EMBEDDING INDUSTRY ENGAGED LEARNING ACROSS THE UNIVERSITY


Abstract
This paper is the second in a suite of ongoing reports documenting one Australian university’s longitudinal redevelopment of its Higher Education curriculum as it embeds Industry Engaged Learning, or IEL (an umbrella term for cooperative education, work-integrated learning, and related programs), across all undergraduate degree offerings. For the subject university, IEL is a philosophy, framework, and organising set of principles for learning in the workplace and community. This paper re-examines the attributes of IEL programs and lays the foundations for an encompassing applicable learning theory. It reveals tools developed to identify, evaluate, and create IEL units and activities and reflects on lessons learned over the past year. Both papers may be classed as case studies. Combined, they contribute significantly to a practical understanding of how universities may undertake a major transformation agenda and how that agenda may have to adapt to meet changing circumstances. Specifically, these two papers address how cooperative and work-integrated learning programs may be extended, enhanced, leveraged, and integrated within the overall curriculum.

Introduction
This paper follows one presented at the 17th World Conference on Cooperative & Work-Integrated Education in Philadelphia, Pennsylvania, USA, in June 2011. In that paper, “Institution-Wide Focus for Structured Industry Engaged Learning,” Clements and Hays (2011) outlined one Australian university’s approach to achieving its strategic objective to have Industry Engaged Learning, or IEL (the university’s encompassing title for a variety of cooperative and work-integrated learning programs), a part of every undergraduate degree. The core of that paper was a four-year plan for institutional transformation. Respective years from 2011 to 2014 were conceived of as (a) program initiation, (b) implementation, (c) embedding, and (d) continuous improvement, with 2015 intended to reflect that Industry Engaged Learning was fully embedded and integrated and, chiefly, that IEL was an integral part of all undergraduate degree programs.

This subsequent paper revisits and reinforces the premise and fundamentals of IEL, including a discussion on mitigating the theory-practice divide. Theoretical foundations of IEL, encompassing numerous learning theories, are broached. These concepts are presented as underpinning criteria for assessing and revising the educative quality of IEL activities. Another important contribution of this paper is its coverage of the three dimensions of Industry Engaged Learning with respect to embedding it university-wide and throughout the curriculum: depth, breadth, and reach. This was a new idea in 2011, though in keeping with the nature of the planned institutional transformation depicted in the earlier paper. It provided focus for the
The university’s initiatives to enable sweeping change in what people think and do, in the relationships created and developed with institutional partners, in strategies and mechanisms for community engagement; and, perhaps most importantly, in the new emphasis on learning—that is, learning from practice and experience over practice itself. This second paper also presents a typology of IEL programs and modes at the institution. It introduces the IEL Continuum, and the role it played in qualifying and distinguishing IEL units, activities, and other experiences. Finally, this paper reports on progress in attaining the university’s strategic aim, discusses new directions, and explores lessons learnt during the ensuing year.

**The University and Change**

The institution was founded over 100 years ago, has six campuses, including one overseas, and serves over 30,000 students, with about a quarter of those international students. There are almost 200 undergraduate and postgraduate programs, and the university is ranked in the top 500 worldwide.¹ The university has had student engagement in industry and the community as a part of its curriculum for 50 years. For the most part, Industry Engaged Learning (the university’s umbrella framework for cooperative and work-integrated learning and learning in the workplace and community programs) has been to undergraduate and vocational and technical students, primarily domestic. The university is currently looking to expand opportunities for international and postgraduate students, and is further developing sustainable learning programs for indigenous students and those from lower socioeconomic status backgrounds.

Institutional transformation such as embedding IEL throughout the curriculum and across the university embodies not merely change in behaviour (what we do and how we do it), but change in thinking and valuing as well—change presupposing new and different skill sets, knowledge and understanding, themselves the product of on-going education and engagement, and the institution of a variety of new policies, procedures, processes, mechanisms, and systems for doing the work.² In short, a major culture change. As we experienced, even in the relatively short timeframe of one year, language changes; indeed, the way people began to talk about Industry Engaged Learning and its role at the university during 2011 became a barometer for the shifts in

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¹ The university is ranked in all three major international university ranking systems, having been included in the top 500 in the *Academic Ranking of World Universities 2011*, the top 450 in the *QS World University Rankings 2011*, and most-recently in the top 400 in the *Times*.

