The impact of Learning in the Workplace Policy on differing ICT degrees

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Abstract

At Victoria University, the release of a new Learning in the Workplace and Community (LiWC) policy has been introduced to ensure that graduates are job and career ready. The policy underlines the importance of workplace contextual learning in all course deliveries and is scheduled for progressive implementation by 2010. For each degree, the policy mandates that a minimum of 25% of program content and assessment must be related to work integrated learning.

Compliance with the 25% shift poses significant challenges for its implementation upon all undergraduate programs since the policy is expected to impact upon program structures, unit deliveries, assessment practices, and course administrations. In particular, there has been an extensive review of existing approaches to learning and teaching in the programs that deliver information and communications technology (ICT) degrees across business and science faculties. This paper describes the current Bachelor of Science in Computer Science and Bachelor of Business in Information Systems programs identifying similarities and differences between the two offerings with respect to their learning in workplace components. It explores possible synergies between the two programs that could be capitalized upon to implement the LiWC policy and details the challenges to both faculties in mounting a coordinated response.

Keywords: course management; curriculum development; ICT education; workplace learning; Australia.

Introduction

At Victoria University a new initiative has been launched in 2007 to ensure that all teaching programs "will create job ready and community aware graduates whose courses have at least 25% learning in the workplace, including opportunities for service learning in the community" (Aitken & Mitchell, 2007). Consequently, a new Learning in the Workplace and Community Policy (LiWC) specifies that a minimum of 25% of program content and assessment in all deliveries must be related to work integrated learning. Realizing this policy poses significant challenges for the two faculties which offer ICT degrees at Victoria University.

There are many different ICT disciplines, including computer engineering, computer science, software engineering and business information systems, to name but a few. Each ICT undergraduate degree has a particular focus; for instance, Information Systems (IS) is interested in how computers and information flows are employed in business whereas Computer Science (CS) studies are in the development of skills for designing and imple-

menting software and in how computing problems are solved (ACM, 2005; ACS, 2003). At Victoria University, the IS and CS undergraduate programs are offered by two different operational units: the Business & Law and the Health, Engineering & Science faculties respectively, each with their own distinct underlying philosophy.

In implementing the LiWC policy, there is a need to explore common goals and possible synergies between all ICT programs, to achieve the best possible learning in the workplace outcomes for students through the sharing of ideas and resources. For a dialogue to commence between the two faculties, an examination of Table 1 identifies the similarities and differences between the current offerings. Both programs are comprised of 24 units of study with an existing, albeit different, work-integrated learning components. Importantly, in each case, the LiWC component fails to meet the mandated 25% requirement. To meet the LiWC policy shortfall, a discussion to identify suitable approaches for a cross-faculty coordinated response is detailed below.

ICT Degree Programs		
Faculty	Business & Law	Health, Engineering & Science
Degree	Bachelor of Business in Information Systems	Bachelor of Science in Computer Science
Duration	3 years full time	3 years full time
Structure	24 units of study: 7 core units of business studies 7 IS specialization units 7 electives 3 professional development units	24 units of study: 1st year: 6 core + 2 electives 2nd year: 1 core + 7 electives 3rd year: 3 core + 5 electives
LiWC component	Compulsory: I unit industry project Optional: Year long co-operative learning equivalent to 2 electives	Compulsory: 3 units of industry project
LiWC %	Compulsory: 4% Compulsory + Optional: 12.5%	Compulsory: 12.5%
Professional Accreditation	Yes Australian Computer Society	Yes Australian Computer Society

Table 1: Similarities and differences between the IS and CS degrees at Victoria University

Approaches to comply with the LiWC policy

In an extensive review of cooperative education literature, Calway (2006) identifies several generic models of work-integrated learning practice. Most relevant for ICT degrees are the practices of work-based contextual learning, industry projects, internships and cooperative education. Of these approaches, work-based contextual learning adopts a more holistic approach as within every unit of study there is situated some component of work-related content and assessment whereas projects, internships and cooperative education segregate the work-related content from the traditional academic study. The following sections discuss the appropriateness of a holistic versus a segregated approach to the en-

actment of the LiWC policy within the two programs mentioned above. The discussion is influenced by the different perspectives taken by IS and CS disciplines respectively, with a search for a common view to find appropriate strategies for implementation of the policy.

Holistic Approach

The holistic approach demands and relies on every unit of study to incorporate at least 25% of the content and assessment to work-based contextual learning. The advantage of this strategy is that all staff are equally responsible for the delivery and assessment of work-based learning. However, the challenges of this approach are many. For instance, this approach naturally lends itself to contextualized work-based learning rather than more authentic workplace experiences gained in industry projects and cooperative programs. As well, there may be units where work-based contextual learning may be difficult and even inappropriate to achieve in units such as in pure mathematics electives found in the CS program. More broadly, there needs to be a mapping of program structure versus work-based learning for a smooth integration of LiWC learning objectives as there are issues of accountability in ensuring that each unit, irrespective of being a core or elective, is LiWC compliant. In particular, further difficulties arise for the IS program which is reliant upon much content taught by colleagues in business studies. Therefore in all cases, a great degree of cooperation and commitment is needed from all staff in adopting this approach.

