Facilitating work integrated learning (WIL) through skills-enabled e-portfolios in construction and nursing

Final Report

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Executive summary

Project aims

The purpose of this project, funded by the Australian Learning and Teaching Council Ltd., was to investigate the potential for the development of an e-portfolio system for students from the disciplines of construction management and nursing. The aim was to explore whether e-portfolios could transcend disciplinary boundaries and provide the core for a meaningful documentation of students' work integrated learning (WIL) experiences. Such a portfolio could allow disciplines to contextualise competencies in relation to evidence and documentation of their students’ work integrated learning. Firstly, the project aimed to determine the best form the portfolio could take and, secondly, it considered how the portfolio could be effectively managed. The study established that there are considerable commonalities between the two different disciplines studied. The synergies between these disciplines provide opportunities for a shared portfolio comprised of a core set of requirements and supplemented with those requirements that are discipline specific.

Outcomes and deliverables

There was a significant focus on engaging with the disciplines to enable a context for the study. The purpose of this engagement was twofold. The first purpose was to identify the issues with undertaking WIL on a large scale, and the second was to investigate the examples of practice which show innovation in the use of e-portfolios. This process allowed the team to consider these exemplars as a means to address some of the current issues in this field. To do this, the project team first invited varying disciplines to submit case studies on using e-portfolios for WIL. A forum was then held where these issues were widely discussed and a range of the chosen case studies were shared. What became apparent from the case studies and during the forum was the enthusiasm for the potential of e-portfolios for enhancing student learning.

The team is currently taking the materials developed, and the range of case study contributions, and compiling these into a book, as well as continuing professional development (CPD) modules, in order to create resource materials for academic staff in the sector. These resources will be distributed in 2012. Another activity that was actively pursued during the project was the dissemination of knowledge through the publication of papers at discipline specific conferences.

The project has produced specific deliverables; which included; discipline newsletters, conference presentations, workshop, forum, and an interest group, these deliverables are included in the appendices.

Recommendations

A number of recommendations have been made as a result of this project. The following eleven abbreviated recommendations relate to the importance of WIL for students, academic staff and professionals alike, and the potential of e-portfolios to enhance this experience through better documentation.

**Recommendation 1**: WIL should be promoted more actively - underpinned by strong industry and professional body ownership of the practice.

**Recommendation 2**: A unified industrial experience framework for Construction Management that identifies demonstrated outcomes and evidence which aligns with industry requirements should be developed.

**Recommendation 3**: Construction groups in the universities should work with the accreditation bodies and the supporting placement bodies in order to create a consistent approach and a shared understanding of placements, their management and learning program. Opportunities for assessment frameworks to be developed.
should be actively pursued.

**Recommendation 4:** E-portfolios could be introduced across the two disciplines for recording both the achievement of skills and also for reflection on experiences as well as for translating theory with practice.

**Recommendation 5:** A WIL charter should be developed for Construction for the industries participating in WIL, and should be managed by their respective professional bodies.

**Recommendation 6:** E-portfolios should be implemented to support students’ involvement in WIL activities in a manner consistent with the current communication practices (such as mobile technology preferences) of most students.

**Recommendation 7:** A consistent approach to developing and implementing evaluation strategies should be employed, in order to link what is learned and assessed at universities, to what happens in the practice of the workplace.

**Recommendation 8:** Consideration needs to be given to developing additional graduate attributes which acknowledge the demonstrated achievement of knowledge, skills and attitudes applied by students during workplace activities. These additional attributes would be created in a hierarchal structure, and would include attributes which were demonstrated at university, and attributes that were achieved in the world of work. These new attributes need to be defined in terms of established outcomes gained through an integrated WIL experience.

**Recommendation 9:** Efforts must be made by industry, Tertiary Education Quality and Standards Agency (TEQSA), accreditation bodies and universities to create an environment of shared understanding and ownership of WIL, and of its potential to enhance the quality of the student experience and the quality of professional graduates.

**Recommendation 10:** Approaches should be made to develop networks of disciplines that share a heavy WIL commitment to collaborate in the development of e-portfolios, based on commercially available products. The demands to achieve a quality outcome are too inhibitive for one discipline in one university to take on and sustain. Larger professional bodies could also become partners in the development of such portfolios to provide the potential for the portfolios to continue beyond the university WIL application.

**Recommendation 11:** Research into the potential of Web 2.0 technologies to engage and support WIL is needed. These technologies will, if pursued, provide an effective portfolio with greater opportunities for student initiative to document attribute development and skill attainment. The use of video and audio materials needs to be included and the ability to share the data at multiple levels will provide an engaging and effective learning support environment.

Nevertheless, with this capacity comes the potential for ethical and potentially legal issues to arise. Substantial further research and discussion needs to be carried out at this level to ensure that the students and institutions, as well as such people as the patients being treated in the nursing context, can be protected.
## List of Acronyms

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
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<tbody>
<tr>
<td>ACEN</td>
<td>Australian Collaborative Education Network</td>
</tr>
<tr>
<td>AIB</td>
<td>Australian Institute of Building</td>
</tr>
<tr>
<td>AIBS</td>
<td>Australian Institute of Building Surveyors</td>
</tr>
<tr>
<td>AIQS</td>
<td>Australian Institute of Quantity Surveyors</td>
</tr>
<tr>
<td>ALTC</td>
<td>Australian Learning and Teaching Council Ltd.</td>
</tr>
<tr>
<td>ANMAC</td>
<td>Australia Nursing and Midwifery Accreditation Council</td>
</tr>
<tr>
<td>AUBEA</td>
<td>Australasian Universities Building Education Association</td>
</tr>
<tr>
<td>CIOB</td>
<td>Chartered Institute of Building</td>
</tr>
<tr>
<td>Construction</td>
<td>Construction management</td>
</tr>
<tr>
<td>CPD</td>
<td>Continuing Professional Development</td>
</tr>
<tr>
<td>OLT</td>
<td>Office for Learning and Teaching</td>
</tr>
<tr>
<td>RMIT</td>
<td>RMIT University</td>
</tr>
<tr>
<td>SWOT</td>
<td>Strengths, Weaknesses, Opportunities and Threats</td>
</tr>
<tr>
<td>TEQSA</td>
<td>Tertiary Education Quality and Standards Agency</td>
</tr>
<tr>
<td>WIL</td>
<td>Work integrated learning</td>
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### Glossary

<table>
<thead>
<tr>
<th>Term</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accreditation</td>
<td>Ratification of the content and quality of professional degree programs by professional institutions external to the degree provider.</td>
</tr>
<tr>
<td>Clinical placement</td>
<td>Periods of time that nursing students spend in clinical settings in partial fulfilment of part of the requirements of their degree.</td>
</tr>
<tr>
<td>E-portfolio</td>
<td>Electronic portfolio, commercially available internet-based software applications that allow students to store and reflect on evidence of their skills development. These applications may be customized to incorporate frameworks of generic and discipline-specific skills descriptors against which students are required to track the development of their skills.</td>
</tr>
<tr>
<td>Graduate attributes</td>
<td>Statements of the combination of knowledge, skills and understanding that students are expected to possess by the time they complete their studies.</td>
</tr>
<tr>
<td>Industrial experience</td>
<td>Periods of time that construction management students spend in either on construction sites or in related settings in partial fulfilment of the requirements of their degree.</td>
</tr>
<tr>
<td>Placement</td>
<td>Periods of time that students spend in relevant workplace environments in partial fulfilment of the requirements of their degree.</td>
</tr>
<tr>
<td>Professional institution</td>
<td>Organisations that are entrusted with oversight of the legitimate practices of different occupations (e.g. AIB, ANMAC)</td>
</tr>
<tr>
<td>Web 2.0</td>
<td>A fluid term describing internet-based applications that facilitate participatory information sharing, interoperability, user-centred design, and collaboration.</td>
</tr>
<tr>
<td>Work integrated learning</td>
<td>The term used to describe educational activities that integrate theoretical learning with its application in a workplace, profession, career or future employment.</td>
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1. [http://www.qualityresearchinternational.com/glossary/professionalbody.htm](http://www.qualityresearchinternational.com/glossary/professionalbody.htm)

Facilitating work integrated learning (WIL) through skills-enabled e-portfolios in construction and nursing
Chapter 1: Introduction

Overview

At the end of 2009, a two year Australian Learning and Teaching Council grant was awarded to The University of Newcastle for the purpose of conducting an investigation into the use of e-portfolios for work integrated learning (WIL) in the Nursing and Construction Management (Construction) disciplines. The project investigated the existence of any links between Construction and Nursing education and WIL by demonstrating the application of theoretical knowledge to practice and how this can be supported by electronic portfolios (e-portfolios).

The lead institution was the University of Newcastle, with participation from colleagues in the Nursing, Construction, and Design disciplines and involved a reference team from four partner Universities. These partners included; RMIT University (Construction), Avondale Nursing College (Nursing), University of Western Sydney (Nursing) and, an external IT consultant in education, Intercog™. The reference team provided a well-grounded cross-disciplinary approach, with the reference team’s background and expertise being in WIL and/or e-portfolios. The project finished in 2011.

Project Scope

The project developed a robust WIL framework in order to facilitate and encourage reflective learning during WIL activities to enable students to link the theoretical concepts learned at university with real-world practices. In addition, the framework aimed to showcase to students how their university experiences relate to each other, how these skills and competencies relate to their WIL experiences, and how these connect in order to enable students to graduate as professionals in their respective disciplines (see Chapter Four). The project further investigated the opportunities that e-portfolios and Web 2.0 environments can provide in supporting students’ WIL experiences.

The project did not aim to re-invent e-portfolio systems. Instead it recognised and built upon the investments many universities have already committed to e-Portfolios. Thus, the project identified ways to enhance the existing use of current e-portfolio application in order to creating a more useful learning tool by guiding students in auditing and developing their skills in relation to WIL. The project consisted of four phases:

**Phase 1:** Context analysis - ‘A task analysis to identify WIL opportunities’ was based on a literature review, consultation with professional bodies and discussion with academic staff and students.

**Phase 2:** Curriculum mapping WIL Framework development - This phase analysed each discipline’s curricula and required professional attributes and correlated these with WIL experiences considered essential to support students’ learning.

**Phase 3:** E-portfolios analysis and alignment to disciplines agendas - A best practice framework was established by benchmarking the disciplines involved. A SWOT analysis revealed the issues associated with implementing e-portfolios in this context.

**Phase 4:** Development of Continuing Professional Development (CPD) materials - This phase (due 2012) will draw together materials as CPD modules in order to support academics and industry in facilitating WIL. The modules will be developed as a CD.

Facilitating work integrated learning (WIL) through skills-enabled e-portfolios in construction and nursing
The project aims and deliverables consisted of:

- Investigating opportunities that Web 2.0 environments provide in supporting students’ experience of WIL.
- Developing a robust framework that facilitates and encourages reflective learning during WIL activities and enable students to link the theoretical concepts learned at university with real-world practices in the disciplines of Construction and Nursing.

The professional accreditation bodies for the construction management and nursing professions have well defined competency statements. These competency statements were reviewed and expanded into hierarchical sets of skill descriptors, which could then be embedded within existing e-portfolios. Students can then make connections between their placement experiences (evidenced by the development of their skills and competencies in their e-portfolios) and their university education. The project team showcased this outcome at the AAEF conference, 5-7 December, 2011 and invited those interested to comment and make these connections by using the framework.

Project Outcomes and Deliverables

Outcomes can be defined as creations or achievements that are measurable, or where firm evidence of their existence can be provided. This project produced the following specific outcomes for students, educators and professional institutions:

- resources which demonstrate and support the development of aligned WIL / formal learning
- reports which document the potential of e-portfolios to enhance practice and theory
- packages which provide teaching resources to support academics in engaging with WIL in their formal lessons
- CPD modules.

These outcomes will collectively provide direction for course curriculum developers, teaching academics and the professions by providing a tool for the cohesive alignment of practice and theory.

Project Rationale

Why Construction and Nursing?

The Construction and Nursing disciplines were studied because they both involve large numbers of students engaging in WIL. Further, these disciplines share substantial competency requirements as defined by their professional accreditation bodies. In addition, this study provided opportunities for the disciplines to learn from each other and encouraged the following results:

- development of resources that encourage WIL as a learning experience
- promotion of change through the use of the upcoming CPD modules for teaching and learning practices in order to support better engagement of WIL with curricula
- alerting of academics to the opportunities provided by WIL in these disciplines;
- encouragement of academics to consider WIL and how to align their teaching with real world practice/requirements of the field,
- development of research outcomes as CPD modules.

In Australia, the principal method of developing Nursing and Construction competencies is through work placement experiences. As stated, both Construction and Nursing curricula are compliance and accreditation driven. It is therefore vital that workplace requirements are

Facilitating work integrated learning (WIL) through skills-enabled e-portfolios in construction and nursing
Facilitating work integrated learning (WIL) through skills-enabled e-portfolios in construction and nursing. The main bodies that accredit Construction (Australian Institute of Building AIB, Australian Institute of Building Surveyors AIBS, Australian Institute of Quantity Surveyors AIQS) require students to engage in 520 hours (80 days) of industrial placement during their degree (2008). In comparison, in the Nursing disciplines, the Australian Nursing and Midwifery Council (ANMAC, 2005) requires a minimum of 800 clinical placement hours. Self-assessment, predominately through reflective portfolios, is one of the methods used to assess the competence of individual nursing students (T. Levett-Jones, Fahey, Parsons, & Mitchell, 2006). On the other hand, in Construction, reflective practice is embedded in the professional development practices prescribed by the professional body, the Chartered Institute of Building (CIOB).

At the moment there are no quality control mechanisms in place for WIL in Construction as prescribed by the accrediting bodies for this discipline. As such, individual universities need to interpret, administer and monitor WIL requirements in accordance with their own policies and interpret industry placement requirements of the accrediting bodies in different ways (A. Williams, Sher, & Simmons, 2009).

Facilitating WIL through e-portfolios

‘WIL’ is a term used to describe educational activities that integrate theoretical learning with application in a workplace, profession, career or future employment (Stephen Billet, 2001; Patrick, 2009). WIL is expanding in recognition among Australian universities and is increasingly being integrated in a broad range of undergraduate programs. WIL experiences can be off or on campus and either real or simulated, depending on the discipline area, but must involve clearly stated outcomes and assessment strategies and should be consistent with quality teaching and learning (S. Billet, 2010). WIL has been recently promoted in Higher Education to encourage opportunities for students to apply the conceptual knowledge they gain from on campus learning to the ‘real world’ or practice/industry. For instance, research into Construction education has shown that when students start employment they frequently find it difficult to relate theory to practice. However once they have been exposed to the workplace, they tend to modify their views and make these connections more explicitly (A. Williams et al., 2009). The higher education system for the Construction and Nursing disciplines, in particular, promotes WIL opportunities within their curricula. In addition, it is mandated by accreditation bodies for students to engage in WIL, through work placement experiences during their undergraduate studies.

Issues with WIL

A recent report on construction education in Australia found that those responsible for managing construction programs at universities expressed reservations about industrial experience and WIL (A. Williams et al., 2009). These reservations centred on the availability of placement opportunities for students during volatile economic times, and the resource implications of administering WIL (A. Williams et al., 2009). It was reported that some academics would argue that, given the choice, students may not engage in industrial placements if these were not required by their degree program (A. Williams et al., 2009). On the other hand, this same report showed that Construction students greatly valued WIL. Teamwork, and collaborative learning whilst on placement, emerged as the drivers of effective learning.

Recent WIL studies in engineering have highlighted further concerns about the lack of linkages between programs, industry experience and assessment. Richardson, K aider, Henschke & Jackling (2009, p. 338) state that ‘the underpinning cause for inadequate WIL assessment is a lack of understanding of the nature of learning in the work place’ due to the ad hoc nature of learning in these contexts (such as learning ‘informally’). Similarly, Hu, Oliver and Yusman (2009) identified a lack of research in the area of which particular generic skills were required to be gained from engineering industry placements. The authors

Facilitating work integrated learning (WIL) through skills-enabled e-portfolios in construction and nursing.

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reviewed current industry placements as an evaluation project, and identified the most important generic skills that need to be developed during WIL (Hu et al., 2009). They evaluated these by investigating the skills developed in relation to WIL experiences that support the development of these skills (Hu et al., 2009). The conclusion was made that there is still work to be done in this area, with the researchers stating that ‘Stakeholders need to also understand which aspects of the work experience program contribute to the effectiveness of the program in developing students’ generic skills’. A series of questions for future investigation of this issue were raised, namely:

- What general transferable work skills and attributes are developed in work experience?
- What aspects of the workplace and the program support the development of these skills and attributes?
- What learning experiences and processes in the workplace lead to the development of these [generic] skills and attributes?

(Hu et al., 2009, p. 22)

These issues and questions for engineering placements were shared by the Construction disciplines (see Sher & Sherratt, 2010)). The current project attempts to answer these issues and questions in relation to Construction and Nursing in order to close the practice/theory gap through competency alignment.

In regards to Nursing, some important WIL issues identified relate to how students make the necessary links between theory and practice when on placement. Researchers sometimes assert that, despite the efforts of nursing theorists, educationalists and practitioners, the theory/practice gap continues to defy resolution (Rolfe, 1998). However, if the current model of viewing theory as informing and controlling practice were to give way to a new, mutually enhancing model in which theory is derived from practice, and in turn influences future learning, the so-called theory/practice gap could be closed. In fact, e-portfolios may encourage the closure of the so-called ‘theory/practice’ gap by an approximation of the two parts.

This similarity of WIL issues and opportunities highlighted between the two disciplines validates the need for this current project which aims to promote links between practice and theory for Nursing and Construction students.

Using e-portfolios for WIL

Universities are increasingly introducing e-portfolios to support WIL practices. Generally, an e-portfolio is “a purposeful collection of artefact’s including demonstrations, resources and accomplishments that represent an individual, group, or institution. It illustrates students’ efforts, progress, reflections and achievement” (Ivanova, 2008, p. 1). Additional technologies can be included and used to demonstrate these achievements, such as social networks and Web 2.0 technologies. Overall, e-portfolios’ offer a space to “review, reflect, collaborate and share” (Ivanova, 2008, p. 1) what has been achieved. Some universities (for example QUT, University of Technology, Sydney, Curtin University of Technology) have implemented university wide platforms. Some Universities have implemented e-portfolios just for WIL and some of these projects will be showcased in this report.

Skills-enabled e-portfolio platforms contain a section within the platform for ‘competencies’ - evidence based records where practical experiences may be documented and assessed. There are ranges of slightly different ways the competency sections can be viewed and assessed. One such view is the ‘assessor view’, with a range of competencies, or options where staff can create a WIL ‘shopping trolley’ of competencies (Barrett, 2004). Within the ‘competencies’ section of an e-portfolio there can be tags/links to artefacts, such as a document/video/audio of practical experiences uploaded to show that students have

Facilitating work integrated learning (WIL) through skills-enabled e-portfolios in construction and nursing
achieved the relevant WIL competency (Barrett, 2004).

From a functional perspective some e-portfolio architecture (see UTAS Case Study for a more detailed discussion on summative assessment and reflection) allows for summative assessment that is conducive for WIL. For instance there are a range of tools for reflection. Some examples include “action plans, journals, blogs and reflective activities that provide prompts when uploading achievements to specific activities” (Andre, 2010, p. 4). Similarly, e-portfolios can provide a section where examiners and/or peers can comment on these entries. his information can be made public by students for professionals to see work achieved through reflections (Andre, 2010). Over time, e-portfolios can display students’ progression and attainment of goals during their undergraduate years as a useful document for use in their future careers (Andre, 2010). Construction currently struggles with a lack of WIL assessment and therefore no official documentation of these experiences. However, this documentation could be made possible and accessible with the use of e-portfolios or online tools, with benefit to stakeholders such as students, teachers and industry. This brief review of e-learning tools in relation to documenting WIL has shed some light on the benefits of these tools to promote deeper integrated learning experiences for nursing and Construction students engaged in practical experiences. The remainder of the report will highlight WIL issues and showcase e-portfolios and Web 2.0 opportunities, to demonstrate how they can support WIL, as well as a discussion of actual and potential barriers to effective e-portfolio use.

Research Design

A mixed method approach was adopted for the project using a combination of qualitative research methods. The purpose of using mixed methods was to make the conclusions sound. As stated by Beazley, a mixed method approach helps “to build stronger conclusions, as the strengths of one approach or method serve to compensate for the weaknesses of the other” (Bazeley, 2010, p. 8).

The following outlines the phases in relation to the methods used:

Phase 1 Context analysis – Phone interviews with placement coordinators:

A context analysis was conducted to identify WIL and e-portfolio opportunities at Australian universities offering Construction and Nursing. The qualitative data gathered in this phase focussed on discussions with academic staff across universities who organise student placements. Participants were asked to respond to a series of questions from a semi-structured interview schedule. They were asked about their current views and involvement with WIL and/or e-portfolios relevant to Construction or Nursing education. This approach extended the existing knowledge from the literature and competency standards already reviewed and aligned from the competency standards from professional bodies. A significant proportion of the data gathered from this stage of the project is reported on in Chapter Two, ‘WIL implementation and related issues’.

Phase 2 – Focus Groups with students and academic staff for e-portfolio analysis and alignment to disciplines’ agendas:

This phase of the research mapped opportunities to support students in integrating WIL with on-campus learning. The qualitative data gathered in this phase involved focus groups with students and academic staff across universities, in order to establish an in-depth understanding of the issues and opportunities for WIL and the use of e-portfolios.

Questions on the issues and solutions for e-portfolios/WIL were discussed with the participating academics using “Strength, Weakness, Opportunities and Threats” (SWOT)
analysis at a workshop with Construction academic staff at an academic conference. The workshop was part of the conference program and attendance was voluntary. A focus group was also conducted with Nursing Clinical Coordinators at the NSW Network of Clinical Coordinators meeting. The voluntary nature and focus group questions were the same as for the Construction workshop.

Secondly, focus groups with students were conducted to investigate their experiences with e-portfolios when engaged in WIL. Only Construction/Nursing students at the affiliated universities (the projects’ reference group members’ universities) were invited and contacted via the reference group members. These focus groups informed the development of the conceptual framework and e-portfolio opportunities and are reported on predominantly in Section Four (conceptual framework) and Section Five (e-portfolio opportunities).

On-line survey
An on-line survey was also conducted with students from the affiliated universities. This was carried out in order to understand students’ views on their WIL experiences, industry/clinical placement implementation and related issues. The Construction survey questions are in Appendix L. The online survey data is predominately reported in Section Two (Implementation) and Three (WIL issues).

These qualitative phases mapped the opportunities to engage and support both staff and students in integrating WIL with university work and associated issues. The aim of this was to ascertain whether adopting e-portfolios would be advantageous within the university context. The data provided the team with exemplars of e-portfolio practice.

Case studies
The team additionally invited experts in the field to submit case studies on innovative WIL or e-portfolio use at their respective institutions. These contributions will comprise material for chapters in an upcoming edited book — one of the outcomes from the project. The case studies were collected in order to highlight existing practices of e-portfolio use for WIL placements as well as to showcase how e-portfolios can be used for WIL and also to use for lessons on the CPD modules. These case studies are at times are hyperlinked with solutions to issues raised in the report. These case studies further informed the CPD modules which will form a CD appendix in the book. The book is due for publication in early 2012.

Benefits to participants and response rates
The research aimed to benefit academic staff and students in Construction/Nursing disciplines. The research provided an opportunity for academics to discuss issues and opportunities in regards to WIL, e-learning technologies and curricula assessment, and to share current issues that university staff face in assisting students to link theory to practice.

Current students benefitted from discussing issues of concern and consequently felt part of a student community sharing similar concerns about issues and experiences of e-learning technologies and practical experiences. Future students will benefit from consequent assessment changes within their curriculum, such as on-line assessment opportunities.

For the telephone interview phase of the project, identification of Clinical and Industry Coordinator staff at the Universities proved to take longer than expected which also resulted in a smaller response rate than anticipated, with twelve participants engaging in an interview.

Construction and Nursing academic staff took part in the workshop (27) /focus group session (9), and students participated in focus group discussions (7) and/or an online survey (193) during 2010 and 2011 for the study.

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Data analysis

NVivo™ coding of the qualitative data (interviews, focus groups, workshop and open ended questions from the survey) for reoccurring themes was employed for the project. The major themes which emerged were as follows:

- discrepancies between industry and university expectations of students
- students being viewed as ‘an extra pair of hands’ and not feeling valued when they are on placement
- lack of student motivation to reflect on WIL
- and meta-cognitive skills not being appreciated.

Further, it was found that e-portfolios play a significant role in supporting and documenting WIL experiences in Construction, but possibly not in Nursing due to privacy issues — students would not be able to document themselves performing a routine on a patient.

The on-line ‘Survey monkey’ survey tool was used for the survey which has in house analysis of the responses gathered. The open ended questions from the survey were further analysed in NVivo.

Content and structure of the report

This report is structured upon the project aims and phases (identified on pages 8-9 above) which are aligned to the related findings and issues. Chapters Two and Three align with phase one, ‘Context Analysis’.

Chapter Two begins with a review of WIL implementation practices, by evaluating placement structures, assignments and evaluation within the two disciplines across Australia. Associated issues were then considered. These include the current WIL discipline implementation, review of problems such as industry needs verses university placement and students views on implementation issues, such as assignments not correlating or being due at the same time.

Chapter Three considers particular issues that surfaced from analysis of the qualitative data. These issues revolve around the perceived gap between theory and practice.

Chapter Four, (which aligns with phase two — ‘Curriculum Mapping’) discusses the development of the competency alignment and showcases the final two-staged conceptual framework. Skills descriptors and reflective prompt questions devised for students to promote reflective practice are then highlighted.

Chapter Five aligns with phase three — e-portfolio analysis. The literature on e-portfolio use and platform capabilities is reviewed. The WIL needs that were discovered as the result of work carried out and described in chapters are used to inform an e-portfolio matrix, in order to showcase how WIL needs can be supported by e-portfolios. The qualitative data findings of students, and academic views of using e-portfolios for WIL, are then discussed. Finally, Web 2.0 tools to support WIL are reviewed. This chapter finishes with examples of how the framework devised in Chapter Four can be embedded into e-portfolio’s.

The final chapter, Chapter Six, is aligned to phase Four, ‘CPD modules’ and reviews the dissemination strategies from the project and makes recommendations for future WIL and e-portfolio use. In this chapter a strategy is recommended in order to best disseminate the
information which will engage academics in implementing the strategies identified as supportive to WIL.

Case studies are hyper-linked within chapters to provide examples of how the issues/processes raised in the section can be potentially resolved through the use of e-portfolios.
Chapter 2: Context Analysis (1) WIL Opportunities – Implementation and issues

Introduction

The disciplines of Construction and Nursing both recruit large cohorts of students who are required, by the professional institutions that accredit their degrees, to engage in industry or clinical placements. This chapter begins with a review of placement structures, assessment and evaluation strategies adopted by the two disciplines in order to best understand the opportunities that WIL affords students.

These placements (or WIL activities) also present universities with a number of challenges. These include difficulties inherent in locating suitable placement opportunities and avoiding conflict with other universities, and students’ work-life commitments such as part-time work or family commitments. These issues and other characteristics, such as demanding periods of time on placement and clashing assignments, create challenges for students when implementing WIL. These latter issues will be considered separately later in this chapter.

Structure of industry placements in Construction

Placements are organised differently across the universities. At The University of Newcastle, Construction students identify and arrange their own placements. Students frequently complete their placements during university vacations, though some manage study and work simultaneously. Students may consult university staff about placement opportunities, but staff generally play no further part in placements until students submit evidence of completion (Sher & Sherratt, 2010).

As an alternative, or a supplement to placements, some programs arrange visits to construction sites and/or have industry practitioners address students. Some examples from The University of Newcastle include visits to the new Charlestown shopping complex (facilitated by Bovis Lendlease), and visits to the new Laboratory complex at John Hunter Hospital (facilitated by Cockram Construction), as well as lecture presentations from Bovis Lendlease, John Holland and contractors. In addition, some universities engage students in simulations of various types. These include role-plays (where students take on industry roles and act out procedures such as managing staff on site), as well as computer-based management simulations such as AROUSAL and Flash (Lansley & Irwig, 2011) (Maier, 2009) and excursions to building sites (Ashford & Mills, 2006).

Construction students are a diverse group. Many of them are of mature age and in paid employment whilst they study (A. Mills & Ashford, 2004). WIL in its most basic form is a reality for these students. Informal discussions reveal that many of them work in the construction and/or construction allied industries. Students finding themselves in this situation are in a potential dilemma as it brings their paid employment and their studies together. The question remains, as to whether this opportunity to supplement and reinforce the WIL experience is effectively used as a learning experience?

Construction - Assessment and evaluation of industrial placements

In common with placement arrangements, the assessment of the industrial placements/WIL varies from university to university. The range of assessment or evaluation strategies employed for industry experience includes:

- submitted formal reports

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Facilitating work integrated learning (WIL) through skills-enabled e-portfolios in construction and nursing

- employer confirmation of the duration of placements and the nature of the work students completed
- verbal or seminar presentations reporting students’ practical experiences.

Further details of types of assessment are provided in the three examples below drawn from staff and student respondents in the interviews and focus groups.

Example A

“The WIL subject offered by this Construction degree combines WIL with an academic exercise. It introduces and prepares students for the work they have organized with their employer. It requires students to choose an aspect of their employers' organisation they will focus on (such as an energy audit, or a contract report). Students then work online on their project and with their employer”.
(Construction Workshop, group discussion, 2010)

Example B

“.//. you had to keep a log of how much you had done. So say I did two weeks with this guy, four weeks with that guy, I would have to keep a log of what I had done to prove I had done my full sixteen (weeks). Then at the end of your period with each person you get a letter from them to say, ‘I did this, this, this and this for this time period’ and you put that in as your evidence that you were there.//.” (Student)
“So there’s no actual presentation or anything about what you have learned?” (Facilitator)
“No.” (Student)
(Construction Student Focus Group B, 2010)

Example C

“.//. you have got to do these sixteen weeks and at the end of it you needed to be able to submit evidence that you have done something, you know the standards of your work.//. Because I mean it's pretty easy to find samples. You do a program, there you go, just photocopy it and bring that in as your evidence of what you have done. You know you have to do site logs, if you go out to a site. Who’s on site, what are they doing, what is the progress//. Photocopy that and present (it). It’s not like it would be - like you wouldn’t want it to be like an assignment that’s taken you days and days to put together. It would be something that they could easily link together.”
(Student)
“Oh link it together while you are working?” (Facilitator)
“Yes.” (Student)
(Construction Student Focus Group A, 2010)

As seen in the comments above, the assessment of placements lacks consistency across the university sector. In some cases students’ placements are not formally assessed but rather function as a compliance check. In these circumstances, no direct stimulus is given to prompt the student to reflect on the links between theory and practice. Reflecting on practice is either left to be intrinsic or to come from another sources. Opportunities to engage students in reflective exercises which combine their university learning with their real-life experiences (such as e-portfolios) exist only at a small number of universities. This lack means that there is significant scope to address the issue of assisting students to engage with their university and work experiences in a manner which can initiate reflection and create links between the learned and the experienced.

The following figure was drawn from the on-line survey, (see page 14 of the methodology section) with Construction students:

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Facilitating work integrated learning (WIL) through skills-enabled e-portfolios in construction and nursing

Figure 1: Methods of assessment in Construction (source: on-line survey)

Structure of clinical placements in Nursing

The Australian Nursing and Midwifery Accreditation Council (ANMAC) require nursing students to undertake clinical placements across a wide range of facilities and clinical specialties, consistent with the nature of a comprehensive curriculum. In complying with this requirement a range of clinical placement models are used. Generally, students undertake a series of short placements in different clinical facilities or settings during the first two years of their degree, followed by extended placement blocks in their final year. Students are required to complete a minimum of 800 hours of clinical placement distributed across the three years of their program (ANMAC, 2010).

Studies (Andre, 2010; Hallam et al., 2008) suggest that Australian universities use a variety of methods to manage clinical placements (also termed clinical practicum, fieldwork or professional placements) and nursing students' learning experiences can vary considerably whilst on placement. At most universities students undertake clinical placements in each year of their program for the purpose of building upon the knowledge and skills learnt on campus (Andre, 2010; Hallam et al., 2008). To encourage and support learning whilst on placements, universities use a range of processes, such as the provision of clinical facilitators, who supervise small groups of students on placements as well as mentoring by experienced registered nurses, clinical skills practice and assessment, reflection on practice, and the completion of learning journals and portfolios (Cooke, Walker, Creedy, & Henderson, 2009). These portfolios are collections of evidence that can be used to reveal and stimulate learning and/or provide evidence of developing competence (Andre & Heartfield 2007, cited in Andre, 2010 p.2). This approach is designed to encourage students to reflect on their learning experiences whilst on placement (T. Levett-Jones & Bourgeois, 2007).

There is widespread agreement that clinical placement experiences are central to nursing education and crucial to the consolidation of student learning (Clare, White, Edwards, & van Loon, 2002). It is clear, however, that clinical placements represent a very challenging component of nursing education. The last twenty years has seen a plethora of reports that document the longstanding and multidimensional nature of the problems that surround

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Length of clinical placements:
Currently there is little robust, contemporary evidence to support many of the practices related to clinical placements, for example, minimum clinical hours and the structure of clinical placements. Most practices have evolved through years of experience, custom and in response to industry/professional expectations (Clare et al., 2003; National.Nursing.and.Nursing.Education.Taskforce, 2006).

In the nursing literature, opinions are divided concerning the optimal duration and structure of placements as well as their impact on students’ experiences. Nursing students frequently complain that they do not spend enough time in clinical areas in order to feel comfortable (Elliot, 2002; Mallik & Aylott, 2005). Mannix, Faga, Beale and Jackson (2006) state that much valuable time is wasted as a result of the frequency and duration of clinical placement rotations, and students’ constant need to re-familiarise and re-orientate themselves to new clinical environments. Nolan (1998) asserts that while students are attempting to familiarise themselves with new settings, routines and staff, they focus on little else but ‘needing to fit in’ at the expense of gaining the intended clinical skills.

Supervision models:
The largely informal and unstructured mentorship approach that has developed in Australia may be partly attributable to the emergence and proliferation of the sessional clinical facilitation model that emerged following the transfer of nursing education to the tertiary sector. Clinical facilitators fulfil a number of important functions including advocacy, liaison, mediation, clinical teaching, assessment, role modelling, mentoring, debriefing and appraisal. However, it is the nurses that students work with on a day-to-day basis that have the greatest influence on students’ learning experiences during clinical placement. The inherent goodwill and commitment of registered nurses to support students to become competent and confident professionals appears to have been eroded over time (Mallik & Aylott, 2005). Further, clinical staff are sometimes of the belief that facilitators assume primary responsibility for the supervision and teaching of undergraduate students and that clinical mentors have been relegated to a less important position (T Levett-Jones et al., 2006).

The findings from this project support the findings detailed above. The following examples show the diversity of approaches outlined by Clinical Coordinator participants.