² The most ambitious and lengthy of the ten strategic projects associated with embedding IEL was estimated to be education. In this context, education entails the undergraduate curriculum and all teaching and learning facets of IEL as well as education of faculty and staff—the requisite skills and knowledge for IEL but also the hearts and minds on which its success depends.
thinking and valuing we believed would be necessary for IEL to be adopted and internalised on a wide scale.\textsuperscript{3}

**Learning For, About, At, Through, and From Work and Community**

The basic premise of Industry Engaged Learning and, indeed, cooperative education and work-integrated learning is that students gain skills and knowledge through experiences that complement—and are generally not possible in—the classroom or typical academic studies. The experience is generally appreciated by most stakeholders as contributing to a graduate’s employability. Sometimes these programs are tightly coupled to a student’s major and are part of their curriculum (teaching, engineering, and nursing provide examples). As we noted Clements and Hays (2011), even work experiences only distantly related to the student’s major can be of great value and count as IEL to the degree that they promote learning and development in desirable graduate attributes (DGA) and key generic skills (KGS). Typical DGAs and KGSs are shown in the box below.

<table>
<thead>
<tr>
<th>Graduate Attributes</th>
<th>Key Generic Skills</th>
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<tbody>
<tr>
<td>• Entrepreneurial and innovative</td>
<td>• Teamwork and collaboration</td>
</tr>
<tr>
<td>• Effective and ethical at work and in the community</td>
<td>• Analysis, including collating and interpreting data / using evidence</td>
</tr>
<tr>
<td>• Adaptable and able to manage change</td>
<td>• Problem-solving</td>
</tr>
<tr>
<td>• Cognisant of local and international environments and issues</td>
<td>• Communication</td>
</tr>
<tr>
<td>• Lifelong learning orientation; curious, questioning, and proactive</td>
<td>• Ability to tackle unfamiliar problems</td>
</tr>
<tr>
<td>• A sense of service, citizenship, and social responsibility</td>
<td>• Independent, initiating, and proactive</td>
</tr>
<tr>
<td>• Ability to learn from situations and events, including failures and successes.</td>
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</table>

*Table 1. Typical Desirable Graduate Attributes (DGAs) and Key Generic Skills (KGSs).*

Our institution has a firm commitment to develop DGA and KGS, but until now strategies for their development and measurement have not operationalised to a university standard. Industry Engaged Learning and engaged activity in the community are seen as viable mechanisms for building desirable graduate attributes and key generic skills. Host organisations are increasingly seen as valuable sites of learning, and the university is seeking to create optimal learning conditions for students through better preparing them for their experiences, enhancing the learning environment at job and engagement sites, linking and leveraging experiences, and improving focus on consolidation. A continued emphasis on DGAs and KGSs will help ensure that potential activities and experiences in which students might be engaged are selected and

\textsuperscript{3} A range of shifts were included in the 2011 paper. Attending to these shifts throughout the change process is a useful way of gauging the degree to which the change is becoming adopted and operationalised.
shaped to produce the best learning, make it possible for students to get recognition or credit for their participation, and raise all stakeholders’ consciousness about the nature and value of such learning experiences and their contribution to the overall curriculum and to development of the student body as a whole.

In a subsequent section, we discuss classification and qualification of Industry Engaged Learning; and present a continuum that is indicative of a wide range of potential IEL programs, units, and experiences. The authors discovered through extensive review at the university that there were a variety of experiences held to be IEL, yet no common defining criteria. Some units purported to be IEL, upon examination, for instance, were found to have little or no real IEL. Since there was disagreement as to what real means, and to set standards for measurement, better communicate aspirations and ideals of IEL, and suggest revision and enhancement objectives, clear parameters were developed (see discussion below and Annex 1). These criteria were ultimately applied to all units, with the result being that the university now knows how many students actually participate in IEL and what the nature of their participation is. It will now be much easier to demonstrate the degree to which we are meeting the strategic aim to have IEL a part of every undergraduate degree, and to set improvement targets for the respective faculties. Unit and curriculum revisionists will also have a much more informed idea what they need to do to increase and improve IEL components. We talk about the “IELness” of a unit or experience.

The section heading—learning for, about, at, through, and from work (and engaged activity in the community)—is significant and of relevance to the preceding discussion. Many of the units and experiences thought to be IEL initially were found to be learning about or for industry and the community, rather than providing students any significant exposure to and experience in those environments. Essentially, to be classed as IEL, students are taken out of the typical academic context for some designated period or proportion of their study time. One implication of this is that experiential learning activities, with case studies, simulations, or team projects, as examples, and having no direct contact with industry or the community, would generally be excluded from classification as IEL (see section on classification, below) as students are not actively engaged in industry of community.

