meet new people, you get to be in new situations and you just gotta learn, you learn from your experiences.

The aims are detailed in paper/course outlines, and all majors provide a list of programme aims and learning outcomes. The part-time mature student saw the work placement as a way of challenging himself to perform in the workplace:

One of the key things would be to challenge myself that I actually, well challenge myself with what I've learnt and bring it into the business that I was working for. And, also prove to myself that I am more than capable, as well as it was just a good summarise-type course where you put everything from all the different subjects together and then manage to use it in a real-life environment.

Comments on the pedagogies used identified lectures with the learning of theoretical concepts, consistent with paper/course outlines. Participants pointed to the contribution made by lecturers in their learning, but also said they learnt from classmates during co-operative group study on assignments and exams:

Well, I think I have learnt a lot from the lecture because the lecturers enlarge our knowledge, they will talk about something in their life or in their industry ... Yeah, I agree with her. They got lots of knowledge you have to learn from the lecturer first. And some people got experience, but some basic knowledge you have to learn from the lecturer.

The whole thing really, because you learn some from the lecturers, but then along with the students which, like, say if you need help you know you can actually get to make friends and then you learn better [with them] ... you can't just learn from one person [i.e., the lecturer].

Many of the participants commented on how they learnt time management, communication, and teamwork skills—based on, and facilitated by, the assignments they had to do (something specified as a learning outcome in documentation, e.g., “Demonstrate sound oral and written communication skills”). One mature student commented:

I think the theory is really good, but, ah, some of the assignments, I'll be honest, should probably be done in a real live environment not just, you can just come up with anything and you don't actually learn from it—not that I did because I was always in a company and I was able to use that company, you can go through my records and, um, to do my assignment. But there will be students that weren't working that will be doing anything that I don't think applies and they don't actually learn from it, so the assignment work needs to be more within, applied focus within their industry.

The students felt that the things best learnt on placement were soft skills especially communication skills:

Yes, communication is very important especially clarifying things, sometimes they just give you things to do and you have to go and ask them and you have to be good at listening because they expect you to know everything.

Oh yes time management, what else is there ... communication skills you know, learning to be assertive, learning to be creative in the marketing, obviously you have to be a bit creative, challenge yourself, learning to go back and actually clarify not just get on with the project. Always check.

They also felt that these practical skills learnt on placement were of a much higher value than in classroom settings. This feeling was linked to a perception that even in an applied business-degree programme, the type of assignments, including projects, did not reflect the “real world” situation:

Well the one difference is that at [the HEI] we did the assignment, the assignment is in just one format, that format is not in the real workplace.

I think in the [the HEI] you writing the assignment and thinking more but in the placement I need thinking more [on] actual problem, like cost limitations ... I designed the company brochures, I can design it very beautiful but I need to consider about cost, about so many things.

I found that at [the HEI], like with the courses they teach you a lot of stuff but ... when you doing a project here [i.e., the placement] give you a budget, actually give you a certain budget, they kind of tell you what they want, but with the real world it's more of a, you got to come up with a plan like a promotional plan but then the budget often is restricted, or, like, very, very, limited.

Another participant commented on the importance of communication within the organisation:

The best things [learnt on placement] probably the type of communication required in the business environment, or acceptable communication. With a marketing degree, like product knowledge and things like that, so the product that fits the organisation, yeah so obviously you have to learn through the organisation [what] you can't through [the HEI] that goes back to me saying there's students that just do assignments that's not real, 'cos you can just pull off a of a product off the Internet. Yeah, so [learning], is best within the organisation.

The placements also appear to have exposed students to the needs of “real clients” and customers, and this required the students to become more customer-focused and to focus on delivering value to customers:

Because I'm working as a tax agent so you have to always think about your clients, their, um, benefit, because they always ask you ‘how can I claim expense’ or something like this you have to be very, um, professional you know you can't give them the correct idea, you have to say depends something like this, no correct answer for them so you have to find more detail or some more evidence from the IRD [i.e., the New Zealand Inland Revenue Department] website ... Honestly, I never [learnt or was] taught taxation before and I'm just doing the taxation this semester so it's quite useful, but before it was just some basic idea how to do the report journal.

Students commented on how the theory relates to managerial decision making, whereas in the workplace they were expected to perform routine tasks that did not relate to what they had learnt in the degree. As one student commented:

Yeah because basically examples [given by lecturers or text] in the class, they assume you being in the position [as] manager, but out there they just, personally they didn't ask me my knowledge of proper job [but] just basically day to day I do new things, so I'm just learning I'm not giving them my knowledge [from the on-campus learning].

Most of the participants felt that the workplace host supervisor/manager was the critical person to learn from, at the placement site:

Yeah the host manager and accountant, yeah, because they are very friendly for me and they teach me lots of things ... Accountant they got more experience, they have lots of [knowledge] ... learned from them and my host manager, we always have a meeting every week and just solve problems.

Well I learned a lot from the host [my supervisor], she is very good person and she is very professional in this industry, and her writing [skills] is very good, so I should learn a lot from her ... [about designing a brochure].

Some of the students reported learning also from other staff members, in addition to their host supervisor:

I mainly learn from my manager because he pretty much does, he's pretty much 'the company', like I've learned some from the other staff as in depending on what they do, but, yeah, mainly the manager, who was always there to help me.

All of them, my host and also other staff because you know sometimes I do the customer service I need, talking to the student and the other staff also do this job, she always told me you must take [collect] all [the information] you need to know [and] some things [documents] next time, so I think that it's very, very helpful for me.

There were some things the participants felt needed both on- and off-campus learning experiences to achieve. They mainly referred to soft skills like communication skills (consistent with IBL documentation), and learning to take the initiative to research independently:

Time management and marketing research because I did a lot of research during the placement. Yes I think so, marketing research is very important.

I think I learn more about research in [the placement firm] ... I dealing with some email, it come back to [the placement firm] when they were sending the letter to the customer, it come back to [the placement firm], so it made it slow and I need to [research] the cause ... I went to work with databases to find where the customer is.

Some of the student participants felt that there should be integration of on-campus learning with on-placement learning. In particular, it seems the students did expect some of what they had learnt on campus to be of use to them on placement:

I think there's like communication, leadership, group work, kind of everything really to be honest, as in whatever you learn at [the HEI], although it might be different, it's still really relevant to what you do in the workplace, so you can actually take what you learn in [the HEI] into the work experience and, like, that's what I actually enjoyed about [the HEI], is that it's really real-experience based.

Yeah like, some basic knowledge how to do [analyse] the financial performance and position is quite useful in the real life, you have to do all of this for your clients, and you have to communicate with the IRD as well. So you have to have communication skills to write email and some things like this.

In the marketing part, I expect to apply some marketing strategies [learnt from the degree] into the work, such as some promotion strategies to help the companies to increase the sales.

Time management, marketing research skills and some e-marketing skills [learnt on campus] is very useful [at the placement firm].

For example, like communication skills. Time management, computer skills, they're very important.

Interestingly, the integration of theory into practice is specified as a learning objective in the IBL documentation which states students are expected to "Integrate theoretical concepts and accepted best practice to support actions, solutions, conclusions and/or recommendations made during the project/placement". The students did identify more holistic skills, such awareness as of ethics, and one noted he felt the workplace would mimic learning accomplished on campus:

Ethics, that sort of thing, communication, all those things we did in business communication course, things that you are learning in both environments ... Yeah you do learn time management, discipline as well, meeting deadlines and project deadlines, understanding long-term objectives, looking at the bigger picture rather than just doing a step-by-step assignment, things like that.

Well, I thought it was going to be straight from the textbook to be honest. Like you're going to a workplace and it's straight from a textbook, but it's not, it's actually quite different, although what you learn is useful and can be applied to the real world but it is quite different and you gotta come in and like have a sort of a whole new attitude towards it. As in at [the HEI], you know they tell you it's going to be, oh it depends on where you work but it does depend, you got to be able to adapt.

As noted above, the business degree IBL placement that forms the focus of this work is part-time, and most participants were enrolled for other courses in their final semester at the same time they did their placement. As a consequence, the participants had an expectation that there would be integration of on-placement learning into the classroom setting:

Yes. I think it's like, personally, taking everything what the lecture says is really important, like what I found is for HR [human resources] the group meetings and how can we develop the group meetings when I go to [Company A] they show me exactly the same ones [as in class], but I thought those ones are just basics, [and] not, at the HR [strategic] level, [but] they are really important.

This expectation was across different topics including accounting and marketing students:

Yeah, especially taxation, yeah, I never learned this before even in diploma, but you know when I first come into the company, the accountant just asked me what is the [difference between] resident and ... tax resident, I told her 'no idea', so I just learned some basic knowledge then I come back [and bring it] to the class.

Yes, before when I was writing the assignment about the company ... like marketing planning assignment I just thinking [and assuming] about how the company runs, but now when I go to the work placement I know actually [how] a company runs ... So when I'm writing the assignment [for a course I am doing currently] it's helpful.

The students reported that the placement provided for integration and reflection. Reflection is a key part of the portfolio assessment approach used and is noted in documentation about how to construct a portfolio (see below). This reflection caused an increase in confidence levels, and an acute self-assessment of the students' strengths and weaknesses:

Yeah, I'm a full-time worker, employee, I just continued with the skills I learnt from IBL, some key things that I picked up were reflecting on the day and I tend to start doing that more, you know, understanding what is actually going on around you, I watch the news now, and I want to watch it at 6 o'clock, and I'm wondering what's happening to me. Um, you know reading papers, publications and things like that.

It actually gave me more, deeper understanding of what I want to do, like, as in what I need to, what I need to achieve what I want to do. Because the reason is I've never seen myself as, you know, as a proper, you know, like as someone important, but from the work experience you can actually, you can define yourself as you want to be—a leader, or if you just want to be a follower. And personally I want to be a leader. And work experience actually helped this.

However, it seems any actual connection between on-campus learning and off-campus learning (or vice versa) from the students' point of view was coincidental, and the students felt that no one sought to directly facilitate or drive this, although their academic supervisors did frequently comment that they expected students to relate theory to practice. As one student commented:

You know in the real live environment, especially in the role that I've got now, you have your good days and you have your bad days and for me to carry on and keep going when I had a bad day I had to sit back and think 'Okay, well, what went wrong? why did it go wrong?' and then just move on from there, tomorrow's another day. It's the only way I can get through and reduce stress levels and things that.