One Clinical Coordinator discussed their nursing and curriculum as having a ‘building block approach’, meaning students theoretical knowledge expands through the Bachelor of Nursing program as does their WIL or clinical practicum requirements. This means that the clinical components are related to the theoretical components, and the theory and the practice are aligned. If students are unsuccessful in achieving the course requirements they are then not eligible to progress to the next course containing the next clinical component, as all courses or clinical experiences prerequisites for each other (Nursing phone interview A). The students at this university undertake placement for three weeks during each of their first and second semesters. Initially students have a limited scope of practice, such as learning how to communicate with clients and the multidisciplinary team. These skills are built upon as the student progresses, for example oral medication administration is taught in one semester and this extended in the subsequent placements to administering IV medication (Nursing phone interview A, 2010).
Similarly, a Clinical Coordinator from a different institution described how students practice in clinical skills laboratories for two-hour sessions per week for approximately nine weeks. Students then undertake a one week placement (which is due to increase after the universities curriculum review). In second year students undertake a two week placement in the first semester. These placements are intense in hospitals. Further, this particular university splits the cohort into two groups to ensure placement availability and to avoid placements in holiday periods (C Coordinator Phone interview B, 2010).

The Clinical Coordinators at this university involve the students during lab work in:

“…//… case scenarios looking at medications and that's the early stages of giving IMI [intramuscular injection], sub cut [subcutaneous injection] and oral medications. Then they advance into second semester as second years in a course called complex nursing where they learn to administer IV medications” Interviewee (C Coordinator Phone Interview B, 2010)

Nursing Placement Assessment and Evaluation

Assessment and evaluation processes vary across universities. Figure 2 is drawn from the on-line survey of nursing students from three universities relates the range and frequency of assessment strategies employed during their clinical experience:

Figure 2: Methods of assessment in Nursing (source: on-line survey).

Assessment items during or following clinical placements is a process designed to evaluate students development of levels of competence. However, ‘competence’ remains a complex concept that is difficult to define and even more difficult to measure (M. FitzGerald et al., 2001; Watson, Stimpson, Topping, & Porock, 2002). The assessment of nursing students' clinical competence has confronted educationalists with problems of validity and reliability over an extended period of time (E. Girot, 1993; E. Girot, 2000). While universities aim to prepare nurses to work in complex, dynamic and unpredictable clinical environments, too

Facilitating work integrated learning (WIL) through skills-enabled e-portfolios in construction and nursing
often clinical assessments are focused on psychomotor skills. This can mean a failure to take into account the multidimensional nature of competence and the range of attributes required for professional practice. Portfolios have grown in popularity in recognition of the fact that they allow for a range of evidence to be collected in order to demonstrate different components of competence. In addition, portfolios are now required by the Nursing and Midwifery Board of Australia as a way of demonstrating continuing competence. E-portfolios hold potential in that students can use the evidence acquired during their undergraduate degree as a component of their professional portfolio.

Portfolios provide opportunities for self-assessment and reflection, as well as for practice. Reflective practice is a crucial professional activity (Brown, Esdaile, & Ryan, 2003) and is intrinsic to learning. It is a deliberate, orderly and structured intellectual activity (Bolton, 2001). It allows students to process their experience, explore their understanding of what they are doing, why they are doing it and the impact it has on themselves and others (D. Boud, 1999). Portfolios provide a way of using these reflective activities as evidence of developing competence and are effective in assessing nursing students’ professional activities.

### Comparison of WIL implementation in the disciplines

<table>
<thead>
<tr>
<th>Discipline</th>
<th>Placement</th>
<th>Supervision</th>
<th>Participation/Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>NURSING</td>
<td>Clinical placements are organised by universities, and are based at a range of local and distant clinical facilities</td>
<td>Facilitators, mentors or facilitators</td>
<td>Simulated learning experiences in clinical skills laboratories, Performance appraisals, Portfolios, Journals, Reflection on practice</td>
</tr>
<tr>
<td></td>
<td>Placements are conducted during each year of degree</td>
<td></td>
<td>Clinical skills appraisals</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Portfolio reflections</td>
</tr>
<tr>
<td>CONSTRUCTION</td>
<td>Students generally identify a construction company and arrange their placement</td>
<td>Industry supervisors</td>
<td>Conducted during vacations and at end of program</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Assessment on industry evidence, report, presentations (inconsistent requirements)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Building materials tested in laboratories</td>
</tr>
</tbody>
</table>

Table 1: Summary of the different placement applications in Construction and Nursing.

### WIL Implementation Issues

Our investigations have revealed that a diversity of issues exist for WIL implementation in Construction and Nursing, including the different perspectives of industry practitioners and university staff relating to WIL implementation. Placing large numbers of students is a practical management issue for both managers in the construction industry as well as hospital managers experience practical difficulties when placing large numbers of students.

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Hager, Crowley & Melville (2001) document the different ideological positions of industry practitioners and university academics regarding the objectives of the curricula as they relate to industry experience in Construction. Participants in this study raised similar issues, specifically the impact of accreditation and the skills shortage, dealing with large student numbers and students’ contributions not being appreciated when they are on placement.

**Issues with implementation - Construction**

**Industry pressures/accreditation**

Most of the professional institutions that accredit construction management degrees in Australia (including the Australian Institute of Building, the Australian Institute of Quantity Surveying, the Royal Institution of Chartered Surveyors and the Chartered Institute of Building) require students to complete periods of industrial experience as part of their tertiary education. These institutions are currently attempting to rationalise their accreditation requirements (AIB, 2006), and at least one of them is awaiting the implementation of TEQSA legislation (Hunt, 2011). This has understandably created uncertainty about the extent to which industrial placements (and WIL) will be mandated by these bodies. The following quote illustrates this point:

> …//… “And we’re also trying to, at least at the university level, to engage with industry, and get the industry associations [accreditation bodies] to require the accreditation has work integrated learning, which is a university requirement as well. It has that as part of its course, and at this stage of the game, the accrediting authorities haven’t been strong enough on Programs. They’ve simply allowed things like unstructured work experience to comply, to meet accreditation requirements”.

(Industry Placement Coordinator Phone Interview A, 2010)

**Skills shortage**

The construction industry is experiencing a severe and ongoing skills shortage. According to Carswell (2010) this shortage is most pronounced for building and engineering professionals. Construction employers seeking personnel frequently employ construction management students on a part (or full) time basis before they graduate. As stated by an academic in the workshop:

> “WIL issue - Academic staff for Construction Management stated that 90 per cent of students are already working and around 75 per cent are working in industry”.

(Construction Workshop, 2010)

In such circumstances, students may be pressured into taking on other work responsibilities they are ill-prepared to accept.

In the discussion recorded below, students highlight feeling pressurized to engage in work because their employers are investing in them.

> “That’s right, they’re investing in you, not you investing in them”. (Student 2)
> “That’s right.” (Student 1)
> “Even if you work for free, they’re still investing in you.” (Student 2)

(Construction Student Focus Group B, 2011)

Furthermore, students who enter university from high school find it more challenging to meet their industrial experience requirements. The following extract from a student focus group illustrates the difficulties students experience in this regard:

> “I think most of the time it’s not what you know, man. The best student in the course can still not have a job.” (Student 2)
> “Yes.” (Student 1)

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“Try and get it before you end...//... I started doing one day a week and now it's already on four. He's already pressuring me, like, 'Do five' but no I can't. As soon as I end [university], I've got a job.” (Student 2) (Construction Student Focus Group B, 2011)

In summary, the current skills shortage in the construction industry presents construction management students with employment opportunities and issues. There is evidence from the focus group sessions and online survey that students are working in part and full-time capacities and beyond their skill base well before they graduate

**Challenges experienced by academic staff**

Academic staff need to respond to several challenges when implementing WIL, including students’ queries, and monitoring the completion of students’ placements. Construction academic staff raised similar issues of concern for students about placements during the focus group discussions. These included employers being too busy to provide constructive supervision, having poorly motivated students (in some cases), WIL being difficult to assess in a meaningful manner, and the variability of the placements (with some students gaining little more than exposure to basic clerical activities such as photo-copying). These last two points are illustrated in the following quotes:

**Difficult to assess:**

“From our perspective [employer], I mean, we need to clearly understand the expectations of the institution, of the student, how do we fit into their assessment process, if it's assessable, and what we need to provide for that. I mean, you know, we need, as employers, I think we need stuff, you know information from the University, some sort of assessment framework if it's assessable, is there a rubric of the expectations, are we meant to give them experience in difficult areas of an organisation?”

(Construction practitioner, Workshop 2010)

**Variability of placement experiences:**

“Oh then again that depends on the employer. I mean this is my second place of work experience. I was at another joint for a week and they just had me labouring for two weeks, they didn't actually care. I pulled up and I said, 'Well what's the plan for me? Am I going to be stuck here?'.//... and (they said) ‘Oh we've got really nothing going on...//... If there's no work going on we can't call you in’ and (I said) ‘Can I just come into the office then, just have a look...//...? I don't care if you don't pay me?’”

(Construction Student, Student Focus Group B, 2010)

Furthermore, such placement experiences can be de-motivating for the students as another student discussed:

“.//... not all employers actually care about the young kids, you know? They're just, 'Oh yes he can go do our coffee runs for the time he's here'.//... If you get someone that ends up stuck in one of those places it is really de-motivating.”

(Construction Student Focus Group B, 2011)

**Large Class sizes**

A factor affecting how industry placements are delivered at universities is the number of students involved. Over the past decade, the intake of students to Construction degrees has increased markedly (with many universities at least doubling their cohort size during this

Facilitating work integrated learning (WIL) through skills-enabled e-portfolios in construction and nursing
period). However, resourcing of these degrees has not kept pace. Noting these constraints, one member of academic staff expressed his concerns about “.../... the whole issue of assessment and design of (WIL), and what the resource implications.../...” (Construction Workshop participant – group discussion, 2010). Having such large numbers of students has constrained the manner in which these placements are facilitated, administered and assessed, leading many academic managers to adopt pragmatic and minimalist approaches to WIL.

A further example of the impact of class size is apparent in the following quotations:

“.../... we have a final year class, we have (a company), they provide half of the teaching, they come in and teach our students, they've got work placement projects, and it's fantastic, the students get involved. Instead of sitting at the board going, "God here we go, chalk and talk again." You know and it's fantastic and the students go out and they're, they're really happy and pleased...” (Interviewee 1)

“How big a class are you dealing with?” (Interviewee 2)

“Oh, between 27 and 40 students.” (Interviewee 1)

“Yeah we've got 200...” (Participant 2)

“200 to 300, so that's pretty different.” (Interviewee 3)

“Scale matters.” (Participant 1)

“Two to three hundred in a class.” (Interviewee 3)

“Oh right, that makes it a bit more difficult.” (Interviewee 2)

(Construction Workshop Group Discussion, 2010)

“We do that.../... but it's a different model, because to ensure that all students get the same experience, and a hundred or more distance learners. We have to tailor things differently. Some students will do placement, but there's no way they could process two hundred students...”

(Construction Workshop Group Discussion, 2010)

It is pertinent to note that the Nursing discipline also attracts large numbers of students. Those arranging and managing WIL for Construction students might consider the approaches use by Nursing and explore whether they could be adapted. In this regard, e-portfolios support WIL and present opportunities worth exploring.

Lack of resources

Many Construction disciplines adopt a minimalist approach to placements and simply require students to complete WIL in order to graduate (Sher & Sherratt, 2010). In such circumstances it is difficult to change the status quo and deploy extra resources to facilitate, manage and assess WIL. This is illustrated in the following quotation:

“.../... individual Heads of School won't do anything unless they're required to do it, particularly when something's going to be resource intensive. That's why it hasn't been addressed here, because it takes time and resources, unless there's somebody paid to do it, you just don't bother, even though it's of benefit to the student.”

(Industry Placement Coordinator Phone Interview A, 2010)

The large number of students enrolling in Construction degrees compounds this issue. Facilitating, managing and assessing WIL for hundreds of students requires significant resourcing. The hesitancy of those managing Construction disciplines to commit scarce resources to WIL is thus understandable.

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In conclusion, the skills shortage discussed currently being experienced by the construction industry in Australia presents challenges for the implementation of WIL in Construction degree programs. Many students are employed by the industry but universities have been slow to harness the opportunities such activities present. There are several reasons for this reluctance including a lack of clear guidance about WIL from the professional institutions that accredit these degrees (which has made it difficult for universities to adequately resource moves from their current minimalist WIL practices), a lack of financial and human resource, concern that placements may become difficult to secure should the economy experience a downturn, and difficulties in devising valid and authentic assessment practices for placements.

**Issues with implementation - Nursing**

*Industry/Hospital*

Industry perspectives on clinical placement experiences are diverse. While there is general agreement that clinical placements are imperative for students to learn to become safe and effective registered nurses, too often patient acuity and staffing shortages are seen as constraints to the provision of quality clinical placements and support for students. Concerns have also been raised by industry representatives about the competing tensions of caring for patients when supervising students and how students’ level of knowledge and skill could negatively impact on patient safety, for example:

> “Everything is around incompetence and safety, and always assuming that the students are incompetent and unsafe. And they [registered nurses] don’t appear to see that they have any role in that.”
> (Nursing C Coordinators Focus Group, 2010)

While recognising that clinical teaching is integral to the professional role of nurses, some respondents reported concerns about what students are expected to achieve while on placement and how to best support them to do so:

> “Having students whilst it is very important and it’s something each nurse has to do as part of our role but it’s a logistical nightmare to get your head around the fact that Monday, Tuesday students can to that but on Wednesday, Thursday, Friday a different group can do that and that.”
> (Nursing C Coordinators Focus Group, 2010)

Nursing students were often seen as an ‘extra pair of hands’ when undertaking their clinical placements, although a number of clinicians were cognizant of this and tried to make time for learning opportunities:

> “Still, the students are the ones who are left doing a lot of the very basic nursing care, that is, the showers and the washes and all that very basic stuff. And it’s what we expect them to do whilst out on placement, but not at (the) detriment to their learning. There not here as a pair of hands … but they are still using them as workforce.”
> (Interviewee 1)

> … “I’ve been at **** hospital and there’s some brilliant RNs there, they say to the student ‘oh come on, I’ll show you such-and-such.’ And with other ones you can see the students just tagging along behind, not learning a thing.”
> (Interviewee 2)

(Nursing C Coordinators Focus Group, 2010)

Some students also identified issues that undermined their placement experiences and negatively impacted their learning; the following examples are student’s comments from the online survey:

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• I find I can’t really do any study while on clinical because of 1) tiredness 2) lack of time - i.e. time to travel to & from clinical plus being there for an 8 hour shift. Some assignments are due during clinical placement.

• It definitely is of value but such limited time on units gives little time to gain much hands on experience

• Because I had 2 bad placements it made me doubt whether this is what I want to do.

• I get very tired on clinical as I go from sitting at uni 2-3 days a week to full time work.

• Coincidence of multiple assignments/assessments with clinical placement increases demand of self and pressure on student, decreasing clinical satisfaction, enthusiasm and compromising patient care.

(Nursing student responses – on-line survey)

It is interesting to contrast the responsibilities given to Construction and Nursing students. Due to the skills shortage currently being experienced in the construction sector, some Construction students are already industry employed and taking on responsibilities for which they were ill-equipped. Students’ motivations to engage in such activities were not explored in this study.

Comparing disciplines: the extent to which students felt prepared for placement

When comparing the responses of the students from both disciplines in response to the online survey question asking “how prepared students were for their placement?” it was clear that Nursing students felt better prepared to enter their placement, with 63 per cent feeling ‘prepared’, 27 per cent ‘feeling ‘well prepared’, 7 per cent feeling ‘not prepared’ and only 3 per cent feeling ‘not at all prepared’.

![Pie chart showing how well prepared students were for their clinical placement](source: on-line survey)

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Facilitating work integrated learning (WIL) through skills-enabled e-portfolios in construction and nursing

Figure 4: How well prepared were you for your industrial experience placement? (source: on-line survey)

By comparison the Construction students felt less well prepared with 42 per cent saying they felt ‘prepared’, 15 per cent felt ‘well prepared’, with 37 per cent felt ‘not prepared’ and 6 per cent felt ‘not at all prepared’. This ill-preparedness of the Construction students is concerning. Being poorly prepared for placement is likely to compromise effective workplace learning as students may lack confidence, knowledge and feel unable to complete tasks. It is interesting to contrast these results with the more positive feelings of the nursing students. As discussed in Chapter 2, clinical placement of nursing students is informed by the gradual development of their bed-side skills and exposure to simulation experiences whilst at university. This gives nursing students a more grounded approach and appears to enhance their feelings of confidence.

Indeed, a Construction student noted that more preparation and integration whilst at university would better equip him and his peers for their placements as the following quote shows:

“They [academics] have got to understand that the real world doesn't work like university. I think there’s a bit of a shortcoming in university that they don’t teach you… to understand what goes on in the workplace. There should be more integration, kind of like an apprenticeship, when you're going to uni. There's none of that. You finish your course and that's it, you're on your own.”

(Construction Student Focus Group B, 2011)

These findings indicate that simply requiring students to engage in their industry experience without preparation is a flawed model. It is recommended that Construction disciplines embed industry placements into their programmes and develop students’ experience into their curriculum. The apparent preparedness of nursing students demonstrates the effectiveness of this approach. Construction could thus benefit from the experiences of the nursing discipline in implementing and managing WIL, see AAEE 2011 paper.

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These sections have identified (and summarised in Table 2) the following issues with WIL implementation in the two disciplines:

<table>
<thead>
<tr>
<th>Issue</th>
<th>Present in Construction</th>
<th>Present in Nursing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dealing with large students numbers</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Accommodating students in appropriate locations</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Assessing them and providing meaningful feedback</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Students’ perception of being undervalued or ignored</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Lack of WIL preparedness</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Conflicting demands on student involved in WIL, e.g. assignments being due</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Timing of placement for students</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Lack of resources and time to implement meaningful WIL experiences for students</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Conflicting WIL student learning objectives expected by Industry and Academia</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Lack of meaningful reflective phases</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Lack of longitudinal documentation of WIL experience</td>
<td>✓</td>
<td></td>
</tr>
</tbody>
</table>

Table 2: WIL implementation issues

E-portfolios offer potential to provide solutions to some of the identified issues, see link to Case Study 6 – E-portfolios in Nursing at Edith Cowan University
Chapter 3: Context Analysis (2) WIL opportunities and issues – The gap between theory and practice?

Introduction

Studies on WIL have shown that students often question the relationship between the theoretical concepts they are taught at university and their experiences of the ‘real world’. This chapter reports on the qualitative data gathered from the focus groups and the on-line survey to understand predominant WIL issues and opportunities for students and academics. First this chapter reviews the main WIL issue raised in the literature - the lack of linkages between practical experiences that relate to the theoretical concepts taught at university. Second, this is issue from the literature is considered in light of the findings from the qualitative data - the views of students and members of academic staff - and the consequent opportunities WIL can give students. Some of the issues raised in this chapter can be solved through the use of e-portfolios, see the case study using Mahara e-portfolios for Medicine placements which showcases how e-portfolios could support students in making connections between theory and practice.

Literature Review

It is argued that students learn in the real world through experience gained through WIL, as they make contact with industry personnel, and are exposed to relevant work practices (Patrick, 2009). A recent ALTC discipline based initiative study (A Williams et al., 2009) in construction education identified WIL as an area that offers considerable potential to benefit students in the discipline. This is due to the high level of industry experience required and the inconsistent methodologies and assessment strategies employed (see Chapter 2). For example, students were reported as stating that whilst participating in WIL activities they were generally more motivated and had a better understanding of how to apply their knowledge in practice than when they did not undertake a placement (A Williams et al., 2009). In addition, other studies have shown that students experiencing workplace learning are better able to cope with other complexities relating to professional practice (J. E. Mills & Treagust, 2003); (Webb & Hayes, 2008). In addition, students at times, “only realize the value and applicability of their career choice once they are employed by industry” (Koch, 2010, p. 720). Hence undergraduate WIL experiences can provide students with opportunities to feel more prepared for their chosen career once they are employed by industry” (Koch, 2010, p. 720). Hence undergraduate WIL experiences can provide students with opportunities to feel more prepared for their chosen career (Koch, 2010; Webb & Hayes, 2008). This suggests that students rely on these WIL opportunities to apply their conceptual knowledge so that it becomes grounded in the real world. Therefore, WIL experiences are crucial for students to make these connections. In addition, it can be argued that these experiences are more important for students in the Nursing and Construction disciplines compared to other disciplines, due to the professional nature of the degrees.

Boyer (1994) discusses different modes of knowledge production. In particular, his idea of scholarship of application as it relates to WIL, is ‘applied fields of knowledge’ where knowledge is not just for knowledge sake but works “towards knowledge and understanding in addressing conflicts, tackling problems and meeting the needs of client or other groups” (Boyer 1994 cited in Griffiths, 2004, p. 715). The scholarship of application is required particularly so for Construction and Nursing, where students need to demonstrate more readily their application of their knowledge from university in the workplace. WIL is therefore an important and formative experience for students in these programs. Consequently, it is an imperative that in order for complete advantage to be gained from the WIL experience that students need to be supported to make meta-cognitive links between theory and practice (aspects of which were reviewed in Chapter 1). For example, a study in Engineering found that students predominantly learn in an ad hoc way in the workplace and that ‘the
underpinning cause for inadequate WIL assessment is a lack of understanding of the nature of learning in the work place’ (Richardson et al., 2009).

Severisson (1997) similarly identifies this theory/practice issue in Nursing and defines it as a conflict between what is taught compared to the actual clinical practice and states that “even if you know ‘how to do it’, the nursing process (theory) aimed at benefiting the patient is not always possible to implement in reality (practice)” (Severinsson, 1997). Other researchers in Nursing refer to it as the theory/practice gap and it continues to defy resolution (Rolfe, 1998).

See related papers:
AUBEA Paper, 2010
ANZasCA Paper, 2010
AAEE Paper, 2011

WIL Issues: Student perspectives on WIL theory practice gap

The findings from the qualitative data on the theory/practice gap in this study were slightly different to those found in the literature. The data from the student and staff focus groups and student on-line survey still highlighted a range of issues associated with WIL experiences for students, such as ‘not enough time in industry’ to ‘contradictory information being learnt’. Students in both disciplines stated that there are not necessarily gaps between theory and practice. Students articulated that more time needs to be devoted to and more meaningful experiences in industry would be advantageous for their future careers. As a Construction student described during a focus group, “University education provides us with the ‘why’ but we do not get enough ‘how’ (practical experience)” (Construction Student Focus Group B, 2011). Yet, academic staff who facilitate WIL, saw placement experiences as being issue-laden with students being ‘used as cheap labour’ and having little control over what students learn, this will be further discussed in the section ‘Staff perspectives on WIL theory practice gap’.

Contradictory knowledge

Students in both disciplines were consistent in raising the issue of conflicting approaches where companies and clinical venues, at times, have different protocols for handling tasks compared to what had been learnt at university. This is clearly articulated in the following comment from one of the Construction student focus groups:

“That’s like what I said before, what people do realistically [in industry] and what we’re doing here [university] is a little bit different. (Student 3)

“Their set up is different. I was sitting down last time I was in the office, I stayed behind because I’d made a few mistakes and I was going through. I’m getting stuck on trying to write it down. It’s not that I don’t know how to multiply and add things, it’s just to present it. Because what uni’s teaching me and how work is teaching me is confusing the heck out of me. So, you know, that’s kind of the other side too. That’s why it would be good to get a bit more integration between work and uni instead of just saying you’ve got to do this, go and do it. Because we don’t go there to waste time, we do these professional communication classes, like they say ‘how to talk and how to respond’. Then you’ve got your employer going against the book, you know? So contradicting all that you’ve learnt so it’s just another thing, you know, not everything’s going to be perfect. It’s just the way things are sometimes” (Male 2) (Construction Student Focus Group B, 2011)

A similar discussion was had by the Nursing students in the focus group:

“Or what about the clean hand and dirty hand? Not everybody uses that technique.
Like I know our clinical facilitator was like yeah you've got to do it that way but the lady on the ward was like no it doesn't really matter as long as you're keeping it clean”.
(Nursing Student Focus Group, 2011)

This issue can be resolved with greater communication between the three worlds of academia, clinical facilitators and industry (see Recommendation 9).

**Getting ahead on placement**

Other issues that arose in the focus groups and on-line survey pertained to the selective opportunities WIL provides students who come from an industry or hospital background. For instance some Construction students suggested that their maturity and background in other closely related subjects and their knowledge of the Construction role gave them an advantage over other younger students, as shown in the following discussion:

...//…“You’ll be scraping the barrel for a few years and the thing is that a lot of these kids, some have a background, some don’t. We have a background in building design so we have a good idea on, you know, how things are built. We know how to draw the drawings so when we get the, when I see the drawings from the architect come in the office, I know what's going on, I'm not lost with it, you know? I can, we go out on site I can see what's going on in terms of the structure, you know? What's going on specifically, what needs to be done, you know, how we can fix things on the spot…//… Because I think a lot of students tend to forget that being a construction manager…//…involves, like I said, the management being able to solve problems with construction. Because you'll need to know, alright I need to pull these guys out. Is there a way we can fix this? You're not just some guy that calls people. You need to have that knowledge as well, so, yes. I think that's just another important thing…//…is to understand that all of the things that are tied to construction management are covered [in the program] properly.” (Student 2)
(Construction Student Focus Group B, 2011)

The quote above clearly articulates the perception that not all students in the program have access to such an expanded experience through the subjects they choose and/or their lack of experience in the workplace, thereby creating an inequality of experiences for younger students who could then end up feeling aimless in the program.

This issue calls for proper management of WIL experiences and opportunities for all Construction students, not just the fortunate ones who find a job in industry or placement experience that is closely aligned to the profession (for instance, rather than a labouring experience). Furthermore, it indicates a need for an increase in discipline awareness before and during the Construction degree. For example, an increase in background lectures, visits from industry and accreditation bodies to clarify the role and skills required for the degree. As a consequence, graduates would know what is required of them and what jobs they can aim for upon completing their Construction degree.

Likewise, Nursing students felt that at times there was not enough exposure to clinical placement experiences:

“And it's better later in the week too. Like if you go for a week the first day is like full-on nerves and then it gets better as you know what to expect.” (Student 1)
“Yeah then by Friday it’s actually quite fun.” (Student 2)
“So that’s why I think maybe even having more clinical - I was thinking that at the end of my two weeks. I had such a great time on the colorectal and surgical ward…yeah got to take out staples …So yeah I think more clinical and things we enjoy.” (Female Student 1)

Facilitating work integrated learning (WIL) through skills-enabled e-portfolios in construction and nursing
Again, this discussion highlights the students’ perceived need for more time to be involved in clinical placement.

Consistent with the Construction students, the Nursing students similarly felt that being mature-aged gave them an advantage in the clinical setting. They felt better able to gain respect from the Registered Nurses on the wards:

“Because I think a lot of the young kids in our class have a bad time because of it and they get treated differently and I think oh maybe sometimes because I’m mature aged”. (Student 2)

“They look at you as more of an adult”… (Student 3)

“… yeah they’re not going to treat me like that, they’re not going to talk to me badly whereas I think some of the kids do get sort of a raw deal.” (Student 2)

“Yeah and if you’ve had experience on the wards as well because I’ve just started working on the wards that actually helps. You know what’s going as well more…” (Student 3)

“And as you start to get comfortable with terms and things then it’s easier after that.” (Student 2) (Nursing Student Focus Group, 2011)

Both these quotes from the disciplines show that being a mature-aged student, and having increased, relevant placement experiences allows students an enhanced placement experience.

The consistency of comments and identified issues raised by both disciplinary groups of students further demonstrates the level of alignment that exists relating to WIL and the issues and opportunities it has to provide these disciplines.

**WIL Opportunities – students putting theory into practice**

Despite some of the issues raised above, it was found that the students in each discipline were extremely positive about their placement experiences. Students from both disciplines responded that these activities provided them with an engaged learning experience. Moreover, and in contrast to the studies considered above in Chapter One and the brief literature review above, most students felt that they were able to link their placement experiences to the theory that had previously learnt at university. An example of how students recognise the links between practice and theory is provided in the following quote:

“Yes, it’s more just developing a whole big knowledge base. … because a lot of that stuff really overlaps … What you learn from this guy, you go to this course and you think ‘oh hang on, we learned something about that’, and that builds on … Then you go in the real world and then you can draw from all of it, so yes it [theory] is relevant”. (Construction Student Focus Group A, 2011)

Here, the process of connecting theory to practice is described by a student as an ongoing experience where knowledge is built upon over the years. Nursing students from the focus group similarly felt that these experiences provided confirmation of what they had learnt at university, as demonstrated in the following statements:

“I suppose to learn on the floor what we’d been taught at school. To put the information into practice.” (Student 1)

“To reinforce what we’ve learnt so it makes more sense actually doing it and participating in it.” (Student 2)

“So just the practical aspect that makes you really think that you’re going to be a
nurse one day it helps you to actually learn how to care for patients and to learn a lot of things about like I don't know just the nursing way of doing things like handover and yeah heaps of things.” (Student 3)
“They're not just terms anymore. They're actual processes.” (Student 1)
(Nursing Student Focus Group, 2011)

Likewise Construction students noticed that those of their peers who had industry experience conveyed an air of confidence in class:

“It just seems like, I've noticed, especially in my year, you can tell. When you look around the class you can tell who has worked in the industry.” (Student 1)
“Oh, that's interesting.” (Facilitator)
“I don't know if you guys have noticed that? You can just tell, like guys just go get it done.” (Male 1)
“Worldly?” (Facilitator)
“Because things connect and…” (Student 2)
(Construction Student Focus Group B, 2011)

Similar responses were obtained in the student on-line surveys which additionally confirmed this finding; it showed that students were readily able to integrate the various elements of their learning experiences. For example, when answering a question about how effectively their placement related to their university courses, more than 60 per cent of the participants from both disciplines felt that their placement related to their courses ‘very effectively’ or ‘effectively’ (see figures 5 and 6 below). They felt that they had exploited opportunities to apply their theoretical knowledge during their placements regardless of their discipline.

![Figure 5: How effectively did your industrial experience relate to your university courses?](source: on-line survey responses – Construction)
Survey responses identified that the majority of students clearly recognised the value of clinical and industry placements. Many students responded to the open-ended questions noting that placements allowed them the opportunity to integrate theory and practice and to make sense of what they were learning at university, for example:

- It [the clinical placement] helped me to see the application of theory into practice.
- It [the clinical placement] enhanced my understanding and filled in the gaps because although we do a lot of case studies at uni which tell us how we should do things they are not as efficient or specified as reality.
- Understanding and being able to imagine and think about performing the skills and incorporating what we learn at clinical into our theory at uni - this can aid in studies when looking at case studies.
- It [the clinical placement] provided a better rounded learning experience that has motivated me to focus more attention to my studies.
- I'm more motivated to do nursing and enter the workforce now that I have a sobering idea of what it involves.
- I'm more able to understand my lectures on clinical skills, anatomy and medical-surgical knowledge.
- The placement encouraged me to be a better nurse and reminded me of why I chose this career path

(Nursing Student responses to the on-line survey, 2011)

Other answers from the on-line survey revealed that knowledge gained at university consolidated students’ practical experiences. The following responses are from both

Facilitating work integrated learning (WIL) through skills-enabled e-portfolios in construction and nursing
surveys:

- Hands on experience to implement theoretical knowledge into practice to consolidate skill base, improving career outlook and confidence.
- The clinical experience has given me understanding/insight in relation to the theories that have been learned in classroom those theories do not make much sense or do not impress me unless they are applied in real clinical scenarios.
- Clinical experience has helped me to make sense of the theory learned in class. It's not until you see the theory applied to real life that it starts clicking in. Besides, it's so much easier to remember things like medications and what they are used for once you've seen them used for a specific purpose in the case of a specific patient.

(Nursing Student responses to the on-line survey, 2011)

The Construction students stated that:

- It has consolidated and made me look further into some of the areas touched on in my course. I feel that the course gives you an introduction and basic knowledge on many areas but it is up to you to go out there into the industry and consolidate that learning for yourself by being on site, working with people, resolving problems etc.
- Getting a head start in the industry, and gaining on-site education.
- My current placement is helping guide me to the position I want within the company.
- Gaining an understanding of the business and building side of construction.
- Familiarity with the system.

(Construction student responses to the on-line survey, 2011)

**Reflecting on placement**

The data revealed that WIL provided opportunities for students to relate what they leaned at university to the practices industry adopts, slightly adjusting the approaches they had learnt from university. For example:

“../.. he (student’s supervisor) does a take-off for tiles or - he’s got a different way to uni. Like he says ‘This is the way you got taught at uni, but this is the way to become more efficient at it for our workplace.’ Because a lot of time at uni you’ll do things - probably you’ll overkill it. Like you’ll make it to look nice../.. Then all of a sudden when you get in the real world it’s much different I think. It’s all about how you can make more money faster.” (Student 1)

“Do you ever find moments when you link back to theory?” Facilitator
"Oh 100 per cent, yes. Yes, most of the time, like a lot of stuff I’ve been told - like even today we did some industrial relations stuff and it makes sense to me because I’m writing contracts at the moment. So when we’re writing contracts and when we’re listening about contracts in class and about, you know, what is included, certain clauses. That's what we have to include in ours, so it's good, no it's really good.”
(Student 2)

“So that confirms more what you learn?” (Facilitator)
"Yes, definitely. It confirms why you do it." (Student 2)

(Construction Student Focus Group B, 2011)

Whilst few instances of formal assessment of WIL in Construction were identified, some students took it upon themselves to keep a record of information they felt was valuable and would assist them in the future. For example, in the quotation below, a student noted data he felt would be helpful in ordering bricks.

Facilitating work integrated learning (WIL) through skills-enabled e-portfolios in construction and nursing.
“There was (sic) a few key facts like in a square metre we do 52 bricks...//... Then on a truck-load, the bricks come in packs of 348, so there’s no good doing a brick estimate and doing an exact figure if then you’ve got to convert it to 348...//... Like they’re two different figures. So little things like that I’ll document because if I go back or if I do it again, I don’t want to put 360 if it’s 348. Like little things like that I think you really have to document and they’ll help you.”
(Construction Student Focus Group B, 2011)

Similarly, some nursing students found that reflection and recording details of their work from their placement allowed them to consolidate their knowledge and use as their own resource:

“...//... because I found what helps me is having a little book and when I’ve made like something that I’ve learnt from or made a mistake or ‘oh got to remember that’ or something that I’ve learnt, a new drug or a new concept, write it in that book and that helps. I think journaling is important as well. You don’t have to write the patient’s name. Just say my patient today was like this and this is what happened and the nurse said to do that and it just helps you deal with it and learn and move on and it’s really good because you can look back on it as well.”
(Nursing Student Focus Group, 2011)

Students did not confine their reflections to facts and ways of doing things. An example of this was where one Construction student noted from the focus group, B, the respect his ability to use computer software earned from his older employees.

Furthermore, where students were mentored during their WIL, they found this to be a valuable experience, as the following quotation illustrates:

“You have done your first start-up meeting with the client and told him what is going to happen...//... You have come out and you have just thought, ‘Oh my God...//... I feel sick but no, that was right.’ You need someone to go, ‘That was excellent! This is what you did right, this is what you can do better next time’ and move on. Then sometimes you need someone to like, pull you back into line and say, ‘Ooh, don’t be doing that.’”
(Construction Student Focus Group A, 2011)

Similarly, the nursing students felt that having a variety of mentors on the ward was important as it provided them with exemplars of practice:

“It was a good experience. You learn about different - even the staff. I think the way that they work it helps you learn like how you can be your style like different nurses that you get budded up with have different styles. Some are more organised, some are all over the place and yeah just learning what works for you”.
...//...
(Nursing Student Focus Group, 2011)

These student responses indicate that WIL placements provide students with an extremely rewarding and important experience during their studies, providing students with alternative approaches to their practice, additional knowledge and communication skills.