A borderline case is illustrated by a capstone unit that has an industry representative come into the classroom and outline a project a firm would like students to work on. Typically, the same individual would review submitted projects and provide feedback to students at the end of the semester. Such a project subject would fall to the left on the IEL Continuum (see below) as students have little to no direct experience in the organisation or with its stakeholders and clients.
While there is a practical component, it concerns learning about or for rather than in. The project subject could, however, be improved through a range of relatively simple and low-cost / low-risk adjustments.

**The Theory-Practice Divide**

The intent of cooperative education and work-integrated learning is to bridge the theory-practice divide: students undertaking these programs will graduate more employable and better equipped to “hit the ground running” than their counterparts who have completed academic units only. They experience and learn practical sides of their studies, which may be more or less theoretical and abstract, insulated from the “real world.” The project subject described above is an example of a unit that strives to be practical and experiential, but remains predominantly a classroom-based exercise.

Few would dispute that students working through cooperative education and work-integrated learning programs undoubtedly gain valuable practical experience unlikely afforded by academic study alone. However, as discussed in Clements and Hays (2011), some of these programs do little to directly help students make the connection between what they are studying (or even their reason for studying) and what they experience and learn on the job. This is partly explained by the fact that some cooperative education and work-integrated learning programs have become detached from formal study. When faculty participation is minimal, connection to the curriculum is distanced and emphasis on learning becomes secondary. More subtle and insidious, it is often the case that faculty and staff assume that practice (the experience), itself, is sufficient—that students will automatically learn (and make the most of the lessons they confront), make theory-practice connections, bring classroom learning to the job site and what they learn on the job back to the classroom. They don’t. (Considerable literature on transfer of learning reveals how difficult it is to achieve.)

Where curriculum and learning become secondary, the emphasis is on getting a job (placement), getting experience, then getting back to university. We believe that the emphasis needs to shift towards learning from experience rather than experience itself, and that much can and should be done to facilitate such learning.

Our own appreciation for the theory-practice divide and its implications was heightened when we undertook to find a solid theory base for Industry Engaged Learning (see next section). In our search we came across a rich literature on theory-practice divide and closing the gap. This and other discoveries from our forays into theory informed development of the qualification indices

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introduced in this paper. More importantly, we concluded that IEL (and, by extension, cooperative education and work-integrated learning) had no clear and agreed-upon theory foundations. While this contention has already been disputed by counterparts at our own and other universities, we think it reasonable to accept that (a) there are multiple pedagogical theories drawn upon, each contributing something of merit to understanding teaching and learning associated with cooperative education and work-integrated learning, but (b) there is no embracing and integrating theory or theories that inform practice and lead to better, more consistent learning outcomes.

**Toward a Theory of Industry Engaged Learning**

Having concluded that teaching and learning theory applied to cooperative education and work-integrated learning is disparate and tenuous, and given our institution’s commitment to enhancing the learning associated with such programs—in our case Industry Engaged Learning—we set about to find firmer footing on which to ground our programs and inform practice. The authors’ past experience and more recent research suggests that these programs are founded more on practice and conventional wisdom than they are on theory. And, where they are strongly embedded in theory, they draw primarily on experiential learning theory (Kolb, 1984; Kolb and Kolb, 2005; see, also, Boud et al, 1993; Haddara and Skanes, 2007; Heron, 1992; Nicolaides and Yorks, 2008; Quay, 2003; and Yorks and Kasl, 2002). Experiential learning theory has contributed much to contemporary teaching and learning practice and has served predecessors of Industry Engaged Learning well. Experiential learning theory will continue to play a major part in Industry Engaged Learning as the field evolves. However, reliance on experiential learning theory has had an unanticipated and unfortunate impact on the field, limiting development of both practice and theory. We suggest that dependence on experiential learning theory might also explain why units and programs that rely on simulations, case studies, role plays, virtual (computer-aided) scenarios, and other classroom- or lab-based experiential learning, including many projects, are often considered to be work-integrated learning. As alluded to earlier, these do not meet all of our criteria, particularly (a) relevant work experience and (b) active engagement with industry or in the community, and hence, are not classified as IEL. They orient students toward work, but do not actively engage them in authentic work in actual work environments.

The absence of comprehensive and solid theory has privileged practical experience over learning from the experience and, paradoxically, undermined effective practice. Major operative assumptions that have influenced practice include: (a) work and other forms of practical experience are tantamount to learning, (b) placements meeting certain criteria will be sufficient
supplements to students' formal studies, and (c) the greater the immersion the more beneficial the experience. These assumptions have grave implications for the design and delivery of cooperative education and work-integrated learning, not least of which are disconnects between the student on placement and the academic institution and rifts between what the student experiences and what he or she studies.