There was an expectation by mature students that someone *should* facilitate the integration of learning:

As an IBL student I think, I think the actual IBL course co-ordinator should actually get more involved with the projects that are going ahead, um, and maybe there should be a separate IBL co-ordinator for each programme like marketing, accounting because that co-ordinator really needs to drive the whole thing and push it through the whole cycle, that way the students would get more support as well, that's just a recommendation.

Assessment in this IBL programme involves the preparation and submission of a portfolio of learning. For this portfolio students gather evidence to demonstrate that they have met four learning outcomes. The basis of using the portfolio for assessment is that it passes responsibility and ownership of assessment onto the student. This is achieved through students engaging in self-assessment of their workplace performance, and critically reflecting on their learning experiences and professional development needs. Extensive documentation is provided to guide students in the development of their portfolios. It seems this process is well understood by students, and they see the portfolio as an important learning tool:

Well, I do think it is very, very helpful to do the portfolio because, as you see, I wasn't sure how much I had achieved until I put all the files together and writing my own reflection. And also I [could] see the progress I made during this period of time, so I think it's very, very helpful for me, so I believe it can be helpful for everybody.

Students are supported and mentored by an academic during their placement, and students' learning journals play a key part in creating dialogue ("long conversations") between themselves and their supervisor. The students reported that this support helps to ensure they maximise the learning from their experiences.

I valued it because I got a lot of help, I kept on asking questions when I didn't understand something because from the start we were told this is different, this is not like any other paper, you have to do the work yourself ... I guess I was lucky because my academic supervisor was very helpful and I always got feedback from him every week on how I am going ... the reflective journals [identified] everything that I would go through in a week [and] he'd read it, tell me what I need to improve on and all those sort of things, so I felt that was very helpful.

An important evidential requirement for their work performance is formative feedback students gather from work peers and employers throughout the placement period (all detailed in the portfolio guidelines). Students are encouraged to use this feedback as part of the dialogue that occurs at the end of the placement between the employer, student, and academic (at a "collaborative assessment" meeting):

I was really conscious of ways of ensuring that I was meeting the host's expectations so I was always checking [how I was doing] on a regular basis. So by the time you got to the collaborative assessment there were no surprises because we'd kinda covered [everything], we were checking things off as we went and I had a plan. My supervisor knew the plan and the skills that I was really trying to [develop for] myself ... [and] she would volunteer that [feedback] herself, because we kept in close communication.

In summary, the IBL students came to their HEI for very pragmatic reasons, which were not to do with the WIL programmes. They learnt content knowledge from their on-campus experiences but also highly valued group work, where they learnt from their peers. They reported that assignments facilitated development of communication skills and teamwork, and the main value of the placement was to gain soft skills and knowledge of business culture. They felt they learnt from

variety of people, that there should be integration of on- and off-campus learning, that the use of a portfolio approach to assessment sought to aid this integration.

Practitioners

Practitioners comprised two cohorts, those who were involved in the co-ordination and facilitation of the IBL programme, and those who acted as academic supervisors for students who went on placement for the IBL programme. Their views are discussed in turn.

IBL co-ordinator

There was one IBL co-ordinator who was interviewed face-to-face. She holds a number of tertiary qualifications, and has more than 8 years of teaching experience in the programme. The co-ordinator identified the intended learning outcomes of IBL as: “The students should be able to undertake work successfully in their placements, integrate and communicate in the workplace, achieve personal learning goals, and be able to reflect on their own performance and what they learned from their experience.” These are consistent with supporting documentation which, for example, in the case of the BBus specifies as a learning objective students being able to “Evaluate and critically reflect upon the project/work processes and outcomes within the context of the workplace environment”, and emphasises the importance of reflection: “Reflection forms an important link between processing the new information and integrating it with our existing understanding of the world around us.”

She clarified the responsibility of the co-ordinator as being “to ensure they understand what the completely different requirements are for this course … and the processes identified that would facilitate that understanding”. She went on to note that she ran:

Four workshops … in the first four weeks, [each being] three-hour sessions. In addition, towards the end of the semester we are running two portfolio workshops where they bring their portfolios in … and they can get feedback and exchange in critiquing each others.

She described how the pedagogies used helped the students to know the exact requirements of the IBL, saying:

We’re telling them what the requirements are for how they can achieve in the workplace, we train supervisors to support them … but I think [what] I haven’t mentioned is the whole structure of the learning outcomes and all the work that’s in the workshops and the way the whole course is designed, all builds towards that learning.

Learning journals were seen as very valuable in facilitating learning. The co-ordinator commented that:

The critical-reflection process is probably the singularly most valuable aspect of the IBL. Having people analyse and reflect on incidents that have occurred that week … describe it, analyse it and say what they might change the next time they encountered it. And, by submitting these, it’s also part of their evidence [that] is going to form part of their portfolio

... it's trying to encourage that lifelong analysis and I think the whole degree ought to be teaching this and this just optimises it.

Supporting documentation such as paper/course outlines strongly emphasise the importance of reflection.

The independent nature of the placements was also noted by the co-ordinator:

They're working pretty independently, there is the occasional little hiccup, and in which case if there is a hiccup, probably a friend comes to support. They are placed in individual placements—we don't let two people go together ... um, we don't let them share a job and I think that's healthy, um, we have them in the same company, like Company X has got several, but they're in different areas, they're in accounting, HR, marketing.

One of the responsibilities of the academic supervisors, according to the IBL co-ordinator, is to ensure that the workplace for student placement is suitable: "The academic supervisor is really checking out the location to make sure the student is okay, that the position is okay, clarify, very important to clarify precisely the work that's going to be undertaken." This responsibility is consistent with documentation that specifies that "The process of determining the project will be overseen by the Placement Adviser and the Academic Course Co-ordinator."

According to the IBL co-ordinator, theory was best learnt on campus—"the theory has to be learnt in the classroom"—and practical skills and attitudes were best gained in the workplace:

They do discover in the workplace the importance of communication in the first couple of weeks. They haven't perceived it, some people haven't perceived it to be so important, but it's very hard for them to function and interact without that, and attitude to detail, attitude to doing the job well.

The co-ordinator felt that the IBL placement should be in the final semester of a student's programme of study because of the possibility of continued employment on a full-time basis: "People get offered full-time jobs, and lots of them do, as a result, then I think it, they can do it in either of those semesters but if I were them I would do it in the last one." An added advantage of this model in her view was that the students really cannot wait to earn their living: "I think they want to get out and earn, and they're just itching to get out there and put their knowledge to good use. They're very practical people."

The use of an evidence-based portfolio was seen as an effective verification tool of what the student had actually learnt from their IBL placement:

Thinking critically, organising material, so not only have they done their job in the workplace, now I see the portfolio almost as a communication exercise because they have to select [using] critical thinking, they have to select appropriate evidence.

As regards the learning that students value from their IBL experience, the co-ordinator felt that the social aspects of learning were highly valued:

It's about being able to socialise with people. They suddenly realise there is a value placed on that, and I've had very bright kiwi [i.e., New Zealand] students suddenly realising they had to actually talk to people. Okay, they just haven't appreciated that. Being able to take instructions and clarify and integrate, that's huge. [They have] to understand what's required of them, it's actually incredibly important 'cos they have to learn so quickly, don't they? They're only there two days a week, they've got to pick up the threads and perform.

Overall it was the personal development of the student: "It's developmental personally, and of their own knowledge and skills, remembering many of our students bring a great deal of knowledge with them."

IBL academic supervisors

Two cohorts of academic supervisors, all with considerable experience in supervising IBL students, were interviewed. Their specialisations were accounting, marketing, management, operations, human resources, and information systems. Their teaching and supervision experience ranged from 4 to 8 years.

As far as the aims for the WIL programme were concerned, one of the supervisors thought that during a placement in the workplace a student has the opportunity to put into practice the theory learnt in the classroom: "What is taught in the classroom is actually being used in business, whether it is or isn't, that's for them to find out, and I think that it is a good work experience on that basis." In contrast, another noted that "It's a lot more than that, because it's about relationships and cultures and that kind of things in business." Again these views are consistent with paper/course outlines (see above).

A common point of view was that the main point of the IBL placement was to prepare students to enter the workforce:

I think this learning really opens eyes of the students as to what the real work environment is like. Especially for those students who have never been in the work environment before. The classroom environment is entirely different and what we are trying to do in the classroom is really trying to get them ready for the workforce and if they don't know what the workforce is like, if they land into it suddenly I think it is quite a shock for them and I think this way [industry-based] learning comes very neatly into place to prepare them for the workplace before they start their first job.

Pedagogies reported as being used on placement included learning journals (as noted in paper/course documentation—see above), and this was identified as being particularly effective in the personal development of students:

I think, a lot of the learning they are getting out there, it is more personal, it comes from their reflective journals learning what, [for example] 'Oh, hang on, I've thought I was good at that but I'm not', and getting to realise that different places work in different ways, and reflecting back on their role on what they're doing and teaching them to take responsibility for themselves.

The quality of the learning was reported to improve as the student progressed through the placement:

Things like being able to communicate, ask questions, disagree with the employer, disagree with the supervisor, with validity, ask questions as to why we are doing things, why are we doing it this way, which they would never have thought they could do when they first arrive. So initially it is just learning the task, and then moving on they become more comfortable with the menial tasks, they start to want to do more tasks and then start to learn as to why they are doing these tasks this way. Is there another way?

Collaborative assessment meetings were also deemed to be of considerable importance:

You really understand when you see them interacting in the workplace with the supervisor and the things that they say about themselves, the way they put across their own comments in the assessment form, I think that is where you really get to find out exactly how much they have learnt and what they have learnt.

Monitoring of student progress through the placement through regular contact was seen as important because it allowed for intervention or guidance in a timely manner: "So it's quite important to me, from my perspective, that you have to keep close contact with these students and follow and monitor their progress." When identified as necessary, this guidance was provided by the academic supervisor, rather than the IBL co-ordinator:

My role as [an academic] supervisor is to keep them on track and provide them with [guidance should they] find a situation where there is something that they haven't learned in the classroom that they need to do, to tell them where to go, where to find it.

Theory behind the practice was seen as best learnt on campus: "Obviously the theory behind the practice is obviously best learnt in an academic environment", and it was felt that the students should be technically competent before they enter the real world of work: "I expect them to be technically competent and I expect the IBL's a journey of self-discovery and also a journey of learning what goes on in the real world."

Things learnt on placement took place in formal as well as informal situations. Learning during placements was not only through planned activities, "one of the interesting learning things that's come out of this, which probably isn't in the IBL anywhere, is the amount of informal learning that takes place at afternoon tea and morning tea and things like that", but it was felt that the students may be lacking in communication skills necessary in such situations:

I think that in the workplace that is where the communication skills are really tested ... especially the oral communication because some of them have to deal with clients. They might find in the social environment at lunchtime, at tea breaks, that other people are chatting, you know casual conversation, and then they suddenly realise that their skills are lacking in one of those areas.