Academic staff had a slightly different view on students’ placements, in regards to the uncertainty of placement and the consequent issues it raised for themselves and students. The following outlines these issues.
Staff perspectives on WIL theory practice gap

Academics in both disciplines conveyed similar WIL perspectives in regard to the issue of the theory/practice gap.

These being:
• Difficulties in ensuring that placements are a positive and quality learning experience for students. Academic staff felt they had little control over what students learnt during their placement experiences. This was especially an issue for Construction where placement at most universities is not formalised, assessed, or monitored.
• Student input not valued by industry – treated as a burden.

The following paper from the ANZasCA conference, 2011 provides an overview of issues raised via a Strengths, Weaknesses, Opportunities and Threats (SWOT) analysis with Construction academics. Staff in the research workshop were asked to look at the SWOT from the different perspectives of ‘students and WIL’, ‘staff and WIL’, ‘employer and WIL’, and ‘professional bodies and WIL’, refer to table 1 in this paper entitled ‘WIL Strengths, Weaknesses, Opportunities and Threats (SWOT) analysis – Construction program placement coordinators feedback’ (ANZasCA 2010).

When questioned on this issue in a focus group Clinical coordinators stated similar concerns to those articulated by the Construction staff (detailed in the ANZasCA paper). The most important issue raised was a feeling of lack of control over what students were learning whilst on clinical placement, for example:

.../... “I guess some of the weaknesses from an academic perspective is our lack of control over what that learning is, in the workplace, that sometimes undermines what we’re actually teaching”. (Interviewee 3)
... “And how the learning’s implemented in the workplace”. (Interviewee 1)
“Yes, and how, and the quality of the placement, and our inability to control what the students are learning, how they’re learning it, and the quality and the experience they get, we can’t, you know, we have very limited control. So I’d see that as one of the weaknesses, but certainly that leads to opportunities to develop better ways of managing that, and I think that’s what we’re trying to discuss, really”. (Interviewee 4)
.../... “And the dichotomy of, we’re trying to support the students in a positive way, they then go out on clinical placement, and we then have the attitude, like they were talking yesterday about um, someone said, ‘they teach you this at university, but when you’re out here, you do it this way.’ And so that puts extra stress on the student, but it also means they come back to us stressed, because they feel we’re teaching them one way, and they’re being forced to do a separate way when they go out on placement.” (Interviewee 2)
(Nursing C Coordinators Focus Group, 2010)

These statements from the clinical coordinators reflect the issue of students going out on their placement and staff having no real control over how and what they learn. Academic staff do however have some control as they can guide students and give them feedback in placement assignments (such as portfolios in nursing), nevertheless, they never entirely know the reality of how this knowledge is assimilated by students and put into practice.

Indeed, staff in both disciplines discussed the issue of different approaches taken at university and in the workplace. Similarly, Sher and Sherratt’s research on Construction students placement experiences found that “[A] couple of students emphasised the differences in focus between the workplace and university and the importance of practical experience for some degree programs/careers” (Sher and Sherratt, 2010, p.9). Increased integration of WIL experiences into the programs may aid this reoccurring issue. Some initiatives such as case studies and industry visits may assist in closing the practice/theory
gap, as the following statement shows:

...“one of the strengths that we found with industrial interaction or what's called WIL here, is to demonstrate the concept of the integration of the various subjects, through case studies, through an expert, actually we try to do panel discussions, bring in people from various disciplines, like building services, to explain this idea of integration of the various subjects. Otherwise we as teachers sometimes compartmentalise the subjects, there is no vertical, horizontal, whatever integration you want to call it. So through this type of on-site experiences, and bringing site into the classroom, you can get the idea of integration, which is becoming extremely important. We even try to do this in a global setting, with having student teams in various continents, in one of our courses of subjects.”

(Construction Academics Workshop - Group Discussion, 2010)

Furthermore, if the current model of viewing theory as informing and controlling practice were to give way to a mutually enhancing model in which theory is derived from practice, and in turn influences future learning, then the so-called theory practice gap could be closed. Ways that this can be done is through increased forums with students for the purpose of dealing with their placement experiences, where theory arises from WIL experiences are shared. E-portfolios could further support this sharing of knowledge learnt through on-line discussion groups (these will be reviewed in Chapter Five).

Overview of the WIL issues and opportunities raised by staff and students:

<table>
<thead>
<tr>
<th>Issue</th>
<th>Present in Construction</th>
<th>Present in Management</th>
<th>Present in Nursing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of alignment of curriculum knowledge</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inequalities in the level of WIL experiences</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Being mature-aged gives students advantages in placement</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Students getting the ‘raw deal’</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Lack of control of the students experiences</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>WIL confirms and reinforces knowledge gained at university</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Reflection on knowledge occurs because of WIL experiences</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Integration of course work, case studies and industry visitors can aid WIL</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
</tbody>
</table>

Table 3: Overview of WIL issues and opportunities

Conclusion

This chapter has shown that reflecting on practice or discussing practice in forums does not necessarily mean that the gap between theory and practice is closed. It is still up to students to understand and make connections between the two worlds. This highlights the need for a curriculum review to explicitly create links between competencies within the disciplines. This is one of the aims that this project set out to achieve - to align curricula with practice through a competency framework. The following chapter reports on this aim, on the curricula in both disciplines and curriculum alignment, and the reflection framework which explicates these links between curricula and practice for students.

Facilitating work integrated learning (WIL) through skills-enabled e-portfolios in construction and nursing
Chapter 4: Curriculum aligning and mapping

Introduction

A reflection framework was developed to encourage students to reflect on their practical experiences and their university tuition. What was to become apparent with this project was that the disciplines of Nursing and Construction Management may appear to the casual observer to be worlds apart in competency requirements. However, through the evidence gained in this study, it was found that there were significant synergies in the qualities that both professions require of their graduates. Synergies were analysed to determine if there was the potential to have a range of attributes or qualities that were uniform. A close scrutiny of the professional qualities of the two professions was undertaken through textual methodologies, employing the Nvivo analysis software to undertake the analysis. The outcomes of the investigation established that it was possible to align the professional attributes and develop a two staged learning framework from these synergies.

Historical background on competencies in the disciplines

Construction

In order to meet the demanding requirements of the diversity of accreditation bodies, the Construction curricula require a significant commitment to curricula design and evaluation. Efforts to align the requirements of these bodies have not been successful to date. The implementation of TEQSA’s requirements may provide a catalyst in this regard. The state of professional competencies in this discipline are thus in a state of flux.


Nursing

University nursing curricula in Australia must be able to demonstrate how the ANMC competency standards for the registered nurse are incorporated into the curriculum. This may not always be evident in teaching practices. Assessment of WIL (clinical placement) is often undertaken by sessional staff or workplace mentors who may not always have a sound understanding of the curriculum or familiarity with the ANMAC competencies. While processes to measure competency remain challenging, the assessment of competency in the clinical environment remains the most rigorous option available. Continuing to support educators and mentors to understand and apply ANMC competencies should remain a priority. Supporting students to reflect on and recognise competency in their own practice is also effective in linking practice with theory.

Continued in L. Bowen – ‘A History of Nursing Competencies’

Aligning the Disciplines

To align the disciplines, the initial phase of the competency framework included an analysis of the competency statements of the accreditation bodies’ skills requirement lists (AIB, AIQS, CIOB, and ANMC). Within these statements lies the range of qualities that are required by the professional bodies to ensure that graduates attain these before they graduate into the profession. As identified above there could be a logical assumption that such different professions would require different professional qualities at entry point. It would appear that the ability to enter the profession as a Quantity Surveyor with the skills to develop bills of quantity for large building projects would have little in common with the knowledge skills and attitudes of a graduate nurse entering work on a surgical or medical ward. Nevertheless, synergies were identified between the disciplines.

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This competency mapping also drew on another ALTC projects' findings which aimed to publicise a nationally agreed competency assessment tool for nursing based upon the ANMC competency standards see (R. Brown et al., 2009).

The competencies and graduate professional qualities of these two disciplines were mapped and evaluated against each other. This allowed the identification of core areas/synergies as well as defining discipline specific competencies. The purpose of looking for the domain attributes that were consistent across these diverse discipline areas was to identify if there was the potential to develop an e-portfolio that could primarily cover a broad range of disciplines with minimal specific discipline development or contextualisation required. One of the limitations in a single discipline developing a discipline specific e-portfolio is the cost of both development and maintenance. Identifying the potential of a core that is broad based in its defined attributes with the capacity to provide the needed support for a diversity of disciplines would provide an economy of scale allowing the quality of the system to receive the funding rather than simply maintaining it becoming an issue. Thus, the potential of distinctly different disciplines being able to clearly define shared attributes holds promise.

The mapping process allowed for the identification of the core areas/synergies and discipline specific competencies. Generic synergies identified were then organised into specific competency domains allowing alignment.

An issue which emerged from this exercise was the extent to which the structure of the definitions of competency requirements was presented in Construction. For instance, the presentation varied between professional bodies with some statements consisting of a hierarchy of how a skill should be obtained whilst others had basic descriptors. Following are a set of examples of the presentation of the attributes or qualities as defined differently by two professional accrediting bodies for Construction:

**AIQS Competency standards**

**Range Indicators**

Competencies in contract administration will be demonstrated in the execution of typical work undertaken as a professional Quantity Surveyor. The work in question will call for the application of extensive knowledge appropriate to the discipline. Such knowledge will normally be acquired through a structured program of education to degree level incorporating training and work experience.

This activity would be based on a clear understanding of the processes involved in project contract administration including:

- strategies for gathering data and carrying out research on current trends in contract administration
- analysis of data relating to contract performance and cash flows
- analysis of the financial implications of construction process, rise and fall calculations and outcomes of negotiations on variations and claims

(AIQS, 2010)

**CIOB Competency Standards**

The following indicates the balance between the four components - construction technology, the construction environment, specialism and skills - as the learning programme progresses through its three levels.

**Level 3:**

Synthesis and evaluation by the integration of subject themes Construction Technology 3

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**Level 2:**
Analysis and application Construction
(CIOB Competency standards)

Adhere to all legislative requirements in relation to anti-discrimination, OHS & R, environmental and industrial.

To undertake all tasks as directed

When required to undertake training, assist the Estimating Manager with all tendering and estimating duties including copying, mailing, courier, telephoning subcontractors, correspondence and compiling prices on a needs basis if requested

Assist with the letting of contracts and orders on time within budgets as per the target program/s, program works and procurement of works with the construction team.

To co-ordinate with the construction team the running of a project and to perform site administration functions.

Assist with the management of costs associated with site projects, including processing claims, invoices and variations; approve expenditure in accordance with the Quality System and prepare monthly cost reports.

(CIOB, 2007)

Despite this variation of required skills between the professional body requirements in Construction, a core of attribute statements remained and fed into the development of the framework.

**Curriculum alignment – stage 1 of the framework**

The next phase of the project involved the analysis of the different professional bodies' required attributes or qualities to see what levels of synergy existed. The need to identify the synergies was essential to this project in order for it to be of use across multiple disciplines in support of their WIL activity. These shared attributes must be able to be demonstrated by a student engaged in a WIL activity and have the potential to be placed in a hierarchy or set of attainment levels to show the level of achievement.

To achieve this framework, the team firstly aligned the attributes within the multiple professional bodies, and then looked at developing a framework which allowed the mapping of the qualities of the professional bodies’. The outcome was the following fields:

- Communication and Team communication
- Self Evaluation
- Ethics
- Knowledge of Health and Safety
- Legal Knowledge
- Management Skills
- Up-to-date knowledge of the field – Social impacts on the field
- Research and reporting Skills

Following is the mapping, see Table 4 of the attributes from each of the professional against these fields.

Facilitating work integrated learning (WIL) through skills-enabled e-portfolios in construction and nursing
<table>
<thead>
<tr>
<th>RN Nursing</th>
<th>Midwifery</th>
<th>CORE ALIGNMENT</th>
<th>Construction Management</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communication skills to plan nursing care with individuals and groups</td>
<td>Communication skills to facilitate decision making</td>
<td>Communication Team communication</td>
<td>Claims and dispute resolution – know the construction process - communication skills</td>
</tr>
<tr>
<td>Communication - Relationship building skills</td>
<td>Communication - Developing effective communication strategies</td>
<td></td>
<td>Communicate effectively both in writing and orally</td>
</tr>
<tr>
<td>Team communication and collaboration skills</td>
<td>Professional conduct - Knowledge and responsibility of actions</td>
<td></td>
<td>Interpersonal skills -Teamwork</td>
</tr>
<tr>
<td><strong>Domain: Critical Thinking and Analysis</strong></td>
<td></td>
<td><strong>Self Evaluation</strong></td>
<td>Self evaluation</td>
</tr>
<tr>
<td>Participates in ongoing professional development of self and others</td>
<td>CPD (identifies personal beliefs) to enhance practice</td>
<td></td>
<td>CPD - self evaluation, recording achievements: management and control of the personal learning plan, the record of its achievement, the reflective evaluation of its success and to update this plan for future uses (CIOB).</td>
</tr>
<tr>
<td><strong>Nursing ethical codes of practice</strong></td>
<td>Ethical decision making skills</td>
<td><strong>Ethics</strong></td>
<td>Knowledge of codes of ethics</td>
</tr>
<tr>
<td></td>
<td>Promotes Safe care</td>
<td></td>
<td>Knowledge of environmental protection principles to building work</td>
</tr>
<tr>
<td></td>
<td>Cultural awareness</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Professional conduct - Knowledge and responsibility of actions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Practices with an evidence based framework – such as Identifying the relevance of research to improve health outcomes</td>
<td>Utilises risk management and/or open disclosure policies in the follow-up of unsafe practice</td>
<td><strong>Knowledge of Health and Safety</strong></td>
<td>Understand ‘safe sites’ - Health and safety skills, review Health and Safety management systems</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Risk management skills</td>
</tr>
</tbody>
</table>
Facilitating work integrated learning (WIL) through skills-enabled e-portfolios in construction and nursing

<table>
<thead>
<tr>
<th>Facilitates a physical, psychosocial, cultural and spiritual environment that promotes individual/group safety and security - prioritises safety problems</th>
<th>Assess, planning and evaluating safe care for clients needs</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Legal knowledge affecting RN nursing practice</th>
<th>Legal knowledge affecting midwifery practice</th>
<th>Legal knowledge of rights of women, families and communities</th>
<th>Complies with legal policies and guidelines, for example, occupational Health and safety, child protection, Family violence.</th>
<th>Legal Knowledge</th>
</tr>
</thead>
<tbody>
<tr>
<td>Legal knowledge – ie contracts, Govt regulations - in relation to building</td>
<td>Claims and dispute resolution – know the construction process - communication skills</td>
<td>Understand compliance issues</td>
<td>Knowledge of environmental protection principles to building work</td>
<td>Procurement knowledge –</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Management Skills</th>
<th>Understanding building management</th>
</tr>
</thead>
<tbody>
<tr>
<td>Management skills - Knowledge of systematic assessment procedures. Provision and coordination of care</td>
<td>Human management skills</td>
</tr>
<tr>
<td>Relates to the coordination, organisation and provision of nursing care that includes the assessment of individuals/groups, planning, implementation and evaluation of care.</td>
<td>Project planning and programming skills – management skills</td>
</tr>
<tr>
<td>Organises workload to facilitate midwifery care for women and their babies, demonstrates appropriate time management and Priority setting skills and ensures the effective use of resources, including personnel.</td>
<td>Management skills</td>
</tr>
<tr>
<td>Evaluation skills - health outcomes.</td>
<td>Procurement knowledge – management knowledge</td>
</tr>
<tr>
<td>Demonstrates awareness of current research in own field of</td>
<td>Quality assurance management skills</td>
</tr>
<tr>
<td>Cultural awareness</td>
<td>Business management skills</td>
</tr>
<tr>
<td>Up to date knowledge of industry – critique the design process</td>
<td>Risk management skills</td>
</tr>
<tr>
<td>Strategic planning skills</td>
<td></td>
</tr>
</tbody>
</table>

Facilitating work integrated learning (WIL) through skills-enabled e-portfolios in construction and nursing
<table>
<thead>
<tr>
<th>practice</th>
<th>Up to date knowledge of the field – Social impacts on the field</th>
<th>Knowledge of building materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supports philosophies – up to date knowledge of public health</td>
<td>Acknowledges the impact of social, economic and psychological factors on women’s lives.</td>
<td>To describe and apply the social and economic performance requirements of the construction process.</td>
</tr>
<tr>
<td>Reviews and provides feedback on the relevance of organisational policies and procedures</td>
<td>Identifies and interprets laws in relation to midwifery practice, including the administration of drugs; negligence; consent; report writing; confidentiality; and vicarious liability. Uses research to inform midwifery practice.</td>
<td></td>
</tr>
<tr>
<td>Practices with an evidence based framework – such as Identifying the relevance of research to improve health outcomes</td>
<td>Research and reporting Skills</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Documentation skills</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Budget preparation and report writing</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Research skills – analysis of problems, conduct a research project</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Budget establishment, reporting and monitoring</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Conduct financial audits</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Basic Abilities- Quantification / Measurement</td>
<td></td>
</tr>
<tr>
<td></td>
<td>To demonstrate an ability to process, use and present analytical information. Including the use of the necessary range of numerical methods for calculating, checking, presenting and communicating solutions to problems (CIOB).</td>
<td></td>
</tr>
</tbody>
</table>

Table 4: The framework – stage one (source: Accreditation requirements in Nursing (ANMAC) and Construction (AIQS, AIB, AIBS, CIOB)).

Facilitating work integrated learning (WIL) through skills-enabled e-portfolios in construction and nursing
This initial review of the Construction and Nursing disciplines made it possible to identify where the skills of each discipline aligned with each other. However, the challenge of the framework, being how to encourage and facilitate students’ reflection between theory and practice, still remained.

**Framework stage two - reflection**

**Literature on other reflection frameworks**

Firstly, in order to best assist students to link practice and theory, it is necessary to understand how students make these connections. One way is by encouraging them to reflect on their practices. This learning-support strategy lends itself to a reflexive approach that can be ‘a more immediate, continuing, dynamic and subjective self-awareness’ for students (Finlay, 2002), and promotes a holistic approach to learning. Moon (1999) similarly discusses the importance of reflection for learning in practice and suggests that students, teachers and practitioners all require guidance on how to reflect in a manner that facilitates deep learning whilst engaged in practice. The pedagogical findings on the importance of learning through reflection, the reflection frameworks and the method to reflect are pertinent for the development of the robust framework established in this project.

Reflective practice is a crucial professional activity and is intrinsic to learning. It is not simply introspection, but a deliberate, orderly and structured intellectual activity (Bolton, 2001). It allows students to process their experience, explore their understanding of what they are doing and why they are doing it and the impact it has on themselves and others (D. Boud, 1999). Engagement in reflective thinking requires students to critically review their practice with a view to refinement, improvement or change. Boud, Keogh and Walker (1985) similarly define reflection as ‘returning to experience’, ‘attending to feelings’ and ‘evaluating experience’. These authors define the way in which learners return to the theoretical knowledge learnt, as they evaluate their experiences through reflection. In addition, the topic of reflection through the use of portfolios is documented extensively in the nursing literature which states that this form of learning allows for deep learning (Cooke et al., 2009). Reflective learning therefore allows for a more holistic approach to learning; it further allows students to make links between what is learnt in on campus learning and practical experiences. These pedagogical practices are integral to establishing a foundation for the ‘framework’ proposed in this section.

Student reflection on the WIL experience is a necessary component of deeper learning. Studies have created different types of reflection frameworks for WIL. A recent study by Richardson, Kaider, & Jackling (2009) which set out to develop a WIL assessment framework through interviews and surveys with educators, students and industry is an example of one type of framework. The data the researchers gathered formed a criterion framework for creating relevant WIL assessment tools. The authors defined this assessment framework as CCARDS (Contextual, Capability driven, Action-based learning, Relationship collaboration, Development, Student-centred). They stated that the “framework provides a simple checklist for ensuring that professional context, environment and generic development are embedded in the choice of assessment” (Richardson et al., 2009, p. 343) and provides an ‘effective and efficient’ way of assessing WIL tasks. Similarly, Temple, Allan & Temple (2003) reviewed students’ use of e-portfolios to document their learning during placement in an undergraduate physical education course. These researchers encouraged students to think about their competencies by reflecting on their previous experiences and to think about these experiences in different categories of their “behaviours, knowledge, skills, and abilities that are job related” (Temple et al., 2003, p. 5). The students could reflect on these categories through the use of the Situation, Task, Action and Results (STAR) framework which provided the foundation for students to reflect on the skills learnt for assessment tasks which were then embedded into an e-portfolio platform. Another framework proposed by Bain, Ballantyne, Packer, & Mills (1999) is the ‘educative workplace model’ for teacher students reflecting on their placement experience. This involves reflecting on workplace learning in four stages, these being ‘articulation of the problem’, ‘analysis of
the problem’, ‘the development of tentative theories for the problem’ and then the ‘learning stage’ (Bain et al., 1999). This final stage is where all the learning comes together for students as they reflect back to their initial problems and past experiences (Bain et al., 1999). (Bain et al., 1999) suggest that the ‘educative workplace model’ can additionally be considered to resolve how concepts learnt can be applied in the workplace. This model includes three suggestions as shown below:

...non-formal educational processes are potentially powerful tools for developing an educative work environment. Second, andragogical learning and empowerment theory can be adapted to the workplace; and, third, this learner-centred approach can help us to build worker learning possibilities into our organisational designs. (Kornbluh & Greene, 1989 cited in Bain et al, 1999)

A similar model, developed by Jerlock, Falk, & Severinsson (2003) relates to clinical placements for nursing. In this model they developed a learning process to meet what was required for their future profession, to train undergraduate nurses in “problem-solving, reflection, decision-making and the ability to use both deductive and inductive learning strategies” (Jerlock et al., 2003, p. 219). They stated that creating knowledge includes four stages; "awareness of concepts and phenomena, development of a 'language of caring', development of a 'model' of communication, and reflection gained as an effect of the intervention" (Jerlock et al., 2003, p. 231). These frameworks for reflecting on placement are similar in their approaches as they require students to be flexible and to reflect on their experiences or the tasks at hand.

Smith, Brooks, Lichtenberg, McIlveen, Torjul, Tyler, ‘Career Development Learning Final Report’, (Smith et al., 2009) ALTC study on career learning, offers another reflection framework and could easily be applied to WIL, as they state that “It would not be unreasonable to suggest that institution-specific policies and procedures could be extended to cover the delivery of career development learning and work-integrated learning. Consultation with stakeholders throughout this project revealed a need to develop a quality system for the delivery of career development learning and work-integrated learning” (Smith et al., 2009, p. 30), (figure 7):

![Figure 7: 'Looking from both sides of the two-way mirror' (Smith et al., 2009, p. 29).](image)

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In nursing three of the most common reflective models used include those of Gibb, Mezirow and Stevenson:

**Gibb’s reflective cycle**
The reflective cycle developed by Gibb (Gibbs, 1998), is a basic model for reflecting on clinical practice and is easy to apply to a range of situations. Students are asked to construct their narratives using critical questions at each stage of the cycle. Although suitable for beginning students to learn the process of reflection this model does not evoke the critical reflection needed in practice. Reflection must be critical in nature if students are to understand empowerment and promote change and they must be taught higher order skills as they progress (Crowe & O’Malley, 2006).

**Mezirow’s Hierarchy for Critical Reflection**
Critical reflection exposes the dynamics of power in the teacher: learner relationship and critically questions the social/cultural assumptions in the practice (Brookfield, 1995). At this level reflection is based on the important critical social theory, which currently influences education and nursing, and propounds the belief that no social phenomenon can be understood apart from the cultural, historical, economic and political context in which it exists. (Mezirow, 1990) suggests that critical reflection should elicit new meanings and judgements, resulting in personal transformation. He offers a model of hierarchical levels of reflection which move from consciousness (affective, discriminate and judgemental) to critical consciousness (conceptual, psychic and theoretical) as a higher level of reflectivity is reached about a situation or experience.

In Mezirow’s approach, the reflective range extends beyond the immediate situation to a more critical level. The personal issues, the social implications and the influence of empowerment within the relationship are considered to be essential components. Reflection in nursing must have this critical intent so that assumptions taken for granted in the clinical world are challenged and debated (Usher, Foster, & Stewart, 2008). This critical approach takes reflection to a level beyond those advanced in other models such as Gibb’s.

**Stephenson’s Framework for Critical Reflection**
Stephenson’s 1993 (Palmer, Burns, & Bulman, 1994) framework adopts an approach similar to Mezirow’s; it evolved from research into nurses’ actual practice. The framework is shown below

**Stephenson’s Framework: The Critical Approach to Reflection**

Choose a situation, and ask yourself:

- What was my role in the situation? Did I feel comfortable or uncomfortable? Why?
- What actions did I take? How did I and others act? Was it appropriate?
- How could I have improved the situation for myself, for the client and for the others involved?
- What can I change in the future?
- Do I feel as if I have learnt anything new about myself?
- Did I expect anything different to happen? What and why?
- Has it changed my way of thinking in any way?
- What knowledge from my theory and research can I apply to this situation?
- What broader issues, such as ethical, political, cultural or social, arise from this situation? - - What do I think about these broader issues?

These reflective frameworks are broad in their application to WIL and the Nursing and Construction disciplines. The following development of the framework (stage two) incorporates reflection to guide WIL. This second stage contributes to a comprehensive

Facilitating work integrated learning (WIL) through skills-enabled e-portfolios in construction and nursing
understanding of how to encourage students to make links between their knowledge and the skills they have gained during WIL.

To incorporate reflecting, the framework (stage two) allows practical placement experiences and the consequent attainment of employability skills to be further documented and understood from all these stakeholder perspectives. In addition, students can make the important links between what they have learnt at university to the work place.

How do students reflect and evidence these skills?

The project developed questions for students to use when reflecting on their competencies within the competency framework (see Table 5 below) based on a 2002 study into Nursing, Construction and Education competencies entitled NURAPID (A. Williams & Sher, 2004). Students may use these prompts to reflect on after or during their WIL experiences to gauge the level of competency they have achieved. This reflective process works to integrate their knowledge of the two domains (university and workplace).

Prompt questions for ‘Communication core’ (developed from NURAPID questions Williams & Sher see related study: NURAPID Case Study 7)

<table>
<thead>
<tr>
<th>Communication - planning nursing care for individuals and groups</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recalling and reflecting upon your experiences, consider which of the following statements best describes your competence in this skill:</td>
</tr>
<tr>
<td>A. I can contribute to or prepare and deliver a nursing care plan for individuals and groups.</td>
</tr>
<tr>
<td>B. I can prepare and deliver a nursing care plan for a patient, to a Nursing and Medical audience, explaining the process clearly.</td>
</tr>
<tr>
<td>C. I can prepare and deliver a nursing care plan on a complex situation to an unfamiliar audience, (new patient, family member) using an appropriate empathy and dealing with any questions and avoiding digressions.</td>
</tr>
<tr>
<td>D. I can prepare and deliver a Nursing care plan on a complex scenario, to a variety of audiences, encouraging further discussion and participation by people with alternative views (such as fellow clinical staff, Doctors, patients, members of the family). I am able to synthesise the discussions and sum up the various contributions in relation to my Nursing care plan. Finally in preparing the plan I take cognisance of issues such as gender, culture etc, choices being made in terms of language, method of communication and approach taken to the particular scenario. I am able to judge the effectiveness of my Nursing plan.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Communication - for a claims dispute and resolution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recalling and reflecting upon your experiences, consider which of the following statements best describes your competence in this skill:</td>
</tr>
<tr>
<td>A. I can contribute to or prepare and deliver a claims dispute on the construction process.</td>
</tr>
<tr>
<td>B. I can prepare and deliver a claims dispute on the construction process, to a construction audience, explaining the process clearly.</td>
</tr>
<tr>
<td>C. I can prepare and deliver a claims dispute on a complex scenario, to an unfamiliar audience, using an appropriate tone and style and dealing with any questions and avoiding digressions.</td>
</tr>
<tr>
<td>D. I can prepare and deliver a claims dispute on the construction process to a variety of audiences, encouraging further discussion and participation by people with alternative views (such as contractor, legal advisors). I am able to synthesise the discussions and sum up the various contributions in relation to the claims dispute. Finally in preparing the claims dispute, I take cognisance of issues such as gender, culture etc, choices being made in terms of language, method of communication and approach taken and I am able to judge the effectiveness of my construction dispute claim.</td>
</tr>
</tbody>
</table>

Indicate on the grid below your competence in this skill:  

<table>
<thead>
<tr>
<th>Statement A</th>
<th>Statement B</th>
<th>Statement C</th>
<th>Statement D</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

What evidence do you have to support your claim of competence? Where is this evidence located? Show on the grid below:

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Table 5: Reflection framework – stage 2

<table>
<thead>
<tr>
<th>Evidence of competence</th>
<th>Evidence of competence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Showcasing my nursing care plan to the clinical coordinator (link to plan document, YouTube of presentation)</td>
<td>Showcasing my claims dispute to my Industry placement supervisor</td>
</tr>
<tr>
<td>Reflection of my Nurse care plan experience:</td>
<td>Reflection on my claims dispute:</td>
</tr>
</tbody>
</table>

These questions further relate to Stephenson’s Framework outlined above and serve to prompt students to reflect on their WIL experience in order to create a critical approach to reflecting on experiences.

The aforementioned stage one and two framework - further aligns with ‘The Assuring Graduate Capabilities’ ALTC fellowship project (Oliver, 2011). Oliver proposes that all graduate attributes that universities design and relate to skills required for the workplace fall into the following seven categories:

1. Written and oral communication
2. Critical and analytical (and sometimes creative and reflective) thinking
3. Problem-solving (including generating ideas and innovative solutions)
4. Information literacy, often associated with technology
5. Learning and working independently
6. Learning and working collaboratively
7. Ethical and inclusive engagement with communities, cultures and nations (Oliver, 2011)

Oliver’s standards have been developed to understand how undergraduates can attain competencies through the use of rubrics. The standards work by Oliver, (see slide 22 onwards http://otl.curtin.edu.au/atna2011/local/documents/Beverley%20Oliver%20ATNA2011.pdf) provides an example of the different standards with levels of attainment (from novice to professional). Oliver suggests that academics need to know the standards that students require in their discipline and where they need to have progressed to by the end of their program in order to map out these standards(Oliver, 2011). The issue that arose in Oliver’s fellowship was ‘how to evidence these standards’ besides using the usual assessment measures? To resolve this, Oliver proposed a capstone portfolio assessment, where there is a ‘synthesis of portfolio assessment’ at certain stages of the program to create an authentic and auditable awareness of what level of capabilities graduates are at throughout their program in relation to the seven clusters (see hyperlink above).

Oliver (2011) further suggests that there will soon be a National portfolio called ‘My University’ where these capstone portfolios can be published by students. See Oliver’s website for further information http://boliver.ning.com/ and PowerPoint http://otl.curtin.edu.au/atna2011/local/documents/Beverley%20Oliver%20ATNA2011.pdf

Also Brown’s work on Nursing competencies http://www.altc.edu.au/resource-nursing-competencies-toolkit-uow-2010

Oliver’s project shows that Universities currently provide well-developed graduate profiles which are expressed at institutional as well as at discipline-specific program level.

The project reported here provides further opportunities to introduce a different form of

Facilitating work integrated learning (WIL) through skills-enabled e-portfolios in construction and nursing
“attribute” in relation to WIL which is expressed in terms that demonstrate achievement in the workplace. These attributes could align with WIL activities and create a link with practice. This different view of attributes would allow students to witness these traits being demonstrated by practitioners, and allow them to develop and apply a shared understanding of what their university degree is trying to achieve and the ‘other’ qualities expected of them when they graduate. Furthermore, universities should have more control of their students’ WIL learning experiences, as these attributes are demonstrated in the workplace through related evidence (see also relevant case study on Curriculum Mapping for WIL at the University of Canberra). The table below explains this process:

<table>
<thead>
<tr>
<th>UoN abbreviated GA</th>
<th>Defined by University and guided by accreditation</th>
<th>Attribute applied and demonstrated in workplace</th>
<th>Examples of related evidence/reflection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Decision making</td>
<td>Communicates effectively in a team</td>
<td>Construction dispute</td>
<td>Recording of event</td>
</tr>
<tr>
<td>Professionalism:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Problem solving</td>
<td>Acts effectively in decision making and problem solving</td>
<td>Nursing care plan</td>
<td>Interview with student</td>
</tr>
<tr>
<td>Work alone and in team</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Community responsiveness:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Responsible role in communities</td>
<td>Communicate effectively in communities</td>
<td>Up to date knowledge of industry</td>
<td>Report on industry</td>
</tr>
<tr>
<td>Take in social and philosophical contexts</td>
<td>Up to date knowledge of public health</td>
<td>Evidence of communicating with Nursing professionals through reflection portfolio</td>
<td></td>
</tr>
<tr>
<td>Scholarship:</td>
<td>Reflect on and continue to develop knowledge, skills and attitudes</td>
<td>Project planning and programming skills – management skills</td>
<td>Evidence of project planning in the workplace</td>
</tr>
<tr>
<td>Commitment to knowledge</td>
<td>Knowledge of systematic Nursing assessment procedures.</td>
<td>Evidence of systematic assessment procedures.</td>
<td></td>
</tr>
</tbody>
</table>

Table 6: Evidencing attributes in the workplace (source: framework stage 1 and UoN Graduate attributes)

Conclusion

The two-staged framework phase of the project allowed the team to map opportunities that engage and support students in integrating WIL with their university learning, and define WIL skills and the associated issues of evidencing and reflecting on these competencies. The use of e-portfolios was then investigated to establish if these platforms would be advantageous within this WIL context and to assess and demonstrate competency levels gained and applied during placements.

Facilitating work integrated learning (WIL) through skills-enabled e-portfolios in construction and nursing
Chapter 5: E-portfolios for WIL?

Introduction

The themes which emerged from the qualitative data revealed that e-portfolios can be advantageous for documenting skills gained during work placements. In this chapter, the WIL topics and issues which surfaced from the interviews are matched with the opportunities an e-portfolio could provide for students when they are on placement through a WIL/e-portfolio matrix. This chapter then showcases Web 2.0 as a solution for the issues identified from the qualitative data within the matrix (stage two) which responds to these online applications. The chapter concludes by describing how the Construction and Nursing disciplines could benefit from the application of these e-learning technologies in managing and linking practical experiences to theoretical learning in order to close the gap between theory and practice for students and teachers.

Literature review

Significant opportunities are provided by the use of e-portfolios to assess WIL in Construction and Nursing education. For instance, skills-enabled e-portfolio platforms such as Mahara http://mahara.org/ (see also Mahara pilot case study in Medicine) and Drupal http://drupal.org/ have sections within the platform on ‘competencies’, being evidence based records (some platforms being more detailed than others). There are slightly different ways that the competency section can be viewed and assessed, such as ‘assessor views’, the range of competencies, or options where staff create a ‘shopping trolley’ of competencies (Andre, 2010). Within the ‘competencies’ section of the e-portfolios exists tags/links to artefacts (including document/video/audio) which can demonstrate students’ reflecting upon their practical experiences. These artefacts may be uploaded to show how students have achieved the relevant competency in their placement (Andre, 2010). WIL examiners could then validate the evidence with a comment or request for further work until this competency is completed. The competency lists in some platforms relate to generic skills such as, ICT and communication skills but these can be customised especially for WIL and the Construction and Nursing disciplines.