Our recent research has identified four key learning theory streams manifestly relevant to our field: (1) adult learning theory, or andragogy; (2) experiential learning theory; (3) transformative, or transformational, learning theory; and (4) workplace learning theory. Our research has also surfaced a wide range of theories, approaches, and models that are relevant (see Table 3).

Together, these theory streams are envisaged as four pillars (Figure 2): they bridge theory and practice, and provide imposing foundations for both. While strong support in the literature has been found for each of the pillars (see Table 2 for a sample of notable references), none independently is sufficient to support the theory and practice of Industry Engaged Learning. For instance, experience does not necessarily or automatically convert to desired learning and, unfortunately, some of what is learned may be counter-productive (Field, 2004).

There is also nothing in experience, per se, that fosters learners making the linkages between theory and practice. Often, the solution proposed to this problem is reflection (Boud, 2001; Kolb, 1984; Meuser and Lapp, 2004; Reynolds, 1998; Schön, 1983; 1987; van Woerkom, 2004)\(^5\), extending learning from practice by reflecting upon it. And while there is little disputing the value of reflection on experience, the structure of work-learning experience is at least as important. Here, workplace learning theory has much to offer. However, none of the theory

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\(^5\) The following all deal with reflection and are provided as indicative references and because they provide strong support for one or more of the four pillars: Bandura (2006); Boström & Lassen (2006); Brown (2002); Carson & Fisher (2006); Chapman et al (2005); Doel (2009); Grauerholz (2001); Groenewald (2009); Grossman (2005); Haddara & Skanes (2007); Harvey et al (2010); Hutchison & Bosacki (2000); Kessels & Poell (2004); Loo & Thorpe (2002); Lyon and Brew (2003); Marsick & O’Neil (1999); Schwandt (2005); Shutte (2007); Varner & Peck (2003); Winchester-Seeto et al (2010).
streams individually fully encompass the learning from work experience context, which includes both work and study. This is why a comprehensive theoretical foundation for cooperative education and work-integrated learning is so needed. If universities are meant to graduate work-ready professionals, how can we best educate them as adults to prepare them for the “real world”? How can we structure and integrate study and work experience so that students get the best possible learning from both? Adult learning theory, or andragogy, provides much needed guidance. We know that workplace and community experience can be transformative, but what is the relationship of such experience to the curriculum? How can we as academic and workplace supervisors support and guide such transformation? This is where the groundbreaking work being done in transformational learning theory is instructive.

Our review of relevant literature reveals that some linkages have been drawn between and amongst independent theory streams. For example, Mezirow (1997) integrates transformational learning with discovery, autonomy, self-direction, and adult learning. Much work has linked participation and experience (e.g., Engestrom, 2001; Gherardi et al, 1998; Grauerholz, 2001; Nicolaides and Yorks, 2008, link experiential and lifelong learning), but no evidence has been found to date suggesting that adult, experiential, transformational, and workplace learning theories have yet been integrated or unified.6

<table>
<thead>
<tr>
<th>Adult / Andragogy</th>
<th>Experiential</th>
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<tbody>
<tr>
<td>Brookfield (1977); Burns (2002); Caffarella (2002); Knowles (1980); Knowles et al (1998); Merriam (2001); Merriam and Caffarella (1999); Mezirow (1991; 2000); Nicolaides and Yorks (2008); Taylor, E (2008).</td>
<td>Boud et al (1993); Dewey (1938); Kolb (1984); Kolb and Kolb (2005); Heron (1992); Mead (1934); see, also: Boud et al (1993); Haddara and Skanes (2007; Nicolaides and Yorks (2008); Quay (2003); Yorks and Kasi (2002).</td>
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</table>

Table 2. The four major theoretical and conceptual foundations of Industry Engaged Learning, and selected key reference sources.

In summary, stronger theory bases need to be identified and research drawing on this theory base needs to be extended. We believe that the four theory streams presented here in our four pillars model provides a justifiable starting point.