And the student was felt to commonly discover other ways of learning:

A lot of it is the politics of the workplace; the things that they get in IBL are the closest they will ever get to, quote, ‘the real world’ learning because the classroom is quite closeted in that regard and you’re supported, etc., etc. But in the workplace, um, that more than often enough doesn’t happen and so just the politics, getting along with people, understanding how to find the right person in the organisation to actually ask for help, how to know who you should listen to, that kind of thing can’t be done in the classroom and probably is strictly limited to the work placement, that from my perspective, that’s the beauty of IBL.

Networking also facilitated learning, and had ongoing value:

Yeah, one of them is relationships between people, the networking bit of that has come up with one of my students, the value to them of meeting colleagues and being able to interact with them in the future, it’s a future thing.

It was felt that the student would learn most from people who were both accessible and friendly:

Who will the student learn most from is I think the person who is most available and most friendly, sort of. If he was going into the work environment for the first time there may be a supervisor, but if the supervisor is not available when the student needs a supervisor then the student will go to somebody else and who is available, and usually you will find there are people there who are very friendly, they are willing to help and they are available and those are the people the student will learn most from.

Of the things that are needed both on and off campus, teamwork was seen as essential in the real world, but it was considered that some exposure to it was possible in classrooms: “They even get used to teamwork, you know whether it’s good or bad, in the classroom and just dealing with groups in how to deal with conflict when people are not carrying their weight, situations like that are very real to the business.” Interestingly, the academic supervisors felt teamwork is of particular importance in New Zealand:

Being part of a team is very, very important [and] if people feel in industry that you are not going to fit in with the rest of their team and the rest of the colleagues they don’t really care how brilliant you are. They are not going to employ you. It is really, really important that you fit in. Especially in New Zealand I found more than anywhere else.

As might be expected, good communication was seen as vital in team work:

Yeah, I think they all tie up together because individual people have to have those skills but then in the real-world situation you bring together everything you know. I think the vital one is communication because, as you asked earlier on, that is something that is everywhere, whether you are in the classroom or the work environment communication is vital and if there is a communication breakdown then we have difficulties in the system. So communication is a very vital skill and everyone will have to have it no matter where they are, and communication really is not just being able to express yourself, and make yourself understood. Communication I think also means that you are able to inform people about things especially if you are working in a team.

Time management, like teamwork, it was felt could be learnt both on campus and in the workplace:

One of the things that we try to instil in the classroom is when you are given an assignment, give them four weeks to do it, we expect you to work on it right from the start so that it gets finished. In business definitely as soon as you are given a job to do, you don't think 'Oh, I'm going to hang around for two weeks doing nothing, getting paid and then try to cram it for two weeks', so [in] both of the situations we're trying instil the fact [when] you [have] got something to do you get down and do it, and if you finish it early, move onto something else.

The importance of time management was stressed by all the academic supervisors, one commented that:

I think time management—when you think about it, you have to manage your time when you are studying as well, so I mean, I think that is a skill. Time management is a skill that you can use both in the workplace and in academia but there is definitely—I think you are faced with a lot more problems in the workplace, a lot more challenges, and they are in far more detail than you get given in an academic environment.

But time management, whilst considered an important part of students' on-campus activities, was felt to be of critical importance in the workplace:

From a student perspective or from a work perspective, the student perspective probably gives them some time-management skills because they see deadlines; the work perspective, though, will probably give them a little bit more and the deadlines are not just 'I didn't hand in my assignment on time and my grade is low', but you can have somebody in their face yelling at them, 'I need this and I need it now!'

So the workplace was seen as more demanding in terms of pressure, and less forgiving in terms of getting away with things:

And a lot more pressure I think is applied, at least I always felt a lot more pressure in the workplace than I ever did as a student.

Yeah, probably in the student world you can get away with more, but in the real world, as you say, you can't do that—when that report is due, it's due now and you can't go up to the manager and say, 'I haven't started yet, gee, I was sick yesterday.'

Occasionally situations did arise where the stakeholders needed to come together to alleviate problems encountered during placements, and this situation was dealt with by the academic supervisor: "There was one where the workplace got a bit tetchy at one stage and we had a meeting between us and sorted it out and that was probably was a learning experience, how you negotiate your way through a difficult patch in your employment."

Problem-solving skills also were essential, and something academic supervisors thought were best learnt in the workplace:

Absolutely, yeah, but problem solving means that they have something to do that they don't quite know how to do, and so they have to, quote, 'find out how to go about doing it', okay, as opposed to, they might have some operational problems to solve, but problem solving in the generic sense means the boss says 'here's a job', how the hell do I do that?

The options for learning about problem solving were everywhere on campus and in the workplace, and this was something that engaged the academic supervisors a lot when working with students:

When I talk to my students [I say] everything is a problem that needs to be solved. Everything they do is a problem that needs to be solved. That is one of the things that we can pride ourselves on in a technical side of things. We are always looking at what's the problem and what's the decision that needs to be made?

While some problem-solving skills may be learnt in the classroom, it was felt that most had to be picked up in the workplace:

I think they need to solve the problem of thinking that the theory that they have gathered in academia is really what will happen out there. They need to ... adapt the skills that they have gathered in the classroom and change [them] to suit the environment in which they are going to apply those skills, because [in] my experience it will not work exactly [as] they have been told in class.

So students can also learn from experience: "Perhaps in IBL we are starting to encourage students to start anticipating by looking at this as an event that happened, what was the cause of that? What could be done differently? What could you learn to do in the future?" And if things do not work out in their favour, then they can always fall back on their academic supervisors for support:

We see students come in [who are] very quiet, some of them insecure, and we see them starting to grow, and rather than throw them in the deep end of going out and applying for jobs, we're giving them a transition where they've still got their education to fall back on. If they are not going well [they] can cry on your shoulders sort of thing, if necessary.

There were some examples of integration of on-campus learning with learning on placement. During a placement the student gets an opportunity to not only to put theory into practice but also to secure full-time employment: "He wasn't even interviewed after his IBL, he just carried on working ... when his [placement] time was over he just carried on and he was in full-time employment." All three stakeholders are considered to contribute to the student's learning:

It's a three-way partnership: there is the student that's got to show the initiative and start asking these things, there's us that's got to set them up into the position where they are getting, know that they are comfortable and if they need the assistance we're here ... and then the workplace should be made fully aware of their responsibilities, they're agreeing to act as part of the supervision.

But ultimately it is the student who is required to take responsibility for their learning:

My students email me every week and I give them feedback every week. But I think the whole idea is you're not too close—it's having good early warning systems, and one of the things that I make clear when I go out with them for the first time to meet their supervisor is to say if there is a problem I want to hear about it early not late.

IBL placements during summer school were not seen as a favourable option:

If you are going to have a short summer-school thing, the whole idea of reflection is that you have time. And if you are jamming people into summer school you don't have time. It's probably a bad learning experience all round, summer school really.

There were mixed views on whether it was best for IBL to be in the final semester of a student's degree programme, with one group saying, "I thought it must be the last semester because they know that they can't re-sit that, um, and if it's the second last semester they know if I don't do my best I can still re-do it next semester", and another the converse:

Yeah, there are some advantages to the last semester, but there are also some advantages to the first semester of the last year. Um, in that you can, if they have a good experience you can capitalise on it, if you have a bad experience you can actually capitalise on that as well, so there are some advantages.

If you have it earlier than the last semester, they can't integrate in the workplace as well probably because there may be areas, vital areas that they haven't covered yet. And it may be that they need the academic class first, but they can't sort of learn on the fly sort of thing.

Indicators of learning that took place during an IBL placement included "the reflective essay" and "the learning journals", along with a combination thereof:

Mine are two-fold, one is there's the learning journal, maybe its three-fold, learning journal aspects, the other is when they come back and say 'Thanks for your comments that you have given me back, I didn't look at this that way before and now I realise my eyes are opened', and the other way is their personal learning objectives [goals] which they've stated 'I need to learn to do so and so' ... and then the portfolio comes in and says 'That's what I've done, this is proof that I can do it now', then you've got the pure evidence.

During IBL placements it was felt that students find out "how good their communication skills are" and a realisation that these were not as good as they might have thought: "I think some students think that their communication skills are great until they get out into the workplace."

Interestingly, it was noted that not everything that they learn in the classroom was seen as useful in a particular work environment: "They have to put in their own resources to get things done." If they are able to draw upon their own resources this can then result in substantial personal growth:

I think a lot of my students ... go in thinking that they are the most stupid, useless person in the organisation and they come out thinking actually they are quite valuable, they are actually not that bad. So a lot of them get a lot of self esteem. Another thing they learn is that if they think cleverly about a situation that a lot of the stuff they do in the classroom does actually have [relevance] ... the thinking, the decision making, learning how to learn, they are actually quite flexible and useable in workplace environments. And I think they learn self-discipline, they learn fear, they learn higher degrees of communication, they will learn the fear of failure, and it is up to them.

Overall the growth that comes about through an IBL placement was evident in that the students were reported to become increasingly self-confident about their abilities, making them more independent:

They have now got the confidence to do what they are meant to be doing. They know how to do the portfolio; they know how to find it out themselves. The confidence has been gained when initially in there I was a crutch for them to lean on, I am no longer a crutch, they now have wings, and they fly. I know that they have learnt through that journey.

But fundamentally, the main difference between WIL and non-WIL students was that a graduate who had completed IBL was seen to be “more work ready than another graduate who has not had that experience. A graduate with IBL experience will be expected to start off more smoothly in a first job.”

In summary, the business and management practitioners saw the purpose of placements as putting theory into practice, and developing some hard skills (such as problem-solving skills), but mostly soft skills (such as communication, team work, and social skills). Informal learning was felt to occur on placement, and students learnt from a variety of individuals. Critical reflection was seen as a key learning strategy, and there was strong support for the portfolio model for assessment (including collaborative assessment), and the use of learning journals. Integration of on- and off-campus learning was seen as desirable but not facilitated by anyone specific—it remained the students’ responsibility.

Employers

Four employers participated in individual face-to-face interviews. Three of the employers interviewed were general managers, and their experience in their current roles ranged from just over one year to 10 years. The companies were diverse in nature, and included a professional membership service organisation, an international export trading company that specialised in the supply and servicing of steel products, and a company that imported high-tech mobile equipment, such as cellphones. Three of the four companies were small businesses, employing 10 or fewer staff.