Nevertheless, Barrett (2004) suggests that students can become alienated from a platform if it is solely focused on the style of institution-driven assessment defined above. Therefore, it is imperative for educators to resolve the purpose of their e-portfolio before it is implemented (Barrett, 2004). Overall, Barrett (2004) states that a balance is required between students’ own WIL journeys and the need for assessment of these journeys. As stated in previous chapters, at the moment in construction education in particular, there is a lack of WIL assessment. Any documentation of these experiences, made possible with e-portfolios and/or web tools, will benefit both students and academics in this discipline. On the other hand in nursing, some universities are already using e-portfolios for clinical placement and have found them advantageous in this setting (See Case Studies in Nursing – UTAS, and Edith Cowan).

WIL - e-portfolio matrix – stage 1

There are two major types of e-portfolio platforms defined by Himpel and Baumgartner (2008, p. 2), these being a ‘working portfolio’ or a ‘presentation portfolio’. The ‘working portfolio’ is defined as learners showing their development of learning through milestones, these are done through ‘collecting’ evidence, reflecting. The second ‘presentation portfolio’ is the final presentation of these milestones for assessment. To understand how platforms can support different learning needs, Himpel and Baumgartner (2008) provide an in-depth review of the main platforms currently used. The table by Himpel and Baumgartner (2008) gives
some indication of the services e-portfolio platforms can provide for learning, such as ‘reflecting, testing, verifying and planning’.

To be continued: See table, page 13 for final overall result of the evaluation of main e-portfolio software:


See also list of e-portfolio platforms and other related resources available.

WIL needs to be related to this review of the platforms. The following table therefore uses a WIL criteria raised from WIL issues mentioned in chapters Two and Three, such as large cohorts of students engaging in WIL and the need for effective documentation of what happens during placement. These WIL criteria have been abbreviated and matched to the overall benefits e-portfolios can provide staff and students, as shown below:

<table>
<thead>
<tr>
<th>What is needed to support WIL</th>
<th>What e-portfolios can provide</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capacity to support large numbers of students engaging in WIL (large student numbers can create issues in monitoring and assessing WIL)</td>
<td>Able to handle a large user base</td>
</tr>
<tr>
<td>Future learning and planning for skill development/knowledge gained</td>
<td>Capacity to showcase WIL evidence – most e-portfolios can support large file uploads and storage. This evidence provides a capacity to show development of students over their studies</td>
</tr>
<tr>
<td>Innovative assessment strategies of WIL required as traditional methods challenging for students. Further, there is a need for different ways of assessing</td>
<td>Allows reports to be developed by and shared between students and supervisors</td>
</tr>
</tbody>
</table>

Facilitating work integrated learning (WIL) through skills-enabled e-portfolios in construction and nursing
### Learning in the Workplace

<table>
<thead>
<tr>
<th>High level of student support - monitoring, management, communication and assessment.</th>
<th>Collaboration – supports effective student/supervisor and peer collaboration <a href="#">see i-portfolio case study</a></th>
</tr>
</thead>
<tbody>
<tr>
<td>Increased communication channels - between mentors (industry/hospitals) - students (peer support, a place to voice issues) – academia (clinical coordinators, lecturers).</td>
<td>Students have control over their portfolios – they allow access for fellow students, industry and staff therefore opening up communication channels so issues can be identified. Students can tailor their own pages/website.</td>
</tr>
<tr>
<td>Continual WIL support – there is need for all students issues to be supported and resolved whilst on placement.</td>
<td>Students have control over their portfolios – they allow access for fellow students, industry and staff therefore opening up communication channels so issues can be identified. Students can tailor their own pages/website.</td>
</tr>
<tr>
<td>Equal access and quality WIL - for all students to have a quality WIL placement experience.</td>
<td>Cannot directly support</td>
</tr>
<tr>
<td>Change in attitudes and culture in the workplace - students respected by colleagues in the workplace, change in attitudes needed.</td>
<td>Cannot directly support</td>
</tr>
<tr>
<td>Increased pre-placement preparation - introduction courses, industry lectures,</td>
<td>Efficient management of WIL placements – as a central organiser –</td>
</tr>
</tbody>
</table>

Facilitating work integrated learning (WIL) through skills-enabled e-portfolios in construction and nursing
<table>
<thead>
<tr>
<th>Facilitating work integrated learning (WIL) through skills-enabled e-portfolios in construction and nursing</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Induction)</strong></td>
<td><strong>Upload important documents needed for placement.</strong></td>
</tr>
<tr>
<td>Increased resources/time - to implement meaningful and in-depth WIL experiences for students – aid such things as time management for staff and students, avoidance of assignment clashes with placement, increased supervision of student experiences.</td>
<td>Efficient management of WIL placements – as a central organiser – upload important documents needed for placement.</td>
</tr>
<tr>
<td><strong>Framework triggers between theory and practice - reflection triggers for students to relate between theory and practice.</strong></td>
<td><strong>Competencies embedded into the assessment section of the platform, students can reflect against these and submit these to supervisors.</strong></td>
</tr>
<tr>
<td>Documenting WIL experiences - a place to record thoughts/important information whilst on placement.</td>
<td><strong>Capacity to support reflection. Reflective framework and prompt questions can be embedded into the platforms. This creates opportunities to document post placement experiences and reflect with peers.</strong></td>
</tr>
<tr>
<td>Increased post placement experiences - reflection with peers, trigger to CPD)</td>
<td><strong>Capacity to support reflection. Reflective framework and prompt questions can be embedded into the platforms. This creates opportunities to document post placement experiences and reflect with peers.</strong></td>
</tr>
</tbody>
</table>

Table 7: Matrix – stage 1 ‘e-portfolios for WIL’

Facilitating work integrated learning (WIL) through skills-enabled e-portfolios in construction and nursing
The table shows how e-portfolios can be extremely supportive for documenting, reflecting, organising and assessing WIL experiences. The table also indicates some gaps where e-portfolios cannot entirely provide WIL support for students. These two topics are ‘equal access and quality WIL experiences’ and ‘change in attitudes and culture in the workplace’.

Participants in the focus groups and interviews were asked to discuss their views on issues and opportunities with the use of e-portfolios. The findings from these data will now be discussed.

**Student and staff perspectives on e-portfolios**

**Opportunities**

Both staff and students who were interviewed similarly identified how e-portfolios could be useful for supporting WIL experiences through such strategies as supporting students conceptualise their whole program in order to see the links between courses and experiences. To do this, e-portfolios need to be seen as a repository for facets of the students’ digital identity in different modes. An efficient e-portfolio can display these links and facets well.

This opportunity adds to students’ WIL experiences being documented more explicitly over time. A clinical coordinator stated that “this can be advantageous as their current paper-based portfolio assessment item ends at the end of each semester” (Clinical Coordinator Focus Group, 2010). However, with the potential use of e-portfolios, teachers can have access to the students’ documented development over the whole three years, for example:

…”but the problem is it [portfolio] stops at the end of each semester …that’s what could be done in an e-portfolio, that the academics could get access to, that you could go back and say, ‘well look, this student was obviously not coping in such-and-such an area of the ANMC competency standards in first year, but I can see in third year how they’ve developed that skill.’ And that was one of the things that we used e-portfolio… quite a long time ago. If it's an ongoing thing, then a student and an academic can show their development over the three years, and that would be the biggest positive out of it…”

(Clinical Coordinator Focus Group, 2010)

Furthermore, it was found that in order for e-portfolios to work well in a School, there needs to be ‘buy in’ from staff. One way to do this is for staff to use e-portfolios to advertise their own professional competencies and CPD and use this for academic promotion purposes. Staff are more likely to use e-portfolios when introduced this way and then also more likely to encourage use amongst their students. Other unexpected opportunities also arise in regards to use of e-portfolios. For instance, a Construction student suggested that they would be effective to use by employees on site to report on the progress of a job, as stated in the following:

…”If you had something like this you could be…I could send it through to somebody in the office… They could download it on the thing and then it’s like a real time record of what’s going on at the site rather than…I mean some of our sites are a whole day’s drive away. So by the time you get back to the motel or back to where you are staying, you have forgotten a lot of things.”

(Construction Student Focus Group A, 2011)

These opportunities raised by staff and students have shed light on the potential of using these platforms to document placement experiences and promote deeper WIL experiences for students.

Facilitating work integrated learning (WIL) through skills-enabled e-portfolios in construction and nursing
As well as the potential benefits of using e-portfolios for WIL, potential problems also exist. Staff and students have identified a number of potential issues with using e-portfolios.

**Issues**
A number of e-portfolio issues and opportunities arose from the focus groups and interviews with staff and students and are outlined as follows;

**General issues**
- Time consuming, and frustrating if the users are not computer literate
- Limited Platform capability and storage space
- Little guidance on what WIL skills are required (so these can then be embedded into e-portfolios)
- No evidence of e-portfolio successfully linking practice with curricula.

**Nursing Issues**
- Resource constraints
- Technology constraints - lack of computer availability on wards
- Time constraints
- The high clinical workload in the hospital setting does not allow time for professional reflection on placement practice (Garrett & Jackson, 2006)
- Practicalities of documenting competencies - how to fit into the culture of hospitals.

This last point refers to the physicality of using mobile e-portfolios on placement as computers are rarely used on wards and nursing students are not allowed to use mobile phones whilst on duty (Clinical Coordinator Phone Interview J, 2010). Therefore, any documentation of these activities would have to be in labs only. With respect to ward experience, students would have to reflect after these experiences. See recent Office of Learning and Teaching (OLT) study, using mobile technologies for clinical skills on placement (Snodgrass, 2010) [http://www.olt.gov.au/project-eosce-advancing-technology-assessment-reliability-uon-2010](http://www.olt.gov.au/project-eosce-advancing-technology-assessment-reliability-uon-2010)

**Construction Issues**
- Difficulty integrating competencies with practice in the e-portfolios due to the lack of alignment of professional competencies, as discussed in Chapter 4.
- Lack of consistency of how WIL is assessed – for example, learning happens in ad hoc ways for Construction students, as discussed in Chapter 2, p.24 (therefore to use an e-portfolio to document these experiences would be difficult).

Time to upload and reflect experiences on top of other university demands was a particular issue that the students in both disciplines felt strongly about. For example, in both the following quotes, the students have the exact same opinion in regards to this issue:

**Construction**
“I suppose the thing you really have to balance though is time. I mean if you have just worked, eight or ten hours’ days, do you really want to go home and blog about it for the next hour or more?”
*(Construction Student Focus Group A)*

**Nursing**

Facilitating work integrated learning (WIL) through skills-enabled e-portfolios in construction and nursing
“I suppose reflections in the blog part you could reflect on but then would you want that on-line?” (Student 1)
“Would you want to go home and sit on your computer after work?” (Student 2)
(Nursing Student Focus Group, 2011)

For students it is a struggle to be motivated and to see the reason for keeping an e-portfolio, especially in regards to construction work as students do not need to record their practical work for their university requirements. As previously discussed, due to the construction industry skills shortage, Construction programs already struggle to keep students. As a consequence, being motivated to engage with e-portfolios and to think about their future development seems to be very low on student’s priorities.

A solution to this issue is suggested by Construction staff member who stated that the assessment needs to drive the learning to ensure student motivation, as shown in the following quote:

…//… “So you need to set up a system, whereby the students are motivated to do it… I've had a couple of trials where things can work… but I've also had an experience… where students just walk away from it… And then it becomes very difficult for them, it's not driving their learning… So I think, at least from my experience, that's the problem area. I think the e-portfolios are excellent, it's a case of how can you use the assessment to drive the learning. And then you've got to drive the learning in a direction that actually creates work readiness, and that of course has its own problems.”
(Industry Placement Coordinator Phone Interview A, 2011)

Another issue that arose for nursing was the issue of ethics and privacy. The type of WIL evidence used to document workplace learning, such as video recordings of interactions with real patients, could be unethical. The students in the following quote discuss this issue;

“I think the problem is that because of patient privacy what could you document? Like you can't video yourself giving an injection or talking to a patient or giving a bed bath.” (Student 1)
“What would you document? So if you had lab work I suppose you could”… (Student 2)
“Yeah you could video lab work.” (Student 3):
“Would you see any benefit in doing that?” (Facilitator)
“I wouldn't, no.” (Student 2)
“Because I wouldn't look at it again I don't think. I mean once you've been taught it in the lab it's the practice on the ward that makes it happen….” (Student 1)
(Nursing Student Focus Group, 2011)

A further solution would be to document simulated evidence only, such as working in labs or if a student went overseas and came back and documented/reflected on this experience, such as recording how the student related with local students whilst on placement.

This discussion has shown that traditional e-portfolios can provide a solution for evidencing WIL to a certain extent. Nevertheless, some issues and WIL criteria raised were not resolved through the use of e-portfolios. In addition, the other related issues of managing these platforms with large amounts of students meant that these platforms are not entirely the best for WIL facilitation.

Another solution to these issues is to incorporate Web 2.0 tools either as links to e-portfolio platforms or as stand-alone entities.

Facilitating work integrated learning (WIL) through skills-enabled e-portfolios in construction and nursing
WIL - e-portfolio matrix - stage 2

There are varied definitions of Web 2.0 technology. Generally, Web 2.0 technology is defined as ‘web applications’ that promote community participation, such as information sharing, collaboration, user design and social networks (O’Reilly, 2006). These are online tools that individuals can use for such things as information and video sharing, for instance ‘Wikipedia’ (online encyclopaedia), ‘Blogger’ (to upload blogs online) and ‘YouTube’ (online videos); for information search and retrieval such as ‘Google’, and for social networking, such as ‘Facebook’.

Web 2.0 can be combined with mobile e-learning technologies to work towards monitoring students learning whilst they are on placement. This is done through using existing technologies, such as mobile phones, and related Web 2.0 applications to capture and assess the evidence and information students have learned when they are on placement. A recent initiative with five universities in the UK has created and trialled a mobile learning system for students in health and social care, which ‘supports the creation, distribution and storing of assessment tools on mobile devices’ (MKMlabs, 2009). The devices have assessment items based on core competencies, which are sent to students whilst they are on placement (MKMlabs, 2009). The devices also create opportunities for students to contact and communicate with their tutors through a single portal, which means that students do not feel so isolated when they are out in the ‘real world’ learning. Similarly, a recent OLT project investigated the use of mobile technologies for clinical examination, see (Snodgrass et al., 2010 http://www.olt.gov.au/project-eosce-advancing-technology-assessment-reliability-uhn-2010).

Most relevant to this project and compatible with e-portfolio platforms are social networks and the concept of ‘cloud computing’. Cloud computing can be defined as:

…the delivery of computing as a service rather than a product, whereby shared resources, software, and information are provided to computers and other devices as a utility (like the electricity grid) over a network (typically the Internet). (Knorr & Gruman, 2008)

Cloud computing means that these Web 2.0 tools can provide a network ‘in the cloud’ which supports distant collaboration and learning as well as peer support and evaluation. For example, Web 2.0 technology can support community-based learning as it allows the connection of multiple-disciplines and communities. Here there is potential for WIL to be supported by Web 2.0 through ‘collective intelligence’ (Knorr & Gruman, 2008), which is defined as a consensus on the decision making action of many groups of entities that share similar goals and solve problems in an intelligent manner. This further allows opportunities for innovative ways of doing, documenting and reflecting on WIL. As such, Web 2.0 can make a significant contribution to WIL through this collective learning.

Web 2.0 can also support self-evaluation or the interactions between the industry personnel and the academic assessors, and can also engage students through social network sites with multiple inputs, such as assessor, employer/s, and their peers.

The literature on e-learning technologies states that if students drive their own on-line learning, they are much more likely to be engaged with e-learning technologies such as Web 2.0 (Barrett, 2004). Here, students are empowered through their self-directed use of e-learning technologies. Barrett (2004) creates the concept of a ‘digital shoebox’ when referring to web 2.0. The ‘shoebox’ is used as a metaphor here referring to a collection of items such as those often stored in a shoebox. Therefore the digital shoebox concept emphasises the need of the use of a collection of online tools or applications to document and reflect learning experiences rather than relying on one single electronic platform. Students can use a wide range of electronic applications, essentially Web 2.0 tools (such as
Facilitating work integrated learning (WIL) through skills-enabled e-portfolios in construction and nursing

What the 'shoebox' can provide:

Social networks - Facebook, Linkedin, Ning, Google Reader, Twitter

Presentation - Slideshare (shares powerpoints), scribd (publishes and shares articles), elluminate, podomatic (uploads ideas in audio and audio feedback), Flickr (photographs, images and diagrams), Blip TC, YouTube and Vimeo (uploads videos of competencies etc), netvibes ‘dashboard everything’ (combines and organizes links to Web 2.0), pinterest (online/virtual pinboard to share ideas with friends)

Blogs - blogger, Vox, Typepad, Movable Typle, WordPress, ExpressionEngine, TextPattern, ProBlogger

Communication and sharing work in progress documents - Google Docs, Mindomo, Mindmeister (both create mindmaps to share), Gliffy (creates, shares and collaborates on diagrams and flowcharts), Twine – social bookmarking tool on subjects researched. (Owen, 2010)

Web 2.0 tools offer a solution to the gap identified in the e-portfolio matrix - stage 1 ('equal access to WIL' and 'changes in attitudes') and furthermore, the issues that arose by participants in the study (identified above). These issues can be resolved through a more eclectic use of varied Web 2.0 tools. See following matrix - stage 2 below:

<table>
<thead>
<tr>
<th>Limitations of e-portfolios</th>
<th>What Web 2.0 can provide?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time consuming</td>
<td>Immediate uploads of evidence/reflections through apps/mobile technologies</td>
</tr>
<tr>
<td>Lack of time to reflect on practice due to other demands</td>
<td>All Web 2.0 can be accessed anywhere and anytime whereas only some platforms can be accessed if browser based</td>
</tr>
<tr>
<td>Practicalities of documenting experiences</td>
<td>A collection of tools means evidence etc. is stored elsewhere 'in the cloud' therefore storage space is reduced and data saving is</td>
</tr>
</tbody>
</table>

Facilitating work integrated learning (WIL) through skills-enabled e-portfolios in construction and nursing
Facilitating work integrated learning (WIL) through skills-enabled e-portfolios in construction and nursing

<table>
<thead>
<tr>
<th>Issues with platform capability, storage space and saving data</th>
<th>Data students enter are easily portable to other applications therefore having the added advantage of being easily sustainable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Limited guidance on what WIL skills are required</td>
<td>Guidance can be fed to students immediately through tools (such as Twitter)</td>
</tr>
<tr>
<td>Resource constraints</td>
<td>Web 2.0 are predominantly free applications</td>
</tr>
<tr>
<td>Lack of motivation</td>
<td>Motivation increased by these tools – for instance Web 2.0 responds most younger students’ preference to engage electronically with these applications (Facebook, Twitter) as it is a style of interface that they are comfortable with using rather than a new e-portfolio platform</td>
</tr>
</tbody>
</table>

**WIL ISSUES RAISED IN MATRIX STAGE 1:**

| Equal access and quality WIL experiences | Wider user and audience base means increased awareness of WIL access and potential change of attitudes |
| Change in attitudes and culture in the workplace | Wider user and audience base means increased awareness of WIL access and potential change of attitudes |

*Table 8: Matrix Stage 2 - Web 2.0 as a solution to e-portfolio limitations*
The above table identifies how Web 2.0 can provide a solution to some of the limitations of e-portfolios. Nevertheless, not all students are tech savvy or interested in these tools thereby making Web 2.0 not the only answer for supporting WIL.

In addition, there are still other issues that arise from using Web 2.0 tools and e-portfolios, most importantly the issue of compatibility between platforms.

**Issues arising from Web 2.0 and “cloud” services for WIL**

The widespread adoption of Web 2.0 technologies can be seen as representing an important phase in the development of the World Wide Web and also in the approach to the delivery of learning, training, and professional development services offered by relevant institutions. This is also true for ‘cloud-based’ services which are revolutionizing the deployment of enterprise-wide services. Providing adequate links to the ‘contained’ environments of institutional learning management systems (LMS) and e-portfolio systems in order to mesh with the open frontier of Web innovation, such as using Web 2.0, offers challenges as well as opportunities. Web 2.0 technologies offer outcomes far beyond enabling social interaction and the sharing of resources, however, just because an innovation enables new capacities does not necessarily mean it can be easily integrated with other technologies or systems. Thus, from an interoperability perspective, Web 2.0 technologies can at times be seen as a fragmenting force given the sheer diversity of tools and environments available.

To be continued in: *A perspective on Standards and Interoperability with Web 2.0* by J. Mason.

Overall, the Construction and Nursing disciplines can benefit from the application of these e-learning technologies in managing and linking practical experiences to theoretical learning, as well as encouraging reflection, with the aim to ultimately close the gap between theory and practice for students and teachers.

<table>
<thead>
<tr>
<th>Defined by university and guided by accreditation</th>
<th>Attribute applied in workplace</th>
<th>Demonstrated evidence</th>
<th>E-portfolio/Web 2.0 evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communicates effectively in a team</td>
<td>Construction Claims dispute</td>
<td>Mapped out claim dispute</td>
<td>YouTube film of event Link to YouTube in e-portfolio</td>
</tr>
<tr>
<td>Acts effectively in decision making and problem solving</td>
<td>Nursing care plan</td>
<td>Interview with student</td>
<td>Audio file of interview - podOmatic</td>
</tr>
<tr>
<td>Communicate effectively in communities</td>
<td>Up to date knowledge of industry</td>
<td>Report on industry</td>
<td>Pdf of reports on e-portfolio, or link to Scribd</td>
</tr>
<tr>
<td></td>
<td>Up to date knowledge of public health</td>
<td>Evidence of communicating with Nursing professionals</td>
<td>Link to powerpoint - SlideShare</td>
</tr>
</tbody>
</table>
Facilitating work integrated learning (WIL) through skills-enabled e-portfolios in construction and nursing

<table>
<thead>
<tr>
<th>Reflect on and continue to develop knowledge, skills and attitudes</th>
<th>Project planning and programming skills – management skills</th>
<th>Evidence of project planning in the workplace</th>
<th>Mind map of planning - MindMeister</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge of systematic Nursing assessment procedures.</td>
<td>Evidence of systematic assessment procedures</td>
<td>Report on assessment procedures - Gliffy, pinterest and YouTube</td>
<td></td>
</tr>
</tbody>
</table>

Table 9: Demonstrating the competency framework (an extension of table 6) with Web 2.0

The above table offers an example of how Web 2.0 tools could be used to demonstrate WIL evidence. See another example of embedding the 'core – communication' from the competency framework into e-portfolios and the support of students reflections on placement– Case Study 5, Curtin University of Technology and Case Study 4, The University of Newcastle and University of New England. See also using Pebble Pad for Reflection – Case Study 1, RMIT.

Conclusion

The qualitative data collected as a result of this study revealed that there is potential for e-portfolios to be used to improve students’ placement/WIL experiences. Problems and issues relating to the use of e-portfolios were also identified. Participants nominated issues about the reality of implementing e-portfolios – such as cultural issues, student motivation, time and inconsistencies of placement requirements across the University programs. These findings have informed the recommendations, such as the need for the development of resources to enhance existing e-portfolio systems and to exploit Web 2.0 technologies to complement existing systems. The project outcomes, deliverables and recommendations will now be addressed.
Chapter 6: Outcomes, Deliverables and Recommendations

Introduction

The project has encouraged and facilitated skill development and evidence gathering in line with life-long learning practice. Practical outcomes include the development of a WIL framework as a result of curriculum mapping (to promote and link theory with practice) and online resources (which demonstrate and support the development of aligned WIL/formal learning). This chapter reviews dissemination, outcomes and deliverables and the important links created from the project with related ALTC projects. Eleven recommendations for the facilitation of WIL through e-portfolios are made at the conclusion of the chapter.

Dissemination

The project outcomes will disseminated on the Office of Learning and Teaching (OLT) website. In addition, academic papers are due to be presented at upcoming conferences in June and July, 2012.

The upcoming published book (including CPD modules) will be sent to all universities which offer Construction and Nursing as well as teaching and learning centres and libraries in early 2012.

Previously, the project has been disseminated at national and international conferences. These events provided the team with formal and informal feedback on the project’s contribution to knowledge of WIL opportunities between the two disciplines and the identification of issues for implementing e-portfolios in this context. The project outcomes have been shared at the following events and conferences:

**AUBEA Conference (2010, 16 – 18th July)** Paper presented and data gathering workshop conducted with conference participants to review findings developed from the project and gain further feedback/evaluation of project outcomes.

**The Learning Forum EIFEL** (2010, 5-7 July, UK) Competencies and e-portfolios conference - Two paper presentations on the project to receive feedback and gain up to date knowledge of online learning tools and student reflections.

**E-portfolio conference (2010, 3-4 Nov, Melbourne)** Paper presented to seek potential case study participants.

**ANZAScA Conference (2010, 24-26 Nov, New Zealand)** Paper presented to inform academic community of initial project findings.


Network of Clinical Coordinators (2010, June) Focus group session - to review findings developed from the project and gain further feedback/evaluation of project outcomes


**AAEE (2011, 5-7 Dec, Western Australia)** – paper presentation on qualitative data (on-line survey) and the two-stage competency framework.

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Project Impacts

Presenting the project at a number of conferences and forums has provided opportunities for peer comment and feedback as well as for progressive dissemination of the project and its outcomes. Submitting work for publication also allowed for blind review and feedback which was valuable. As well as the very positive comments and feedback received from referees and conference audiences, feedback from peers at our respective universities has been encouraging and helped the team to appreciate the potential impact of the project on WIL. It was evident that once the issue of the relationship of the disciplines involved in the project, Construction Management and Nursing, was understood, the potential role of WIL and e-portfolios in order to enhance student learning and experience was appreciated.

Meetings with the project evaluator have been conducted and email communication maintained. This has enabled the evaluators to monitor progress and to provide feedback to the team. Feedback from the project evaluator caused us to carefully consider aspects of the project that may present potential risks to the project’s success and to develop appropriate risk management strategies. The evaluator also provided insight into potential opportunities for the project and also for further work after the project’s completion, especially in the journal publication domain. A summative project evaluation was conducted and is provided in Appendix K.

Of significant importance was the ongoing feedback we received from participating universities. This unsolicited feedback from the reference group and case study contributors has been consistently positive. This affirms the importance of not only the projects worth but also the importance of investing in and continuing to examine both WIL and the potential opportunities e-portfolios offer to universities, professional bodies and industry partners in providing effective learning as well as practice.

Critical success factors

This project was conducted by a large project team due to the participation of two disciplines as well as a diversity of content, WIL and e-portfolios. Undoubtedly this created some challenges not only for each of the team members but also for efficient project management. However, the size, commitment and expertise of the team were directly attributable to the team’s success. The large project team did require effective communication processes, as well as clarification and negotiation regarding the roles and responsibilities of team members. The project manager was pivotal in all of the communication and support of the project and the team and communities’ understanding of the project and its outcomes.

In this project capacity, team building was seen as an important outcome. This did become an issue for the team with the project leader being unavailable for an extended period and another member being involved in sabbatical leave during the project. Contingency plans were developed early in the project in the event of team members being unavailable for an extended period to work within required time frame, nevertheless the project did continue to function well and achieve outcomes during these periods. The support of ALTC and now OLT was also greatly appreciated during this time.

Perhaps most important to the success of projects is ensuring the provision of adequate support from the organisation (school, faculty and university). This has been a key factor for this particular project to achieve success. The commitment of support by the Schools in providing participation, feedback and facilities was greatly appreciated. In addition, a number of the members of the project team have been fully funded by the University to attend conferences to ensure that dissemination has been ongoing. This commitment to the project has been assured for the foreseeable future, as well as the commitment to increasing the profile of the project over the longer period.

Engaging colleagues both within our organisation/s and across the sector was essential to

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the uptake of the teaching and learning initiatives and to encourage educational practice change. Having team leaders and reference group members with positional authority and professional credibility was important for the project progression, for accessing the required support. Also, the continued engagement by the industry member of our reference team during the project was highly valued; especially seeing this involvement was unfunded.

Factors Impeding Success

The team experienced a number of difficulties during the period which required an extension of the project timeline. The primary issue was the unavailability of the project leader for an extended period due to medical issues. This did have a significant impact on the delivery of the project outcomes.

During the initial stages of the project there was the recurring issue of Institutional Ethics Approval. The evaluation and approval of the project’s ethics application was protracted, firstly due to the nature of the process at the hosting University but secondly because in order to meet ethics requirements, Heads of School needed to consent to the project being conducted at their School, in addition to academic staff consenting to participate in the project. As a result the interviewing phase of the project was extended and become overly time-consuming. The process took a lot longer than originally budgeted for, as HOS approval took time to obtain due to workload time constraints at some of the participating universities.

Linkages

Linkages between the following projects and fellowships were created during the project:

OLT projects:

**Patrick Crookes and Roy Brown National Nursing Competency Tool**

The National Nursing Competency Tool devised by the University of Wollongong and the development of a pre-registration nursing competencies assessment tool for use in universities across Australia: See toolkit: http://www.olt.gov.au/resources?text=nursing+competency+tool

**Stephen Billet – WIL fellowship**

William Sher facilitated a parallel research project with Billet’s WIL fellowship which investigated student practical experiences in CM via an online survey. It became apparent that the survey executed for this parallel project asked very similar questions to the ones devised for this current project. http://www.olt.gov.au/altc-national-teaching-fellow-stephen-billett

**Sidney Newton – discipline scholar in Building and Construction**


**Beverley Oliver – National Teaching Fellowship**


http://tiny.cc/boliver

**Professor Susan Ryan – Project Leader (Priority Project)**


This priority project is entitled ‘Creating student-focussed, web-learning resources to support the development of and provide evidence of occupational therapy students’ graduating competencies’. The project has strong parallels to the project reported here.

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Industry liaison
Industry liaison has continued throughout the project with ICT professionals (at the reference group meeting and a ‘Career Hub’ e-portfolio software tool demonstration at the UoN). These industry representatives have informed the team of ICT opportunities.

Unexpected interdisciplinary linkages that have emerged as a result of the project: Medicine and Engineering
The team engaged with other disciplines, including Medicine and Engineering. Collaboration with a medicine team at the UoN has informed a shared understanding of e-portfolios and health terminology. The School of Medicine has set up an e-portfolio system for third year medicine students (see the University of Newcastle, and University of New England case study). This sharing of knowledge created a cross reference of project experiences and terminology and the related issues of using e-portfolios.

Contact was made with Engineering and in particular Engineers Australia, The Engineering education body. Synergies have been developed between the project findings and the WIL requirements and issues in engineering education.

Evaluation
The reference group met for an all day workshop at the beginning of the project to inform and evaluate the project, disseminate and review project findings and develop resources from the project. In addition, a symposium was conducted in May 2011, to gain feedback from the academic community. At the symposium the case studies were presented for discussion.

The formative evaluation process used for the project was guided by the evaluation questions given at the ALTC Leading and Managing Projects Workshop (conducted in 2008) and from the ALTC website which formed the structure for the Independent Evaluation Report.

Deliverables and outcomes achieved
The project has produced specific deliverables;
formal report
discipline newsletters
conference presentations
workshops
forums
interest groups
## Outcomes

<table>
<thead>
<tr>
<th>Outcomes for Project</th>
<th>Related Deliverables</th>
<th>Achieved</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reports which document the potential of e-portfolios to enhance practice and theory</td>
<td>Formal report</td>
<td>The report on WIL and e-portfolios is finalised.</td>
</tr>
<tr>
<td>Online resources which demonstrate and support the development of aligned WIL / formal learning</td>
<td>Web-site information</td>
<td>A web-site for the project was created on the ALTC exchange for project dissemination to the ALTC community.</td>
</tr>
<tr>
<td></td>
<td>Discipline newsletters</td>
<td>Established discipline newsletters to send to our interest group and academics in CM and Nursing informing them of the project its progress and outcomes.</td>
</tr>
<tr>
<td></td>
<td>Conference presentation</td>
<td>Industry leaders and academics engaged in workshops at conferences (Construction) and a focus group session Nursing. A symposium for the project to disseminate findings, encourage a community of practice and seek project feedback for the final report was conducted in May 2011.</td>
</tr>
<tr>
<td></td>
<td>Workshops</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Web blogs</td>
<td>Web blogs and information networks have been identified and shared to promote dialogue between the team. Beverley Oliver Website on Assuring Graduate Capabilities - <a href="http://boliver.ning.com/">http://boliver.ning.com/</a>, ABEL e-portfolios discussion forum and newsletters, USA Australian Flexible Framework – e-portfolio forum</td>
</tr>
<tr>
<td></td>
<td>Information networks</td>
<td></td>
</tr>
</tbody>
</table>
| | Interest groups | There has been significant interest from two specific groups which were involved in the project:  
1. The AIBS and AIQS (Construction Management Accreditation Bodies) who have changed the accreditation requirements in response to this project removing a time defined Industry Experience requirement to including an outcomes based requirement which is aligned with the WIL profile developed for this project.  
2. The Nursing Clinical Placement managers have been engaged in this project from its beginnings and will continue to utilise the materials developed in this project. Both these groups will be fostered and a link will be maintained with them in an endeavour to further the WIL agenda and the potential of e-portfolios. |
Online packages which provide teaching resources to support academics in engaging with WIL in their formal lessons

Discipline specific CPD modules that link WIL and formal

| Advisory booklets | Curriculum analysis was conducted for both disciplines involving the analysis of competencies from their Professional Bodies. Shared generic terms between the disciplines have been identified. This analysis has informed the discipline specific modules (to be published with the upcoming book).

Seven Case Studies on innovative projects who use e-portfolios to facilitate WIL were collected. These will become a large component of the advisory booklets and CPD modules to showcase to fellow academics examples of how WIL can be supported by the use of e-portfolios. |

| Table 10: Project outcomes |
Recommendations

Recommendation 1
WIL is highly regarded by the professional bodies and industry as a means of introducing students to the culture of work before they enter the workforce. Despite the issues that exist, WIL is a positive experience and should be promoted more widely by these key stakeholders as it is they that have a role to play in developing future professionals. As such, a level of ownership and support of the practice must be supported and encouraged and a genuine collaborative attitude developed to sustain and strengthen the practice.

WIL should be promoted more actively and underpinned by strong industry and professional body ownership of the practice.

Recommendation 2
The Construction discipline adopts a wide range of implementation and assessment practices to facilitate WIL. There is a significant need for the professional bodies to consider unifying their accreditation requirements in this regard. Furthermore, they need to consider adapting their industry placement practices to the opportunities presented by WIL. This is a timely opportunity for the professional bodies to define the required outcomes of industry experience in terms of a series of defined outcomes or demonstrated achievements (rather than simply relating the time students spend on placement). Universities need to respond to this by developing management structures and assessment profiles that support such actions. These would provide opportunities to introduce a more thorough profile of formative and summative assessment associated with WIL experiences.

The industry bodies and the universities involved in Construction should develop a unified industrial experience framework that is demonstrated in outcomes rather than time. Universities should adopt management and assessment strategies that align better with industry requirements and effectively support students’ learning experiences.

Recommendation 3
Assessments, both during or following WIL activities, should be designed to evaluate students’ developing levels of competence. However, ‘competence’ and reflection on competence remain a complex concept that is difficult to define and even more difficult to measure. The assessment of students is a concern with respect to validity and reliability. While universities aim to prepare students to work in complex, dynamic and unpredictable environments, too often assessments are focused on general skills and fail to take into account the multidimensional nature of competence and the range of attributes required for professional practice.

The Construction groups in the universities work with the accreditation bodies and the supporting placement bodies to create a consistent approach and a shared understanding of placements, their management and learning program. There are opportunities for improvements to be made as well as for assessment frameworks to be developed which share the same meaning between students, industry and university staff.