**Depth, Breadth, and Reach**

The illustration (Figure 3, below) was developed to help university executives, faculty, and staff

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6 While not attempting to theorise Industry Engaged Learning, Brown (2002) provides perhaps the most encompassing support for the four-pillars in her paper on the contribution of portfolio development to adult learning. She linked experiential, transformational, adult, and workplace learning.
better appreciate the magnitude of the institutional transformation and its implications. As indicated, breadth relates to the multiplicity and diversity of IEL experiences and opportunities actually and potentially on offer. To date, we have set about to expand, extend, and diversify opportunities for all students. Depth refers foremost to pedagogic matters, the importance of incorporating and applying the best in teaching and learning theory and established practice, and demonstrating the achievement of significant learning outcomes. This has driven our work on theory for cooperative education and work-integrated learning and where that work has been most influential. Finally, reach came to be understood as continuity—the whole student and his or her overall experience at university; and the integration of and relationships amongst the sequential, tiered Industry Engaged Learning opportunities in which the student will participate. Here, we speak of trajectories, acknowledging that students will have a say in designing their own unique pathways amongst many options available, and that these pathway experiences will build upon and complement one another in a deliberate way.

We also believe that students should be rewarded and recognised for their participation, and are working on several initiatives for them to earn credit, certification, and other acknowledgements, including and especially items respected by industry bodies. The depth-breadth-reach metaphor underpins everything we do, providing basic philosophy, direction, and a reference point when we need to find our bearings and remember our objectives.

**The IEL Continuum**

The IEL Continuum (Figure 4) is a key concept in the way Industry Engaged Learning as a philosophy and framework is understood and applied at our university. It demonstrates that many activities and experiences classify as IEL. Where a particular activity or experience falls on the continuum reflects its relative “degree of IELness,” which is a function of its theory-practice proportions. The continuum was first developed as a device to assist in dialogue with
practitioners and address questions concerning what is and is not IEL, and to stimulate IEL practitioners to work toward enhancing the teaching and learning aspects of IEL units and experiences.

**Figure 4.** The IEL Continuum, showing a range of IEL and potential IEL units, programs, and experiences and their relative position with respect to “IELness” or their theory-practice proportions.

As depicted in the figure above, IEL activities and experiences have been arrayed on the continuum based on generalised assumptions concerning the relative proportions of theory and practice in categories such as Study Tours and Internships. Positions are indicative only and are not fixed. The ideal for any IEL activity or experience would be a balance of or reasonable proportion between theory and practice. In fact (and in theory) all educational activities could move to the centre, striking a better balance between theory and practice. This is in keeping with our objective to close the theory-practice gap. IEL program designers are now working with unit convenors and program managers to adjust instructional strategies to improve levels of “IELness” in existing units and programs and to further close the theory-practice gap. This is also an objective of professional development being offered to practitioners at the university. Amongst other content, they learn about the continuum, the indices, and other tools, and how to use them. They also learn about the 4 pillars and explore ways to incorporate them and the additional theories, concepts, and approaches included at Table 3 into their units and programs.

- Deep Learning
- Lifelong Learning
- Organisational Learning
- Active / Action Learning
- Situated Learning, Embeddedness, and Importance of Context
- Participation and Engagement
- Autonomy and Self-Direction
- Service Learning
- Communities of Practice
- Discovery Learning
- Student-Centred
- Agency and Self-Efficacy
- Emancipation and Democracy
- Constructivism
- Holistic Learning / Whole Learner
- Meta-Learning
- Learning Styles
- Authentic Work and Learning
- Table 3. Learning theories, concepts, and approaches found to be associated with cooperative education and WIL.

**IEL Typology**

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7 Space limitations preclude discussion of these. References and elaboration on these theories, concepts, and strategies are available from the authors upon request.
In the review of Industry Engaged Learning in our two sectors, Higher Education and TAFE (Technical and Further Education) we identified no fewer than 26 types at our institution. Since our priority during 2010 and 2011 has been on the Higher Education sector, we identified seven distinct and prevalent forms of Industry Engaged Learning currently on offer, comprising 92 units of study and embedded in 80% of our undergraduate degree programs. The seven types are listed below, along with a brief program description.

<table>
<thead>
<tr>
<th>Program Type</th>
<th>Program Description / Differentiation</th>
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<tbody>
<tr>
<td>Industry-Based Learning</td>
<td>6-month or year-long full-time paid placement in a professional organisation; no university component.</td>
</tr>
<tr>
<td>Industry Placement</td>
<td>6-month or year-long paid placement occurring three or four days per week; return to classroom on ‘off’ days.</td>
</tr>
<tr>
<td>Professional Practice / Placement</td>
<td>Short-duration paid or unpaid work placement, usually for credit or mandatory for program, no more than a few weeks.</td>
</tr>
<tr>
<td>Internship</td>
<td>Part-time or short-duration placement, usually unpaid and a component of a unit of study.</td>
</tr>
<tr>
<td>Industry Project</td>
<td>Short-duration (no more than a few weeks) project presented as part of a unit; &lt; 50% of unit assessment.</td>
</tr>
<tr>
<td>Capstone</td>
<td>Semester-long project for an industry partner, completed in final year, and consisting of up to 100% of unit assessment.</td>
</tr>
<tr>
<td>Study Tour</td>
<td>Site visits / study trips that include all 3 elements of IEL: relevant work experience, strong learning framework, and active engagement.</td>
</tr>
<tr>
<td>Service Learning</td>
<td>An academic unit with compulsory 40-hr service placement. A two-semester option is available.</td>
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</table>

Table 4. Seven distinct and prevalent types of IEL in the higher education sector at subject university. Service Learning, to be introduced in 2012, will comprise the eighth type.