Three of the four employers had previous personal experience hosting WIL students, one of which was through another HEI. The type of work undertaken by the students included accounting, sales, and marketing.

The employers were asked to comment on the skills and attributes they expect from WIL students before they arrive. Most placed particular importance on communication skills: “I think it [will] be the same as when we employ new employees, basically good English skills.” One employer, who took on a Chinese WIL student, emphasised the need for good written English: “Sometimes business writing is very important for Chinese students because they are not very good in oral English … so they can do more in writing.”

The employers also emphasised the importance of attitude, with one relating this to the need for WIL students to give more thought to what they want to get out of the placement:

I think they need to be a bit more focused ... that they are coming from a university or college environment [into a] business or an office environment, and to have a better understanding of what they are trying to achieve rather than walking in 'cold'. I think it's more the understanding of what they want to do, I think. From what I could gather there was no clearly defined future as to what [Student X] wanted to do. He just wanted work experience and you can get work experience anywhere really.

For another employer, attitude was more about how well prepared the WIL student was, particularly in relation to what they knew about the company:

They have to have the general knowledge about all the equipment and what we sell, such as like, um, what type of network we sell, like [Company X & Company Y] and what's the difference between them ... and when the new technology came out. They had to know what it is and what it does, yeah, so they can explain it.

When asked how they help WIL students learn while on placement, one employer focused on student understanding of their core business and the particular work they need to undertake. In this case it was a retail business, and the importance of the customer was emphasised:

Generally we teach them, like, [the] basics ... what is important when seeing the customer, [that] the customers [go on] appearances, I mean which clothes they have to wear ... you know, to give a good impression. Basically this is sales, retail sales, so they have to make a good impression ... they have to look professional. [When] the customer asks [a question], they're there to respond quickly and accurately.

Other employers considered student learning more broadly, seeing learning as helping students by adopting more of a mentoring approach through interactive questioning:

When the student would send me through, you know, some of the work that they have done ... I would go back and ask an open question: 'Why do you think we should use [this]? Why should we reduce the price as a market-entry strategy when we've got a niche market?' ... I always encourage her to ask questions, what she wants to know, and what she doesn't understand. How to ask question is very important for students, so we can help them.

In terms of how on-campus classes contribute to student learning, these employers tended to focus on the need for students to be well grounded in the realities of business: "The best thing [they can learn] from the class is [to get a] general idea of the business."

For one employer the focus of on-campus learning should be "to prepare them well to tackle the [realities of] employment or get a grip of what the real world is about". This is something that another employer believed was done well in New Zealand: "We find ... academic education is more practical [here], I mean like [compared] with other countries." Surprisingly, one employer felt that classroom-based study was more important than work-placement learning:

For myself, I believe that classroom study is more important than practical experience. I mean especially during university education, 'cos you need to have really good educational background, good foundation, much knowledge about marketing something, you can [then] relate the theory to practice.

When considering the things best learnt on placement, not surprisingly the employers focused on the practical and contextual elements of their businesses:

Sometimes what you learn [from] academics, from the textbook, is ... about big business, [but] sometimes, especially [in] New Zealand, we [have a] small business, a small team, that's very different.

Applying a total business-management structure—what I mean is, undertaking a project in order [to] see it all the way through, from getting the order, processing it, [considering the] shipping logistics or the freighting logistics, and getting it to the point of final delivery.

Here they actually face the real business, what it looks like, because, um, they [only] have a vague idea of it, but when they're working here they actually experience how to deal with customers and they get confidence with that, and then, some sort of problems like customer complaints or customer misunderstanding like a big argument ... they can't actually teach that in the class. They actually have to go into it and deal with it face to face.

The employers suggested that the students learnt from a variety of people when on placement. As one employer noted, “overall guidance needs to come from the top, [for example] what the company is all about, what the structure is, and what our policies are, and then the rest is about working with everybody else.” For another employer, learning was derived from working with other staff in a related position, although he noted that “sometimes you learn more from customers, from the feedback [from staff].”

Things that employers considered were common to student learning—whether on campus or off campus and on placement included “time management” and “communication skills”. When asked to sum up what they think students learn overall from their WIL experience, and how, one employer expressed the view that “probably just being thrown in the deep end and, actually, you know, doing a real-life marketing plan, or business plan that's gonna be actually used by the organisation”. A common benefit to students that employers identified was the value they get from having to deal with the people involved in their business: “Exposure to and being in direct contact with the customer, the end user, the suppliers ... In retail, the customer is everything.”

The employers were asked how they knew students learnt from their placement experience. A common response related to the discernable change in student self-confidence about being able to handle issues and problems on their own:

In the very beginning when she first came here ... I asked her ‘Why don’t you have confidence [in] yourself?’ [and] she said ‘I don’t know what this industry is like, I don’t know what our clients [are] doing.’ But now [when] I ask her to do something, she [will say] ‘I’ll do it’, and then she will find ways to solve the problem. She really know[s] what the property industry is and what [the] real estate agent is doing every day, and so she knows what we need to do to meet their needs.

In summary, the business and management employers felt that students learnt a variety of things from both on- and off-campus experiences. They saw their role as mentoring students, teaching

them about workplace culture, and helping them develop soft skills, which they learnt from a variety of people in the workplace.

Summary, conclusions, and discussion

A review of the research findings points to some differences, but remarkable commonality across the three sectors. Here we provide an overview of the findings and discuss these findings in relation to the literature.

There seems to be strong consensus across all three sectors and each cohort of stakeholders that all three parties benefit from WIL, with most benefit accruing to students, who are seen to gain important graduate competencies/skills and career enhancement. Students are thought to pick up a repertoire of skills from WIL, mostly as a result of completing a placement, practicum, or IBL project. On-campus pedagogies consist of lectures, tutorials, and, in the case of science, engineering, outdoor education, and information-systems students, practical work. The main purpose of such pedagogies is to provide basic content knowledge and theory, with the practical, real-world work anticipated to be learnt from the off-campus work placements, practicum, or project. Most programmes, irrespective of the WIL component, see themselves as applied in nature, and some employ group work and other pedagogies to foster at least some skill development in the behavioural or soft-skills area. However, the stakeholders think any real-world experience comes mostly from the off-campus activities. The pedagogies employed off campus tend to be more informal in nature than the on-campus pedagogies, and consist of inductions and one-on-one mentoring. There is no consistent mechanism by which off-campus supervisors or mentors seek to employ or develop pedagogies to foster learning. Learning is thus by means of *legitimate peripheral participation* (Rogoff, 1995), with students' off-campus learning occurring alongside professionals in their area via an apprenticeship model of learning (Lave & Wenger, 1991; Rogoff, 1995). Skills gained in off-campus learning are mostly behavioural or soft "people" skills, such as communication and time management, along with an understanding of workplace culture, treating others with respect, a good work ethic, and developing a sense of professionalism culminating in an appreciation of what it means to be a professional in their specialty area (Eames, 2003a, 2003b; Eames & Bell, 2005).

There seems to be clear recognition of *distributed cognition*, in that all stakeholders across all sectors consider that students learn in a variety of ways, from a variety of sources, with knowledge resident in a variety of places across an organisation (Perkins, 1997). Consistent with this observation, there also is evidence for Haigh's (2008) notion of "public general knowledge" and "personal practical knowledge" in the workplace, and it seems students from all three sectors access public general knowledge via books and resources in their HEIs, and via documents and formal induction in the workplace. The students also access at least some of their mentors' personal practical knowledge—derived from years of experience as professionals—via the

apprenticeship model described above. This type of learning is particular to the specific education or learning context, be it the lecture hall or the workplace.

Wertsch (1991) also talks of *situated cognition*, where the learning is specific to the setting (see also Lave & Wenger, 1991). For example, what the students report learning here (supported by the views expressed by mentors and academics) depends on the setting; they report learning factual material, such as content, in their HEI, soft skills in their workplace, and so on. However, consistent with Eames's work (see Eames, 2003a, 2003b), the knowledge they learn in, say, a marketing firm, is *specific* to that industry and that firm—the way we do things around here, the acronyms we use, and so on. Hence, the teachers (be they lecturers or workplace mentors) employ a variety of Vygotskian psychological tools (Vygotsky, 1978) such as *mediated action*, which involves, for example, the use of language specific to that educational setting and writing in a specific way (e.g., writing or speaking “scientifically”, or in a formal manner when preparing tax audits).

There is no evidence of direct *explicit* attempts to integrate on- and off-campus learning, although all parties expected this would occur and agreed it should occur. However, integration is *implicitly*, or indirectly fostered by a variety of means—more so for some sectors than others. This means the students may not develop the competency to learn. The principal means for fostering integration of on- and off-campus learning is by reflection and review, via, for example, reflective journals and assignments or reports postplacement. This integration mostly consists of reflection-on-action (Schön, 1991) after the learning activities, incorporating reflection on personal growth and incident/event deconstruction. In this sense it is similar to the activities of the teaching practicum, which strongly encourages reflection after the event (Allen & Peach, 2007).

Eames and Bell (2005) say assessment of WIL programmes should reflect the complexity of the dual and complementary nature of the learning environments. The assessment approaches employed here, as noted above, all incorporate elements of reflection (e.g., assignments, reflective journals, etc.) along with more conventional modes of assessment. The model proposed by Hodges (2008) certainly is sophisticated enough to address all learning outcomes revealed in this work (Figure 2, p. 11). As Hodges notes, and as is strongly supported in this work, assessment of the workplace-learning component in particular bedevils WIL programmes. Complex as it may be, it seems if we wish to address the complexity of the learning that occurs in the workplace, we may well need a model that is as sophisticated as that provided by Hodges. If we do not, then we can really only say we are assessing in a piecemeal fashion.

Implications for practitioners

It is evident from this project that despite coming under the umbrella term *work-integrated learning*, most programmes do relatively little to formally drive the integration of knowledge between the HEI and workplace and vice versa. Whilst there is some logic in suggesting the student has ultimate responsibility for his or her own learning, WIL practitioners argue they are *educators*, or at least that they should be considered educators (see, for example, Coll & Eames, 2000; Ricks et al., 1990), in which case we argue here they must accept ultimate responsibility for the integration of WIL. In doing so, they need to draw upon their training as educators, their personal experiences, and research.

