Work-Integrated Learning in ICT Degrees

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Abstract

Work-Integrated Learning (WIL) is acknowledged by universities, professional societies, government and industry as a valuable model of learning that provides significant benefits to students. Despite this agreement there remain some differences of opinion between universities, industry and the professional society regarding implementation of WIL. This paper reports on the outcomes of a university forum that discussed various aspects of WIL programs. A recommendation for a stakeholder approach to WIL is proposed that would ensure that all motivations and expectations are made explicit and that the primacy of student learning outcomes is maintained.

Keywords: Work Integrated Learning

1 Introduction

Many Australian universities have a strong history of engagement with the ICT industry regarding the design and implementation of their degree programs. Modes of interaction include industry-based learning, industry-linked projects and the use of industry examples in case studies and scenarios. Authentic engagement with industry has the potential to bring significant benefits to all stakeholders including students, the university, industry and the nation in general.

The term ‘Work-Integrated Learning’ (WIL) is now frequently used to describe the various forms of learning experiences that aim to develop student’s professional capabilities and knowledge of the workplace. The recent Australian Learning and Teaching Council (ALTC) national scoping study for Work Integrated Learning (WIL) (Patrick et al, 2009) reported on the broad and growing picture of WIL across Australia and ways of improving student learning experiences in relation to WIL. The project regarded the term ‘Work Integrated Learning’ as an umbrella term that included a “range of approaches and strategies that integrate theory with the practice of work within a purposefully designed curriculum”.

It is commonly acknowledged that WIL brings mutual benefits for students, universities and industry. Bates et al (2007) suggest that WIL provides students with an opportunity to test the theoretical knowledge learnt at university and to put it into action in the complex and pressurized environment of the real professional world. For graduates, previous industry experience provides significant salary advantages with the Graduate Careers Council reporting that computer science graduates (collective category for IT graduates) with previous full-time employment experience earned a median starting salary AUD$13,000 higher than those without previous experience (GCA, 2010). In a survey of Australian universities, Smith et al (2008) found that many lecturers identified Industry-Based Learning as the single best feature of their degrees, primarily because it realized the alignment of their programs to industry. Other more recent surveys found that ICT graduates in the workplace strongly believe that there needs to be some form of work-integrated learning to address both what was missing from their courses and what needed improvement, and that ICT employers believe that students need more work placements to gain industry experience (Koppi and Naghdy, 2009).

The Federal Government also acknowledges the value of WIL with the then Minister for Employment Participation (O’Connor, 2008) noting the “immeasurable” value of integrating real work experience into academic programs including recognized benefits to students: “By integrating practice and theory, students develop those important ‘softer’ skills greatly valued by employers, such as team work, self-management and initiative”, and other stakeholders: “Students are able to make an immediate and meaningful contribution to increasing productivity and prosperity—for industries, businesses and the nation as a whole.”

Despite the many examples of good practices and the significant potential benefits of WIL, the ALTC sponsored ICT Scoping Study (Koppi and Naghdy, 2009) found that ICT graduates and ICT employers identified common deficiencies in the workplace readiness of new graduates particularly in relation to the development of essential generic skills such as interpersonal and professional communications, business awareness and problem-solving abilities. The ICT Scoping Study suggested that these deficiencies could be addressed in large by appropriate workplace experience with a formal recommendation that universities and industry leaders to “investigate the possibilities for greater work-integrated learning by all students of ICT, and develop a scheme that has local and national applicability”. This paper reports on progress on a component of an Australian Learning and Teaching Council project (Ogunbona, 2009) that aims to address several of the recommendations from the 2008 ICT Scoping Study (Koppi and Naghdy, 2009). In particular, the paper focuses on the recommendation regarding the learning experiences that will enhance the work-readiness of graduates.
2 Context and Consultation Process