Qualification and Classification

One of the major needs identified in the review we conducted in late 2010 was to better understand the diversity and breadth of Industry Engaged Learning programs, units, and experiences and student participation rates. This was no easy task, as there had never been systematic collection and collation of relevant data and no real mechanism for doing so. This became one of our major projects. We experimented with several ways to achieve this task, and ultimately went with faculty nomination of units and programs that met stipulated IEL criteria (see the indices or dimensions in the following section). This task also allowed us to formulate and adjust our IEL Continuum. It enabled a first-ever, realistic accounting of student participation rates, and how (or where) they participated in Industry Engaged Learning.

IEL Dimensions
Dimensions, or indices of Industry Engaged Learning (see Annex 1), were developed in an attempt to respond to the challenge to define the “perfect” IEL activity. This was an important step for us in developing a way to distinguish IEL units, programs, and experiences from one another, and ascertain their learning potential, and led to development of our first IEL classification and identification tool, which we trialled but did not use on a large scale. For university-wide qualification of IEL we ultimately used the faculty nomination process mentioned earlier, which hinged on program leads or associated deans of education qualifying their units and programs with respect to the indices (Annex 1).

Lessons Learned and Observations from Experience

**Critical Success Factors.** Having dedicated, centralised staff, sufficient resources, and demonstrated executive support are notable factors in the successful implementation to date. These were identified as Critical Success Factors in the university’s strategic planning for embedding IEL, as they proved to be. Faculty/school support for the implementation and a sufficient governance structure in place were also acknowledged at the time as CSFs.

One lesson learned bearing mention at this point is the function of time as a Critical Success Factor. Though we planned for an implementation period of four years, we did not conceive of time as a CSF. Sweeping institutional change, such as embedding IEL throughout the curriculum and across the university, will take considerable time. Institutions considering embarking on such a journey must accept at the outset the function of time. There are at least two relevant dimensions of time. The first is obvious: the time it takes to actually put things into place and get buy-in from disparate stakeholders. The second, more complex, is the requirement to balance the need for momentum with the patience and support people require to come to understand and appreciate the change, not to mention to begin to operationalise it. The authors and many observers expected quicker response and achievement than we always attained.

**Options.** Some professional practice models have students working full-time and being paid near-graduate wages. One of the IEL programs at our university is like this; in fact, it is one of our best-known programs. Despite their attractiveness to employers, students and their parents, and some faculty, such programs are labour-intensive and costly, and are often seen as adjunct and cumbersome rather than fully-integrated into curricula. We will probably always have a program like this, but it is not likely to ever expand to provide opportunity to a larger cohort of students. Finding paid positions for all the students who might like to participate is becoming more difficult, and even long-standing relationships are vulnerable, as many would have

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8 A review version of this internet-based, automated tallying instrument is available from authors upon request.
experienced with the global financial crisis and sluggish return of the economy. What is needed is a variety of options so that all students, irrespective of their major, grade level, or other factors can participate and have access to opportunities to enrich and complement their academic studies. Granted, a range of options is probably the best way to accommodate diverse curricula, student preferences, and host organisation requirements, but makes administering these programs more difficult. Thus, more flexible and adaptive arrangements and mechanisms are required.

Valuing. One of the objectives of the change program that is the focus of the case presented herein was to change the way students, academics, and workplace supervisors think about and value work and the learning that can come from experience: that it is, in fact, learning from practice that matters, not merely the practice itself. Some might argue that this takes the emphasis off work. It is not that we are diminishing the value of work or experience, but that we are emphasising what can be gained from work over and above experience. That so much can be gained from work over and above the experience emphasises the need to re-examine the way we structure cooperative education and work-integrated learning units, programs, and experiences for learning. At the end of the day, universities are in the business of learning; they are not [work] placement organisations and placement is not core business. When placement services are required, they might most efficiently be outsourced.