Recommendation 4
Portfolios provide opportunities not only for effective documentation and sign-off by placement facilitators and managers; as well they are very effective vehicles for self-assessment and reflection on and of practice. Reflective practice is a crucial professional activity, being intrinsic to learning and in allowing students to see connections between the worlds of learning and practice. It is a deliberate, orderly and structured intellectual activity that allows students to process their experiences, explore their understandings of what they
were doing, why they were doing it as well as the impact it has on themselves and others. Portfolios provide a way of using these reflective activities as evidence of their developing competence and are effective in assessing both Construction and Nursing students involved in WIL activities. This is especially so where supporting documentation and reflection occur over an extended timeframe which, in the context of these disciplines, may be a period of three to four years.

Portfolios should be introduced across the two disciplines for recording not only the achievement of skills but also for reflection about experiences and for comparing theory with practice. Whether electronic or in hardcopy format, there is much to be gained by using portfolios in this context.

**Recommendation 5**

The current skills shortage in the construction industry presents Construction students with employment opportunities. However, there is evidence that students are working beyond their skill base well before they graduate.

**Consistent quality of WIL experiences need to be assured for Construction students. The construction industry needs to acknowledge its role in the development of the next generation of professionals. A WIL charter needs to be developed for the industries participating in these exercises and this should be managed by their respective professional bodies.**

**Recommendation 6**

The potential for use of portfolios is widely acknowledged and there is a growing level of research, including the study reported here, which demonstrates that WIL could be more effectively implemented by using e-portfolios. A range of factors that support quality learning are facilitated by e-portfolio use including consistency of assessment and feedback, encouragement and facilitation of reflection, and allowing access and formative feedback from a number of sources. The use of e-portfolios allows for improved communication channels to be established between academia and industry which in turn strengthens connections to industry partners. Another benefit is the potential to allow students to create communities of practice so they do not feel isolated during placement. Furthermore, e-portfolios can allow a greater level of facilitation of WIL for large numbers of students, with uses such as assessment items and organisation of placements being posted onto the e-portfolio site.

**Consideration should be given to a broader adoption of e-portfolios to support students involved in WIL activities. These portfolios have the potential to address many of the issues identified in this study in a manner consistent with the current communication practices of students.**

**Recommendation 7**

If the outcomes possible with WIL are to be realised, it is imperative that students are supported in making meta-cognitive links between theory and practice. The lack of this skill is frequently identified as a conflict between what is taught compared to the actual placement practice.

**A consistent approach to developing and implementing strategies which link what is learned and assessed at universities to what happens in the practice of the workplace must be implemented. Whilst it is acknowledged that there will never be a singular fix for this issue, universities and placement partners need to make ongoing and consistent efforts to ensure that the current divide**

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is diminished and that the situation is evaluated regularly.

Recommendation 8
Universities currently provide well-developed graduate profiles which are expressed at institutional as well as at discipline-specific program level. These currently refer to ‘outcomes’, providing an opportunity to introduce a new level of ‘attribute’ which is expressed in demonstrable terms [see Oliver’s Assuring Graduate Capabilities project, (Oliver, 2011) which aligns with this recommendation]. These new attributes could align with WIL activities and create a link with practice. This would allow students to witness these attributes being demonstrated by practitioners, and allow them to develop a shared understanding of what a university degree is trying to achieve and the qualities expected of them when they graduate.

Consideration needs to be given to developing additional graduate attributes which acknowledge the demonstrated achievement of knowledge, skills and attitudes applied by students during workplace activities. These additional attributes would be created in a hierarchal structure, and would include attributes which were demonstrated at university, and attributes that were achieved in the world of work. These new attributes need to be defined in terms of established outcomes gained through an integrated WIL experience.

Recommendation 9
The introduction of TEQSA provides an environment where new levels of dialogue can occur. These dialogues could be harnessed to assist in aligning the needs and aspirations of the different professions with the university sector. There is an opportunity to embed WIL activities with appropriate assessment, management and facilitation strategies in a context of shared understanding and shared ownership of WIL activities and the potential it has for industry.

Efforts must be made by industry, TEQSA, accreditation bodies and universities to create an environment of shared understanding and ownership of WIL and of its potential to enhance the quality of the student experience and the quality of professional graduates.

Recommendation 10
As demonstrated in this report, there are considerable opportunities for a diverse range of disciplines to collaborate in developing graduate attribute frameworks which are translatable into e-portfolios. Careful construction of these frameworks should result in minimal contextualisation being required, and for such resources being able to be efficiently shared. This would allow resources to be diverted to higher end activities associated with an e-portfolio, rather than development costs. Such a sharing of frameworks would represent an efficient way of expending resources, and would avoid discrete disciplines develop such frameworks in isolation. There is the potential for the development costs to be shared allowing both a broadening of the footprint of adoption of the portfolio as well as the high quality learning activities.

Approaches should be made to develop networks of disciplines that share a heavy WIL commitment to collaborate in the development of e-portfolios, based on commercially available products. This will allow resource requirements to be less inhibitive to one discipline but will also allow the development costs to be better directed at developing quality learning experiences which engage students and develops their documentation and meta-cognitive capacities. The demands to achieve a quality outcome are too inhibitive for one discipline in one university to take on and sustain in a quality

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Continuing from the above recommendation

Professional bodies could also become partners in the development of such portfolios. This would provide the potential for the portfolios to continue beyond the university WIL application and be elevated to professional development and CPD activities and become a part of the professional registration process. This would provide the opportunity for shared understanding to be developed and this development would be for a more far-sighted purpose than just meeting accreditation requirements.

Recommendation 11

WIL experiences may be accessed and measured through e-portfolios. Students’ competencies may be viewed and assessed using a variety of tools, and examiners can validate students’ evidence or request further work to be completed.

Research into the potential of Web 2.0 technologies to engage and support WIL is needed. These technologies will, if pursued, provide an effective portfolio with greater opportunities for student initiative to document attribute development and skill attainment. The use of video and audio materials to be included and the ability to share the data at multiple levels will provide an engaging and effective learning support environment.

Continuing from above:

With the capacity to explore and implement new ways of demonstrating students’ skill development or industry experience comes the potential for ethical and potentially legal issues to arise. Considerable research and discussion needs to be conducted at this level to ensure that the students and institutions, as well as such people as the patients being treated in the nursing context, can be protected. There is need for efforts to be directed at this aspect to ensure that the educational capacity of the e-portfolios is not lost in a potential ethical or legal labyrinth.

Conclusion

This project has provided strategies to improve WIL practices through a competency framework and a review of e-portfolio opportunities for these two disciplines and professions in order to improve student learning experiences. Furthermore, it has proposed a pathway for linking e-portfolios with skills frameworks through reflection. The case studies and qualitative data have created an understanding of the underpinning knowledge, ethics, attitudes, values, and management which are the essence of WIL competences. The challenge presented from the findings is in designing assessments that demonstrate a sound integration of these dimensions of professional practice across virtual and actual learning situations. In particular, the study has shown there is a need to ensure judgment, attitudes and ethics are clearly part of the WIL assessor tasks from all stakeholder perspectives, online or off.
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Facilitating work integrated learning (WIL) through skills-enabled e-portfolios in construction and nursing
Appendices

Appendix A: CASE STUDY 1 – Facilitating WIL: e-portfolios in Laboratory Medicine at RMIT

Case study one: Facilitating WIL: e-portfolios in Laboratory Medicine at RMIT

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Dr Indu Singh
Jane Moon

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Medical Sciences, School of Health Sciences
RMIT University (RMIT)

Introduction
The Laboratory Medicine program at RMIT is an internationally accredited program offering students careers in all the major areas of laboratory medicine. E-portfolios were first trialled in 2008 as a way for students to record their Professional Practice placement. Since then, there have been iterative developments of the e-portfolio practices and processes to allow students to record their compulsory 40-week Professional Practice, Work Integrated Learning (WIL) placement. This case study is a work-in-progress review of the use of e-portfolios in Laboratory Medicine. Students currently record, and simultaneously reflect upon, their WIL placement using a scaffolded template in PebblePad (PP). They are required to share their monthly journal entries with their workplace and academic supervisors creating a triangulated communication process.

Context
Laboratory Medicine at RMIT is the only internationally accredited, four-year degree program in Australia that prepares students for work as medical scientists in all the major areas of laboratory medicine including haematology, transfusion and transplantation science, cytopathology, histopathology, medical microbiology and clinical biochemistry (RMIT, 2010a). The program is accredited with the Institute of Biomedical Sciences (IBMS) UK, which mandates the academic requirements for programs so that graduates can register as biomedical scientists with the Health Professions Council in the UK and work in laboratories and hospitals globally.

The program contains a compulsory WIL Professional Practice placement. The placement occurs in third year, whereby all students complete up to 40 weeks of supervised work experience in a diagnostic, research or reference laboratory. On average, there are 55 students who participate in the WIL placement per year. RMIT arranges all placement positions and two teaching staff members conduct site visits twice per year to review student performance and elicit feedback from supervisors.

Students can also spend 10 to 13 weeks in approved overseas laboratories in the UK, Ireland, Sweden, Macedonia, Kuwait, USA, Singapore and Hong Kong. Students are only required to attend campus twice a year.

The Professional Practice year comprises 4 courses: Professional Practice in Laboratory Medicine 1 and 2 (ONPS2175 and 76, 36 credit points per course); and, Principles of Professional Practice 1 and 2 (ONPS2173 and 74, 12 credit points per course), each with their own assessment tasks. In 2008, an e-portfolio was introduced as an assessment task in the Professional Practice in Laboratory Medicine 1 and 2 courses. Prior to the introduction of e-portfolios, students produced a paper-based portfolio which was

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submitted after the completion of their WIL placement at the end of November. This portfolio, often in excess of 150 pages, consisted of weekly journal entries detailing the activities undertaken in the various laboratories and supported by monthly feedback from the students’ workplace supervisors. The portfolio could be submitted as hardcopy at the school office, or they could be emailed and then printed. Upon submission of the portfolios, a brief assessment was conducted within one week to ascertain if they demonstrated the required competencies. Students were thus awarded a pass or fail grade so they could progress (or not) to their final year. Following this, the designated academic staff member spent the next three months completing a thorough review of the portfolios. They were then handed back to students when they returned in March the following year. Students were also required to show a Continual Professional Development (CPD) log of activities undertaken throughout their work placement and write a reflective essay of their whole placement experience.

**WIL as a means to enhance learning**

The decision to trial e-portfolios for WIL in Laboratory Medicine was based on a number of factors. Firstly, academics were unable to provide regular feedback and monitor student progress across student placement. This lack of feedback created issues as students received very little, if any, formative feedback on their Professional Practice portfolio throughout the year, which in turn, created uncertainty for students as to whether they would meet the required learning outcomes and competencies. Secondly, the paper-based portfolios created a significant assessment workload on one academic staff member, which meant that students did not get their portfolios returned until the start of the next academic year. Students also felt that it was hard to maintain regular communication with their academic supervisors and thus maintain a sense of connection with the program and university. Thirdly, it was difficult to monitor if students were meeting the required competencies and learning objectives uniformly across the various hospitals and laboratories. This is important as a way to maintain and monitor the quality of the student experience within the hospitals and laboratories, and is also vital for continued international program accreditation. Finally, as a result of the portfolios being returned to students at the beginning of the following year – their final year – there was very little opportunity to link the feedback given by academic supervisors to their actual work experience, as students are time limited throughout their final year courses and find it difficult to remember what was practiced on work placement up to a year prior.

To resolve these issues, e-portfolios were introduced to improve assessment practices for students undertaking the compulsory 40-week Professional Practice placement in both local and international hospitals and laboratories. In addition, e-portfolios were introduced as they provide a unique way of fostering independent and connected learning that allows students to link practice and praxis across a field of study. We believe that e-portfolio-based learning fosters independent learning and assists students to reflect upon, record and collect evidence of their learning and skills development over time, which can therefore be used to support their personal, professional and academic development and to demonstrate career readiness.

The most important aspect of e-portfolios for students is that the platforms allow for multimodal artefacts (e.g. images, videos, audio files), and more traditional rich media files (e.g. Word documents, PowerPoints, spreadsheets), to be collected and presented to different audiences as evidence of learning and skills development over time. The three-way communication process e-portfolios offer, and the opportunity to respond to and reflect upon comments from both industry and academic supervisors, overcame the lack of regular face-to-face meetings with their supervisors. Indeed, the e-portfolios allowed students to relate their experiences while on work placement more readily with their academic learning, and hence better understand the concepts taught together with their ‘real world’ application and utility.

Students also commented on the usefulness of the e-portfolio platform beyond industry placement, as a resource for themselves, with some students adopting it as a personal tool.

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As students have been using and exploring PebblePad, many have come to realise that it can serve as a kind of extended personal resume. Additionally, they can use it, not only within RMIT – to record their learning and achievements during their program – but also beyond their formal university experience, to extend it into ‘real’ life.

E-portfolio solutions for WIL issues: laboratory medicine

According to the Joint Information Systems Committee (JISC, 2008, p. 6):

An e-portfolio is the product, created by the learner, a collection of digital artefacts articulating experiences, achievements and learning. Behind any product, or presentation, lie rich and complex processes of planning, synthesising, sharing, discussing, reflecting, giving, receiving and responding to feedback. These processes – referred to here as ‘e-portfolio-based learning’ – are the focus of increasing attention, since the process of learning can be as important as the end product.

At RMIT, e-portfolios were introduced as an enterprise supported tool in 2008. Following a review of various e-portfolio systems in 2007, the university decided to commence a trial of the PebblePad e-portfolio system (Botterill, Allan & Brooks, 2008). Now in its third year, there are approximately 90 courses with over 5000 students using e-portfolios for learning and teaching purposes. As part of the continuing roll-out of e-portfolios across the university, e-portfolios have been strategically positioned as a vehicle that will enable the ongoing compilation of learning achievements and experiences that can be used for authentic, evidenced-based assessment and demonstration of career readiness.

The introduction and implementation of e-portfolios across the university have been closely aligned with RMIT’s strategic directions: namely, Graduate Attributes; Work Integrated Learning; Professional Accreditation; Internationalisation; and, Recognition of Prior Learning. Work Integrated Learning (WIL) is a core component in the majority of RMIT’s programs. A key tenet of WIL is that students should ‘learn by doing in context and with feedback [from industry professionals]’ (RMIT, 2010c). Types of WIL activities include ‘placement in a workplace including practicums and clinical practice’ (RMIT, 2010b). E-portfolios, as online learning environments, strengthen the university’s ability to provide flexible WIL assessment practices and support student career development.

For students, e-portfolios enhance the opportunities to provide evidence of formal and informal learning, and position them for the transition to graduate employment. The university-wide availability of student e-portfolio capability provides increased flexibility for the development of assessment practices that are academically robust and independent of time and place, hence they are being used for laboratory and hospital placements with the aim of providing a viable alternative for WIL assessment. The decision to introduce e-portfolios in this particular program was also considered as a way to address the course-related issues mentioned above, streamline assessment processes, and meet the Institute of Biomedical Science (IBMS, UK) international accreditation requirements. E-portfolios were introduced into the Professional Practice placement program as a way for students to record and gather evidence of the skills and knowledge acquired in the workplace, and also to reflect on their formal and informal learning experiences. This was considered important in an era where Information and Communication Technologies (ICTs) are ubiquitous and where Web 2.0 technologies (e.g. blogs, wikis and social networking) are used extensively by students in both their academic and social interactions on the internet. This was a chance to change practices from 20th century paper-based portfolios—to transform them into electronic portfolios commensurate with the knowledge economy and the modern era. In 2008, students and industry partners were invited to voluntarily try the new e-portfolio system, PebblePad. Three laboratories volunteered, including two from the Austin Hospital and one from the Peter MacCallum Centre. In the initial trial, students used PebblePad to record their placement journal entries and receive feedback/comments from their supervisors in second semester. Both students and their supervisors were able to compare
experiences and they all acknowledged the advantages of the electronic system. However, work was still required to streamline the recording processes to make it easier for both students and industry supervisors to use PebblePad. In 2009, all students were asked to use PebblePad to record their journal entries as well as to submit their other assignments. Many students used it efficiently; however some students chose to submit their other assignments as email or hard copy. About 2 to 3 per cent of students emailed their journal entries to their supervisors if they, or their supervisor, had difficulty with the webfolio setup or if they wanted to attach large documents as evidence. In 2010, the use of e-portfolios to record and evidence WIL placements was made mandatory and since then, e-portfolio use has been further extended and developed. Following a review of the program in 2009, the key issues and areas for improvement were identified, and a new and improved template was designed for student use. Firstly, it was decided to reduce the number of journal entries from weekly to monthly entries. To facilitate feedback between students, workplace supervisors and academic staff, a process was developed whereby students would share their monthly journal entries with their workplace supervisors so they could comment upon them, then these would in turn be seen by the academic staff. It was hoped that this would create and triangulate ongoing feedback and communication across all parties. Secondly, in order to consolidate all assessments across the Professional Practice year, the assessment tasks from the four courses of Professional Practice 1 and 2, and Principles of Professional Practice 1 and 2 are now incorporated into one template. A template is recognised as a valuable scaffolded approach to facilitate student learning and assessment outcomes (Lawton & Purnell, 2010) and supports ‘e-portfolio-based learning’ (JISC, 2008, p. 6). By structuring all the assessments into one template, it was felt that students would be able to make connections across the various courses, instead of seeing them as discrete entities. The template was improved using the ‘form builder’ tool in PebblePad and the webfolio wizard. The template was then placed within the course space, or ‘gateway’, so students could copy it into their own e-portfolio and work in it. The form builder allowed us to build bespoke forms for the different assessment tasks (i.e. the monthly journal entries which included requirements that students identify the learning outcomes and competencies they thought they had achieved in the month) (see Figure 1); undertake the risk assessment; and, complete the organisational structure assessment tasks and the CPD log. In addition to these, a detailed reflective journal was added so that students could reflect on their overall workplace experience. This journal also asked the students to give an example of an experience that demonstrated each of the learning objectives and competencies. The forms were then placed inside a webfolio using the webfolio wizard (see Figure 2). Finally, the template was placed in the resources section of the Laboratory Medicine gateway so students could copy it and use it throughout the year (see Figure 3). Once the template was developed and placed in the gateway, a hands-on induction session was held in a computer lab for all students, supported by specific instructions and step-by-step guides. In this, students were introduced to PebblePad, the Laboratory Medicine gateway and the template. They were shown how to copy the template into their e-portfolio, along with the process for sharing their monthly journals with their supervisors and publishing their webfolio to the gateway. There were also specific instructions developed for the workplace supervisors detailing how they could access their student’s journal entries and how to make comments on them. Finally, there was an induction session with the teaching team members including ‘how to’ teaching guides.
Facilitating work integrated learning (WIL) through skills-enabled e-portfolios in construction and nursing

Figure 1: A monthly journal entry form

Figure 2: The webfolio template
Facilitating work integrated learning (WIL) through skills-enabled e-portfolios in construction and nursing

Figure 3: The template in the gateway resources section of the gateway

Project Evaluation
To date, the e-portfolios have received positive feedback from students and staff, and there further interest being generated across the university. The only area of concern, raised by both staff and students, has been technical issues such as speed and particular copy and paste functions. These issues have been addressed and resolved where possible. Some users feel they require more training as it has taken them a long time to become familiar with the system. However, once users gained experience and progressed beyond initial teething problems, they were generally able to appreciate the overall functionality of the process and system.

Students’ perspective.
The major issue from the students’ perspective has been familiarity with the system and the assessment change to e-portfolio-based learning, which requires regular input practices rather than last minute activities. All students were given an induction session at the start of the year in which they had to submit a small assignment as a test task in PebblePad. Those who then started using PebblePad early in their placement were more likely to remember how to use it and were able to submit their monthly journal entry to their placement supervisors. However, those who did not regularly complete their monthly journal entries, or started their entries late, did not have the same level of familiarity and confidence with the program, and hence they were unable to assist their supervisors as is sometimes required.

Staff perspective.
Staff appreciated the ongoing monitoring of student work and the ability to provide good quality, timely feedback. Unlike the previous paper-based portfolio, students often did not receive substantive feedback until after the completion of their professional practice year, so they did not have the ability to benefit from the feedback, work on their weaknesses, nor the opportunity to discuss, with their placement supervisors, the possibility of gaining further experience in areas they needed most. Using PebblePad has enabled staff to ensure that students are provided with equitable facilities and support across the various workplaces and given the opportunity to meet the professional competencies and learning outcomes required in the program. This, in turn, complements the knowledge that students learn on campus and gives them the ability to apply it in practice. It has also been a very useful tool in communicating with students off campus.

Industry supervisors’ perspective.
Responses from industry supervisors (n=6) were generally positive regarding the use of PebblePad as a way to manage and monitor student laboratory placement. The following comments from one supervisor typifies many of the responses:

I have found it to be an improvement over the old system of submitting the journal as students often got behind and this meant that they may be asking you to read pages and pages of notes toward the end of their placement. This was not an ideal situation for the student or the supervisor. So the PebblePad requirement that the journal is submitted to an RMIT supervisor means that the laboratory feedback is more current for the student and the effort is spread out.

I think that the email system is also a good improvement to ensure that the responses are actually coming from a supervisor. I also like the way that the student can attach the various pieces of evidence to their journal, which should be a great resource for them in the future.

A final evaluation will be undertaken with all supervisors (n=30) after placements finish.

Facilitating work integrated learning (WIL) through skills-enabled e-portfolios in construction and nursing
The issues identified by industry supervisors can be broadly divided into two categories: technical issues and design issues (e.g. navigation). As mentioned, a number of supervisors experienced problems related to a lack of familiarity with the software, as this was a new process for many of them. The supervisors who used PebblePad regularly from the start of their student’s placement and had received an induction/training session were more positive about the software than those who left it until later in the year. In general, those supervisors who felt discouraged or negative about using PebblePad were not given a proper induction at the start of the year, or had left it too long to remember how to use the system. Although all supervisors were given ‘how to’ guides to support them, these was not as effective as face-to-face inductions. Thus, early induction sessions helped the supervisors to become familiar with the product and feedback processes. The industry supervisor induction process will be improved in 2011, through both site visits and the opportunity to participate in an induction session at RMIT.

There were also some concerns about design issues such as finding the ‘comment box’. The comment box is on the top right hand side of the webpage but the icon is not immediately apparent. A number of supervisors also expressed annoyance with the need to login each time to access their student’s monthly journal entries, following email notification that the student had shared the journal entry with them. Some said that they were dealing with lots of emails each day, such that they could not remember their login, or would forget their passwords. However, one supervisor suggested that this problem was more of an organisational problem, which they addressed by printing the login name and placing it on the computer. Finally, several supervisors suggested that they would have liked to be able to annotate or make specific comments on various parts of the student journal entries. As one supervisor describes:

The only drawback is the inability to make changes to the student’s submission with coloured or italicised responses. There is also no ability to change font or make bold for emphasis.

Unfortunately, this cannot be done in the current version of PebblePad. However, this has been addressed and will be available in PebblePad 3.

Future directions
In 2010, IBMS reaccredited the Laboratory Medicine program until 2014. One of the recommendations was the need for the Professional Practice placement to introduce graded assessment to replace the current competency-based assessment in order to comply with the assessment practices of other accredited programs. The use of PebblePad will make this easier to achieve as the final grades and results must be recorded within 2-4 weeks of the completion of student placements. Thus the use of e-portfolio based learning and assessment will allow for speedy review and examination, as it will be an ongoing process. A marking rubric will be developed to provide both academics and industry supervisors with a way to grade student progress at regular intervals. Therefore, this will provide a way to support students with regular progress reports, quality feedback and graded assessment throughout the year.

Conclusion
The use of e-portfolios in Laboratory Medicine to record student placement has been a success. Generally, the experience from students, academic staff and industry supervisors has been positive, but there is a need to continue to develop capabilities in all stakeholder groups. The main area of concern has been familiarity with the software and processes, although this can be reduced substantially with induction sessions and early use of the system to reinforce routine practices. The issues that led to the trial of e-portfolios to record professional practice placement have all been addressed and ongoing annual reviews of the use of e-portfolios in Laboratory Medicine will further develop and evolve e-portfolio learning across the program.
References
Appendix B: CASE STUDY 2 - An interdisciplinary evaluation of an e-portfolio at the University of Tasmania

Case study two: An interdisciplinary evaluation of an e-portfolio: Work Integrated Learning at the University of Tasmania

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Introduction
The learning and teaching (L&T) project known as ‘An interdisciplinary evaluation of the integration of an e-portfolio (PebblePad) as a learning and teaching tool during professional experience placement (PEP)’ evaluated the implementation of a digital e-portfolio – PebblePad – used by students during the work integrated learning (WIL) component of the first year of their undergraduate Bachelor of Nursing (BN) program, in the School of Nursing and Midwifery (SNM) at the University of Tasmania (UTAS). This case study reflects the journey of the implementation of the e-portfolio into the WIL component of the foundation unit known as ‘Introduction to Nursing Practice’. This unit is comprised of lectures, laboratory sessions (11 weeks) and 80 hours of WIL known as professional experience placement (PEP). The implementation of an e-portfolio was part of an interdisciplinary project undertaken in 2010 by three schools within the Faculty of Health Science (FHS). In 2009, three academics from the Schools of Nursing (SNM), Medicine (SoM) and Pharmacy (SoP) were successful in applying for an intra-faculty teaching development grant. The project was awarded $8,307 to assist with data collection processes required for evaluating the implementation of the software application into each of the WIL components of each school’s unit. The duration of the project was one year. Minimum risk ethics approval was sought and granted. This enabled the evaluation study to commence.

Context
During their undergraduate degree, nursing students are required to undertake 944 hours of PEP. This requirement is met through five PEP units. Each of these experiential practicums is undertaken in a variety of health care environments. The choice of facility that students can attend for PEP has expanded and, during their degree, may include the acute care tertiary facilities located in Hobart, Launceston, Devonport or Burnie. These facilities may be within the public or private sector.

Students are also exposed to smaller health care facilities that include district hospitals, multipurpose health centres, clinics or general practice surgeries. Additionally, students may be placed in an aged care facility, community mental health agency or facility, or occupational health environment. Each of these agencies or services has their own specific models of clinical supervision. They each induct or orientate students to meet their needs and ensure that students receive a safe and high quality experience.

Rationale for implementation of an e-portfolio
The recent growth in undergraduate student placements has required the SNM to remain responsive to the needs of organisations, clinical facilitators, preceptors and mentors who provide clinical supervision, workplace learning opportunities and guidance with learning and teaching endeavours to students of nursing. Recent literature discusses the need to ensure clinical educators are provided with the resources and guidance to assure that their novice students are afforded a quality PEP experience that facilitates opportunities to ‘learn nursing reasoning’ within a safe learning and teaching environment (Elliott, 2002). Currently the SNM allocates students to approximately 250 placement agencies of which 243 are considered non-acute agencies. Most students undertake two or more individual placements per year and, during 2009, more than 1828 individual PEP activities occurred in...
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Tasmania alone (Mather, 2010).

The use of an e-portfolio in a first year undergraduate unit was introduced to support and augment student learning while on placement and enable them to capture evidence of their practice that could be linked to the Australian Nursing and Midwifery Council (ANMC) competency standards (ANMC, 2006), and be used as part of the evidentiary requirements at the time of registration (AHPRA, 2010). It was considered that the introduction of an e-portfolio at the beginning of the BN program could promote life-long learning opportunities at the outset of students’ careers, facilitate reflection and provide a repository for collection and storage of evidence of competency that could be used across their degree and beyond.

Development of the project

The academics from each of the schools had recognised the L&T potential of using an e-portfolio within the WIL component of their undergraduate courses. However, to promote it more widely within the schools, they recognised it was important to be able to objectively demonstrate its value. Although an e-portfolio is primarily a student-led resource, it was proposed that to evaluate its use and demonstrate its value, each academic needed to design assessment tasks that were authentic and integral to the units of study that students were undertaking.

The introduction of PebblePad into demonstration units within three schools provided baseline data about the use of the program within the FHS. The evaluation was designed to capture evidence of its use that could enhance the L&T of these cohorts of students that may result in improved assessment of competency/capability over time.

Additionally, collaboration between the schools enabled the establishment of a community of practice that generated increased understanding through interprofessional collaboration among these three groups of health professionals.

Prior to commencing the study, the SoM had used a paper-based portfolio and SoP and SNM had not used portfolios at all within the chosen units. In further developing this approach, the academics were interested in investigating the potential of using an e-portfolio during PEP and gaining an understanding of the student perspective.

Working towards competency was also an element that was considered for capture by using appropriate tools within the e-portfolio. The academics had the desire to encourage students to undertake authentic contextual learning while they were in practice, thus assisting students in developing life-long learning skills that could be used to provide evidence of competence for the new national requirements for registration within the health professions (AHPHRA, 2010). Once the academics had articulated their objectives, they reviewed how to progress them whilst remaining committed to facilitating sharing and collaboration between and within schools that undertake WIL.

As a result of this process, PebblePad was adopted to promote a critical approach to developing the professional identity of students, by integrating theory and knowledge into practice, and linking required course work to professional standards across their degree. PebblePad was used by academic and clinical facilitators to provide a mechanism for supporting students during the WIL component of their units.

Additionally, PebblePad was used to provide a vehicle for strengthening a community of practice within and between schools of the FHS and industry partners. The evaluation was undertaken to provide feedback about the efficacy of the program as an andragogical L&T tool. The findings were used to develop future L&T and assessment opportunities for students undertaking PEP.

WIL as a means to enhance learning

Facilitating work integrated learning (WIL) through skills-enabled e-portfolios in construction and nursing
Clinical education of nursing, medical and pharmacy students is a vital component of the undergraduate nursing and medicine curriculum. The SNM, SoM and SoP have developed partnerships with various facilities to ensure that undergraduate students are exposed to industry conditions (Elliott, 2002). Students now undertake PEP rotations in various health care agencies that provide students with learning opportunities for developing the knowledge, skills and attitudes required for achieving beginning level competence as a registered nurse (RN), medical officer (MO) or registered pharmacist. Such experiences may also facilitate employment of students on conferment of their degree (Castledine, 2001, Robinson et al, 2004). RNs, MOs and registered pharmacists that are currently employed by host facilities are required to assess and document student progress and competency, or capability and development. At present, many preceptors report they are often not prepared for this role (Dalton & Walker, 2002).

Portfolios are defined as: “a collection of evidence that demonstrates skills, achievements, learning or competencies” (Cooper, 1999). It is argued that utilising portfolios to assess student learning will lead to self-reflection and self-assessment of students, increased motivation, integration of skills and enhanced student performance (Robinson, 2000). Another advantage of the portfolio system for the students is that there is potential to use their portfolios to build a ‘curriculum vitae’, which may assist them in gaining employment in coming years.

One of the problems of traditional paper-based portfolios often cited by assessors is the actual collection, storage and organisation of the materials. A solution is to convert the portfolios to a digital media or ‘e-portfolio’ such as PebblePad. As the information held in the portfolios can be accessed using an internet browser, accessibility is increased for teachers and students. In addition, maintaining e-portfolios for a large number of students is easier than handling traditional portfolios. Additionally, e-portfolios can be continually updated and reviewed. The students can revisit their work and think critically and reflect about their evidence.

Woodward and Nanlohy (2004) showed that e-portfolios can be a positive learning experience for students, but must be developed within a carefully designed framework based on a similar method used in the development of paper-based portfolios (Woodward and Nanlohy, 2004). For the successful introduction of e-portfolios, students must first acquire the necessary information, communication and technology program skills, and the focus must remain on the student ‘meeting the needs of both their intended audience and the exploration of their own learning’. One of the inherent dangers of e-portfolios is that the technological novelty of the product could overshadow the purpose of the portfolio, resulting in the learning opportunities being subsumed by the technology itself (Woodward and Nanlohy, 2004). For this reason, the individual schools designed the e-portfolio after developing a well-defined portfolio framework.

The Centre for Advanced Learning and Teaching (CALT) has commissioned PebblePad as the UTAS designated e-portfolio. PebblePad provides a facility for students to record personal memos and evidence of achievements. This professional portfolio development provides a valuable record of student clinical experience and evidence of WIL. It also provides an easily accessible mechanism for academic staff, preceptors and students to adjust their L&T practices according to students’ learning needs and expected scope of practice. Furthermore, by having access to ‘negotiated’ student data, the e-portfolio will enable clinical teachers and preceptors to explore and increase their understanding of both their students and their role within each teaching program. The e-portfolio provides a link between faculty, preceptors and students, forming an important triad, or ‘community of practice’, that supports student academic progression and professional development. Through using PebblePad the community of practice can develop and strengthen, as information about respective roles, functions and capabilities of students and staff is more easily understood.

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Evidence consistently shows that the success of clinical education relies on effective communication between preceptors, facilities and faculty (Woolley, Sen Gupta, and Thistlethwaite, 2006). Through the use of PebblePad, these relationships can become more aligned. At UTAS, curriculums are continually changing and the recent growth in numbers of students attending WIL, meant there was a need to further enhance L&T opportunities. The development and implementation of innovative L&T tools is necessary to ensure quality provision of academic support and clinical guidance during PEP rotations. The experiential component is a significant and vital aspect of all health faculty undergraduate degrees and the e-portfolio is a useful mechanism to improve support for academic teachers, preceptors and students in clinical practice.

E-portfolio solutions for WIL issues: Nursing and Midwifery
Consultation with CALT staff was undertaken in the development and implementation process of PebblePad within the three schools. These staff were pivotal for facilitating resource development and implementation, especially within the SNM, which includes over 500 students across four campuses.

However, there remained a number of challenging issues in developing and implementing the e-portfolio successfully to the student cohort. These potential issues included: geography and spatial limitations of the investigators and student cohorts; variable time lines for development and implementation; differences in missions and goals of the curriculum and courses within the disciplines; and, differences in the learning outcomes for students using PebblePad. However, due to the focus on contextual learning within the workplace and the desire to develop authentic L&T tools, the investigators pursued their objectives with (vigorous) discourse.

The embedding of an e-portfolio within the BN curriculum was undertaken to meet the objectives of evaluating an innovative L&T tool, to provide a scaffold for developing skills in lifelong learning, and enable students to develop evidence of competency. The strategies used to implement the e-portfolio within the SNM attempted to present information about PebblePad that would appeal to the different learning styles of the student cohort.

Resource development for students in the demonstration unit included access to the Vista Blackboard learning management system used by UTAS known as MyLO.

Support resources for staff and students were placed in a designated PebblePad resource folder available within this system. These included a detailed manual and access via web links to the PebblePad homepage that has tutorial video clips and downloadable tip sheets. There was also a tailored, pre-recorded and narrated Microsoft PowerPoint presentation that provided students with information about how to login and set-up their PebblePad accounts, an explanation for the rationale behind the use of e-portfolios, and details of their assessment task to be undertaken while on PEP. Students were also provided with support by tutors in the three weeks preceding their WIL placement. Students had access to an assessment rubric to facilitate an understanding of the requirements of the assessment task to be undertaken in PebblePad (see Figure 1).

CNA111 Introduction to Nursing Practice - Rubric PebblePad Blog Assessment Task 3

<table>
<thead>
<tr>
<th>Criterion 1</th>
<th>HD</th>
<th>DN</th>
<th>CR</th>
<th>PP</th>
<th>NN</th>
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<tr>
<td>Engages constructively and regularly with</td>
<td>Participation in learning tasks/activities and their relationship to professional</td>
<td>Participation in learning tasks/activities and their relationship to professional</td>
<td>Participation in learning tasks/activities has been reasonably documented</td>
<td>Participation in learning tasks/activities has been adequately documented</td>
<td>Participation in learning tasks/activities is evident.</td>
</tr>
</tbody>
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Facilitating work integrated learning (WIL) through skills-enabled e-portfolios in construction and nursing
the views and experiences of peers to promote greater reflection and insights. **Weighting:** 8 per cent

Deep reflection has been made upon experiences and observations with importance and possible applications of learning clearly identified.