The inaugural Australian Council of Deans of ICT (ACDICT) Learning and Teaching Network Forum was held in July 2010 with the aim of disseminating new developments and sharing good practice. The forum was attended by over 20 Associate Deans Learning and Teaching or their equivalents in the ICT disciplines of the ACDICT member universities. One of the key sessions at the forum related to Work Integrated Learning in ICT degrees. The purpose of the WIL session was to consult with the forum participants through small group and plenary processes on a range of issues relating to WIL in order to identify any common position that universities in general have on WIL. The WIL issues covered at the forum were derived from a recent newspaper article entitled “Sector split over on-the-job year for IT students” (Mather, 2010) that reported on a proposal from the Australian Computer Society for compulsory work placements for information technology degrees. The particular issues covered during the session related to the value of WIL, compulsory WIL, the tension between the needs of industry versus education and finally models of WIL. The session included some group work in order to seek input on each issue. The subsequent discussions were recorded by a scribe and audio recording. Each issue is presented in the following sections.

3 The Value of WIL

The newspaper article (Mather, 2010) primarily focused on the value that WIL brings to industry with comments such as “Industry is looking for graduates who are capable of being productive in the shortest time possible” and “Graduates need to be more work ready, particularly as the information and communications technology sector braces for a flurry of activity associated with the roll-out of the national broadband network and e-health initiatives”. From an industry perspective there appears a strong consensus that traditional forms of WIL such as Industry-Based Learning (IBL) placements and internships are highly desirable and effective in developing the employability attributes of graduates.

The representatives at the ACDICT workshop unanimously agreed that from a University perspective WIL is beneficial in developing certain ‘professional attributes’ in students with many universities regarding WIL and IBL as key features of their degrees. There were some concerns raised during the ACDICT workshop regarding the need for some ‘hard evidence’ of the value of WIL in the context of student outcomes beyond the direct employment benefits and also that such employment benefits should not necessarily be seen as the primary goal of university education. This broader view of the value of WIL within higher education was raised in the newspaper article (Mather, 2010) who quoted the ACS chief executive, Bruce Lakin commenting that “Among the 17 deans…. the majority support it (WIL) but some take a view that says, “We’re not in the business of teaching vocational skills, we’re about teaching the philosophy of learning, the meaning of life””. This particular issue was highlighted during the ACDICT workshop with some participants taking the view that whilst WIL does provide a direct employment advantage, employability comes from having something ‘interesting’ to offer, for instance a research portfolio or an international experience. Those participants commenting on this issue made the point that students should be presented with a range of options of alternative learning experiences.

4 Compulsory WIL

The newspaper article (Mather, 2010) was written in response to the proposition from the Australian Computer Society (ACS) that information technology degrees should be extended by up to 12 months to include a compulsory work placement period. The article noted that industry placements are mandated in other professions such as engineering, teaching and nursing, however there was no such requirement for IT degrees. The article indicated that the motivation behind the ACS position that industry placements should be compulsory was linked to the need for graduates to be productive in the shortest time possible.

The ACDICT workshop participants unanimously rejected the call for work placements to become a compulsory component of IT degrees. The key concerns raised during the workshop related to equity and access to placements as well as issues relating to student diversity and personal life preferences. It was also noted that the ACS position was based on a view that WIL experiences were limited only to models that involved workplace experiences such as industry-based learning or internship programs. Industry acceptance of the value of other models of WIL will be addressed in a later section of this paper.

The equity and access issues raised during the ACDICT workshop included the visa limitations that are imposed on international students that generally precluded them from participating in full-time paid work including industry-based learning. In addition it was noted that many regional and rural universities and/or university campuses would have difficulty in sourcing appropriate industry placements within their immediate location. The ALTC national scoping study for Work Integrated Learning (Patrick et al, 2009) also identified the issue of ensuring equity and access noting that not all students have easy or equal access to WIL experiences with access dependant on university and/or degree program priorities. These two factors present a significant barrier to the implementation of a mandatory work experience requirement for IT degrees with any solution requiring a substantial package of government and industry funding and support to ensure that no student or university is disadvantaged.