Importance of Theory and Strong Conceptual Foundations. A fundamental weakness in cooperative education and work-integrated learning programs is that that they remain generally misconceived, under-estimated, and poorly-resourced, particularly outside the industry. Those who are not practitioners or directly involved in co-op or WIL may have little regard for such programs, especially their significant contributions to university teaching and learning and their central role in the curriculum. They may be considered nice-to-haves but non-essential, and as such are always at risk when it comes to making tough financial decisions. One important causal factor here is that they are not sufficiently researched. Much needs to be better understood. Practice often lacks strong theory foundations.

We found at our own institution that there was only a casual understanding of teaching and learning theory as it applies to cooperative education and work-integrated learning, and few attempts to design and improve units and programs employing a strong theoretical, conceptual, or philosophical framework. It was no surprise, we concluded, that few individuals at our university appreciated or emphasised the learning associated with (or potential from) these units, programs, and other experiences. So, we set out to find or build our own foundations, ultimately leading to the four pillars model introduced earlier in this paper. Our investigation into the best and most-
useful theory is only beginning, but we have found it helpful and reassuring to be able to draw on an established and credible theory base. Increasing numbers of faculty and staff are coming to appreciate the learning value of cooperative education and work-integrated learning, and have a better understanding of why programs and units may need revision and how to do so to enhance their educative potential.

The benefits and learning outcomes of cooperative education and work-integrated learning programs need to be more firmly demonstrated. This is why our university has launched a major project that goes beyond a simple cost-benefit analysis and explores more deeply the tangible and intangible benefits and value-adds of co-op and WIL; in our case, specifically, Industry Engaged Learning. The tools and process this project generates is likely to have implications for universities around the world, many having continuing needs to demonstrate positive program outcomes that transcend their cost.

**Program or Project?** In our former paper we noted the significance of framing and managing large-scale institutional change as a comprehensive program, an encompassing and integrated suite of projects. We warned of the dangers of project mentality or what may be termed “satisficing” (Byron, 2004). It is typically the case that organisations employ the divide and conquer approach to change, defining projects tightly, establishing project teams and accountabilities, enumerating project deliverables and performance criteria, risks, and so on. There is nothing wrong with this conventional wisdom at the project level, but there can be problems at the program or institutional level, when each project is pursued as an end unto itself rather than as an integral part of a larger and more important change effort. We were fortunate to have a dedicated staff and sufficient resources to plan and manage our embedding IEL program and to have oversight of and control over all projects throughout the implementation. The one downside is that we need to be ever mindful of achieving sustainable buy-in across the university. Faculties and schools may perceive of the change as belonging to us—someone else’s responsibility—and, thus, may show little initiative to orchestrate or ownership of the multitude of changes that must take place at the local level for embedding, internalisation, and operationalisation to occur.

**Communities of Practice.** We envisaged that one way to achieve the wide-scale buy-in necessary for embedding IEL to occur and to build the skills, knowledge, and commitment to sustain it was through creation and support of communities across the university that embraced our diverse stakeholder groups. These communities were viewed as complements to more formal
governance structures, and were thought to become even more important in the absence of such formal arrangements.
Conclusions

This paper builds on a previous one presented by Clements and Hays (2011) at the WACE conference in Philadelphia, providing a companion to that earlier paper. That previous paper presented a high-level overview of our university’s approach to planning and managing the large-scale institutional change associated with embedding Industry Engaged Learning throughout the curriculum and across the university. This second paper provides a progress update on implementation of that change, along with lessons learned as a result of our experience. More importantly, it introduces readers to a series of tools that the authors have developed and found to be exceptionally helpful in identifying and classifying the diverse range of IEL units, programs, and experiences on offer at the university, determining accurate figures on participation, and revising and enhancing the learning associated with respective types of IEL.

We conclude that cooperative education and work-integrated learning are not tired and outdated programs but as important, if not more so, than they have ever been. Since inception, these programs (50 years at the authors’ institution) have complemented formal academic studies, and are expected to continue to serve this essential function. We believe co-op and WIL programs (and their respective stakeholders) will benefit, and perhaps achieve more, if they establish firmly their theoretical foundations and demonstrate an attractive and credible value-add that other academic programs cannot. Cooperative education and work-integrated learning programs appear to be most viable when they are flexible and can adapt to and accommodate the needs and interests of multiple and diverse stakeholders. Our institution is opting for a wide range of programs that are flexible, offering students choices and many possible pathways, but all comprising part of the overall student experience and contributing to development of the whole student.

