Professional Practice in Australian ICT Degrees – A Proposal

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The Broad Meaning of WIL
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) used 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".* The various approaches to WIL may be classified on a continuum from the traditional external, industry-based WIL experiences such as work placements and internships to internal, university-based experiences such as project work, case studies and other simulated or virtual industry experiences. Despite the differences in these models it is commonly acknowledged that WIL brings significant benefits to all stakeholders including students, universities, industry and the community in general. In particular WIL experiences are attributed with the development of important 'softer' skills greatly valued by employers, such as team work, self-management and initiative which prepare students for a professional working environment.

The Academic Perspective
An Australian Financial Review article in May 2010 entitled "Sector split over on-the-job year for IT students" (Mather, 2010) reported on a proposal that Australian 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, and that there was no such requirement for IT degrees. However, the article was wrong in asserting that placement is mandatory for engineering. The article indicated that the motivation behind the proposal was to improve the employability of IT graduates. The proposal was discussed at the inaugural Australian Council of Deans of ICT (ACDICT) Learning and Teaching Network Forum held in July 2010 that was attended by 36 Associate Deans Learning and Teaching or their equivalents in the ICT disciplines from 25 ACDICT member universities. The 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 proposal in the Financial Review 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 and not university-based models of WIL. The workshop participants acknowledged the significant value of internal WIL programs such as simulated workplaces and industry-linked projects and expressed a desire for industry and professional body recognition of these models of WIL.

The ACS Perspective and Recent Developments
The revised Australian Computer Society (ACS) Accreditation Application Guidelines (February 2009) state that as an underlying principle *"ICT is a practical science and practical work, as in project work or industry placements, is required at some point in programs of study so that learning of applied skills and knowledge can be fully developed."* The Accreditation Manual (Document 2A) does not specify any requirement for an industry placement or industry

experience. However the guidelines state that programs will *"include a capstone unit in the final year to allow an assessment of the program objectives."* The Policy on Capstone Units (Appendix 3) indicates dual objectives for capstone units:
1. *Integrate the skills and knowledge developed throughout the program;*
2. *Provide a structured learning experience to facilitate a smooth transition to professional practice or further study in the discipline.*

Whilst the concept of a Capstone Unit is a highly desirable feature of a degree that is accredited at professional level, it is difficult to see how a single unit can authentically achieve the dual objectives of providing both an integrative experience and a professional practice experience. It is feasible that a Capstone Unit might be designed to achieve the first objective of integrating the skills and knowledge developed during a degree program however it is questionable whether the same unit could be designed to also achieve the second objective regarding the transition to professional practice or further study.

The ACS ANZAB accreditation policy is currently under review. The December 2010 draft contained an appendix detailing a "Policy on Capstone Units". This appendix detailed specific features of Capstone Units such as requiring the: *"integration of skills and knowledge acquired throughout the course".* The guidelines also suggested that Capstone Units might be more open ended experiences, i.e. *"The Capstone Unit should provide students with an authentic learning experience. This should be based on the type of professional experiences that a graduate is likely to encounter following graduation from the program. In many cases, this will be achieved through Industry Based Learning (IBL)."* Finally the guidelines state that *"Where the Capstone Unit does not involve a team based project such an exercise must be included in the program in another unit"*. These somewhat conflicting guidelines are possibly due to an attempt to make Capstone Units achieve two important but fundamentally different objectives, i.e. an integrative experience and a professional practice experience.

A later draft (April 2011) separated these objectives by providing two appendices:
- Appendix 3: Policy on Capstone Units
- Appendix 4: Policy on Professional Practice

The Policy on Capstone Units requires a unit (or units) that integrate the skills and knowledge developed throughout the program, often and ideally implemented as a final year team project. The Policy still recommends that the capstone unit provides an experience to "*facilitate a smooth transition to professional practice or further study*" but now states that "*Where a program does not contain such a project unit, the requirements relating to professional practice described in Appendix 4 must be met in another way*".

The new Appendix 4: Policy on Professional Practice requires that accredited programs should model professional practice in the discipline to facilitate a smooth transition for graduates. The Policy indicates that these requirements will often be met in the Capstone Unit however "*in the case that the Capstone Unit is not oriented towards a transition to professional practice, the program must include other experiences which do facilitate such a transition.*" The Policy does not provide details of the types of learning experiences that would be appropriate for this objective apart from a statement regarding the need for "*authentic learning experiences in relation to its intended professional outcomes*".

This proposed Appendix 4 addresses some of the issues in the December 2010 version of the Policy on Capstone Units by separating the objectives of the integrative experience and the professional practice experience. The separate policies provide a more flexible framework

allowing Universities to use a range of approaches that might best suit their context. The proposed Appendix 4 could be extended to become a vehicle to overcome some of the challenges relating to how the community perceive the professional nature of Australian ICT degrees and their link with the ICT profession.