The first recommendation is that programme leaders of WIL programmes should formally state that their WIL programme *requires integration of knowledge*, and set this as an explicit learning objective. This objective can leverage a variety of approaches—many of which are already used in WIL, such as reflection (this is discussed in more detail below). They then need to develop specific pedagogies and activities that will foster and measure integration. Examination of the model for WIL proposed by Apostolides and Looye (1997b) provides a structure for how we might frame this (see Figure 1, p. 9). In the early stage of WIL we need to equip students with basic content knowledge necessary for their discipline of study, but also begin “exposure” to the profession, and critical thinking skills. We then need to develop the students as ever more complex and sophisticated reflective practitioners. In a very pragmatic sense this development might be fostered by practitioner visits to the workplace, or employer presentations on campus. Collier and McManus (2005) suggest WIL programmes need to include such strategies to help students see the relevance of on-campus learning and how it might apply to the workplace setting before they go on placement. Such activities are often already part of many WIL programmes, but our proposition here is these should be *directly linked* to the notion of integration. In the latter stages the integration would then become more explicit via reflection activities, which are discussed in detail next.

Our second recommendation relates to the process of reflection. As noted above, the reflection activities or pedagogies reported in this work consist of reflection-*on*-action; that is, reflection after the event. This approach, whilst valuable (as noted by all stakeholders here), is but one reflection tool open to us. Schön (1991) proposed a model for reflection based on two approaches: reflection-*in*-action and reflection-*on*-action. Reflection-*on*-action is defined in the literature as: “The retrospective contemplation of practice undertaken in order to uncover the knowledge used in practical situations, by analysing and interpreting the information recalled” (Fitzgerald, 1994, p. 67). Atkins and Murphy (1994) take this idea one step further and suggest that for reflection to make a real difference to practice, we need to follow this with a commitment to action as a result. In contrast, reflection-*in*-action means to think about what one is doing whilst one is doing it

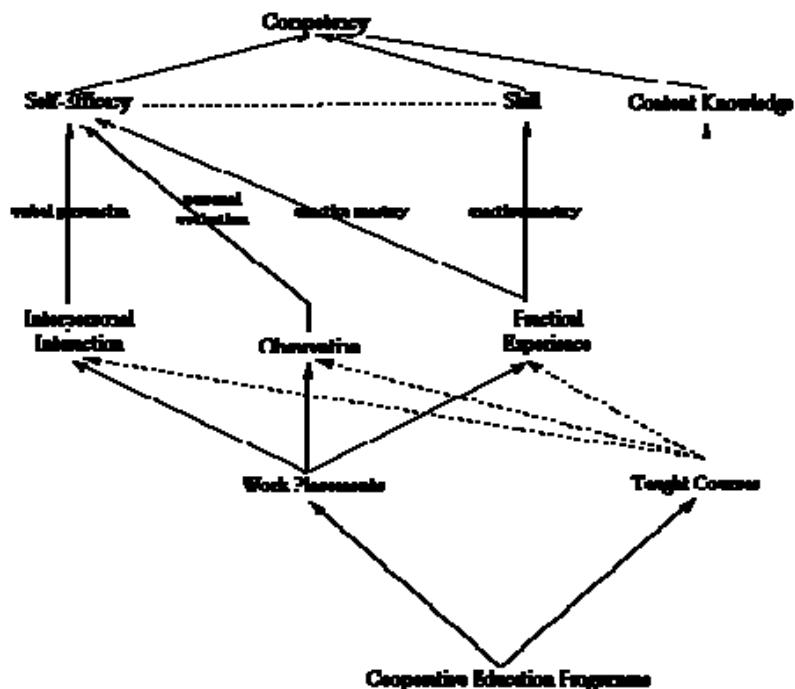
(Boyd & Fales, 1983; Greenwood, 1993), and it allows the student to redesign or think about what they are doing whilst they are doing it. This is commonly associated with experienced practitioners.

Neither of these models of reflection takes account of the importance of reflection-*before*-action, that is, when we plan out what we want to do *before* we act. As might be expected, reflection-*before*-action is preceded by reflection-on-action and reflection-in-action. There are a number of ways we might develop student skills in reflection-*before*-action. Gibbs (1988) proposes a six-stage model. The first stage is to produce a *description* of the event, where a student describes in detail the event they are reflecting on—where were you; who else was there; why were you there; what were you doing; what were other people doing; what was the context of the event; what happened; what was your part in this; what parts did the other people play; what was the result? The second stage involves *feelings and thoughts*, the notion of self-awareness. At this stage, the student tries to recall and explore those things that were going on inside their head: how they were feeling when the event started; what they were thinking about at the time; how did it make them feel; how did other people make them feel; how they felt about the outcome of the event; and what do they think about it now? Stage three is *evaluation*, in which the student tries to evaluate or make a judgement about what has happened, and considers what was good about the experience and what was bad about the experience, or what did or didn't go so well. Next is *analysis*, in which the student tries to break the event down into its component parts so they can be explored separately. The student may need to ask more detailed questions about the answers to the last stage. Including: what went well; what did they do well; what did others do well; what went wrong or did not turn out how it should have done; and in what way did they or others contribute to this? The final stage is *conclusion and synthesis*, which differs from the evaluation stage in that now the student has explored the issue from different angles and now has a substantial amount of information to base judgement on. The final stage involves the formulation of an *action plan*, and during this stage the student should think forward into encountering the event (or similar event) again and to plan what they would do—would they act differently or would they be likely to do the same?

Gibbs' model incorporates all the core skills of reflection. Arguably it is focused more on reflection-on-action, but it also can be used to focus on reflection in, and before, action. With this forward focus, Gibbs' model is consistent with Boud's notion of lifelong learning, and its focus on forward thinking (Boud, 2005; Boud & Falchikov, 2006; Boud, Keogh & Walker, 1985). One of the practitioners in the present work stated that the students "don't have time to reflect when in workplace". No doubt when a student first begins work, this lack of time may appear to be the case. But modern technologies allow practitioners to foster such reflection via, say, online portals or using freeware or third-party software such as Moodle and Blackboard. The portals could be based on Gibbs' (1988) model described above, be staged in using the sequence proposed by Apostolides and Looye (1997b), and incorporate Hodges' (2008) portfolio-assessment approach. One simple task would be an online reflective journal that specified all three versions of reflection described above.

The third recommendation involves practitioners working with employers and workplace supervisors to develop more formal pedagogies for workplace learning. The research findings in the present work indicate students do learn many things on placement, but this learning seems very ad hoc. The sole model in practice seems to be the apprenticeship model. We are not arguing against an apprenticeship model per se, but suggest that to ensure learning occurs in the way we intend, we need some structure (e.g., to see how mentoring might work best). A framework for learning, based on enhancing student self-efficacy, is proposed by Coll, Lay, and Zegwaard (2002) (Figure 3, note WIL is referred to as “co-operative education”).

Figure 3 **A framework for learning, based on enhancing student self-efficacy**



(after Coll, Lay, & Zegwaard, 2002)

This framework is derived from the work of Fletcher (1990, 1991), who suggests WIL can encourage learning by a process of *enactive mastery* (i.e., as students with sound mentoring are scaffolded through their learning in the workplace, they gain in confidence as they “master” tasks). Coll, Lay, and Zegwaard (2002) subsequently looked at the influence of placements on student perceptions of their practical ability. This perception, they argue, enhances student self-efficacy, and thereby practical skills in a number of ways. First, students learn some practical skills at their HEI. Even though they are typically very nervous when they first start in off-campus placements or projects, as they practice under supervision they gain in skill and in self-efficacy. This gain is mediated by good mentoring enabled by *verbal persuasion* (i.e., positive verbal encouragement from their mentors), and *personal evaluation* of their own capabilities (or other peers deemed comparable in capability).

Limitations of the project

This study, like any study, has some limitations. Shulman (1988) argues any study, no matter how well resourced, how long in duration, how well designed, has inherent limitations. He suggests this situation is not something to be concerned about; rather what is important is to identify any constraints, and indicate what influence the researchers feel these may have on the study.

Our first comment is that this is an interpretive study. Guba and Lincoln (1989, 1994) comment that such studies by their nature are not *directly* generalisable to other educational contexts. Instead the onus for interpretation shifts from the researcher to the reader. This transferability is enhanced here by the provision of a detailed audit trail in which we have provided considerable detail about the methodology, specific methods, and educational context in which the study was conducted.

Second, we note here that the evidence presented about learning is inferential in that we rely on reports of student learning. This limitation is mitigated here by the fact we have triangulated data from interviews with examination of relevant documentation, and used different stakeholders in the interviews. This has allowed us to build a picture of the learning that has occurred in these case studies.

Third, in this as in any study, there is an assumption of honesty in participants' responses. This threat is probably most acute with the students who one might imagine would be less inclined to comment adversely on aspects of co-op/WIL to researchers. The evidence in the interviews, however, suggests the student participants felt reasonably comfortable in providing criticism about the programmes and HEIs in which they studied, suggesting this limitation is not severe.

Finally, there is a risk that we have a biased sample, which consists only of good students, or employers we have a good relationship with. We sought to mitigate this by dealing with employers and students with different experiences, some good, some not so good, and students with varying academic capabilities. Again, the constructive criticism suggests this limitation is not too severe.

Relevance to TLRI principles

The full project team and their roles, and the institutions/organisations involved, are provided in Appendix E. Here we detail how the project addressed the TLRI principles.

The project addressed a theme that is of *national strategic value*. The focus of this study was to build understanding of the practice of WIL in New Zealand. This is considered of national importance because of the current skill shortage reported in New Zealand. The employers that participated in this work all were strongly of the view that WIL programmes provide a potent vehicle for producing work-ready graduates in strategic areas—namely science and engineering, business and management, and sport. Related to this, the project established that New Zealand students from a diverse range of backgrounds value WIL as a tool for enhancing their education and career prospects. The project provided valuable insights into how we might better manage WIL programmes and as a consequence work towards enhancing graduate competencies with an aim of producing work-ready graduates.

The project *drew upon related international and New Zealand-based research evidence*. In particular, the project drew upon research conducted by the senior researchers and their advisers, and was based on a comprehensive literature review of international research. Specifically, the study drew on the national and international research literature for WIL from authors such as Bartkus and Stull (2004), who called for further research to understand learning and the educational aspects of WIL. Learning was a major focus of the project. A feature of this literature is the emphasis on local context, and there is a relatively modest body of research-informed knowledge about teaching and learning in WIL in New Zealand. The project provided a series of research-derived case studies to inform theoretical and practical ideas in WIL. It thus drew upon national and international research, and extended it with an in-depth understanding of a particular aspect of the learning in WIL programmes in New Zealand.