Cooperative education and work-integrated learning programs will likely [continue to] suffer when they are or are perceived to be adjunct or peripheral to the university’s core educative mission. Program administrators will find it hard to attract attention and support when considered separate from the curriculum, and the programs, themselves, will remain divorced from the central learning and teaching embodied in the curriculum. Programs will fail to deliver their fullest potential as long as this disconnect persists. Even students may fail to ever appreciate the substantial educative purpose and benefits of co-op and WIL when they are seen as something you do when not studying full-time. For these reasons, amongst others, our institution has set the agenda to embed Industry Engaged Learning throughout the curriculum and across the university, making it a natural and integral part of how we educate. We have accomplished much in a relatively short period of time, proving that it can be done. While much remains to do, we
are optimistic. We remain convinced that our aim to have Industry Engaged Learning a part of every undergraduate program is appropriate and realistic. Importantly for us as career academics, we are excited about the potential for IEL at our own institution and for cooperative education and work-integrated learning more broadly.

Acknowledgements
The authors wish to acknowledge Jacob Workman for his significant contributions to development of tools and processes discussed in this paper and for his editorial support in its writing. We might add that Jake will be presenting a paper on valuing WIL at the 2012 Australian Collaborative Education Network conference, based on the work we have been doing to better understand the benefits and relative merits of various WIL models.

References


INDUSTRY ENGAGED LEARNING

Industry Engaged Learning is a structured learning experience that involves active engagement with industry.¹

Structured Learning Experience

Relevant Work Experience

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<tr>
<td>The work the student does clearly relates to the organisation’s objectives, contributing to real and relevant products or services.</td>
</tr>
<tr>
<td>The student has some defined responsibility (as would any other employee or team member); responsibility is shown to evolve over time.</td>
</tr>
<tr>
<td>The work the student does relates to his or her:</td>
</tr>
<tr>
<td>a. course of study / major</td>
</tr>
<tr>
<td>b. and / or career aspirations</td>
</tr>
<tr>
<td>c. and / or desirable graduate attributes / key generic skills.</td>
</tr>
<tr>
<td>The work exercises and complements skills and knowledge gained in study, and challenges the student to continue to learn and develop.</td>
</tr>
<tr>
<td>Tasks and assignments are assessed as suitable to the student’s knowledge, skills, and interests.</td>
</tr>
<tr>
<td>“Big picture” is evident: the work or position contributes to the student’s understanding of the nature of work and organisational life, in general, and for particular industries or sectors.</td>
</tr>
<tr>
<td>The work or position helps the student to forge a professional identity, to come to understand what it means to be a practitioner in a given field, and to promote enquiry as to person-job fit.</td>
</tr>
<tr>
<td>Historic / integrative / complexity: the work / position enables and requires the student to synthesise and bring to bear a range of knowledge and skills acquired through a variety of courses to solve complex problems or otherwise demonstrate the ability to work in diverse, novel, and challenging situations.</td>
</tr>
<tr>
<td>E&amp;L experiences incorporate at least one major integrating project or task, relevant to the organisation or industry, that is designed to exercise and demonstrate multiple knowledge and skills.</td>
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Active Engagement with Industry

Strong Learning Framework

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<td>There exists a clear structure linking the student’s studies and work experience. Structure outlines and supports, minimally, learning objectives, assessment, and supervision.</td>
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<tr>
<td>There is a clear “mapping” between theory and practice, and intentional structures and activities to bridge the theory-practice gap.</td>
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<tr>
<td>The student is sufficiently supported to reflect upon and learn from experience.</td>
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<tr>
<td>All stakeholders understand that student learning is the primary objective of E&amp;L, as articulated, for example, in collaboratively developed learning plans and projects.</td>
</tr>
<tr>
<td>E&amp;L positions are validated (assessed) as to their suitability in affording meaningful learning experiences and adjusted to optimise student learning.</td>
</tr>
<tr>
<td>Academic supervision / mentoring is ongoing and intensive, with supervisor facilitating theory-practice integration and student development as a professional.</td>
</tr>
<tr>
<td>Academic supervisors, workplace supervisors, and students collaborate in designing work tasks and projects to promote the greatest learning for students, while ensuring organisational objectives are being met.</td>
</tr>
<tr>
<td>Students receive supervision / coaching and performance feedback directly from industry or community partner.</td>
</tr>
<tr>
<td>Generic frameworks to help students learn from experience are in use that complement discipline-specific learning and assessment activities.</td>
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</tbody>
</table>

Bottom line: Student learning features as a primary organising principle, and structure promotes learning and enables its measurement.

Note: Not all indices need be met for an E&L experience / position to qualify, but on the whole the spirit of the principles and their indices should be met.

¹The term industry is understood in the broadest sense, and encompasses organisations and institutions of all types across sectors.