**Comments** on the reflections of peers are relevant and constructive demonstrating critical thinking and analysis.

---

**Criterion 2**

**Writing style** is articulate and concise and demonstrates synthesis of complex ideas in a logical manner. **Spelling and grammar** is correct throughout.

**Spelling and grammar** in general is correct throughout.

**Spelling and grammar** is mostly correct throughout.

**Spelling and grammar** is frequently correct and the meaning can be identified.

**Spelling and grammar** is frequently incorrect and the meaning is often unclear.

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Facilitating work integrated learning (WIL) through skills-enabled e-portfolios in construction and nursing

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In addition to the student resources, academic tutors were provided with access to two...
general PebblePad training sessions and one session specifically tailored to potential tutorial discussion and the PebblePad assessment task. The week before PebblePad was released to students the eight academic tutors from four campuses participated in a video-link ‘Elluminate’ session facilitated by CALT staff to familiarise them with the process of the assessment task and the administrative role of their student groups.

This forum also enabled group discussion about the use of the application. Academic tutors were also provided with an electronic resource of suggested comments to guide feedback on the reflection assessment task after PEP concluded (see Figure 2).
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Academic tutors and students within the SNM who used PebblePad were provided with access to the UTAS information technology support services (ITS) to facilitate orientation to the software, set up of their username and password, personalisation of their own e-portfolio accounts, and troubleshooting prior to the implementation of the application and at the same time as students were undertaking WIL.

The assessment task designed for use within the unit was required to meet the UTAS handbook entry. This document is the ‘blue-print’ for the tenet of the unit and prescribes ‘online discussion’ as part of assessment for this unit. After much discussion between the academics from the SNM and CALT staff, the blog tool was chosen as the most appropriate vehicle to host the assessment task. Students were required to blog at least twice a week while they were on placement (see Figure 3). They were expected to reflect on their own experiences while undertaking their WIL and respond to their peers appropriately. This task could be undertaken using one of the other tools within the e-portfolio and then posted to the blog via a gateway. This process enabled other students within the tutorial group, the clinical facilitator, and academic liaison to view the students’ reflections and gain an understanding of individual perspectives and learning during PEP.
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WIL and the assessment task
Using reflection within PebblePad can be undertaken using a number of pre-formed templates. The thought tool has three levels of prompts for facilitating reflective processes. The students choose which template they prefer to use. The templates increase in complexity to enable students to describe and develop evaluative processes, thereby encouraging and extending their skills of reflection. When students complete their reflections, they post them to their blog where they are accessible for viewing and comment in the ‘gateway’. The ‘gateway’ is the PebblePad term used to describe the interface for viewing (see Figure 4). Only material that is released by the student is available for access by others. The content within the e-portfolio is stored and maintained through a secure system. Similarly, the gateways were unlocked only to members of each tutorial group (i.e. ten students). Therefore, the content and release of information within the e-portfolio is the responsibility of the student.

Figure 3 Blog tool used for reflection

My uni placement
Hey everyone I will post further things on this blog regarding our placement, I think this is correct.

13 October 2010

My first total care patient
WOW! my first ever patient I was in charge of everything, toileting, showering, medicine, e.t.c. what an experience I took the patient down for an aortoreal Dopler which was fantastic, i did all the toileting and yes I even did hospital corners on the bed, I double checked all the drugs (16 tabs in total) and administered them orally, it felt so good to be able to have the capacity to be able to do it, now I just have to manage another 4 patients like the other RN’s, but wow what an experience.

Michel
Posted by [name] at 11:21

View this ‘Thought’

1 New Comment

a weighty Issue
hey guys, just a quick post on an experience that had made me think…. a patient was admitted into our ward on monday who was over 100 kilograms, didn’t speak great english and was not very helpful mobility wise, she was in a wheelchair and has mobility status was 4WW x2 assistance, though it took 3 of us two being males, me and the other RN requested a physice to re assess the patient as three people struggled to put her on a chair, issues found: – no english – dead weight didn’t want to move – miss communication between health professionals

I felt for this patient as they where in a bad way, she really needed a hoist but there was none on the ward, communication was poor, it made me think how bad some things are out there and how RN’s just manage, I think we as students are the future of this profession and really can make a difference.

Posted by [name] at 11:18

View this ‘Thought’

08 October 2010

little reflection
Well oxycontin, oxynorm, warfarin, perindapril, senna, enema, catheter, parkinsons, hysterectomy, Postural BP, observations, BSL, enema, suppository, bluey, showers, toileting, S4, S5, these are some of the things I did this week, and all these things required initiative and some confidence, i was lucky enough to have fantastic teachers. I learnt all the proper procedures in doing everything I giggled and I felt bad but all in all the things I got out this week is that it is all about the patient.

View this ‘Thought’

0 Comments
Project evaluation
The project was primarily evaluated using pre- and post-implementation survey questionnaires that both students and staff involved in the demonstration unit were encouraged to complete. The surveys comprised both closed and open-ended questions regarding the process and content of using an e-portfolio and satisfaction and perception about current and future use. The pre-evaluation survey focused on gaining baseline information about student perceptions, expectations and prior use of using an e-portfolio.

The post-evaluation instrument gathered information about the strengths and weaknesses of the implementation process, and student and staff perceptions, which enabled the investigators to identify improvements that could be made in future iterations. Additionally, quantitative data about the nature and scope of PebblePad enquiries during the semester were collected from ITS. The investigators also kept reflective journals within PebblePad that could be used to inform the community of practice aims of the project.

The WIL component of the course was undertaken in the last two weeks of the semester and the assessment task was conducted in parallel with this learning opportunity. Once students were off-campus, the ability to capture their responses was reduced. As a result, the response rate for the post-test evaluation questionnaire was less than desirable, with a response rate of 15.2 per cent of potential respondents providing feedback (n=75). As the response rate to this questionnaire was not representative of the cohort, the following findings need to be interpreted with caution.

The key findings from the post-evaluation questionnaire included both positive and negative
responses.

Positive findings included:

- blogs enabled the students to feel connected with their peers;
- students liked using the blog tool for reflection; and,
- students found that the e-portfolios supported integration of knowledge and skills.

While the more negative findings included:

- the timeframe for the introduction of the new technology was too short;
- staff and students needed to feel comfortable with using the technology before adopting it for assessment purposes; and,
- appropriate training for staff and students was required.

These findings were critical for planning and embedding the use of an e-portfolio within the BN program in 2011. On reflection, the investigators acknowledged that students undertaking their first WIL component of their degree were already grappling with gaining an understanding of the workplace and culture, their role, expectations, and performance while undertaking PEP. For some students the use of another software application in the form of an e-portfolio added unnecessary anxiety to this experience.

For example, one student suggested: “having access [to the e-portfolio] at the beginning of semester to work our way around it, so we are familiar with it”.

These findings have already been heeded by academics embedding PebblePad within the BN program. In 2011, first year BN students are being orientated to PebblePad during semester one. These students will use the e-portfolio reflection tools for assessment and they will become familiar with the tool without the additional burden of WIL. It is envisaged that students will gain a level of understanding about using the application prior to undertaking the WIL component of the course in semester two. It is anticipated that this approach will reduce the negativity reported in this evaluation and provide sufficient lead-time before they are required to use PebblePad in the WIL component of their course.

The feedback about lack of support and instruction is more problematic to resolve. Due to the spatial and cohort size limitations already mentioned, computer laboratory sessions were not feasible. To compensate for this lack of opportunity, students were provided with face-to-face-tutorial information, together with written, visual and audio instructions. Many students found this information helpful, as one student stated: “instructions were easy to follow… although I don’t believe many students read them properly”. However, the findings suggest that some students require more instruction and support. For example, one student reported: “we weren’t given enough demonstration of how to set-up [the e-portfolio]”.

The post-evaluation survey also provided an indication about the resources that students found useful. Students who responded indicated they found the marking rubric and face-to-face tutorials the most helpful. Interestingly, the survey responses indicated that students did not frequently access ITS or the PebblePad online help. This finding suggests that more effective display of web links, contact numbers and available resources could help students in navigating the e-portfolio, and also aid in addressing perceptions of a lack of support and instruction.

In addition, respondents indicated the connection to peers was important. Students felt that viewing and commenting on other student’s blogs assisted with feeling connected to their peers and in supporting their integration of knowledge and skills. One student commented they liked “hearing how other students were going and reading some of their experiences” and “the fact that I could communicate with friends and share our experiences and

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comment on each other’s experiences”. Additionally, some students indicated writing in a blog in the e-portfolio helped them to reflect upon and understand their role as a nurse. One student reported “I was able to place my thoughts down in a central place” and “I liked the idea that we all have the freedom as students to share our experiences throughout our clinical placements”.

Findings from both the process and content of the project indicate that communication was the key to effective uptake and success of the implementation of PebblePad into the andragogy of the unit. The level of communication impacted on the success of the knowledge exchange and interdependency of the community of practice within and between groups that had a cascade or multiplier effect on process outcomes, such that one student identified the positive outcome of the project was “the knowledge that I could share my experiences and share others’ and all learn from them”. For the three academic investigators, the positive outcomes included gaining a better understanding of academic colleagues about the programs they teach, and raising awareness of similarities and differences between disciplines, curricula, courses, units and WIL experiences. Furthermore, the investigators found that their levels of input varied according to their needs and development of the process, such that building the community of practice was organic. The overall outcome was the development of a repository of shared knowledge and skills that can be utilised again within the respective schools in the future.

Future directions
The in-kind contribution towards this project was approximated across three schools to be $70,000. This figure underestimated the level of guidance and support provided by CALT staff. The consultation and guidance offered by them was considerably more than the $6,600 initially projected. The reasons for this increased level of technological and L&T consultation included a lack of familiarity of academic staff with the choice of L&T tools available within the PebblePad application, and the capacity of the software to meet the needs of users. In any future implementation, costing of andragogical guidance and support to academic staff planning to embed PebblePad into their units will need to be estimated. To assist academic staff with digital augmentation of their units and WIL, the SNM plans to employ an educational technologist to facilitate this process.

Conclusion
The integration of PebblePad into the SNM BN program has begun in earnest, and over time will become ubiquitous in the WIL component of the undergraduate nursing student degree. Academic staff have become familiar with the e-portfolio software and its use—to a level that has assisted with facilitating its acceptance across the discipline. The evaluation of the e-portfolio confirms its success. The overall findings suggest that e-portfolios are useful in supporting academic staff and students during professional experience placement. Moreover, the community of practice and repository of knowledge and skills that was established between the schools participating in the project was an unexpected and beneficial outcome that has provided a foundation for future collective development and communication.

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Appendix C: CASE STUDY 3 - Supporting WIL: A university wide mapping tool at the University of Canberra

Case study three: Supporting WIL: a faculty-wide mapping tool at the University of Canberra

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Introduction
This paper reports on a project that was undertaken at the University of Canberra, in the Australian Capital Territory (ACT). The Faculty of Health at the University of Canberra comprises the disciplines of nursing and midwifery, nutrition and dietetics, occupational therapy, pharmacy, physiotherapy, psychology, and sport studies. Each of these disciplines has unique characteristics, including distinct workplace practices, professional registration requirements and, as a consequence, divergent curricula. A commonality is that all of these disciplines include student clinical or field placements in relevant environments as a means of achieving the learning outcomes of their courses, and to meet certain practice and regulation requirements set by the Australian Health Practitioner Regulation Agency.

In 2010, the Faculty of Health undertook a project funded by the Australian Government Department of Education, Employment and Workplace Relations (DEEWR). This project formed part of a university-wide initiative that involved all faculties and disciplines with a view to improving the way in which work integrated learning (WIL) is provided by the University of Canberra. The contribution from the Faculty of Health was an inter-professional collaborative project aimed at evaluating WIL experiences for students, industry stakeholders and academics.

Context
Prior to commencement of the WIL project, informal feedback received from students, industry representatives, and academics alike suggested the need for a focussed development of the processes that support WIL. Examples provided in the feedback responses indicated a shared desire to clarify the way in which WIL was assessed.

Additionally, the feedback pointed to the need to support students to develop generic workplace skills or graduate attributes (GA). Although these skills had already been formally identified by the university - communication, analysis and inquiry, problem solving, working independently and with others, professionalism and social responsibility – their integration into the learning and assessment process remained a ‘work-in-progress’.

In response to this feedback, the project team undertook a review of the relevant literature to identify how WIL was being implemented in other disciplines and contexts. Findings suggested that similar issues were being experienced worldwide. These issues included inconsistent processes of communication to support WIL (Piasecki & Bird, 2008); differences in expectations in workplaces and between workplace supervisors (Cassidy 2000; Ernstzen, Bitzer, & Grimmer-Sommers, 2009); and random and chaotic assessment processes (Farris, Demb, Janke, Kelley, & Scott, 2009).

Specifically, Wheeler and Yates (2009) identified the need for formal processes to assist with the effective implementation and integration of WIL-related assessment tasks into the curriculum and also semester-by-semester learning requirements.

Questions were also raised about disparate understandings of the notions of
‘competence’ and ‘standards of practice’, and how these disparities influenced the reliability and validity of the field assessment of students (Cassidy, 2009).

Developing answers to these questions formed an integral part of the project undertaken by the Faculty of Health. The questions also became the starting point from which the project developed, and a reference point to which the researchers returned to consider issues as they arose.

**WIL as a means to enhance learning**

WIL covers a broad range of learning activities, with differences evident across a range of professions, disciplines, and from workplace to workplace (Gibson et al., 2006). For practice-based industries such as health, education, applied science and the social sciences, WIL is an essential component of the curricula and involves workplace activities or field training to consolidate theoretical learning. WIL provides students with the opportunity to apply knowledge and develop skills in an immediate, relevant, and authentic setting (Gamble, Patrick, & Peach, 2010). Participation in WIL can also enhance career-related outcomes for students, including the provision of more effective transitioning from the academy to the workforce (Abeysekera, 2006; McIlveen et al., 2008). Further, WIL benefits university and industry stakeholders alike by promoting the integration of current theory and practice (Gamble et al., 2010).

However, and as already noted, the literature suggests that many of the processes related to supporting WIL for students are ad hoc, with students, workplace supervisors, and academics alike searching for tools or a set of instructions to support them to optimise student learning (e.g. Piascik & Bird, 2008; Ernstzen et al., 2008; Farris et al., 2009). In particular, the assessment of WIL has been and remains a much-debated subject (Cassidy, 2009).

Indeed, a number of commentators suggest that workplace skills, technical and generic, can neither be taught nor assessed—rather; knowledge is created by people in context, in combination with one another (Seymour, Kinn & Sutherland, 2003). How then can external stakeholders assess such knowledge? Specifically, the knowledge learned in the workplace is a function of the professional and social interaction that occurs in a particular context. Moreover, and quite often, this knowledge cannot be readily connected to individual competencies that are practised and evaluated in isolation.

This position is supported by Billet (2000), who sees WIL generally as an experience where knowing, learning and doing is achieved on all levels through ongoing and reciprocal processes that involve students, members of the profession, and academics or clinical teachers. Ingham and Ingham (2010) go on to suggest that workplace skills will only be learned effectively when a person works with team members who are mutually supportive. However this raises even more questions, in particular, those related to the way in which academics and industry stakeholders can facilitate or provide such reciprocal processes to students who are placed in the work environment on a temporary basis, or for short placement allocations. Other questions include those about equity and how achievement of workplace skills can be meaningfully assessed if a student is learning in an unsupportive clinical or field environment.

One assessment tool that is currently being developed with a view to answering such questions is the e-portfolio. As an important innovation in pedagogy and technology, this tool is currently being utilised in the contexts of education, health and other practice-based professions to support learning and assessment, and showcase knowledge (Moore & Parks, 2010; Sivakumaran, Wishart & Holland, 2010). E-portfolios are student-centred, self-directed digital compilations put together by students to reflect on the learning they have achieved in the workplace (Buzzetto-More & Alade 2008; Hilzensauer & Buchberger 2009; Tubaishat, Al-Rawi & Lansari 2009).

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Not only does the e-portfolio form a personalised repository of the student’s current knowledge, skills, values and competencies, it can also be used to assist with meeting future competency-based professional registration requirements and to promote lifelong learning (Hilzensauer & Buchberger 2009; Moores & Parks 2010). Finally, e-portfolios provide a resource for academics, students and industry stakeholders alike (e.g. clinicians and managers) to enable discussion about learning (Buzzetto-More 2010), reflective practice (Moores & Parks 2010; Wheeler & Yates, 2009), analytical evaluation (Raiker 2009), and assessment of student work (Tubaishat, Al-Rawi & Lansari 2009). It would seem, then, that the e-portfolio has become an essential ‘tool of trade’ that enables student-centred and context-specific learning. As such, they provide solutions to the issues identified above including the learning of the GA, the meaningful assessment of WIL, and the context-specificity of workplace learning.

While the e-portfolio provides one answer to many questions related to the assessment of WIL, it also raises additional questions. For example, how can the e-portfolio be integrated into and supported within the overall WIL context? How can students, workplace supervisors and academic alike utilise such tools to maximise learning? The project undertaken by the Faculty of Health at the University of Canberra goes some way in helping to answer these questions.

E-portfolio solutions for WIL issues
The general aim of the project was to work towards addressing the issues identified with the WIL experience by local industry, student and academic stakeholders. It was anticipated that this could be achieved by developing a guide or concrete framework to enable a sustained change in, and bedding down of, the required processes to support WIL for students. It was proposed that this guide would ideally consider mechanisms to enable industry representatives and academics to feed-forward to students—that is, to prepare, inform, and educate the students prior to their entry into the workplace, and enable workplace and academic supervisors to provide observations and other information to students during and after the placement (Quinton & Smallbone, 2010). A particular focus of the project was the assessment of WIL and exploring ways and means of supporting processes of assessment. Finally, it was proposed that the project would also provide a forum to: develop interdisciplinary and inter-professional engagement, collaboration, and cross-fertilisation; challenge traditional academic and industry understandings of WIL; develop and cement relationships with industry partners; and, promote a common approach to WIL.

The project utilised a mix of methods to obtain data—both qualitative and quantitative. The approach was viewed as low-risk ethically, and approval was obtained from the relevant Research Ethics Committees. Qualitative data was gathered in two ways, based on the rationale that a two-pronged approach would assist in identifying local issues and enable a comparison of findings with those already identified in the literature. Firstly, a series of focus group discussions was facilitated, involving students, academics and industry representatives considering the major and ongoing issues. Secondly, a Project Advisory Group was convened and also comprised student, academic and industry representatives. Information was obtained about their particular experiences of WIL as part of the group discussions. The transcriptions were analysed thematically using Leximancer software.

Quantitative data was generated through a comprehensive mapping of information provided by the academy to students and industry stakeholders in a process similar to that utilised by Tubaishat, Lansari and Al-Rawi (2009) and modelled on those used widely in the United States to compare learning outcomes and assessment tasks in the curriculum. The mapping exercise undertaken as part of the Faculty of Health project included a close comparison of the information that was provided to all stakeholders about WIL. The information included

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relevant documents such as handbooks and official unit outlines related to clinical or field placements.

Perhaps the most interesting discussion point to be derived from the project findings was the discovery that each of the disciplines was placing considerable energy into ensuring the completion of the tasks or activities required of students prior to their commencement of a clinical or field placement (e.g. police checks, immunisations). It seemed that these activities were prioritised by the Faculty to the detriment of activities associated with supporting the learning and assessment of students in the workplace. In short, the Faculty had been privileging bureaucratic processes over the support of learning and assessment.

The findings also enabled the development of recommendations for change across the Faculty. Recommendations included the necessary provision of preparatory workshops or orientation sessions to all students prior to undertaking WIL to inform them of the workplace expectations, how workplace learning is achieved, how this learning is assessed, and the mechanisms that have been provided to support them in the workplace. It was also recommended that this information be provided in a consistent, comprehensive and written form to all stakeholders. A Generic Mapping Tool (see Table 1) formed the centrepiece of these recommendations, as it provided a means for ensuring the quality of information being given to students (Hungerford, Molan, Gilbert & Kellett, 2010).

The Generic Mapping Tool can be adapted for use by any discipline or Faculty in which WIL is utilised to prepare students for the workplace. The items listed were identified through findings of the literature review, focus group interviews and also the mapping exercise. They provide a guide for academics, students and industry stakeholders to enable WIL. They also provide a guide for curriculum developers and academics who are preparing field-related subjects or units semester-by-semester. In addition, it is anticipated that implementation of the Generic Mapping Tool will assist in addressing a commonly acknowledged deficit in communication and provision of information to stakeholders—a feature identified throughout the project as the most essential means of supporting student learning in the workplace, workplace supervisors and also academics.

1. Preparation for Work Placement:
1.1. Students and industry stakeholders are provided with Faculty Clinical/Field Placement Handbook
1.2. Students and industry stakeholders are provided with discipline-specific Clinical/Field Placement Handbook
1.3. Reference is made in the relevant Unit Outlines to the Faculty Clinical/Field Placement Handbook, directing students to the information contained therein
1.4. Reference is made in the relevant Unit Outlines to discipline-specific Clinical/Field Placement Handbook, directing students to the information contained therein
1.5. Reference is made in the relevant Unit Outlines to discipline-specific online student site(s) for clinical/field placements
1.6. Online student site(s) for clinical/field placements is up-to-date with information that includes:
   o Faculty Clinical/Field Placement Handbook
   o Relevant discipline-specific Clinical/Field Placement Handbook
1.7. Industry stakeholders are invited to speak at preparatory workshop or orientation sessions for students for clinical/field placements
1.8. Preparatory workshops/orientation sessions are held for students prior to clinical/field placements
1.9. Students and industry stakeholders are provided with pre-placement guidelines
1.10. Pre-placement guidelines contain a list of requirements to be undertaken by students prior to their commencement of the placement (e.g. police checks, vaccinations)
1.11. Explanation is provided of workplace requirements, general and specific, including role of workplace supervisor, in discipline-specific Clinical/Field Placement Handbook
1.12. Explanation is provided of academic expectations in relation to clinical/field placement in discipline-specific Clinical/Field Placement Handbook

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1.13. Explanation is provided of process to be followed for dispute resolution in discipline-specific Clinical/Field Placement Handbook

2. Expectations of Workplace Learning: Information to be provided in discipline-specific Clinical/Field Placement Handbook
2.1. Explanation of the knowledge to be learned/demonstrated in the clinical/field placement
2.2. Explanation of the skills to be learned/demonstrated for the clinical/field placement
2.3. Explanation of the attitudes to be learned/demonstrated for the clinical/field placement
2.4. Explanation of the GA to be learned/demonstrated for the clinical/field placement
2.5. Explanation of the role of academics and workplace supervisors and expectations during the clinical/field placement.

3. Assessment Practices: Information to be provided in writing in Unit Outline AND discipline specific Clinical/Field Placement Handbook
3.1. Explanation of the WIL assessment processes, including requirements/expectations around learning of knowledge, skills, attitudes, and GA
3.2. Explanation of the formative (or equivalent) WIL assessment of knowledge, skills, attitudes, GA
3.3. Explanation of the summative (or equivalent) WIL assessment of knowledge, skills, attitudes, and GA, including e-portfolios
3.4. Explanation of the WIL assessment tools that will be utilised, including the assessment criteria
3.5. Explanation of who will be undertaking the assessment
3.6. Explanation of the time-line for completion of assessment tasks
3.7. Explanation of how the assessment process is benchmarked against other Universities

4. Support Mechanisms in the Workplace: Information to be provided in writing in discipline specific Clinical/Field Placement Handbook
4.1. Directions for workplace supervisors and students on how to access information about self directed learning packages to support students in WIL
4.2. Directions for workplace supervisors and other industry representatives on how to access the student learning sites (online)
4.3. Explanation of supports available for students in the workplace
4.4. Explanation of communication processes to be followed by student to feed-forward information, as well as give and receive feedback
4.5. Explanation of communication processes to be followed by workplace supervisor to feed forward information, as well as give and receive feedback
4.6. Explanation of communication processes to be followed by academic to feed-forward information, as well as give and receive feedback
4.7. Explanation of processes that will be followed if student is underperforming

Table 1: Generic Mapping Tool for WIL

Project Evaluation
Evaluation of the project was undertaken by comparing the aims with the findings and outcomes. The aim of the project was to evaluate the experience of WIL for students, industry representatives and academics, across the Faculty of Health at the University of Canberra. Generally, results of the project identified a number of inconsistencies in WIL-related processes, including deficits in the information provided to student and industry representatives. In particular, it was found that academics had been privileging bureaucratic processes over learning and assessment processes in the WIL experience. One way in which the issues identified were addressed was the development of the Generic Mapping Tool – a major outcome of the project – to guide the provision of information to students, industry stakeholders, and academics alike, and promote consistency in processes. It is anticipated that the use of this tool will ensure a more comprehensive integration of assessment tasks such as the e-portfolio. Other more general outcomes were also achieved through the project, as discussed below.

Firstly, achievements of the project can be linked to the universal aim of WIL for students–to

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provide students with the opportunity to apply knowledge and develop skills and enable the integration of theory with practice (Gamble et al., 2010). It could well be argued, then, that an important focus of the educator is to support this learning, with more bureaucratic requirements taking a secondary place. The project highlighted the need for academic and workplace supervisors alike to re-focus on, or develop, their own skills in relation to supporting the learning of students undertaking WIL. The implementation of the Generic Mapping Tool, together with the e-portfolio, will enable a more comprehensive means of enhancing student learning and to overcome the issues identified above. While it is acknowledged that industry demands increasing bureaucratic requirements, these demands should not over-shadow the need to support the learning of the student.

Secondly, the project demonstrated the advantages of interdisciplinary and interprofessional cooperation. Stone (2010) has already identified the benefits of interprofessional learning and collaboration in the health context, citing improvements in patient safety, worker satisfaction, and health service efficiency. In the university context, the benefits of collaboration and cross-fertilisation of the health-disciplines were demonstrated through the successful completion of the project. Likewise, ongoing consultation with industry, students, and academic colleagues throughout the project also provided a forum for inter-disciplinary and inter-professional co-operation and cross-fertilisation. The sharing of current knowledge, practices, ideas, and common concerns enabled participants to share expertise, and adapt this within their specialties.

Thirdly, the project itself enabled academics to critically evaluate their own work, the work of colleagues, and also the work being carried out by other disciplines. Undergoing such peer review has the potential to be personally confronting. Even so, the project facilitated such a review to be conducted in a safe, constructive and collegial environment. In turn, the new knowledge and practices that were developed were made available to other faculties across the university in which students undertake WIL, and more broadly to academics in other institutions.

Fourthly, the project developed processes of communication between the stakeholders, leading to the development of new relationships and the strengthening of existing relationships between academics and industry representatives. In particular, the project provided an excellent example of the power of inter-disciplinary and interprofessional co-operation, especially as a means of developing the Generic Mapping Tool and discussing new and innovative ways of assessment, including the e-portfolio. By working together and openly sharing information, all those involved were able to build upon their knowledge base to benefit the academy as a whole, and in particular, the experience of students.

**Conclusion: future directions**

Following on from this project, further research is recommended to build on the work already undertaken. In particular, other faculties in other institutions where the Generic Mapping Tool is utilised could be examined in order to refine the tool for their particular situation and, likewise, include academics, students and industry stakeholders in the process. Additionally, a repeat utilisation of the Generic Mapping Tool by the originating Faculty would serve to identify compliance to the recommendations that were made as part of the project. Focus groups could again be utilised to measure improvement in processes related to WIL. Finally, an analysis of the use of the Generic Mapping Tool, together with the use of e-portfolios as a means of assessing in work integrated learning, will provide additional evidence to assist in supporting student learning.

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Facilitating work integrated learning (WIL) through skills-enabled e-portfolios in construction and nursing
Introduction
In the Joint Medical Program offered between The University of Newcastle and the University of New England, clinical experience begins in Year 1 and increases integration throughout the program until Years 4 and 5, where all learning is in a WIL setting. For students in Years 1 and 2, 10-20 hours are spent in a WIL setting, while in Year 3 this increases to 8 weeks, and by Years 4 and 5 WIL is full time. Placements occur in term time and within breaks, at both rural and urban settings anywhere in Australia and overseas for some components.

Context
A working party was formed to investigate whether an e-portfolio is a viable means of collecting evidence for assessment of student learning in clinical settings. From initial scoping of the project, the e-portfolio working party used the Pentagonal Model, as developed by Buzzetto-More and Alade (2008), as a guide for further investigation, trialling and planning.

An initial pilot commenced in the middle of 2010 with a Year 4 course whose main assessment component consists of a paper-based portfolio. Educational technology staff from the School of Medicine and Public Health supported this initiative alongside academic staff from both campuses of the JMP.

WIL as a means to enhance learning
There are many logistical, pedagogical and ethical issues to explore if e-portfolios are to be effectively trialled in clinical settings and embedded into WIL. The e-portfolio working party adopted the use of evidence-based investigation, based on scholarly research driving decision-making, as a way of examining these issues in a rigorous way.

Students are continually required to gather and present evidence of learning for assessment within a particular clinical course as part of their degree program. This means collecting evidence in hospital settings as they go about WIL activities. Evidence requirements for particular skills are specified beforehand, with students supported to develop technical skills which enable them to present required evidence for assessment and marking. These are

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aligned through specified learning outcomes and graduate profiles. Course coordinators and markers validate skills from the evidence presented. Students present part of their evidence as a reflective diary. This e-portfolio project is in the early pilot stages with a small volunteer group of less than 10 students involved so far.

**E-portfolio solutions for WIL issues**

Students from a Year 4 course in women and children’s health have to produce as part of their assessment a paper portfolio of their WIL experiences. The course requires that students: provide evidence of their WIL experiences according to a ‘core competency’ checklist; produce various reports; compile evidence of form completions by clinicians; as well as reflecting on their WIL experiences in a journal. The students were to do this over a number of rotations during the course, for each different component and elective.

Students were offered an electronic alternative to undertake this assessment as part of a trial into e-Portfolios. The platform chosen for the trial was the open source e-portfolio software called Mahara, as offered via the Australian-based service portal Foliospaces.com. Mahara provides facilities to categorise your e-portfolio content into themes, which Mahara calls ‘views’. The students would include all their evidence of WIL experience for paediatrics, for example, into one particular ‘view’, while obstetrics and gynaecology would be in another ‘view’ (see Figure 1).

Figure 1: A student’s Foliospaces profile, with links to their views, groups and friends

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In producing reflective journals on their WIL experiences, students could use Mahara’s blogging tools. Multiple blogs are possible in Mahara, so students had the flexibility to reflect on specific themes for their rotation, as well as considering more general issues in a separate blog that could be seen across multiple views in their e-portfolio.

The Foliospaces.com portal offers both free and paid accounts, with the free account being facilitated by advertisements. The free option was used as part of the trial, which provided certain restrictions to users, including only 50MB of space to store content. To alleviate any space issues, GoogleDocs was used to produce their online documents (as most of the volunteers had an existing GoogleDocs account, which comes with 1GB of space). This also allowed students to provide secure links to their content within their e-portfolios for their course coordinators to access and mark at little cost to their account quota.

Course coordinators used a feature in Mahara called ‘friends’ as a means to list trial participants and quickly enter the trial group’s e-portfolios (see previous Figure 1). The ‘friend’ feature is a similar concept to what is offered via social media websites like Facebook. It was decided in this trial to only allow student accounts to be set-up to accept friends, not to initiate any friend requests. In this way, course coordinators and project support staff could see the e-portfolios of the students, but the students could not see each other’s e-portfolios.

The students were encouraged early on to be creative in the presentation of their WIL experiences. Some students used online tools that allowed them to pictorially represent and reflect on their experience—Prezi.com was the main tool used for this purpose (see Figure 2).
Chapter 1 - Reflection on Taree and My Record of Achievement

Included in this chapter are my:

1) Portfolio Coversheet
2) Weekly Record of Achievement and Experiences - A concise overview of my attendance at tutorials, clinics and private rooms, theatre, and formative assessments,
3) Weekly Reflective Presentations - A comprehensive insight into my thoughts and activities in the hospital. I have used a software program called Prizi, which implements the idea of one big blank canvas to write ideas on, rather than the traditional powerpoint slide approach. Simply press the ‘play’ symbol to load the presentation and then navigate through it. Additionally to the activities outlined in the record of achievements, the reflective presentations also review my thoughts and activities on wards rounds, teaching sessions and general patient interactions.

Figure 2: A student’s view showing mixed content of document links, images and media

The e-portfolios also allows selected users to form a ‘group’ by invitation. The group can have its own set of views and file repository to further enhance the support experience within the application. This ‘group’ feature allowed for easy management of the student group as well as using the group forum facility to post notices of online tools, or to field and answer questions that all students might benefit from (see Figure 3).
One facility that was not used during this small group trial of an e-portfolio was Mahara’s ability to provide feedback on content, whether in a view main page or blog entry. This was due to equity issues arising from the division between students involved in the trial and those still undertaking the paper portfolio.

It is envisaged that the next stages of development will make use of the feedback feature, as a means of further enhancing the capabilities of the e-portfolio. However, even in the small group trial, it was apparent that the use of such a feature would have increased time pressures on the small group of academic clinicians that were tasked with marking the trial. To use this tool in a future trial, the e-portfolio working party agreed that more clinical staff would need to be recruited, and that further planning would need to be undertaken to determine the frequency of such feedback.

Project evaluation

Ethics approval was given for the students to participate in focus groups throughout the trial. Two focus group sessions were held during the trial. These small focus groups facilitated the personalised interaction between the project members and the students. However, with the geographic dispersal of the students it was not possible to meet face-to-face. As a result, the first focus group was facilitated through an online communication tool called Elluminate.

Elluminate allows participants to communicate orally, as well as via text-based chat tools, while also allowing the session to be recorded (with the students’ permission).

Elluminate allowed general question and answer discussion on students’ experiences up to that time. The students could also use the desktop sharing feature of Elluminate to show their portfolios to the group. The students described this process as highly beneficial, as it allowed them to view the many different forms a portfolio could take using the same software. Using the desktop sharing facility also allowed the technical staff on the project to answer questions students had on using the tools in Mahara, and to actually walk them through how a particular activity could be done.
Overall, the first focus group described the e-portfolio as a beneficial tool for students. The e-portfolio format allowed students to contribute almost anywhere there was an internet connection, which appeared to make them spend more time reflecting on their WIL experiences, as well as providing ‘date-stamping’ on their contributions. The students found this spurred them on to keep the portfolios regularly updated, rather than leaving it for a later time. Some students, who were self-described ‘technology illiterates’, made note of the benefit of seeing exemplars of e-portfolios, as well as demonstrations for facilitating self-directed help.

The second focus group was conducted via an email survey. The students were asked a range of questions including: how easy it was to use Mahara; whether they supported the concept of an e-portfolio; attitudes to e-portfolios before and during the trial; if they felt it improved their learning experience; and, if they would have liked to use an e-Portfolio for all their courses. The students generally felt quite positive towards the e-portfolio.

Students suggested that the e-portfolio encouraged them to engage and reflect more often on their learning experiences than they thought they might otherwise have done. They described the e-portfolio as easy to use (for the most part), but felt that some aspects of the Mahara software would require targeted support at the beginning and during use, such as exemplars of previous work to show a range of ideas on presentation, as well as some finer aspects of formatting work. Students felt that the use of GoogleDocs was perhaps a necessary evil in the context of online storage space, but perhaps a step too far in the overall process. Finally, all students would like to use an e-portfolio throughout their studies, with some suggesting it would be particularly useful if targeted at the early years of study.