The project addressed *strategic themes*, in that it dealt with issues of ongoing national importance, namely a looming skill shortage in the three sectors that formed the focus for this work. This has been a problem for many years in New Zealand, spawning numerous initiatives intended to enhance the skill development of New Zealand citizens (e.g., apprentice schemes, initiatives to increase the numbers of science teachers and thereby stimulate interest in science and related careers, etc.). Hence, the issue of increasing skill development in New Zealand gradates is one of considerable strategic value.

The research methodology for this project is designed to *enable substantive and robust findings*. As noted above, the project employed a mixed-methods approach. Particular care was taken to triangulate the data and crosscheck findings across sectors, across stakeholder groups, and by

examination of convergence of findings using across-methods triangulation (e.g., comparison of documentary material with interview transcriptions). A key feature of the methodology is the so-called thick description (Merriam, 1998), in which we have provided considerable detail about the research procedures (e.g., interview/document examination protocols), and significant parts of interview transcriptions to provide an audit trail for our work. We also employed independent experts with no contractual interest in the project, for each of the three sectors, to provide feedback at each phase of the project.

This TLRI project strongly recognises the *central role of the teacher in learning*. The teacher here is the WIL practitioner, what Coll and Eames (2000) refer to as the WIL *educator*. Two features of this project emphasise the importance of the teacher/practitioner. First, the practitioners formed a key part of the research team. They brought to the project their particular expertise and filtered the research ideas and outcomes through a highly pragmatic lens; their input to the project was thus crucial. Second, the recommendations arising from the work suggest that implementation of the findings needs to be facilitated by the teacher/practitioner. They are the educators; they have the educational background, along with the in-depth knowledge of WIL, to move the agenda forward. They have been aided in this project by being part of a research team that has worked collaboratively and respectfully to produce research findings that are of value to the WIL community. In a similar way, we also can consider the employers of WIL students to be teachers/practitioners, in that they too are involved in the education of the WIL students. As noted, one outcome of this project is the recognition of a need to scaffold employers into appropriate pedagogies; the findings from this project will thus also be disseminated to employers.

The best research, employing a large team and well resourced, using the most sophisticated methodology, is of little value if we fail to *develop partnerships* that afford comprehensive procedures for the dissemination of our research findings. The partnerships, as noted above, were crucial to the success of this project. The project team was characterised by massive enthusiasm and genuine collaboration. As noted, this project was a genuine partnership, with each team member having much to contribute. The senior researchers produced the overall research design and worked closely with all team members to produce a final research design that everyone felt happy with. A particularly pleasing aspect of partnership development is the enhanced connectedness both within sectors (i.e., the team members from a given sector) as well as between the sectors (e.g., sport and science and engineering). An example of how this collaboration has been manifest is that, for example, members of the sport-sector team are currently engaged in further work. A similar thing has happened for the other sectors. Crosssector collaboration is evident in the members from different sectors being keen to pursue further research collaboration. This collaboration has resulted in a further externally funded project through Ako Aotearoa. All team members have indicated a genuine interest in working with other team members in the future. The NZACE will work to make sure this suggestion becomes a reality.

The ultimate intention is for each sector and/or team member to become a fully fledged researcher in his or her field (or, as noted above, to work with another team member in collaborative

research). Again, there is already evidence this development is occurring. For example, the team early on decided that dissemination of the findings should employ a two-pronged approach. First, the whole team would look to produce crosssector publications arising from this work. This dissemination has already occurred in two ways. First, through academic dissemination. We have presented several conference presentations at national and international conferences, and before the end of the year a large paper summarising the whole project will be submitted to an international peer-reviewed periodical (probably the *Journal of Co-operative Education & Internships*). Second, one of the practitioners suggested the team publish a handbook for WIL students, rather than each practitioner in New Zealand, or each institution, trying to use our findings to inform WIL practice individually. The team is enthusiastic about this initiative and we are currently discussing the details—and have two commercial publishers interested in publishing the handbook (which will probably be published under the auspices of the NZACE or the WACE).

Second, the team decided that each sector would seek to publish the findings from their sector in discipline-specific periodicals and present their work at sector conferences. This dissemination is indicative of the increasing independence of the practitioners as researchers—a key desire of our TLRI project.

A list of publications that have so far arisen from this TLRI project is provided in Appendix F. In each of these publications it was acknowledged that the research could not have been conducted without the generous support of the TLRI.

Bibliography

- Allen, J., & Peach, D. (2007). Exploring the connections between the in-field and on-campus components of a pre-service teacher education program: A student perspective. *Asia-Pacific Journal of Cooperative Education*, 8(1), 23–36.
- Apostolides, V., & Looye, J. W. (1997a). Developing co-op syllabi sensitive to both academic curricula and employer needs. *Journal of Cooperative Education*, 32(3), 56–69.
- Apostolides, V., & Looye, J. W. (1997b). Student assessment of the co-op experience and optimum integration of classroom learning with professional practice. *Journal of Cooperative Education*, 32(3), 16–30.
- Atkins, S., & Murphy, K. (1994). Reflective practice. *Nursing Standard*, 8(39), 49–54.
- Bartkus, K. R., & Stull, W. A. (2004). Research in cooperative education. In R. K. Coll & C. Eames (Eds.), *International handbook for cooperative education: An international perspective of the theory, research and practice of work-integrated learning* (pp. 67–78). Boston, MA: World Association for Cooperative Education.
- Bassey, M. (1999). *Case study research in educational settings*. Buckingham, UK: Open University Press.
- Boud, D. (2000). Sustainable assessment: Rethinking assessment for the learning society. *Studies in Continuing Education*, 22(2), 151–167.
- Boud, D. (2005). *The experience of work: A new learning agenda*. Paper presented at the Fifth Asia-Pacific Cooperative Education Conference, Auckland.
- Boud, D., & Falchikov, N. (2006). Aligning assessment with long-term learning. *Assessment and Evaluation in Higher Education*, 31(4), 399–413.
- Boud D., Keogh R., & Walker D. (1985). Promoting reflection in learning: A model. In D. Boud, R. Keogh, & D. Walker (Eds.), *Reflection: Turning experience into learning*. London: Kogan Page.
- Boyd E., & Fales, A. (1983). Reflective learning: The key to learning from experience. *Journal of Humanistic Psychology*, 23(2), 99–117.
- Branton, G., Van Gyn, G., Cutt, J., Loken, M., Ney, T., & Ricks, F. (1990). A model for assessing the learning benefits in cooperative education. *Journal of Cooperative Education*, 27(3), 30–40.
- Braunstein, L. A., & Loken, M. K. (2004). Benefits of cooperative education for employers. In R. K. Coll & C. Eames (Eds.), *International handbook for cooperative education: An international perspective of the theory, research and practice of work-integrated learning* (pp. 237–246). Boston: World Association for Cooperative Education.
- Brown, J. S., Collins, A., & Duguid, P. (1989). Situated cognition and the culture of learning. *Education Researcher*, 18(1), 32–42.
- Burchell, N., Hodges, D., & Rainsbury, L. (2000). What competencies do business graduates require? Perspectives of New Zealand stakeholders. *Journal of Cooperative Education*, 35(2/3), 11–20.
- Carrell, S. E., & Rowe, P. M. (1994). Effects of cooperative education on student adaptation to university. *Journal of Cooperative Education*, 29(1), 33–40.
- Cates, C. L., & Jones, P. (1999). *Learning outcomes: The educational value of cooperative education*. Columbia, MD: Cooperative Education Association.

- Cates, C. L., & Langford, D. R. (1999). Documenting communication and thinking skills through co-op student reports. *Journal of Cooperative Education*, 34(3), 7–17.
- Coll, R. K. (1996). The BSc (Technology): Responding to the challenges of the education marketplace. *Journal of Cooperative Education*, 32(1), 29–35.
- Coll, R. K., & Chapman, R. (2000). Quantitative or qualitative? Choices of methodology for cooperative education researchers. *Journal of Cooperative Education*, 35(1), 25–34.
- Coll, R. K., & Eames, C. (2000). The role of the placement coordinator: An alternative model. *Asia-Pacific Journal of Cooperative Education*, 1(1), 9–15.
- Coll, R. K., & Eames, C. (2007). Learning science and technology through cooperative education. *Asia-Pacific Journal of Cooperative Education*, 8(2), 131–147.
- Coll, R. K., Eames, C., Zegwaard, K., & Hodges, D. (2002). How do we see ourselves: An Asia-Pacific regional perspective on cooperative education. In A. Zunaedi (Ed.), *Proceedings of the Fourth Asia-Pacific Conference on Cooperative Education* (pp. 1–5). Bandung: World Association for Cooperative Education.
- Coll, R. K., Lay, M., & Zegwaard, K. E. (2002). Enhancing access to experiential learning in a science and technology degree program. *Journal of Vocational Education and Training*, 54(2), 197–217.
- Coll, R. K., Pinyonatthargarn, D., & Pramoolsook, I. (2004a). Evaluation of a work-based learning program in a developing country: Thai students' views of their co-op experiences. *Journal of Cooperative Education*, 37(1), 1–12.
- Coll, R. K., Pinyonatthargarn, D., & Pramoolsook, I. (2004b). Teaching technology and engineering in Thailand: Suranaree University of Technology as a model for cooperative education in Thailand. *Journal of Cooperative Education*, 37(2), 1–6.
- Coll, R. K., Taylor, N., & Grainger, S. (2002). Assessment of work based learning: Some lessons from the teaching profession. *Asia-Pacific Journal of Cooperative Education*, 3(1), 5–12.
- Coll, R. K., & Zegwaard, K. E. (2006). Perceptions of desirable graduate competencies for science and technology new graduates. *Research in Science and Technological Education*, 24(1), 29–58.
- Collier, K., & McManus, J. (2005). Bridging the gap: The use of learning partnerships to enhance workplace learning. *Asia-Pacific Journal of Cooperative Education*, 6(2), 7–16.
- Dressler, S., & Keeling, A. E. (2004). Benefits of cooperative education for students. In R. K. Coll & C. Eames (Eds.), *International handbook for cooperative education: An international perspective of the theory, research and practice of work-integrated learning* (pp. 217–236). Boston: World Association for Cooperative Education.
- Duignan, J. (2003). Placement and adding value to the academic performance of undergraduates: Reconfiguring the architecture—an empirical investigation. *Journal of Vocational Education and Training*, 55, 335–350.
- Eames, C. (2003a). *Learning through cooperative education*. Unpublished doctoral thesis, University of Waikato, Hamilton.
- Eames, C. (2003b). Learning to work: Becoming a research scientist through work experience placements. *Asia-Pacific Journal of Cooperative Education*, 4(2), 7–15.
- Eames, C. (2003c). Integration between the classroom and the placement: Learning experiences of co-op students. In C. Gribble (Ed.), *Proceedings of the Sixth Annual Conference of the New Zealand Association for Cooperative Education* (pp. 50–59). Wellington: New Zealand Association for Cooperative Education.
- Eames, C., & Bell, B. (2005). Using sociocultural views of learning to investigate the enculturation of students into the scientific community through work placements. *Canadian Journal of Science, Mathematics and Technology Education*, 5(1), 153–169.