To overcome some of these difficulties, there is an alternative holistic approach whereby some units make a greater contribution than others towards the LiWC compliance. While there is a requirement that all units contribute to some degree of the work-based learning in the program, it is imperative that the accumulating total of all units account for 25%. Again, this requirement underlines the necessity for program mapping. Alternatively, by taking a segmented approach and using dedicated work-related components, there are several possible ways for a program to be LiWC compliant and capitalize upon different modes of delivery. The various strategies of applying the segmented approach are explored below.

An Incremental Approach

Firstly, by incrementally introducing work-based learning across all three-year levels, this strategy introduces one LiWC unit in the first year, two units in the second year, culminating with three units of the third year; this adds to 6 out of 24 units, thus complying with the mandated 25% LiWC requirement. The advantage of this strategy is that students are oriented early in their degree to workplace learning practice and they are able to progressively build upon these experiences throughout their program. As well, only a select number of staff need expertise in work-related delivery and assessment. The challenge of this approach for both CS and IS programs is in ensuring that suitable core units of study are selected to build appropriate work-related learning experiences at both introductory through to advanced levels.

A Fixed Term Approach

Secondly, the arrangement of the work-based components can be made into a block structure. This structure can be accommodated by sacrificing academic content to enable pro-

ject-based learning or by extending the program duration. In the first instance, a reduction in the number of academic units can be made by freeing up 6 elective units for workplace learning with the advantage being the retention of the 3-year program duration. In this case, the major challenge for both ICT programs is the identification of suitable electives for pruning, so as not to sacrifice intellectual rigor and professional accreditation. This is particularly critical for the IS program where up to 6 of their available 7 electives will need to become LiWC units, thereby reducing the current flexibility for students to pursue specializations.

Alternatively, an extension in duration of the program allows for the addition of a block LiWC component where the original academic content is retained. Ideally, the additional block could compliment the existing work-based units in the ICT programs so that together these units add to the LiWC commitment. In both strategies, there are challenges in developing suitable assessment for the LiWC block component as well as the possible need for administrative support.

Discussion

Before arriving at a coordinated response, each ICT discipline reviewed the possible approaches and assessed the feasibility of adoption in their own context. Table 2 summarizes this assessment. Notice that a fixed term approach that maintains the 3-year degree duration was ruled by IS as unachievable since it is not practicable to sacrifice up to 6 elective units to accommodate a dedicated LiWC component. For the CS program this is not as great an issue as there are currently 3 LiWC units of study in the program structure, necessitating an overall substitution of only 3 electives. Implementation of either version of the holistic approach relies heavily upon the goodwill, esprit de corps and teaching commitment of all academic staff to the successful adoption of the LiWC policy. This may not be the given state of affairs. Furthermore in both disciplines, the holistic approach cannot be immediately realized without considerable units of study review and program mapping to ensure LiWC compliance.

	Information Systems	**Computer Science**
Holistic Equal unit weighting	**?**	**?**
Holistic Unequal unit weighting	**?**	**?**
Incremental 1 + 2 + 3 units	✓	✓
Fixed term 3 year duration	✗	✓
Fixed term Extended duration	✓	✓

Table 2: Summary of assessments of differing LiWC compliance strategies. Note: ✓ signifies possible approach adoption, ✗ indicates an inappropriate choice and **?** shows the need for considerable degree revamping and effort to adopt the approach.

Of the possible approaches, only the incremental strategy and the fixed term extended duration approach are feasible to both disciplines. As applied over the 3 years, the incremental strategy allows for different modes of workplace learning to occur. For instance, students may be exposed to contextual workplace learning with broad community projects in their first year, industry problems in their second year and a final-year IT industry project. From an administrative viewpoint, such an approach allows for the retention of most of the original program structure and academic content without the need for major program upheaval as LiWC demands are placed on limited numbers of staff committed to teaching these units.

Similarly, maintenance of academic content and the inclusion of an additional LiWC component is most easily accommodated by the fixed term approach with an extended program duration. The time extension allows for the inclusion of a variety of workplace experiences, possibly an internship or cooperative education component. There is an argument that only an authentic workplace can provide "on-the-job experiences to students prior to graduation" (Carpenter, 2003, p. 201), where they can be exposed to technical and business mentoring and current industry practices (Calway, 2006; Trigwell & Reid, 1998). As the traditional IS program already offers an optional cooperative education year, there are established mechanisms for administration and assessment support. Typically, students participate in 12 months of relevant paid professional full-time work, which is negotiated, approved and facilitated by a placement coordinator. Thus, if the fixed term, extended duration approach is adopted by both disciplines, IS will need to make the cooperative year a compulsory component of their program. However for CS, such experiences are lacking in the current program and one possible solution is to share the current IS administrative support to effect the placement of a compulsory cooperative learning experience for CS students.

Conclusions

This paper has discovered two possible strategies to implement the LiWC policy in differing ICT degrees where the motivation has been to affect the best possible workplace learning outcomes for students. It sets the foundation for a possible cross-faculty coordinated response where economies of scale through the sharing of limited resources can occur. The choice of the most appropriate strategy requires careful consideration of several issues including: current program structures, administration costs, program duration, unit deliveries, assessment practices, industry alliances, professional accreditation requirements, and concerns of local students and international students. A detailed discussion of these issues and their impact on the CS program can be found in Venables & Tan (2009). Ultimately, the decision of the most appropriate strategy is one for each operational unit where the local impact can be best assessed.

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