**Conclusion: future directions**
The next stage of the project will be to get the entire cohort of students to complete an e-portfolio in the women’s and children’s health course. The focus on this part of the project will be on improving support and the use of technology for student feedback throughout the degree program.

**References**
Appendix E: CASE STUDY 5 - Health Promotion placements at Curtin University of Technology: utilising WIL and e-portfolios for Professional development

Case study five: Health promotion placements at Curtin University of Technology: utilising WIL and e-portfolios for Professional development

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Introduction
Curtin University of Technology offers a three year undergraduate Health Promotion degree in the School of Public Health (Curtin University of Technology, 2011). In their final year of study, students are required to complete the Professional Placement in Public Health unit; the only fieldwork experience in the course. Within this unit, students undertake a 100 hour placement and learn a range of workplace relevant skills, often informally, alongside professionals in the industry within the structure of a university accredited unit. This case study reports on how this unit operates within a Work Integrated Learning (WIL) framework and utilises an electronic portfolio enabling students to reflect on their experiences and collect evidence of competencies.

Context
WIL, according to Gronewald (2004), refers to learning at a university or other tertiary education setting which combines conventional campus based learning with time spent in a workplace that is relevant to the course of study. WIL allows for an integration of knowledge and skills from both the academic and workplace settings (Coll, et al.,2009).

A major component of any WIL is the integration of theory to practice (Hughes, 1998); however, the literature has highlighted that this is often difficult to achieve (Cooper, Orrell & Bowden, 2010; Kane, 2002). One consequence of not providing students with the opportunity to bridge the practice theory gap while on a placement is the risk that students will find themselves in an environment where they are ‘working’ rather than learning (Cooper, et al., 2010; Kane, 2002). Learning in the workplace requires clear, specific and structured outcomes enabling the student to identify what needs to be learnt within the culture of the workplace (Cooper, et al., 2010; Kane, 2002). Essential to this process is the requirement for students to reflect during and after their experience (Coll, et al., 2009; Cooper, et al., 2010). One way this objective is achieved in the Professional Placement in Public Health unit is through the use of an electronic portfolio enabling the students to reflect both in and on their practical experiences.

Placements, for the Professional Practice in Public Health Unit, are organised by the Unit Coordinator who works closely with industry partners to provide a range of options to students. As most health promotion agencies can only take one or two students at any one time, a considerable amount of work is required to secure sufficient placements. While the majority of placements occur in the Perth metropolitan area, placements are also negotiated within agencies in other parts of Australia and, on some occasions, in the home country of external students living overseas. In partnership with CUCRH (Combined University Centre for Rural Health), placements in rural Western Australia (WA) are also available (Combined University Centre for Rural Health 2011).

The number of quality WIL placements available for students in WA reflects the close ties the University has with industry. This is in part a result of the strong industry background and industry experience of several lecturers within the School of Public Health. Expressions of interest (EOI) for student placements are sent out several times a year to industry partners.

Facilitating work integrated learning (WIL) through skills-enabled e-portfolios in construction and nursing
Returned EOIs are then posted on BlackBoard, the Professional Placement in Public Health unit’s on-line unit teaching environment, for students to consider and make contact with the delegated industry representative.

In order to respond to the complexities of student lives and to agency requirements, placements are completed in a variety of ways. This includes completion in a 3 week block over the summer break or midyear semester break, attending placement agencies for one or two days per week throughout semester, or a combination of regular days and one week full time in mid semester break. Although this flexibility can result in additional administration and Unit Coordinator input to finalise, it also means that the best possible fit for students and agencies is achieved. This unit is unique in providing a WIL experience which benefits both the student and the industry and the use of an electronic portfolio to capture and assess WIL learning and promote employability.

WIL as a means to enhance learning

WIL is an important component of teaching health promotion students to ensure the highest employability upon graduation. This is achieved through several units and culminates in the 100 hour placement in the final year unit Professional Practice in Public Health. This unit allows for the theory, accumulated over several years of undergraduate study, to be tested in practice in the field.

Core lectures support the transfer of skills to the work environment and aim to prepare students for their employment journey after graduation. The following topics are covered in a lecture and tutorial setting:

- Career preparation and planning
- Professional competencies
- Occupational health and safety considerations
- Developing an iPortfolio, Curtin University of Technology’s custom electronic portfolio

The 100 hour agency placement allows students, most for the first time, to work in an off-campus health promotion professional environment. As students are required to ‘cold call’ a placement agency and present themselves for an interview, this builds on WIL from other units in the degree; especially the Health Promotion in Action unit. This strategy again contributes to the work readiness of these students. Some agencies have become a popular choice with students and, as a result, strong competition for these placements often ensues. The current system rewards those students who are highly motivated and proactive. However, there is substantial support for those students who find it difficult to secure a placement, sometimes requiring the Unit Coordinator to assist at a more personal level. Interaction between the Unit Coordinator and industry liaisons is an important way of maintaining industry linkages and advancing better student outcomes.

The successful completion of assessment tasks during placement ensures the learning outcomes of the unit are met. These outcomes include:

1. Work in a professional role in a relevant workplace applying skills and knowledge appropriate to the discipline area;
2. Utilise written and oral communication effectively in the professional environment with technical and non-technical audiences;
3. Critically reflect on and evaluate their performance in the workplace;
4. Work effectively with people of diverse indigenous and cultural backgrounds; and,
5. Demonstrate professional behaviour and skills independently, collaboratively and in an ethical manner in a professional environment.

Three key assessments are acquired:

- A resume assessment

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A professional portfolio (iPortfolio)  
Completion of a professional placement with assessment and feedback from agency supervisor

The completion of the iPortfolio involves several separate tasks including evidence of Curtin Graduate Attributes and reference to the Australian Health Promotion Association professional competencies (Health Promotion Association of Australia, 2009). Students meet these requirements through showcasing evidence from learning and achievements across and beyond their course and through reflecting on their placement.

E-portfolio solutions for WIL issues
The iPortfolio is an electronic portfolio developed by Curtin University of Technology for use by students and staff (Oliver 2009). It was piloted in the second half of 2009, and introduced to the whole university community in February 2010. Approximately 24,000 iPortfolios have been developed since the launch and about half of these are active portfolios.

Professional Practice in Public Health was one of the first units within Curtin University of Technology to adopt the iPortfolio as a tool for the assessment of WIL activity and, in a very real sense, increasing the employability of final year students. It provided the basis for students to collect and reflect on examples of learning over their whole degree (including their professional placement), share this with peers and submit as an assessment task. Students utilised the iPortfolio to illustrate key competencies at both a university level and at a course/professional level.

Several sample ‘pages’ from student iPortfolios are presented below to illustrate how this has been used.
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The About me page represents an introduction to each iPortfolio with brief biographical details and a section for goals.

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Facilitating work integrated learning (WIL) through skills-enabled e-portfolios in construction and nursing

The My ratings tab allows students to provide evidence against each of the nine Curtin University of Technology graduate attributes, which can then be rated by the student. In undertaking this exercise, students need to reflect on both formal educational outcomes and community and employment achievements.
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The **My course** tab allows students to chart their university course and enter details of units studied, academic excellence, academic transcript, etc..

**My journals**

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Facilitating work integrated learning (WIL) through skills-enabled e-portfolios in construction and nursing

The **My journals** component of an iPortfolio affords students a reflective space. It provides an opportunity for students to reflect on such experiences as placement and unit activities. In the example above, the student has summarised his reflections after 40 hours in his Professional Placement. Once invited by the student, lecturing staff can also read these reflections and gain insight into the placement experience.

The iPortfolio is assessed by the Unit Coordinator utilising the comments section of individual portfolio pages and by a marking rubric for the unit. Feedback is also provided by peers who have been invited to view others’ iPortfolios. The quality of this feedback is not known as it can only be viewed by the iPortfolio owner. The potential for students to be given more direction by staff in providing feedback on a peer basis is acknowledged.

**Project evaluation**

While the unit is evaluated within the University’s eVALUate system (Oliver, Tucker et al. 2008), which provides students with an online environment to rate unit aspects and comment on the teaching component, no formal evaluation outside of this has been completed to date.

The following captures some student comments from eVALUate:

“I thought the resume assignment was useful as it ensured my resume was current before doing my Professional Placement. The lectures that were given by guest lecturers were informative and also helped me to discover all of the facilities that Curtin has on offer to assist me when I am out in the job market.”

“It was good that the placement could be completed when it suited the student.”

“The professional placement was a great experience and has really helped me improve my health promotion competencies.”

From the Unit Coordinator perspective, there were many positives associated with the unit; especially the use of iPortfolio within the WIL framework. Some of these perceived benefits, according to the Unit Coordinator viewpoint, are listed below:

- The **About Me** tab allowed lecturers to ‘get to know’ their students in a very different way when compared with traditional paper-based essay work. This is especially useful for units that have external enrolments.
- iPortfolio provided a tool for students to record/consolidate evidence to support course reflection and attainment of Curtin University of Technology graduate competencies.

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The unit encouraged students to think about their university course of study as a whole, not just as individual units. It facilitated the development of a user-friendly environment to illustrate competencies through a range of different mediums (e.g. photographs, written work, videos, and documents). It also allowed for the storage of artefacts in one easily accessible location. The My Ratings tab provided a snapshot of student perceptions of graduate attribute competency attainment for an entire cohort. It captured student perceptions of their developing graduate competencies and enabled the teaching team to consider opportunities for course refinement. Ultimately, the iPortfolio afforded health promotion students the potential to be better equipped to enter the workforce and reflect on their core competencies.

Evaluation of unit effectiveness also encompasses phone follow-up with participant agencies to ascertain their experience of this placement unit. The feedback offered by agencies was largely positive, with examples including the following:

“I like that students have to come and negotiate their placement.”

“I appreciate that the University does not demand too much of the agency and we are able to get on and provide real work experience for student.”

“Fantastic student; enthusiastic with ideas and proactive in approach.”

“You can use placements as an opportunity to scout for potential staff – providing less risk for recruiting.”

“Generally self managed students which is good.”

Challenges were also noted by agencies including:

- Needing to juggle students, volunteers and staff over workstation limitations.
- Students need to work, study and fit in placement hours.
- Ensuring that the agency has adequate supervision at the time the student requires it.
- Being able to ensure adequate and appropriate flow of work – some work faster than anticipated.

Challenges have been identified by lecturing staff in the use of iPortfolio for WIL.

However, as iPortfolio use is still in its infancy, this is not unexpected. These perceived challenges included:

- Some resistance from particular students who felt the iPortfolio required extensive effort with unclear outcomes, including some very vocal students who did not embrace iPortfolio. As one student noted in an eVALUate response: “No need for iPortfolio assignment; it is just information about who you are. Not related directly to the unit.”
- Different levels of technological literacy and interest were demonstrated within the class.
- Other lecturers need to also embrace iPortfolio, especially those who may feel intimidated by technology, so that its use is integrated across multiple units.
- There is an identified shortfall in the support mechanism available for both students and staff.

Moderation of fieldwork is challenging due to the number of stakeholders involved (student, industry, supervisor, academic staff) in the assessment process and the uncontrolled (authentic) learning environment (Chapman 2011). Moderation challenges when using iPortfolio to assess this WIL unit include: a) the very real challenge of being able to differentiate between technical skill level and reflection and evidence content; b) the issue of

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marker reliability in large units where sessional staff could be employed; and c) the substantial time staff spend reading whole portfolios – namely because they are interesting – subsequently rendering marking an almost secondary task. Refined marking rubrics and increased lecturer professional development in the use of iPortfolio will address some of these concerns.

**Future Directions**

Several improvements have been developed to address some of the challenges noted above. iPortfolio Student Support Officers (IPSSOs) have been employed on a casual basis to assist with technical issues faced by iPortfolio users. This is part of a wider approach to improving help options within iPortfolio. The importance of users having a positive experience and hence using iPortfolio outside of assessment tasks is recognised. Greater support is being given to lecturing staff across the University who use iPortfolio, including the provision of professional development sessions and an online forum space to share ideas and challenges. Staff members also have access to the IPSSOs.

There is also teaching and learning support to embed iPortfolio into courses from year one of study. For example, from 2011, all students within the Faculty of Health Sciences were introduced to iPortfolio through a new unit titled Foundations for Professional Health Practice, and further units will then build on the assessment tasks completed in this common first year unit. This will encourage the use of iPortfolio throughout a student’s university course and assist the capture of relevant non-university achievements.

A comment from a student who used iPortfolio for the first time in their final year shows the importance of such an integrated approach: “Remove iPortfolio as an assessment piece for third year students. I often found it difficult to recall on every single piece of experience I had from first year to third year. Having iPortfolio from first year to third year would be more practical and allow students to build a solid portfolio.”

The **My ratings** page is being reconsidered with a view to allowing the profiling and evidence for specific professional competencies. Subsequently, students will have to contemplate how to meet these in a structured way from early in their university course, providing greater links with employer and professional requirements.

Further work is required to explore how industry may utilise iPortfolio. There is no doubt that WIL provides a mutually beneficial learning environment. iPortfolio has the potential to further expand on this. WIL units utilising iPortfolio also have the possibility of closing the loop between whole of course reflection and employability. iPortfolio access for life is provided to students and hence allows for lifelong reflection and documenting of achievements. Further development of research projects to report on programme success is currently in the planning stage.

**Conclusion**

The Professional Practice in Health Promotion unit will continue to be a final year unit in which health promotion students have the opportunity to experience a work placement and to reflect on this and their whole university career. iPortfolio will continue to be used as a major form of assessment in this unit. The unit illustrates the interface between WIL and an electronic portfolio and, while this is a new initiative at Curtin University of Technology, it has already demonstrated the potential for positive returns to both students and industry.

**Acknowledgements**

I would like to acknowledge Dr Rose Chapman, Director of Practice Education, Faculty of Health Sciences, Curtin University of Technology, for her feedback on this case study. The three students whose sample pages from iPortfolio are illustrated above have all given permission for me to use these. I thank them for sharing their iPortfolios.

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Appendix F: CASE STUDY 6 - Enhancing Nursing Learning outcomes through e-portfolios and WIL: a case study from Western Australia

Case study six: Enhancing nursing learning outcomes through e-portfolios and WIL: a case study from Western Australia

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Introduction
Workplace Integrated Learning (WIL) has been instrumental in the linking of theory to practice within nursing school environments. Edith Cowan University (ECU) sees WIL as a distinct learning pedagogy that enhances the Bachelor of Nursing Science course by making it contemporary and pertinent to all parties involved, including students, the wider community and business (Edith Cowan University, n.d.).

WIL is more than workplace immersion; it is the inclusion of structures and supports that enable students to better understand their achievements and develop competencies for professional accountability and self-regulation. The aim of the WIL experience within the Bachelor of Science Nursing at ECU is to facilitate student ‘work readiness’, including supporting them to understand their competence and responsibility for continued professional development. Furthermore, the move to the integrated use of e-portfolio within the nursing curriculum assists students in the development of statements to attest to this competence (Andre & Heartfield, 2007; Ward & Grant, 2007).

The capturing of the WIL experience for future reflection is important as it enables students to make sense of their learning, competence and support them in planning for their future professional development. Nursing students on a WIL rotation at ECU complete a Clinical Placement Assessment for each WIL rotation they undertake. This assessment document holds valuable information and evidence as to the learning that has been achieved and is an integral item of evidence for the students’ portfolio.

Context
The Nurses and Midwives Board of Western Australia (NMBWA), in line with several other state boards, historically advocated the use of portfolios as a method of supporting self-regulation by requiring individuals to justify competence (NMBWA, 2004). In order to support the nurse in this endeavour, the NMBWA developed a professional portfolio template that the registering nurse could utilise to articulate and demonstrate their claim (NMBWA, 2004). The transition to the national Nurses and Midwives Board of Australia (NMBA) has similarly supported the need for personal accountability for professional practice by: (a) requiring that nurses and midwives take responsibility for their continuing professional development; and (b) suggesting that a portfolio is an appropriate tool to utilise in this process (NMBA, 2010).

The attainment and continued ability to meet the Australian Nursing & Midwifery Council’s (ANMC’s) Nursing Competency Standards for the Registered Nurse forms the basis for registration as a nurse with the NMBA. In addition to meeting these regulatory requirements, like all other ECU graduates, students within the BSc Nursing are also required to achieve a range of Graduate Attributes (ECU, 2008), as listed in Table 1 below:

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Table 1: ECU Graduate Attributes (ECU, 2008).

<table>
<thead>
<tr>
<th>ECU Graduates will be valued for their</th>
<th>exemplified by</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Ability to communicate</td>
<td>clarity of written and spoken expression, including in public fora, and through appropriate use of technology</td>
</tr>
<tr>
<td>2. Ability to work in teams</td>
<td>collaborating and contributing effectively in diverse settings</td>
</tr>
<tr>
<td>3. Critical appraisal skills</td>
<td>planning, organising, problem solving and decision making</td>
</tr>
<tr>
<td>4. Ability to generate ideas</td>
<td>having the courage and confidence to be creative and innovative</td>
</tr>
<tr>
<td>5. Cross-cultural and international outlook</td>
<td>engaging productively and harmoniously with diverse cultures</td>
</tr>
</tbody>
</table>

It is with these two requirements for graduating students in mind that the ECU Professional Portfolio for nursing students has its foundations.

Barrett (2009) suggests that there are two major approaches to portfolios: learning and showcase (it should be noted that Barrett (2009) recognises a degree of interconnectedness between the two approaches). The learning approach focuses on the learning process, whereas the central purpose for the showcase approach is claiming and demonstrating performance/competence. Within the showcase area, the author is able to demonstrate accountability through arguments that are aimed at a particular audience (Barrett, 2009). In the case of Nursing e-Portfolios at ECU, the primary aim of the exercise was showcasing, or more specifically claiming and evidencing competence.

However, the reflective learning process within the Nursing e-Portfolio activity should also be recognised.

WIL as a means to enhance learning

The overall aim of the portfolio is to instil, from the very start of the nursing journey, the importance of self regulation, accountability for learning and continuing competence, and the demonstration of achievement required for nurses. Additionally, the portfolio provides the students with an authentic assessment item that: (a) is directly relevant to the achievement and maintenance of their professional registration; (b) enhances their learning; (c) assists in employment opportunities; and, (d) acts as a platform from which to launch their future careers. The reflective component also enables students to better understand their learning journey and to appreciate their achievements, thus informing and supporting their role as a Registered Nurse. Feedback from final year students who had prepared their portfolios and used them as a tool in obtaining employment indicated that they found the exercise valuable and were surprised and immensely proud of their achievements. This capstone assessment gives the students an opportunity to identify what they have learnt and achieved whilst at the same time encouraging them to reflect on their practice and identify avenues to further enhance their skills and knowledge. For example, the student may have undertaken a professional development activity whilst on clinical rotation and they are asked to reflect on what they have learnt from this activity. Following this reflection they must identify their further learning needs. Developing these self-assessment and needs analysis skills aims to assist them upon graduation for the required lifelong learning as a nurse.

The introduction of a portfolio at the commencement of the course strengthens the entire undergraduate curriculum, as it is embedded in various units and meaningfully ties together the theory and WIL. At all clinical orientations, students are reminded of the evidence that

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they should be acquiring and the suggested formats for displaying their achievements. Whilst staff members are continuously reminding and encouraging students during the process, the development of the portfolio is the responsibility of the student and they must put the encouragement of staff into worthwhile action. This again reinforces the importance of self regulation and accountability in their future careers as Registered Nurses.

E-portfolio solutions for WIL issues
Portfolios have been used by ECU nursing students for more than ten years to self assess their achievements, understand their own abilities and to assist in the development of statements relating to their claims of competence. Therefore, this process occurs in the ‘workspace’ arena, as described by Barrett (2009). The portfolio at ECU also has activity in the ‘showcase’ arena as it allows the graduating nurse to demonstrate their achievements to both employment and registration agencies (Barrett, 2009). Historically, the final year nursing student has compiled and completed the portfolio in a condensed six week semester as a part of a Professional Issues Unit.

It was within this context that staff at ECU investigated the use of the BlackBoard Learning Management System to support this initiative electronically.

An e-portfolio, as described by Abrami and Barrett (2005), is a ‘digital container capable of storing visual and auditory content including texts, images, video and sound.... designed to support a variety of pedagogical processes and assessment purposes.’ BlackBoard’s ‘MyExpo’ was the e-portfolio platform used for part of this exercise, whereby students were able to store their past work, including clinical performance assessments, in a repository folder entitled ‘My directory’. Instructions and supports to students for the pedagogical aspects of the e-portfolio were provided both online and in class. The display aspect of the e-portfolio was achieved through individual student WIKI’s, where students could work on their final portfolio whilst also accessing peer and staff feedback as they progressed. The following screen shot (Screen Shot 1) is a display of the various components within the MyExpo site, including the point at which students can access their WIKI:

Screen Shot 1: Personal My Expo Site within BB operating system.

Students were provided with step-by-step screen shots, as depicted below in Screen Shot 2, detailing how to access the WIKI and develop the e-portfolio based on the ANMC Continuing Competence Framework:

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Facilitating work integrated learning (WIL) through skills-enabled e-portfolios in construction and nursing

Screen Shot 2: PDF instructions explaining the step-by-step process for students to develop their portfolio using a WIKI.

Screen Shot 3 is a depiction of the announcement site that provided further information to students as they encountered issues with the application of the principles of collecting evidence and claiming competence. The use of these announcements provided a level of adaptability in the information provided and was based on student questions and needs as they progressed through the process:

Screen Shot 3: Sample Screen shot of the Professional Portfolios in Nursing BlackBoard site.

Based upon student request, a sample portfolio site was developed to exemplify the principles of using evidence to substantiate a claim. As Screen Shot 4 demonstrates, rather than develop a fictitious student portfolio, it was decided that staff should develop and display their own portfolio. These not only provided an opportunity to model and demonstrate

Facilitating work integrated learning (WIL) through skills-enabled e-portfolios in construction and nursing
the principles that the students needed to apply to their own portfolio, but also required staff to experience firsthand the issues of using this medium.

The purpose of the samples was to demonstrate the wording of a claim of competence and substantiate the claim with relevant quality evidence. The broader course materials provided students with information about selecting and assessing evidence and reflecting upon this to inform the claims they make. More specifically, the students needed to identify areas within their clinical performance assessment that demonstrated their competence within the ANMC framework, and link this as evidence within their claims of competence. This linking of the theoretical component of the nursing course, including an applied understanding of the codes that govern nursing practice, with the student’s performance while on clinical nursing placement, is an important component of the student’s learning. The portfolio is critical to achieving this linkage, particularly as it provides a reflective base to draw on concrete experiences/records.

The portfolio itself is based upon the reflective cycle of action, reflection and identification. Action refers to the activities that the students undertake; allowing them to reflect on their practice and to identify future lifelong learning needs. This is the basis for their portfolio and, indeed, the basis for working as a professional nurse. By requiring the students to review their past clinical assessment documentation, they are provided with a tangible action experience to inform their reflections. Within the reflective component, the students are required to examine the evidence of their performance and scrutinize it for relevance, reliability and significance. The students are then required to identify both the competence that this evidence supports and the gaps within the evidence. The gaps may relate to a lack of evidence of achievement, or a lack of achievement itself. This understanding is then recorded in their portfolio.

The portfolio, whilst ideally developed over the course of their studies, is not formally assessed until the third year unit ‘Professional Issues in Nursing’ . Students are, however, provided with formative feedback throughout the years of their course relating to items that they need to collect for their portfolio. The documentation within the clinical assessment is assessed at the completion of the WIL experience and this, along with their demonstrated skills, allows the student to progress to the next stage of their clinical and theoretical learning.

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The unit’s BlackBoard site offers a wealth of information so that the student may undertake this activity in a self-directed fashion (as is demonstrated in Screen Shot 5 below). Multiple exemplars for each section of the portfolio are provided so that the students have a conceptual base to work from. Whilst exemplars are presented for student use and suggestions are made as to possible presentation formats, personalisation of the portfolio is very much encouraged. Links to relevant readings associated with the elements of the portfolio allow the student to explore at their own pace. It is with these resources that the student is able to commence the formulation of statements attesting to their competence. The reflective process, bringing together the theoretical learning from the classroom environment and learning undertaken within WIL, is subsequently advanced. The student is able to identify their learning, understand the associated meaning of this process, and formulate statements that aid in the demonstration of their competence. Although the assessment is self-directed up until the student commences the ‘Professional Issues in Nursing’ unit of study, the student has the opportunity (at each step) to submit samples for review and formative feedback. The uptake of this feedback is very high although it is not a requirement.

Screen Shot 5: A selection of items within the Portfolio Content tab.

Project evaluation and future directions
The importance of ensuring assessment of the intended learning outcomes across the entire program is the next step in cementing this program. A curriculum review, due in 2012 for the School of Nursing at ECU, it will allow us to reflect and identify actual learning outcomes. These outcomes can then be mapped to guarantee alignment.

The on campus nursing student cohort from 2010 were happy to either develop their portfolio utilising the suggested templates or develop their own templates for the required content; however, they were more reluctant to utilise the e-portfolio site within BlackBoard for submission. The online students from the same period adapted to the e-portfolio submission.
platform more successfully with >85 per cent submissions through the PPBB e-portfolio link. Students have been informed that, from 2011, they must submit via the e-portfolio link in order to meet the assessment requirements. The development of an online video demonstrating the step-by-step process associated with the use of the e-portfolio in 2011 aims to reduce the apprehension and hesitation associated with new technology.

In part, this reluctance to submit online was also linked to the need to keep two sets of records, as students are unable to access their e-portfolio after the completion of the unit. Fortunately, the University intends to invest in a more extensive student e-portfolio platform that will be sufficiently independent of the Learning Management System to enable students to have their own private e-portfolio space; not only for the duration of their Course, but also after graduation as part of the Alumni offerings. This is to be implemented in 2012, and be accompanied by university supports and training for staff and students.

Information technology skills, and attitudes to technology, have been identified as issues that need to be included in the 2013 ECU nursing curriculum. This is a responsibility for all higher education providers, as literacy and communication skills requirements now include the ability to communicate and contribute to online learning communities. In order for graduates to be able to do this, and even act as leaders of this change, they will need to be proficient in uploading information to websites that are dynamic, informative and relevant, yet accessible to others. Hence, understanding issues of file size and download implications to others will increasingly become required professional skills. The benefits of electronic submission and e-portfolio should not be limited by students’ aversion to engaging with online technologies. They should act as a motivator and learning opportunity to develop their generic information technology skills.

Conclusion
The WIL environment should be valued as a learning domain that allows for the application of theoretical knowledge to clinical practice. The importance of appropriate learning opportunities, a wide range of clinical environments and plentiful WIL rotations will better prepare the student for the real world through the reflection, action and identification processes associated with portfolio development. The importance of authentic assessment for both staff and students is paramount. A suggestion for the future could be the development of a job application addressing selection criteria that will prepare them for future employment. This would aid in the development of critical thinking skills and encourage the student to plan for the future. Additionally, it would provide the student with the opportunity to showcase their learning and achievements. Indeed, the opportunities afforded to a student in WIL are easily showcased in an e-portfolio. However, the student needs the support and scaffolding to assist them in identifying and understanding their learning and to formulate meaningful statements to support their claims of competence.

The success of this program may be primarily attributed to the buy in from all staff. Clear communication and consultation was one of the main features for achieving such success. For others considering the implementation of a similar project, it is suggested that time is taken to consult on and discuss how the school wishes to proceed and its desired outcomes prior to development. By including all staff, a sense of ownership has developed at ECU and this has had a “domino effect” within the program. The imperative of having all staff working from the same sheet ensures continuity for students and minimises confusion with the minimisation of mixed messages and contradictions.

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Appendix G: CASE STUDY 7 – Enhancing WIL at The University of Newcastle: the NURAPID system

Case study seven: Enhancing WIL at The University of Newcastle: the NURAPID system

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Introduction
In 2002, the disciplines of Building and Nursing at The University of Newcastle introduced NURAPID (Newcastle University Recording Achievement for Professional and Individual Development) to first year students in both the Bachelor of Construction Management (BCM) and the Bachelor of Nursing (BN) programs. NURAPID was developed from the existing RAPID system, sourced from Loughborough University, UK. Similar to RAPID, NURAPID was essentially an e-portfolio system that allowed students to track their progress in developing core and other discipline-specific skills during their undergraduate university career, including evidence of experience during work placement, in line with lifelong learning practices in both the BN and BCM.

NURAPID provided a means of supporting the process of implementing the core skills learnt at university and empowering students to take ownership of them.

Context
The development of the NURAPID system at The University of Newcastle was the result of a successful teaching development grant offered by the university in 2002. The project was awarded $50,000 for its development over a period of one year. The project team had representatives in the two disciplines of Construction Management and Nursing. In addition, there was technical support provided to align the system with the university’s existing platform. During 2003, NURAPID was expanded, and at the height of its use, more than 400 students were using the system.

NURAPID was primarily adopted to address a well-known gap identified by staff between students’ university experiences and the ‘world of work’. It was found that students tended to approach university and the workplace independently, and did not reflect on the relationships between them. NURAPID was subsequently designed to support students’ reflection on this relationship, in particular, how their studies related to their work placement (industry and clinical) experiences.

Specifically, students used the NURAPID system to support the development of their professional skills and to facilitate documentation of their work integrated learning (WIL) activities. It underpinned students’ self-assessments and reflective journal instruments which formed integral elements of their formative and summative assessments. Students used NURAPID to submit their reflective self-assessments electronically.

For BN students, the NURAPID system allowed them to document their learning and reflect on their decision-making in order to improve understanding of their clinical experiences. In addition, the system gave nursing students the opportunity to progressively accumulate evidence of their attainment of the Australian Nursing and Midwifery Council (ANMC) competencies required for registration as a nurse in NSW.

Students were introduced to the system in their first semester of the BN program, with the aim of developing its continued use throughout their program of study. This would allow them to maintain an ongoing record of the development of their skills and reflection on their clinical experiences.

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For BCM students, NURAPID was used to support the development of their professional skills. The BCM program is delivered as a problem-based learning course. NURAPID provided a supportive tool to help with this approach as it allowed students to engage in ongoing self-assessment and reflective journal writing. Furthermore, the skills statements incorporated within NURAPID aligned with the competencies required of the professional bodies that accredit this degree. This meant that students’ record of skill development maintained in NURAPID could also be used as evidence to support their applications for membership of relevant professional institutions (e.g. Australian Institute of Building, Chartered Institute of Building). In this way, students were encouraged and supported to use NURAPID throughout their academic career and beyond.

WIL as a means to enhance learning
One of the predominant issues associated with WIL is the lack of pedagogical linkages between university programs, industry experience and assessment. This particular e-portfolio aimed to resolve this issue through supporting the ongoing and online documentation of skills from each of these domains and reflection on the links between them.

It was necessary then, to appropriately define a set of core skills for these students at the outset—to provide them with a supportive framework through which to advance their knowledge and WIL practices. To this end, the project team sought to develop a skills framework as part of NURAPID, drawing on the university’s framework of ‘Core Skills’ for graduates, and refining these through attention to stakeholder and industry needs, as well as the specific professional skills requirements of the two participating disciplines. The result was a framework of thirteen core skills (see Table 1) and a range of components, which together formed the critical outcomes for graduates of these courses.

In the NURAPID project, each component within the 13 core skills was then broken down into a four-step hierarchy of sub-skills, ranging from the lowest to highest levels of competency. Table 2 shows an example of this breakdown for components of Core Skill 1.

1. **Operate effectively with comprehensive and well-founded knowledge, skills and ethical standards appropriate to their fields of study**
   1.1. Managing and applying knowledge
   1.2. Displaying knowledge of the discipline and current affairs
   1.3. Reading and responding to written material
   1.4. Demonstrating skills of the discipline
   1.5. Upholding ethical standards of the discipline

2. **Acquire, organise and present information**
   2.1. Acquiring information
   2.2. Organising information
   2.3. Producing written material
   2.4. Making presentations

3. **Reflect on and continue to develop their knowledge, skills & attitudes**
   3.1. Practicing self-reflection
   3.2. Working towards identified targets
   3.3. Managing personal development

4. **Think logically, laterally, critically and creatively; analyse and synthesise**
   4.1. Applying critical reasoning
   4.2. Conceptualising ideas
   4.3. Demonstrating creativity
   5. Act effectively in decision-making and problem solving
   5.1. Investigating problems
   5.2. Solving problems

5. **Carry out research activities**
6.1. Utilising appropriate investigative and research methods

7. Communicate effectively as members of their communities
   7.1. Documenting and reporting on work, skills and knowledge development
   7.2. Communicating ideas and concepts
   7.3. Taking part in discussions and meetings

8. Work autonomously and collaboratively
   8.1. Managing time effectively
   8.2. Undertaking group planning and discussion
   8.3. Demonstrating team-building skills

9. Utilise information technology appropriately and competently
   9.1. Using IT regularly to inform study and work practices

10. Seek improvement in organisational, social and cultural contexts, in an ethical manner
   10.1. Negotiating with others
   10.2. Motivating and persuading others
   10.3. Practising ethical responsibilities

11. Recognise social, cultural, physical and intellectual diversity, including the history and diversity of Australian indigenous peoples
   11.1. Recognising and respecting diversity (socially, culturally, physically and intellectually)

12. Recognise and respond appropriately to global change
   12.1. Understanding and responding to global advances, changes and issues

13. Recognise human impact on the environment, and its implications for sustainability
   13.1 Demonstrating awareness and understanding of environmental sustainability

Table 1: The ‘core skills’ framework of NURAPID (adapted from Williams & Sher 2004:159)

1. Operate effectively with comprehensive and well-founded knowledge, skills and ethical standards appropriate to their fields of study
   1.1 Managing and applying knowledge
      A. I can appreciate the need for and the value of gathering, managing and applying knowledge.
      B. I can collect information from a variety of sources using techniques I am familiar with. I can, with assistance, manage and manipulate this information, and I can present this information in a range of simple formats.
      C. I can demonstrate confidence and familiarity with a range of information sources and information management techniques. I am able to demonstrate a detailed knowledge of my chosen field of study including specialist areas of knowledge, and can incorporate, contextualise and apply new knowledge effectively in new situations.
      D. I can evaluate and select the most appropriate source of knowledge, and collection and management techniques. I can engage in constructive and critical review of new and emerging knowledge sources and knowledge management techniques. I can apply knowledge effectively to achieve a desired outcome in new and unfamiliar applications.
   1.2 Displaying knowledge of the discipline and current affairs
      A. I am aware of the history, role and purpose of my discipline and how general current affairs may impact on my industry and profession.
      B. I can demonstrate knowledge of the history, role and purpose of my discipline and how general current affairs may impact on my industry and profession.
      C. I have a good knowledge and experience of the history, role and purpose of my discipline and how general current affairs may impact on my industry and profession.
      D. I am involved in developing and can advise others on the history, role and purpose of my discipline. I am able to respond to general current affairs as they may impact on the industry and profession.

Table 2: Example of the hierarchy of sub-skills for Core Skill 1 (adapted from Williams, Sher & Sharkey 2004:6)

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To create the four-step hierarchy, iterations of the NURAPID core skill list were developed through consultation and trial. Firstly, the relevant professional institutions were consulted to ensure that the framework and hierarchy matched the requirements of industry. Secondly, students were consulted and provided with a proposed skill hierarchy on which to provide comment, in order to develop a well-grounded framework expressed in terms that students could relate to. Finally, within the Nursing component of the project, the skills hierarchy was trialled to ensure its applicability and relevance to this setting, as a means of supporting the documentation and reporting of the attainment of required clinical proficiencies.