The issues relating to student diversity and interests that were raised during the ACDICT workshop present a broader range of challenges for any compulsory work placement initiatives. The first of these issues related to generational change, in particular the different attitudes and values that Generation Y students bring to all aspects of life including education. Students born in the 1980’s and 1990’s are now known as the Gen Y students. These Gen Y students are the target age cohort that are involved university workplace learning experiences such as IBL and internships. The key behavioral attributes that characterizes Generation Y include their cynicism towards what they are told by older generations and their
rejection of the things that their parents took for granted including lifelong relationships, continual employment and home ownership (Nimon, 2007). Generation Y students also display different approaches to learning with a desire for “immediacy” (Nimon, 2007) and a strong preference for flexibility of learning options including modes that meet their individual preferences and needs. In addition, Generation Y students value learning that occurs outside the classroom and seek to have this recognized (Skene, 2007).

The ACDICT workshop participants indicated that the vast majority of undergraduate students have significant part-time work obligations. This view is supported by research that found that half of all Gen Ys in full-time study also have paid jobs compared to the late 1980s when around two-thirds of full-time students devoted all their attention to their studies and did not undertake paid work (AMP-NATSEM 2007). The workshop participants indicated that the value of part-time work is critical to Gen Y students as it funds their technology lifestyle requirements within the flexible work-life balance that Gen Y desire. Many students are therefore reluctant to give up their part-time work for a work-placement or internship as they may not be able to resume their part-time positions afterwards and it has been suggested that some are reluctant to reduce flexibility in their life styles.

The ACDICT workshop participants also suggested that students may be acquiring the desired soft-skills and the professional attributes through their part-time work hence are achieving some of the learning outcomes of a work placement or internship. It was suggested that some form of formal credentialisation of the part-time work might be considered in order to recognise the value that this work brings.

The final issue that was raised at the ACDICT workshop regarding the proposal for compulsory work placements related to the diversity of the student cohort, particularly in relation to the academic and personal capabilities of students and their suitability for a traditional work placement. The workshop participants indicated that many universities have eligibility criteria for work placements or internships that require a certain level of academic achievement (e.g. a Credit average). In addition many universities require the students to undergo a vetting process that may include an interview to ensure that the student has the required interpersonal and communication skills demanded by employers. These criteria are applied to provide some assurance that the placement or internship will be successful from the perspectives of all stakeholders and are based on many years of experience in the cases of some universities.

There was a concern expressed by some participants that the relationship with industry partners involved in work placements or internship programs may be put at risk if universities were compelled to involve ‘pass-level’ students as they might place an unreasonable burden on the industry partners who would need to introduce additional support and supervisory procedures to manage students who may not have the yet developed the capability to work without direct supervision and support.

The newspaper article (Mather, 2010) also noted that the achievement level of the student has to be a consideration in any work placement process but used an example from the opposite end of the spectrum “If you’ve got some really technically smart person, you are going to upset them if you stick them on a help desk for a month”.

5 Training vs Education

The newspaper article (Mather, 2010) mentioned a range of stakeholders including industry, government, universities, professional societies and finally the student themselves. The article identified the benefits that some stakeholders were aiming to achieve through participation in work-placements or internship programs, in particular the benefits for industry in having access to a supply of graduates who are “capable of being productive in the shortest time possible”. This was contrasted with a concern expressed by universities who aimed to achieve a balance between teaching theory and vocational practice.

The 2008 ICT Scoping Study accurately described the tension that currently exists between universities and industry regarding the design of curriculum for ICT degree programs. Many universities have focused on the development of the foundations that will enable graduates to acquire ICT skills relevant for their work with the aim of developing a graduate with life-long learning skills. This approach is contrary to the “application driven outcome-based curriculum” (Shoikova & Dwishev, 2004) in which there is a focus on training in the contemporary tools and techniques used in the corporate and industry environments. The ICT Scoping Study (Koppi and Naghy, 2009) indicated that an approach to curriculum and learning that focuses on fundamentals rather than training has resulted in a situation where employers believe that “universities are not interested in meeting industry requirements” and subsequently universities conclude that industry is “remote from and skeptical about university education”.