- Eames, C., & Cates, C. (2004). Theories of learning in cooperative education. In R. K. Coll & C. Eames (Eds.), *International handbook for cooperative education: An international perspective of the theory, research and practice of work-integrated learning* (pp. 37–48). Boston: World Association for Cooperative Education.
- Eames, C., & Coll, R. K. (2006). Sociocultural views of learning: A useful way of looking at learning in cooperative education. *Journal of Cooperative Education & Internships*, 40(1), 1–13.
- Fink, F. K. (2001, October). *Integration of work based learning in engineering education*. Paper presented at the ASEE/IEEE Frontiers in Education conference, Reno, NV.
- Fitzgerald M. (1994). Theories of reflection for learning. In A. Palmer & S. Burns (Eds.), *Reflective practice in nursing* (pp. 63–84). Oxford: Blackwell Scientific.
- Fleming, J., & Eames, C. (2005). Student learning in relation to the structure of the cooperative education experience. *Asia Pacific Journal of Cooperative Education*, 6(2), 26–31.
- Fleming, J., & Martin, A. J. (2007). Facilitating reflective learning journeys in sport cooperative education. *Journal of Hospitality, Sport, Tourism, Leisure and Education*, 6(2), 115–121.
- Fleming J., Zinn, C., & Ferkins, L. (2008). Bridging the gap: Competencies students should focus on during their cooperative experience to enhance employability. In D. Jorgensen (Ed.), *Proceedings of the WACE/ACEN Asia Pacific Conference* (pp. 155–163). Sydney: World Association for Cooperative Education.
- Fletcher, J. (1990). Self-esteem and cooperative education: A theoretical framework. *Journal of Cooperative Education*, 26(3), 41–55.
- Fletcher, J. (1991). Field experience and cooperative education: Similarities and differences. *Journal of Cooperative Education*, 27(2), 46–54.
- Franks, P., & Blomqvist, O. (2004). The World Association for Cooperative Education: The global network that fosters work-integrated learning. In R. K. Coll & C. Eames (Eds.), *International handbook for cooperative education: An international perspective of the theory, research and practice of work-integrated learning* (pp. 283–289). Boston: World Association for Cooperative Education.
- Furco, A. (1997). Service-learning and school-to-work: making the connections. *Journal of Cooperative Education*, 32(1), 7–14.
- Gibbs, G. (1988). *Learning by doing: A guide to teaching and learning methods*. Oxford: Oxford Further Education Unit.
- Gray, D. E. (2007). Facilitating management learning: Developing critical reflection through reflective tools. *Management Learning*, 38(5), 495–517.
- Greenwood, J. (1993). Reflective practice: A critique of the work of Argyris & Schön. *Journal of Advanced Nursing*, 19, 1183–1187.
- Groenewald, T. (2004). Towards a definition of cooperative education. In R. K. Coll & C. Eames (Eds.), *International handbook for cooperative education: An international perspective of the theory, research and practice of work-integrated learning* (pp. 17–25). Boston, MA: World Association for Cooperative Education.
- Grollman, P., & Tutschner, R. (2006). *Possible intended and unintended effects of European VET policies: The case of integrated work and learning*. Bremen, Germany: University of Bremen.
- Guba, E. G., & Lincoln, Y. S. (1989). *Fourth generation evaluation*. Newbury Park, CA: Sage.
- Guba, E. G., & Lincoln, Y. S. (1994). Competing paradigms in qualitative research. In N. K. Denzin & Y. S. Lincoln (Eds.), *Handbook of qualitative research* (pp. 105–117). Thousand Oaks, CA: Sage.

- Haigh, N. (2008). Maximizing student learning in the workplace: One perspective. In R. K. Coll & K. Hoskyn (Eds.), *Proceedings of the 11th Annual Conference of the New Zealand Association for Cooperative Education* (pp. 22–26). New Plymouth: New Zealand Association for Cooperative Education.
- Hodges, D. (2008). Letting go: Changing ownership of the learning and assessment process in cooperative education. In R. K. Coll & K. Hoskyn (Eds.), *Proceedings of the 11th Annual Conference of the New Zealand Association for Cooperative Education* (pp. 27–31). New Plymouth: New Zealand Association for Cooperative Education.
- Hodges, D., & Ayling, D. (2007). A portfolio model of learning: Reframing assessment practices in a business cooperative education course. In R. K. Coll (Ed.), *Proceedings of the 10th Annual Conference of the New Zealand Association for Cooperative Education* (pp. 49–55). Hamilton: New Zealand Association for Cooperative Education.
- Hodges, D., Hopkins, L., Ling, A., Malcolm, P., & Yau, J. (2004). Competency expectations of business graduates: A comparative study of employer views in Hong Kong and New Zealand. In C. Eames (Ed.), *Proceedings of the Fifth Asia-Pacific Cooperative Education Conference* (p. 11). Auckland: New Zealand Association for Cooperative Education.
- Hodkinson, P., & Hodkinson, H. (1995). Markets, outcomes and the quality of vocational education and training: Some lessons from a youth credits scheme. *Journal of Vocational Education and Training*, 47(3), 209–225.
- Houshmand, A. A., & Papadakis, C. (n.d.). *One century of cooperative education in the United States 1906–2006*. Philadelphia, PA: Drexel University.
- Hurd, J., & Hendy, M. (1997). What we know about co-op employers' perceptions of cooperative education: Synthesis of research in the USA and in Canada. *Journal of Cooperative Education*, 32(2), 55–62.
- Lave, J. (1991). Situated learning in communities of practice. In L. B. Resnick, J. M. Levine, & S. D. Teasley (Eds.), *Shared cognition: Thinking as social practice, perspectives on socially shared cognition* (pp. 63–82). Washington, DC: American Psychological Association.
- Lave, J., & Wenger, E. (1991). *Situated learning: Legitimate peripheral participation*. Cambridge, UK: Cambridge University Press.
- Martin, A. J., & Leberman, S. I. (2005). Keeping up with the play: Practicum, partnership and practice. *Asia-Pacific Journal of Cooperative Education*, 6(2), 17–25.
- Merriam, S. B. (1998). *Qualitative research and case study applications in education*. San Francisco: Jossey-Bass.
- New Zealand Association for Cooperative Education. (2008). *Welcome to NZACE*. Retrieved 12 November 2008, from <http://www.nzace.ac.nz/>
- Paku, L., Coll, R. K., & Zegwaard, K. (2003). Māori science and technology students' views of workplace support structures. In C. Gribble (Ed.), *Proceedings of the Seventh Annual Conference of the New Zealand Association for Cooperative Education* (pp. 24–34). Christchurch: New Zealand Association for Cooperative Education.
- Paku, L., Coll, R. K., & Zegwaard, K. E. (2004). Cooperative education and mentoring: Enhancing education for Māori students in science. In C. Eames (Ed.), *Proceedings of the Fifth Asia Pacific Cooperative Education Conference* (pp. 1–7). Auckland: World Association for Cooperative Education/New Zealand Association for Cooperative Education.
- Paku, L., & Lay, M. (2008). Reflection and review: Confessions of placement students. In R. K. Coll & K. Hoskyn (Eds.), *Proceedings of the 11th Annual Conference of the New Zealand Association for Cooperative Education* (pp. 42–44). New Plymouth: New Zealand Association for Cooperative Education.

- Paku, L., Zegwaard, K., & Coll, R. K. (2002, November). *Enculturation of Māori into science and technology: An investigation from a social-cultural perspective*. Paper presented at the Third Annual New Zealand Science Education Symposium, Wellington.
- Parks, D. K. (2003). *An examination of cooperative education students' learning outcomes*. Unpublished doctoral thesis, Valdosta State University.
- Perkins, D. N. (1997). Person-plus: A distributed view of thinking and learning. In G. Salomon (Ed.), *Distributed cognitions: Psychological and educational considerations* (pp. 88–110). Cambridge, UK: Cambridge University Press.
- Peshkin, A. (1993). The goodness of qualitative research. *Educational Researcher*, 22(2), 24–30.
- Rankin, J. A. (1984). Getting the most out of the industrial attachment phases of a cooperative engineering program. *Journal of Cooperative Education*, 21(1), 70–74.
- Ricks, F., Van Gyn, G., Branton, G., Cutt, J., Loken, M., & Ney, T. (1990). Theory and research in cooperative education: Practice implications. *Journal of Cooperative Education*, 27(1), 7–20.
- Rogoff, B. (1995). Observing sociocultural activity on three planes: Participatory appropriation, guided participation and apprentice. In J. V. Wertsch, P. del Rio, & A. Alvarez (Eds.), *Sociocultural studies of mind* (pp. 139–164). Cambridge, MA: Cambridge University Press.
- Salomon, G., & Perkins, D. N. (1998). Individual and social aspects of learning. *Review of Research in Education*, 23, 1–24.
- Schön, D. A. (1991). *The reflective practitioner: How professionals think in action*. Aldershot, UK: Arena.
- Shulman, L. S. (1988). Disciplines of inquiry in education: A new overview. In R. M. Jaeger (Ed.), *Complementary methods for research in education* (2nd ed., pp. 3–69). Washington, DC: American Educational Research Association.
- Sovilla, E. S., & Varty, J. W. (2004). Cooperative education in the USA, past, present: Some lessons learned. In R. K. Coll & C. Eames (Eds.), *International handbook for cooperative education: An international perspective of the theory, research and practice of work-integrated learning* (pp. 3–16). Boston: World Association for Cooperative Education.
- Stenstrom, M-L., Grollman, P., Tutschner, R., Tynjala, P., Nikkanen, Loogma, K., Volanen, M.V., & Marhuenda, F. (2006, September). *Integration of work and learning: Policies, strategies and practices*. Paper presented at the European Research Network in Vocational Education and Training Symposium.
- Taylor, S. (2004). Cooperative education in emerging economies. In R. K. Coll & C. Eames (Eds.), *International handbook for cooperative education: An international perspective of the theory, research and practice of work-integrated learning* (pp. 207–214). Boston, MA: World Association for Cooperative Education.
- Van Gyn, G., Cutt, J., Loken, M., & Ricks, F. (1997). Investigating the educational benefits of cooperative education: A longitudinal study. *Journal of Cooperative Education*, 32(2), 70–85.
- Van Gyn, G., & Grove-White, E. (2004). Theories of learning in education. In R. K. Coll & C. Eames (Eds.), *International handbook for cooperative education: An international perspective of the theory, research and practice of work-integrated learning* (pp. 27–36). Boston, MA: World Association for Cooperative Education.
- Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes*. Cambridge, MA: Harvard University Press.
- Walters, R. (1947). Herman Schneider. Founder of the cooperative system. In *University of Cincinnati—Four decades of the cooperative system*. Cincinnati, OH: Cincinnati University Library.