Professional Practice and Professionalism
The report on the 2009 Australasian Survey of Student Engagement (AUSSE, 2010) shows that ICT was the discipline with the lowest proportion of students who have undertaken an internship or practicum. Also significant were the findings that ICT had lower levels of student engagement and enriching educational experiences than other disciplines. The low adoption of WIL in the ICT disciplines in comparison with other disciplines inevitably has implications for the profile of ICT as a professional discipline. For example, ICT is sometimes overlooked in national reports such as the recent Universities Australia position paper (2008) regarding a National Internship Scheme which presented an overview of structured internship programs available in various disciplines in Australian universities. A list of fields of study in the report included health, education, law, politics, engineering, psychology, performing arts and science, however the report did not include ICT as a discipline.

> *We wish to suggest that a strong and visible professional practice culture in a degree can influence the general community's perception of the discipline's status as a profession.*

Engineering Professional Practice Requirements
It is observed that the disciplines with the strongest professional reputations in the community are those that have a professional practice requirement for graduation or registration, e.g. engineering, nursing, law, psychology etc. These professions rely on professional practice as a differentiating factor, e.g. Engineers Australia (EA) state that "*Exposure to professional engineering practice is a key element in differentiating a professional engineering degree from an applied science degree*" (EA, 2008). The professional reputation that engineers have achieved may be partially attributed to the generally held belief that all graduates of engineering courses have at least 12 weeks industry experiences. This 12 week requirement is well known in the community, including prospective students and their parents, teachers and employers, and underpins a perception that the engineering degrees are industry relevant with strong employment outcomes with well developed career paths. The actual accreditation requirements are not as well known, particularly the level of flexibility permitted regarding the requirements of the so-called '12 week experience'. The Engineers Australia accreditation requirements (EA, 2008) require "*a minimum of 12 weeks of experience in an engineering-practice environment (or a satisfactory alternative)*". The requirements do state that there is "*no real substitute for first-hand experience in an engineering- practice environment, outside the educational institution*" however the requirements also state that "*however it is recognised that this may not always be possible*", i.e., engineering students do not have to undertake 12 weeks of actual industry experience in an external organization in order to complete their degree but can achieve this requirement through alternative means.

The EA accreditation requirements have a broad definition of the types of learning experiences that can contribute to professional practice by stating:
   "*Professional Engineering Practice exposure must include some of the following:*
   - *use of staff with industry experience,*
   - *practical experience in an engineering environment outside the teaching establishment,*
   - *mandatory exposure to lectures on professional ethics and conduct,*

- *use of guest presenters,*
- *industry visits and inspections,*
- *an industry based final year project,*
- *industry research for feasibility studies,*
- *study of industry policies, processes, practices and benchmarks,*
- *interviewing engineering professionals,*
- *industry based investigatory assignments,*
- *direct industry input of data and advice to problem solving, projects and evaluation tasks,*
- *electronic links with practising professionals, and*
- *case studies."*

The EA requirements go on to indicate that: *"The requirement for accreditation is that programs incorporate a mix of the above elements, and others - perhaps offering a variety of opportunities to different students - to a total that can reasonably be seen as equivalent to at least 12 weeks of full time exposure to professional practice in terms of the learning outcomes provided."*

This liberal interpretation of professional practice permits universities to provide a set of university-based learning experiences to achieve the '12 week experience' requirement of EA accreditation. The professional practice requirement could be spread out over the duration of the degree program including providing a context to engage first year students as well as a professional preparation for final year students. The key requirement is that the experiences are authentic and can be documented to demonstrate targeted graduate capabilities set for the program.

Whilst the 12 week requirement appears to work well in the context of engineering, it is accepted that a similar requirement might not map well to the ICT disciplines. However, there would be wide ranging benefits in implementing a similar professional practice requirement for ICT degrees where the requirement is visible, significant and readily understood by the prospective and current students, teachers, parents, industry, government and the community in general.

> ***We wish to suggest that universities adopt a visible, significant and readily understood professional practice requirement for Australian ICT degrees in order to improve the professional reputation in the community, including prospective students, parents, teachers and industry in general.***

Proposal
ACDICT member universities recommend to the Australian Computer Society that the ACS Accreditation Guidelines are reviewed to:
   a. Include a visible, significant and readily understood Professional Practice requirement in the ACS Accreditation Policy.
   b. Develop specific learning objectives for Professional Practice and guidelines that include examples of how a range of learning experiences may contribute to the Professional Practice requirement.

References

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