The ACDICT workshop participants recounted stories of the different motivations of organizations involved in work placements and internships with examples ranging from those organizations who work as genuine partners with the student’s interest as a priority to some organizations that have been banned from any future involvement in WIL. WIL need not preclude tangible task-related outcomes for organizations but the focus must remain on providing the student with a holistic learning experience with intentional and agreed learning outcomes.

6 Models of WIL

The ALTC national scoping study for Work Integrated Learning (Patrick et al, 2009) reported on the broad and growing picture of WIL across Australia and ways of improving student learning experiences in relation to WIL. The project regarded WIL as an umbrella term that included a “range of approaches and strategies that integrate theory with the practice of work within a purposefully designed curriculum”. The number of programs that provide students in various professional fields with practical experience in the workplace have proliferated in recent times (Bates et al, 2007). This increase in interest in WIL has seen the development and adoption of a range of models of WIL extending from the traditional work experience placement to new virtual or simulated WIL experiences. In his
speech to the World Association for Cooperative Education Asia Pacific Conference (O’Connor, 2008), the Hon Brendan O’Connor representing the Minister for Education recognized that WIL now comes in many different forms including “research, internships, studying abroad, student teaching, clinical rotations, community service or volunteer work, industry attachments or placements, sandwich programs, and professional work placements”. These models of WIL may be classified on a continuum from the traditional external, industry-based WIL experiences such as work experience placements and internships to internal, university-based experiences such as project work, case studies and experiential learning opportunities.

The newspaper article (Mather, 2010) discussed at the ACDICT workshop interchangeably used the terms ‘work placement’, ‘industry placements’, ‘workplace integrated learning’ and ‘work integrated learning’ to describe a singular model of WIL that involves students working at the premise of the host organisation on a full-time basis for an extended period of usually between 3 to 12 months. This traditional view of WIL is contrasted by the University community and the ALTC who see WIL as “occurring in a workplace, in the community, within the university, and real or simulated, as long as the experience is authentic, relevant and meaningfully assessed and evaluated” (Boud and Symes, 2000).

The ACDICT workshop participants spoke with enthusiasm of the different models of WIL including simulated work environments, industry linked projects and part-time variations of WIL that provide the flexibility that meet the diversity of student capabilities and interests, including international and students with significant part-time jobs. As the demand for WIL increases further alternative models are likely to be developed and refined in order to offer students a range of options for gaining workplace experience that suits different student motivations and capabilities and different university resourcing models and priorities.

7 Discussion

The plenary discussions at the ACDICT workshop confirmed strong support for Work Integrated Learning as a desirable feature of undergraduate IT degree programs. The benefits that WIL brings to student learning include providing an opportunity to develop and practice soft-skills and to expand the student’s understanding of workplace dynamics and the IT industry. However, the workshop noted that the key value of WIL is the opportunity for students to improve their understanding of professional responsibility. Importantly, it is noted that these benefits relate primarily to the student rather than the other stakeholders involved in WIL.

University support for WIL was contingent upon the recognition of the multiplicity of models of WIL including traditional work experience placements and internships as well as innovative models such as industry-linked project work, case studies and experiential learning opportunities.

The workshop participants agreed that the concept of compulsory work experience placements as proposed in the newspaper article (Mather, 2010) was not viable given the diversity of universities and students. There was some level of agreement that undergraduate IT courses should provide a range of WIL options for students with support for the idea that WIL experiences should be provided early in the curriculum in order to develop student’s understanding of the industry that they will most likely work in.

Implementation of a range of WIL experiences throughout the curriculum in an undergraduate IT degree would require a different level of engagement with other stakeholders including industry and professional societies. The ACS Body of Knowledge (BOK) (Gregor et al, 2008) calls for a ‘common vision’ that can be shared by all stakeholders including industry, government, educators, academic disciplinary bodies, the community, students and professional standards bodies. The ACS BOK encourages a partnership between universities and industry where by curriculum designers in universities should determine what is required of professionals in the workforce when designing programs and industry should be involved in program design through advisory committees.