- Ward, N., & Jefferies, A. (2004). 'The Analytical Club': A unique cooperative education link between industry and academia. *Asia-Pacific Journal of Cooperative Education*, 5(1), 15–18.
- Weisz, M. (2000). Developing a measure of student attributes. *Journal of Cooperative Education*, 35(2/3), 33–40.
- Weisz, M., & Chapman, R. (2004). Benefits of cooperative education for educational institutions. In R. K. Coll & C. Eames (Eds.), *International handbook for cooperative education: An international perspective of the theory, research and practice of work-integrated learning* (pp. 247–258). Boston, MA: World Association for Cooperative Education
- Wertsch, J. V. (1991). *Voices of the mind: A sociocultural approach to mediated action*. Cambridge, MA: Harvard University Press.
- Wilson, J. W. (1997). On the questions asked about cooperative education. *Journal of Cooperative Education*, 32(2), 17–29.
- Wong, N. A., & Coll, R. K. (2001). Student experience of international cooperative education: Reflections on personal and professional growth. *Asia-Pacific Journal of Cooperative Education*, 2(1), 11–18.

Appendices

Appendix A: Interview protocol—students

Questions	Prompts
Background	
Can you please tell me which programme/s you are studying?	Degree/Diploma/Major/Specialisation
What made you chose that programme?	Interest/Teacher/Family/Friend
What made you chose this institution to study at?	Location/Reputation/Costs/Scholarship/Family/Friend
Programme Aims	
Can you please tell me what you think are the overall aims for your learning in your co-op programme	Work Skills/Hard-soft Skills/Practical Skills
Pedagogy/Approaches:	
How do you think you are expected to achieve this learning in your programme?	Lectures/Tutorials/Labs/Placement/
Are there some things you think are best learned on campus? If so What?	Facts/Theory/Hard Skills
How could you learn these things?	Lectures/Tutorials/Labs
Who do you think you would learn these from?	Lecturers/Tutors/Lab Technicians
Are there some things you think are best learned on placement? If so What?	Soft/Practical Skills/Problem-solving/Theory—Practice/Time Management/Organisation/ Communication
How could you learn these things?	Induction/Workshops/Demonstrations
Who do you think you would learn these from?	Supervisor/Technical/Office Staff/HR Staff
Are there some things that you need to have both on-campus and placement learning experiences?	Both lots of above prompts

If so What ? How could you learn these things? Who do you think you would learn these from?	
Do you expect to take what you have learned on-campus into your placements? Do your teachers help you with these? If so, how?	Mentoring/Career Advice
Do you expect to take what you have learned on your placements back into your on-campus learning? If so What, How and from Whom ? Do/es your workplace supervisor/s help you with this? If so how?	All of above prompts
Do you do make a conscious effort to use what you learned on your placement into your on-campus learning when you go back to campus? If so What ? How successful is this?	All of above prompts
Assessment of Learning:	
What do you think you have actually learned?	All of above prompts
How do you know you have learned this?	Grades/Reports/Oral Presentations/Verbal Feedback
Final Comments:	
Do you have any final comments you would like to make?	

Appendix B: Interview protocol—Practitioners

Questions	Prompts
Background	
Can you please describe the role you hold in your organisation ?	Degree/Diploma/Major/Specialisation
Can you please tell me how long you have been in this role?	Interest/Teacher/Family/Friend
Can you please tell me which programme/s of study you deal with?	Location/Reputation/Costs/Scholarship
Can you please tell me about your qualifications and experience—especially as they relate to your role?	Location/Reputation/Costs/Scholarship
Programme Aims	
Can you please tell me what you think are the overall aims for your co-op programme?	Work Skills/Hard-soft Skills/Practical Skills
Pedagogy/Approaches:	
How do you think you try to achieve these aims for your students?	Lectures/Tutorials/Labs/Placement
Are there some things you think are best learned on campus? If so What?	Facts/Theory/Hard Skills
How could students learn these things?	Lectures/Tutorials/Labs/Placement
Who do you think students should learn these things from?	Lectures/Tutors/General Staff
Are there some things you think are best learned on placement? If so What?	Soft Skills/Practical Skills/Problem-solving/Theory into Practice/Time
How could students learn these things?	Management/Organisational/Communication
Who do you think students should learn things these from?	Induction/Workshops/Demonstrations Supervisor/Technical/Office Staff/HR Staff

Are there some things that you think students need to have both on-campus and placement learning experiences? If so What ? How could students learn these things? Who do you think students should learn these from?	Both lots of above prompts
Do you expect students to take what they have learned on-campus into their placements? If so What ? Who should facilitate this? How should you/they attempt to facilitate this?	Both lots of above prompts
Do you expect students to take what they have learned on their placements back into their on-campus learning? If so What ? Who should facilitate this? How should you/they attempt to facilitate this?	All of above prompts
Do you do anything to try and help students integrate on-campus and placement learning? If so What ? Who facilitates this? How do you/they facilitate this?	All of above prompts
Assessment of Learning:	
What do you think your students have actually learned in your co-op programme?	All of above prompts
How do you know that they have learned this?	Grades/Reports/Oral Presentations/Verbal Feedback
Final Comments:	
Do you have any final comments you would like to make?	

Appendix C: Interview protocol—Employers

Questions	Prompts
Background	
Can you please describe the role you hold in your organisation ?	
Can you please tell me how long you have been in this role?	
Can you please tell me which institutions and programme/s of study you deal with when taking on co-op students?	Degree/Diploma/Major/Specialisation
What made you chose that institution/programme	Location/Reputation/Costs/Contacts
Programme Aims	
Can you please tell me what attributes you expect your co-op students to come to you already equipped with?	Hard Skills/Soft Skills/Practical Skills
Pedagogy/Approaches:	
How do you help co-op students to learn whilst on placement with you?	Induction/Workshops/Demonstrations
Are there some things you think are best learned on campus?	
If so What?	Facts/Theory/Hard Skills
Are there some things you think are best learned on placement?	Soft Skills/Practical Skills/Problem-solving/Theory into Practice/Time Management/Organisational/Communication
If so What?	
How do you think the students should learn these things?	Induction/Workshops/Demonstrations
Who do you expect the students to learn these things from?	Supervisor/Technical/Office Staff/HR Staff
Are there some things that you think students need to have both on-campus and placement learning experiences?	Above prompts

If so What ?	
How could students learn these things?	
Who do you think students should learn these from?	
Assessment of Learning:	
What do you think your students have actually learned whilst with you on their co-op placement?	All of above prompts
How do you know that they have learned this?	Grades/Reports/Oral Presentations/Verbal Feedback
Final Comments:	
Do you have any final comments you would like to make?	

Appendix D: Document examination protocol

Background:

- Which institutions and programme/s are dealt with?

Programme Aims:

- What are the programme aims?
- What things are expected co-op will develop in the programme as a whole?
- What things are expected co-op will develop in the placement?

Pedagogy/Approaches:

- Are any pedagogies detailed to develop/foster this learning in the co-op students?
- Are any pedagogies detailed to foster this learning for on-campus learning?
- Are any pedagogies detailed to foster this learning for placement learning?
- Are any pedagogies detailed to foster this learning that require both on-campus and placement learning?

Assessment of Learning:

- What assessment regimes are used to measure what students have learned on-campus?
- What assessment regimes are used to measure what students have learned on placement?

Appendix E: Project team and roles

Role	Name	Organisation
Research Director	Richard K. Coll	University of Waikato

Science & Engineering

Senior Researcher	Richard K. Coll	University of Waikato
Research Adviser	Chris Eames	University of Waikato
Practitioner 1	Levinia Paku	University of Waikato
Practitioner 2	Mark Lay	University of Waikato

Business & Management

Senior Researcher *	Dave Hodges	Unitec
Research Adviser *	Diana Ayling	Unitec
Practitioner 1	Shiu Ram	Unitec
Practitioner 2	Ravi Bhat	Unitec

Sport

Senior Researcher	Jenny Fleming	AUT University
Research Adviser	Lesley Ferkins	AUT University
Practitioner 1	Andrew Martin	Massey University
Practitioner 2	Cindy Wiersma	AUT University

*The roles of senior researcher and research adviser for the Business and Management sector were changed from the original proposal as a result of unforeseen changes to personal circumstances part-way through the project.

Appendix F: Publications arising from this project

- Coll, R. K., Eames, C., Paku, L., Lay, M., Ayling, D., Hodges, D., Ram, S., Bhat, R., Fleming, J., Ferkins, L., Wiersma, C., & Martin, A. (2008). Investigating the integrated in work-integrated learning. In R. K. Coll (Ed.), *Proceedings of the 11th Annual Conference of the New Zealand Association for Cooperative Education* (pp. 38–41). New Plymouth: NZACE.
- Coll, R. K., Eames, C., Paku, L., Lay, M., Ayling, D., Hodges, D., Ram, S., Bhat, R., Fleming, J., Ferkins, L., Wiersma, C., & Martin, A. (2008). Putting the integrated into work-integrated learning. In D. Jorgensen (Ed.), *Proceedings of the WACE/ACEN Asia Pacific Conference* (pp. 112–118). Sydney: World Association for Cooperative Education.
- Wiersma, C., Martin, A. J., Fleming, J., & Ferkins, L. (2008, November). *Promoting excellence in sports management education: An investigation of work-integrated learning*. Paper presented at the annual conference of the Sport Management Association of Australia and New Zealand, Perth, Western Australia.
- Martin, A. J., Coll, R., Eames, C., Paku, L., Lay, M., Ayling, D., Hodges, D., Ram, S., Bhat, R., Fleming, J., Ferkins, L., & Wiersma, C. (2008). Investigating the integration of work place and theoretical learning. In *Proceedings of the 11th International Conference on Experiential Learning*. Sydney, Australia.