The approach to curriculum design recommended by the ACS BOK is an appropriate mixture of top-down and bottom-up considerations. The top-down focus should ensure that designers consider the roles that their graduates will undertake after graduation with an emphasis on the development of a professional who should be able to work across the boundaries of traditional disciplines. This is balanced with a bottom-up consideration of ensuring that underlying knowledge, principles and theories are covered rather than the extreme position where programs are designed to address short-lived market trends or skills gaps.

One of the most encouraging aspects to the ACS BOK document is the development of schema that categorizes ICT roles into “Technology Building, Technology Resources, Service Management and Outcomes Management”. This development will aid in the partnership approach to curriculum design by establishing a common vocabulary and understanding between the stakeholders.

Taking a stakeholder approach to WIL is critical to its further development and adoption. The ALTC national scoping study on WIL identified a broad range of stakeholders involved in providing or benefiting from WIL experiences, including students, university academic and professional staff, employers, professional associations, and government (Patrick et al, 2009). Employers benefit from participation in WIL through recruitment opportunities, universities benefit through improved student learning, engagement and retention (Patrick et al, 2009) and the government and the wider community benefit through the development of a graduate workforce who can make an “immediate and meaningful contribution to increasing productivity and prosperity (O’Connor, 2008).

The ALTC WIL Scoping Study (Patrick et al, 2009) also recommended an integrated stakeholder approach to the planning and implementation of WIL that would be based on “formalised relationships and a common understanding of the associated responsibilities and level of commitment required” where there are “clear
agreements and the recognition of needs as well as mutual benefit and costs”. Smith et al (2008) link the quality of any Work Integrated Learning program to a “dynamic interplay of stakeholder needs (such as academic disciplines and departments contributing to the curriculum, the expectations of industry and professional associations, and the students).

O’Connor (2008) also mentioned the “critical” requirement for a stakeholder approach in his speech but extends this to the notion of a “genuine partnership” between students, employers and education providers for effective collaborative education programs.

The partnership concept is also suggested by Orrell (2004) who notes that partnerships are a distinguishing feature of any effective work-placement programs. In addition, Orrell indicates that the continuing success of WIL programs also requires identification and attainment of explicit benefits for each partner and “if the benefit fails for any party, the partnership ceases to be effective”. Orrell comments that the motivations of host organizations ranged from those who had a ‘value-added’ ethos in which the placement is evaluated on tangible, short-term returns for the organization, to the ‘stakeholder’ ethos which emphasizes learning with a long-term view seeking benefits for all parties.

Bates et al (2007) discussed the WIL partnership model by examining the respective responsibilities of each partner. They suggested that WIL is a three-way partnership between the student, workplace, and educational institution with specific responsibilities for each partner. The student must take responsibility for their own learning during a placement, the university has the responsibility for ensuring the WIL curriculum provides students with learning opportunities including a requirement for reflective learning, the academic supervisor has responsibility for mentoring, support and feedback, the workplace organisation has the responsibility for providing a relevant and suitable project for the student to focus on and a suitable induction process for introducing students to the specific workplace.

Given these requirements and the necessity of the management of partnership relationships, Work Integrated Learning should be intentional, organized and real-world rather than opportunistic or contrived. WIL requires a formal educational structure that defines the roles of the student, the teacher/supervisor, the curriculum emphasis and teaching methodologies (Calway and Murphy, 2006).

8 Conclusions

Work Integrated Learning brings multiple benefits to student learning including the development of soft-skills, workplace and industry knowledge and professional responsibility. The primacy of the student in WIL is regarded as a central success factor for the implementation of WIL.

The contemporary view of WIL is that it includes a broad range of models including the traditional work experience placements and internships as well as innovative models such as industry-linked projects and experiential learning opportunities.

The proposal for mandatory work experience placements was regarded by participants at the ACDICT workshop as not viable or appropriate given the diversity of universities and students. Instead the focus should be on the key issue of identifying and managing different stakeholder motivations and expectations and the requirement to ensure that WIL is an integral part of the entire undergraduate curriculum.

9 References