The aim of developing this framework for NURAPID was to identify and align a set of core skills for these discrete disciplines and arrange them in a useable and transferrable format. By coordinating input from university, students and industry, the project sought to support and advance professional development in line with the requirements of identified professional bodies and disciplines. Moreover, as a result of its carefully considered development, NURAPID offers a model that can be transferred to other professional bodies, industrial sectors, and higher education programs for the implementation and contextualisation of an internet-based skills development and recording system.

**E-portfolio solutions for WIL issues: the NURAPID online system**

The NURAPID system incorporated mechanisms that allowed for both the recording of achievement and facilitation of skills development. To this end, NURAPID recorded evidence of competence (e.g. qualifications, certificates, awards) and supported students' development of skill acquisition through the processes of planning, evaluation and reflection. This approach is an essential feature of any mechanism that records achievement as a means of encouraging and supporting a developmental process.

NURAPID was developed in an online format that enabled registered users to record, monitor and edit data stored on an interactive database. The information was stored and maintained through a secure system that requires a username and password for access. To begin, students were introduced to the system via an instructions page which provided all the relevant information on how to use and navigate the NURAPID system (see Figure 1). Students were then directed to the main page of NURAPID, which comprised of two discrete areas in which to record skill acquisition. The first area was entitled ‘PACE’ (Personal information, Achievements, Career development, and Evidence) (see Figures 2, 3, 4 and 5). ‘PACE’ was the area of the system where individuals recorded their personal achievements. This section enabled registered users to input data including personal details, achievements (including qualifications), career development records, and evidence of competencies.
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Figure 1: Instruction page on how to use NURAPID

How do I use NURAPID?

You should adopt the following three-stage procedure when using the NURAPID Progress File for the first time:

Stage One
Stage Two
Stage Three

TOP
Stage One:

Firstly, complete the PACE component of the NURAPID Progress File. You should complete the following:

- Personal Details: name, address, etc.
- Personal Statement: a 500-word account of your achievements, interests, strengths, characteristics, etc.
- Academic Achievements: qualifications gained.
- Other Achievements: in sport, music, arts, etc.
- Career Development Plan: an outline of your current professional plans and goals.
- Employment History: including industrial placements, and company details (name, contact details, etc).
- Employment Opportunities: a dossier of job adverts and details for future reference.
- Evidence that supports the above records (certificates, newspaper articles, testimonials, reports, etc.) should be maintained and referenced in the Evidence Folder. At the very least, you could have a record of the location of all relevant evidence.

It is anticipated that it may take a little time to complete the above record. You are likely to already have most of this record in one form or another.
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Figure 2: The 'personal information' page of PACE
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Figure 3: The ‘achievements’ page of PACE
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The second area within the NURAPID system was entitled ‘SPEED’ (Survey, Plan, Execute, Evaluate and Document). SPEED is the facility that enabled registered users to expand skills through a process of skills auditing, action planning, execution of skill development activities, evaluation of outcomes, reflection on WIL activities, and the documenting of appropriate evidence of competence. To assist students in this reflection process, the core skills framework (see previous Table 1) was used together with frameworks detailing discipline-specific skills (e.g. the Australian Nursing Council Inc. (ANCI) ‘Competency Standards for the Registered Nurse’, 2000).

Students were encouraged to develop their skills in relation to these frameworks and to generate sufficient verifiable evidence to support their claims of competence. First, students were asked to record their level of attainment of a particular skill by selecting a ‘radio’ button appropriate to the level they feel they have achieved. Second, students were then required to provide evidence of their competence at that particular level (see Figures 6 and 7).
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Figure 6: The ‘Core Skills’ page in SPEED
The motivation for recording evidence against the core skills within SPEED came from employers and professional bodies, who have an increasing awareness of the importance of certain core professional skills, such as communication, presentation and teamwork. Employers assume that university graduates possess technical knowledge but believe that other skills required to qualify for corporate membership of professional bodies are often not acquired for many years after graduation. NURAPID provided students an opportunity to document and demonstrate their knowledge in these other domains.

Project evaluation: measuring the success of NURAPID
Evaluation of the NURAPID project initially involved observation and consideration of findings from the RAPID research project in the UK. The evaluation of RAPID pointed to many successful aspects of the project and also assisted in identifying potential improvements for its Australian equivalent. Although the RAPID project differed in its disciplinary focus (i.e. engineering and computing), the findings from their evaluation provided relevant advice for improving the system even within the specific contexts of The University of Newcastle.

One point of improvement identified in the RAPID evaluation was the need for a more user-friendly system. For instance, the student reports produced by RAPID (and NURAPID) were of ‘plain text’ format—based on the premise that students would personalise the appearance of their documents. However, this design concept proved to be flawed. Students did enhance the layout of their submissions, resulting in many blank pages and monotonous formatting, which was frustrating for both students and academics alike.

To evaluate the NURAPID project more specifically, a baseline questionnaire was also developed. This was designed in conjunction with The University of Newcastle Survey and Facilitating work integrated learning (WIL) through skills-enabled e-portfolios in construction and nursing.
Evaluation Services, and was delivered to the first and final year cohorts of the BCM. The questionnaire elicited undergraduate students’ views on core skills, skills development, mechanisms for promoting skills development and recording of accomplishments. A complementary survey was also administered to teaching staff (see Sharkey, Williams and Sher, 2003).

The data obtained from the survey provided a baseline understanding of student perceptions before engaging with NURAPID. This also provided basic data for future analysis, including comparisons between different cohorts of students (for example, current final years with no experience of NURAPID, compared to students who graduate having had opportunities to use the system throughout their academic/professional careers).

The survey provided information concerning students’ understanding of professional skills and the importance of the development of these skills whilst studying. Both groups of students, when responding to the survey question on the ‘importance of the University’s Core Skills’, rated them as very high—with 90 per cent of those surveyed stating that these skills were ‘important’ or ‘extremely important’. Of interest was the high percentage of students (80 per cent) in their first year that were familiar with the University’s Core Skills framework, which indicates a general awareness of skills requirements.

The students were also questioned about the importance of relating their university learning to professional attributes and skills, particularly through a system such as NURAPID. The survey included three related questions:

What value do you see in a system that allows you to:

a) Compare your skills to those required by professionals in your discipline?
b) Record your progress and achievements?
c) Plan to improve your skills?

The students generally indicated the value of such a system in providing a means to compare their skills with professional requirements and industry practice, and in helping to record their achievements (see Figures 8 and 9). Of most value, was the ability of the system to help in planning, and in supporting the progressive learning of skills (Figure 10). These results reveal how the NURAPID system was generally valued by students and was able to support reflective practice during their WIL experiences.
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Figure 8: Value of a system that compares individual/professional skills

Figure 9: Value of a system that helps record progress and achievements
Conclusion
Despite the apparent success of the implementation and response to the NURAPID project, The University of Newcastle concluded the project as a result of a number of institutional and technological barriers. One of the primary issues that confronted NURAPID was the limited disk space available to house the platform as part of the university IT system. Another issue was that the RAPID program, on which NURAPID was based, is written in a computer language known as PERL (Practical Extraction and Report Language). This was problematic as The University of Newcastle had very few programmers familiar with this language at the time. In addition, only two disciplines utilised the system, and as such, the expense of transferring it across to a new platform was too restrictive for such a relatively ‘small’ user base. This issue made it increasingly difficult to gain renewed funding and eventually caused the shutdown of the program.

There are three lessons from this experience that can aid in the set-up and sustainability of other e-portfolio initiatives. Firstly, the system needs to be broadened across a number of disciplines in order to create a large user base. Having a greater number of disciplines involved would have provided the momentum for sustaining the initiative throughout the technological difficulties confronted at the university. Secondly, e-portfolios need to be contextualised to the technological specifications of the university, such that the program language and characteristics match the existing system and staff capabilities. Thirdly, e-portfolios need to be planned in line with a long-term funding source that can ensure sustainability of the system. Ultimately, it is suggested that e-portfolio systems such as NURAPID are perhaps best structured as university-wide programs, core university activities, or facilitated across a consortium of universities, in order to provide the sustainability required to ensure students have access to this valuable WIL support system.

References

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Facilitating work integrated learning (WIL) through skills-enabled e-portfolios in construction and nursing
The history of competencies development in Construction Management

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The construction industry is vocational in nature, and has a long history of competency development. In the main, these competencies relate to trades people, with courses leading to certificates and diplomas being delivered within the TAFE system. More recently Construction Management (Construction) degrees have aligned their curricula with competency statements relevant to construction professionals, as specified by the professional institutions that accredit these degrees. However, this has been a complex process.

As Construction degrees prepare graduates for several construction-related disciplines, these degrees are amongst the most heavily accredited in Australia. In addition, international accreditations are seen to enhance opportunities to recruit overseas students and to improve the employability of graduates seeking to work overseas. Most Construction disciplines therefore also seek accreditation from various international professional institutions as well as local ones, with some programs being accredited by up to nine professional institutions2 (Williams et al., 2009).

Devising curricula that address this range of requirements is understandably challenging, as each professional institution requires material to be delivered that is specific to their discipline. Compromises need to be made as each degree program can only deliver a finite number of courses within university prescribed time allocation for courses. This means that all the requirements of one accrediting body cannot be met in tandem with all those of the

2 The following are some of the professional institutions that accredit Construction degrees:

- ACCE Australian Council for Computers in Education
- AIB Australian Institute of Building
- AIBS AIBS Australian Institute of Building Surveyors
- AIQS Australian Institute of Quantity Surveyors
- API Australian Property Institute
- BQSM Board of Quantity Surveyors Malaysia
- BVAEAM Board of Valuers, Appraisers and Estate Agents, Malaysia
- CIOB Chartered Institute of Building
- HKIS Hong Kong Institute of Surveyors
- ISM Institute for Supply Management
- NZIQS New Zealand Institute of Quantity Surveyors
- PAQS Pacific Association of Quantity Surveyors
- RICS Royal Institution of Chartered Surveyors
- SIB Singapore Institute of Building
- SISV Singapore Institute of Surveyors and Valuers

Source: (Williams, Sher, & Simmons, 2009)

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other professional institutions. According to Ottewill, McKenzie and Leah (2005:92) attempting to meet multiple accreditation requirements may result in a “zero-sum game” where one subject area is included at the expense of another.

To further illustrate the difficulties universities face in this regard it is informative to consider the different ways in which professional institutions set out their requirements. The Australian Institute of Building sets out theirs in a document entitled “Information Publication Number 1 – Procedures for the assessment of courses and accreditation of qualifications” (AIB, 2006), whilst the Chartered Institute of Building’s accreditation requirements are set out in their education framework document (CIOB, 2007). The skills specified by the AIB are presented on a single page, whereas those of CIOB are presented over ten pages. This crude comparison highlights the difficulties of accommodating two sets of accreditation requirements, let alone those of the multiple other professional institutions from which many programs seek accreditation.

Attempts have been made to align the requirements of these professional institutions (AIB, 2006). These efforts were initiated at the Australasian Universities Building Education Association (AUBEA) conference in 2000 but little progress has been made to date. The topic was discussed again at AUBEA 2011, and it was agreed that renewed efforts were to be made in this regard. According to Newton (Newton, 2011:1) ALTC funding has now been obtained to “ensure the various professional accreditation requirements and emerging national regulatory frameworks are better aligned.” It is too early to tell whether these renewed efforts will be successful.

This situation is further exacerbated by national regulatory requirements set to come into force in 2012. AUQA (Australian Universities Quality Agency — the government’s quality assurance agency for universities) is being replaced. A new national regulatory and quality agency for higher education called the Tertiary Education Quality and Standards Agency (TEQSA) is being established. TEQSA will;

“...//.. regulate university and non-university higher education providers, monitor quality and set standards. TEQSA will register providers, carry out evaluations of standards and performance, protect and assure the quality of international education and streamline current regulatory arrangements. It will join together the regulatory activity currently undertaken in the states and territories with the quality assurance activities currently undertaken by the Australian Universities Quality Agency.” (TEQSA, 2009) [http://www.deewr.gov.au/HigherEducation/Policy/teqsa/Pages/Overview.aspx]

In order to meet the demanding requirements of the diversity of accreditation bodies requires a significant commitment to curricula design and evaluation. Efforts to align the requirements of these bodies have not been successful to date. The implementation of TEQSA’s requirements may provide a catalyst in this regard. The state of professional competencies in this discipline are thus in a state of flux.

Threshold Learning Outcomes in Construction

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In 2010 the Australian Teaching and Learning Council (ALTC) was commissioned by the Australian Government to work with communities of academic, professional, scholarly and business groups. This work was a precursor to the establishment of TEQSA and the aim was to begin to specify how graduate capabilities specific to each discipline might be used as a basis for academic standards. The aim of this Learning and Teaching Academic

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Standards (LTAS) project was to facilitate and coordinate clusters of discipline communities. The LTAS project identified a number of important and pragmatic principles to underlie the use of academic standards for quality assurance. These include:

Academic standards should be expressed as Threshold Learning Outcomes (TLOs) defined by each discipline for each level of qualification.

Processes for assuring academic standards must not give rise to perverse consequences (e.g. standardisation of curricula or standardised tests).

Individual institutions may set their own learning outcome standards in addition to the defined TLOs.

Individual institutions will determine the curriculum, teaching methods, resources and assessment methods leading to the achievement of the TLOs in their institution.

(ALTC, 2009: 1-2)

A TLO can be defined as a clear statement of the set of knowledge, skills and the application of that knowledge and skills that a person has acquired and is able to demonstrate as a result of a particular program of study in a given discipline at the point of graduation. (Australian Qualification Framework Council [online], 2010) Australian Qualifications Framework Council, 2010, p.82). The ALTC Discipline Scholar for Building, Assoc. Prof Sid Newton, has steered the development of standards for construction management. He has liaised with all higher education providers of Building and Construction degrees in Australia, all relevant professional accreditation bodies (local and international), key industry professionals (representing small, medium and large organisational settings and a broad sample of industry sectors), key academic leaders, current students and recent graduates. A summary of the TLOs which construction management students will be required to demonstrate on completion of a Bachelors program are shown below. The full Academic Standards Statement for Building and Construction has now been published (Newton, 2011).

| TLO_1: | integrate and evaluate the fundamental principles and technical knowledge of building and construction technology, management, economics and law |
| TLO_2: | identify and resolve typical building challenges with limited guidance, employing appropriate evidence-based problem-solving and decision-making methodologies |
| TLO_3: | critically and creatively reflect on personal behaviours and capabilities in the context of entry to professional practice |
| TLO_4: | interpret and negotiate building and construction information, instructions and ideas with various project stakeholders |
| TLO_5: | research and develop methods and strategies for the procurement and delivery of contemporary construction work |
| TLO_6: | demonstrate an integrated understanding of both the theory and practice of building and construction based on experience |

The Learning and Teaching Academic Standards (LTAS) project in building and construction was undertaken with the support and guidance of the Australian Learning and Teaching Council (ALTC), the Australian Deans of Built Environment and Design (ADBED) and a specially constituted Building Discipline Reference Group (BDRG). The learning outcome statements developed describe a minimum, or threshold level, of the learning outcomes (TLOs) that all graduates of an Australian bachelor award in construction management are expected to have met or exceeded. This is a critical development in the compass of competencies specific to construction management.

The LTAS project for building and construction involved extensive consultation with industry,

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professional bodies, academics, students and recent graduates. The opinions and ideas of
the building and construction community were canvassed through an extensive series of
workshops, online surveys, meetings, presentations and newsletters. Following an initial and
widespread round of consultation, a draft set of TLOs were developed and refined through
further rounds of national consultation involving all relevant professional bodies and higher
education providers. The draft TLOs were mapped for comparison against a range of
professional accreditation requirements, equivalent standards internationally, the TLOs of
other disciplines, and the course learning outcomes for a number of Australian bachelor
programs in building and construction.

The Building and Construction Academic Standards Statement covers the key themes of
Knowledge, Judgement, Self-Development, Communication, Innovation and Engagement.
The TLOs are supported by a set of explanatory notes that offer a helpful rationale and,
where possible, provide some high-level suggestions about the kind of evidence that each
statement might entail. The Statement is not prescriptive. Higher education providers are
both encouraged and expected to deliver programs of study with broader and more
extensive learning outcomes than required by the TLOs. The TLOs represent a common
expectation on the part of the building and construction community of what all graduates of a
bachelor program of study in building and construction in Australia should know and be able
to do.

A critical element of the LTAS project has been its focus on establishing an evidence base
for the competencies being proposed. The evidence indicates that there is general
consensus on the key capabilities in thematic terms -meaning broad agreement that the
important learning outcomes have to do with Knowledge, Judgement, Self-Development,
Communication, Innovation and Engagement. There was a difference in preference evident
between different stakeholder groups (academics, professional bodies, industry, students,
recent graduates) about which of these themes are most important and which are currently
well developed in graduate students. For example, whilst preference for the skills of
Knowledge and Communication remain relatively high and low respectively and across the
board, there were significant differences in the other TLO preferences. Academics rated
Self-Development and Judgement more highly than did industry or students, and industry
and students were almost identical in their preferences for each. This might suggest that
there are fundamental differences when it comes to Self-Development and Judgement, or it
may simply be a difference in understanding of what might constitute Self-Development and
Judgement. In either event, the difference calls for close attention to be paid when more
specific details are developed. The particularly low rating for Judgement by both industry and
students is certainly cause for concern. The actual draft TLO statement speaks of exercising
judgement and employing appropriate problem-solving and decision-making methodologies
to solve routine building problems under supervision. For both industry and students to rate
this skill so low highlights the need for further investigation to determine what it is about
Judgement that is problematic.

It is very clear; however, that the substantial difference in opinion between industry and
academics relating to Innovation is the most significant factor to emerge from the data. The
fact that the draft TLO statement for Innovation speaks of researching and evaluating
methods and strategies for the procurement, planning, control and/or financial management
of contemporary construction work, is possibly even more alarming, not least because it is
the academics who rate it so low. Some context to the high preference given by Industry is
provided in the transcripts of the workshop discussions. It is apparent that procurement,
planning, control and/or financial management are the learning outcomes of most concern to
industry currently, because they believe the topics are either not dealt with in sufficient detail
or they are failing to keep up to date with significant changes in the industry. There is a
strong case here for curriculum review.

The different preferences expressed for different sources of learning outcome statement are

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and nursing
more complex. There is, perhaps surprisingly, consistently high preference expressed for graduate capabilities. Overall, the strong message from this data is that industry is uncomfortable with any expression other than a traditional competency statement. This suggests that much of the difference in preferences between different stakeholders might reasonably be ascribed to the choice of language. The critical requirement is to come to not only a shared expression of the TLOs, but a shared understanding of them.

Two new initiatives seek to develop a better shared understanding of the TLOs. The first of these is a project that aims to establish, under the auspices of the Australian Deans of Built Environment and Design (ADBED), a building and construction network that will comprise representation from a range of key stakeholder groups with an interest in the higher education standards for construction management. The significance of the project lies in the fact that such networks currently do not exist. Establishment of these networks could lead to alignment of the professional accreditation processes that currently vary significantly and also foster the understanding that the extent of student engagement in the industry has grown substantially in recent years to the point where study and work commitments are often in conflict.

ADBED, with the leadership support of key stakeholder groups, proposes to provide an independent network/forum to bring these various parties together with the aim of harmonising and aligning the relationships between industry, students and providers of higher education, specifically in the building and construction area. The initial network will serve to provide measurable academic outcomes by aligning and simplifying the accreditation processes for the discipline. The outcome will be a new body, independent of any particular stakeholder group but with representation from all key stakeholders. This new body will represent the discipline in terms of sustaining the development and application of appropriate higher education academic standards.

The second initiative is to undertake an Integrating Academic Standards in Programs project, to focus on the alignment of individual course outcomes with the TLO statements, and to produce a series of Best Practice Guides (including one for each TLO) that further explain and illustrate how each TLO might be evaluated and demonstrated. In order to ensure that the TLOs achieve what they are intended to achieve, it is essential to work towards the aim of having all stakeholders interpret the TLO requirements along similar lines and understand how each might be demonstrated and evaluated.

References

Facilitating work integrated learning (WIL) through skills-enabled e-portfolios in construction and nursing
A history of Nursing Competencies

Lynette Bowen
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Some of the impetus for the development of a national set of competency standards for registered nurses (RN) has been driven by government reform and the need to remain competitive in a world market (McKay, 2004). Concern has also existed amongst some nurses that if the profession failed to develop its own nationally accredited competency standards of practice, other bodies would (Percival, 1995).

The first competency standards were developed and validated by the Australasian Nurse Registering Authorities Conference (ANRAC) and published in 1990 (Gibson & Gilbertson, 1995). Responsibility for the competency standards was then assumed by the newly formed Australian Nurses Council Inc. (ANCI), subsequently known as the Australian Nursing & Midwifery Council (ANMC). The standards are now in their fourth edition.

The competencies are the minimum standard of practice for assessment of graduating nurses to determine fitness to register and practice (ANMC, 2006). They provide a common language to communicate competence, regardless of the institution deferring the degree. Likewise, regardless of the context of practice (e.g. peri-operative nurses, remote area nurses) and possible sub-specialties (e.g. nurse educators, women’s health nurses), the competency standards are flexible and remain relevant.

It is expected that all students completing their degree program in nursing will have met all competencies. Evidence of competence is collected through clinical placements and assessments attached to the degree program.

The competency standards also provide a benchmark for daily practice as a RN. The nurse registering authority requires RNs to maintain recency of practice and competence (Nursing & Midwifery Board of Australia, 2010), thus ensuring their ongoing relevance to professional practice.

The RN competency standards describe four domains of practice: Professional practice, Critical thinking and analysis, Provision and coordination of care and Collaborative and therapeutic practice. Each domain further sub-divides to competency units that contain the competency elements.

The domain ‘Professional practice’ has two competency units. This domain outlines the professional, legal and ethical expectations of a RN. Some of the key attributes measured in the domain include: respect for others, practice within legal and ethical boundaries, recognition and respect of cultural diversity and different belief systems. The role of the RN as advocate for clients and groups is recognised within this domain. Recognition of one’s scope of practice (boundaries of safe practice) is also included here.
'Critical thinking and analysis' contains two competency units. This domain reflects the value of evidence and research as the discipline's foundation for practice. It describes an expectation that the RN will support the professional development of others and self. Key attributes of performance in the unit include self-appraisal, professional development, and reflection, application of best available evidence, teaching and participation in quality activities.
The domain ‘Provision and coordination of care’ contains four competency units. The domain describes the coordination and delivery of nursing care and supporting activities. The key attributes for demonstrated competence in the domain include client assessment and goal development, planning of nursing care to meet goals, delivery of goal orientated nursing care and evaluation against specific goals. As the RN leads the team, aspects of delegation and supervision are also embedded in the domain.

The fourth domain ‘Collaborative and therapeutic practice’ contains two competency units. The domain reflects the essence of partnership in practice; with the client, their significant others and the interdisciplinary health care team. Key attributes that measure competence include communication and teamwork. Attributes also include aspects of safety (physical, psychosocial, cultural and spiritual).

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Discussion
The first two domains contain generic attributes that would be expected to be found across any professional group. All professions are expected to act within legal and ethical frameworks. All professional groups are expected to apply critical thinking to their work practices and to rely on evidence to support decision making processes. The exemplars provided by the ANMC (2006) to give clarity to the competency units may reflect nursing practice, but equivalent examples from other professional groups would fit well within the overall domains (Australasian Professional Legal Education Council, 2000; Engineers Australia, 2011). The fourth domain also contains attributes that pertain to all professional groups. Attributes of professional communication and teamwork are essential in any occupational group, as is evident from the list of transferable skills identified for graduating students from The University of Newcastle (UoN, 2011). The alignment of competencies that reflect professional attributes between differing occupational groups appear to be feasible and worthy of further exploration.

Within the nursing discipline, providing evidence of competency can be fraught with challenges. Work integrated learning, often referred to as ‘clinical placement’ provides a forum for students to demonstrate competence in nursing practice. Much of the practice involves clients/patients. The need to maintain their confidentiality reduces the ability to provide some tangible forms of evidence, such a video recording a clinical episode of care. The outcomes of client/patient care may also remain silent in some areas of practice, such as mental health.

Attempts to address these issues include strategies such as simulation, use of reflective journals as well as clinical portfolios with the use of pseudonyms to protect patient identity. The use of simulation to create clinical situations has increased in recent years with opportunities for nurses to practice patient care in a safe environment. Limitations still exist where skills and knowledge needed to fully utilise the equipment are not present (Decker, Sportsman, Puetz & Billings, 2008). However, as expertise in the use of the equipment improves, opportunities to simulate the clinical environment will allow the provision of tangible evidence to support levels of competency.

Reflective journals and clinical portfolios require fewer skills and often place the responsibility for recognition of competence on the student. While Fereday & Muir-Cochrane (2006) supported the process of self-assessment of competence, a UK study suggested that self-reported competence that used objective structured clinical examinations (OSCEs) demonstrated minimal correlation (Lauder et al., 2008). The subjective evaluation of journals and portfolios by teaching staff also remains a concern (Tilley, 2008), yet is also acknowledged as a strategy to support the narrowing of the theory-/practice gap.

Another issue of concern that has both positive and negative aspects is the variability and inconsistency of interpretation of the competencies (Chiarella, Thoms, Lau & McInnes, 2008). Positively, it can enhance the notion of nursing as an art, where creativity and flexibility to deliver appropriate nursing care is encouraged. Negatively, the varying interpretations of competencies can result in poor inter-rater reliability when being used to assess performance (McGrath, Anastasi, Fox-Young, Gorman, Moxham & Tollefson, 2006). Yet the notion that eligibility for registration to practice is built on the ability to demonstrate competence against the standards suggests varying levels of ability may be found in graduating nurses.

Often competency is associated with the practice of clinical skills, where the primary focus is on the psychomotor skills with minimal assessment of the cognitive and affective domains (McGrath et al, 2006). The ‘checklist’ approach to competency assessment that results from this may not embed the holistic approach that is the intent behind the ANMAC competency standards.

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University nursing curricula in Australia must be able to demonstrate how the ANMAC competency standards for the registered nurse are incorporated into the curriculum yet it may not be discernable to teaching staff and students at the classroom level. Assessment of work integrated learning (clinical placement) is often undertaken by sessional staff or workplace mentors who may not have a broad sweep approach to the curriculum document and only superficial familiarity with the ANMC competencies.

**Conclusion**

While processes to measure competency remain challenging, the assessment of competency in the clinical environment remains the most rigorous option available. Continuing to support educators and mentors to understand and apply ANMC competencies should remain a priority. Supporting students to recognise competency in their own practice may also provide a strategy to link practice with theory.

**References:**

Appendix I: Chapter 5 – Continued: Issues with Web 2.0 by J. Mason

Issues arising from Web 2.0 and ‘cloud’ services for WIL - a perspective on standards and interoperability

Jon Mason
Intercog™

In recent years a number of high profile e-portfolio projects conducted within Australia have produced outcomes that have relevance to WIL contexts. Of particular relevance are those projects focused on activities within the University and Vocational Education and Training (VET) sectors (Galatis, Leeson, Mason, Miller, & O'Neill, 2009; Gillian Hallam et al., 2008; G. Hallam et al., 2010). The reports associated with these projects provide both an informative and strategic function in that they can be seen as providing guidance for implementing e-portfolios from a range of perspectives (namely learners, employers, academic staff, technical support staff, and institutional managers). These reports have also highlighted technical interoperability and standards as key foundations for building sustainable infrastructure and a consistent approach. These key foundations will likewise be relevant to the sustainability of leveraging e-portfolio systems for WIL purposes into the future. Related recommendations, such as fostering sector-wide and national communities of practice, (G. Hallam et al., 2010) have also been highlighted. However, dedicated infrastructure that had been established for this purpose, such as the ALTC Exchange, is no longer operational due partly to the perceived role that Web 2.0 technologies now occupy in providing essential collaborative services.

The widespread adoption of Web 2.0 technologies can be seen as representing an important phase in the development of the World Wide Web and also in the approach to the delivery of learning, training, and professional development services offered by relevant institutions. This is also true for ‘cloud-based’ services which are revolutionizing the deployment of enterprise-wide services. As a consequence, providing adequate links to the ‘contained’ environments of institutional learning management systems (LMS) and e-portfolio systems to the open frontier of Web innovation that Web 2.0 offers, presents challenges as well as opportunities. In the case of Web 2.0 technologies there are outcomes beyond enabling social interaction and the sharing of resources. Just because an innovation enables new capacities does not necessarily mean it can be easily integrated with other technologies or systems. Thus, from an interoperability perspective, Web 2.0 technologies can at times be seen as a fragmenting force given the sheer diversity of tools and environments available. For example, from an institutional perspective, the most important consideration will likely be security of systems and data integrity while from an individual perspective it will likely be privacy and control over any personal information.

The Australian higher education sector commonly understands an ‘e-portfolio system’ to be an application developed specifically for the purposes of developing e-portfolios. In the Web 2.0 and cloud services environment it is important to note that some core functions (such as profiling) are also evident in online services that make no mention of the term e-portfolio. Thus, while the primary profiling function is common within teaching and learning contexts that support undergraduates, graduate students or staff, it is also common across a diversity of online services such as professional employment social networking services (for example, LinkedIn) and systems deployed by professional associations that record continuing professional development of its members (for example, the Australian Computer Society). From an interoperability perspective, the question arises as to what extent the data from such systems is interchangeable. In the case of LinkedIn and related professional networking services such data can be exchanged between some systems. Systems configuration to enable interoperability is thus important for any university wishing to take advantage of such services. Configuring their own systems to be interoperable will become increasingly important, particularly from a student or employee perspective where mobility in

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the workplace and portability of personal data are important considerations.

Probably the most significant interoperability issue to consider in future WIL implementations that seek to utilize e-portfolio systems is the need to align defined competency statements from industry with students’ evidence of achievement. Moreover, the deployment of validation services that map this information with formal accreditation information will become an expected feature of systems that as ‘service-enabled’. Internationally, at the ISO level, work is currently underway to develop models that might inform the development of IT systems that manage competency information in ways that maximise the potential for interoperability. It will be important for Australian implementers to engage in the processes involved so that the emergence of any standards in this area is informed by Australian requirements.

Within the Australian education and training context it is also commonplace for an individual’s profile to be represented in terms of ‘employability skills’ (Bowman & Kearns, 2009; DEST, 2002; James et al., 2008; QUT, 2009; Swinburne, 2010; Victoria University, 2007). The adoption of such a conceptualization as standard terminology will likewise be increasingly relevant in WIL contexts, and will need to map against the industry-specific competency statements.

References
Chapter 5 – E-portfolio platforms and resources

Angel Portfolio [http://angelportfolio.com/](http://angelportfolio.com/)
Blackboard [http://www.blackboard.com/Platforms.aspx](http://www.blackboard.com/Platforms.aspx)
Clowdworks, UK [http://clowdworks.ac.uk/](http://clowdworks.ac.uk/)
Desire2learn [http://www.desire2learn.com/](http://www.desire2learn.com/)
Digication (plus google) [http://www.digication.com/](http://www.digication.com/)
ePortfolio org, USA [http://www.eportfolio.org/](http://www.eportfolio.org/)
Gartner, IT professional services for IT advice and current IT research [https://mahara.org/view/view.php?id=1919](https://mahara.org/view/view.php?id=1919)
IMS Common Cartridge (offers advice on IT for institutions) [http://www.imsglobal.org/cc/](http://www.imsglobal.org/cc/)
LEAP 2a [http://www.leappspecs.org/2A/](http://www.leappspecs.org/2A/)
Mahara, open source e-portfolio program, New Zealand [https://mahara.org/](https://mahara.org/)
Now.net portfolio [http://www.technology-now.net/](http://www.technology-now.net/)
Pebblepad [http://www.pebblepad.co.uk/](http://www.pebblepad.co.uk/)
Sakai, open source system, teaching and learning e-Portfolios [http://www.sakaiproject.org/about-sakai](http://www.sakaiproject.org/about-sakai)
Taskstream [https://www.taskstream.com/pub/](https://www.taskstream.com/pub/)
Wordpress (google application) as an e-portfolio platform [http://wordpress.org/](http://wordpress.org/)

Facilitating work integrated learning (WIL) through skills-enabled e-portfolios in construction and nursing
Appendix J: Dissemination – Conference papers


AUBEA 2010 - Williams Anthony Philip, Sher William David, Simmons Catharine Ann, 'The potential for e-learning technologies to facilitate work based learning for construction management students - Researching the nexus between theory and practice', Proceedings of the 35th Annual Meeting of Australasian Universities Building Education Association

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Appendix K: Independent evaluation report

Project Evaluation Progress Report May 2011 for the project:
Evaluator: Margaret McMillan

1.0 Outline of Project
The project aims to:

- Identify the context of WIL issues and opportunities in the discipline
- Identify ways to make e-portfolios more useful for facilitating students’ WIL experiences in Nursing and Construction Management Australia wide.

1.1 Project Outcomes
The project outcomes will encourage and facilitate skill development and evidence gathering in line with life-long learning practice. Practical outcomes include:

- Development of a WIL framework – curriculum mapping which links theory with practice
- Online resources – which demonstrate and support the development of aligned WIL/formal learning
- Final report and publication – which document the potential for e-portfolios to enhance practice and theory, exemplars of using e-portfolios to enhance practice and theory, exemplars of using e-portfolios for WIL
- On-line teaching resource packages – discipline specific CPD modules that link WIL and formal curricula

1.2 Project Stages
In this project the following deliverables were provided through:

- Stage One: Textual analysis of professional competencies.
- Stage Two: Qualitative data: Phone interviews, focus groups with staff and students, online survey with students and within affiliated universities
- Formal project reports
- A web site with information about the project and project outcomes
- Newsletters
- Journal articles
- Conference presentations.

The team describes four phases of activity: Context analysis; Portfolio analysis and the extent of alignment to this agenda; Curriculum mapping and WIL Framework and Development of CPD materials.

2. Purpose, Focus and Scope of the Evaluation

2.1 Purpose of Evaluation
The purpose of this summative audit and evaluation is to provide feedback to the sponsors; the host institution; project partners and the project team on:
The extent to which the project achieved its stated outcomes and the actual/potential impact on student learning
The effectiveness and efficiency of implementation of the project

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The lessons learned from this project and how these might be of assistance to other project applicants.

The products of the evaluation and audit are:
Summative feedback at end of the symposium
Summative feedback at the conclusion of the project.

2.2 Project Evaluation Strategies
The evaluation strategies comprised two primary components:

- Evaluation of the process.
- Evaluation of the outcomes.

2.3 Evaluation and Quality Control Team and Focus of Evaluation
The summative evaluation strategy, conducted by an independent auditor with the ability to evaluate procedures against projected outcomes in the educational context is aligned to another ‘quality control’ evaluation provided by Professor Stephen Billet throughout the two year period of project implementation.

Both evaluations centred on an audit of project processes, progress towards intended outcomes, and the quality of outcomes achieved. A focus on the educational outcomes, their efficacy and feasibility has guided any suggestions for improvement in learning events and outcomes.

3. Role of the evaluator
Following a meeting with the team the evaluator received:
- An overview of ‘updates on progress of project’ at significant stages of the project to date
- Copies of relevant documentation
- An invitation to meet with the evaluation team and project personnel at a symposium
Communication was predominantly through email with a face to face meeting (16.5.2011) aligned to attendance at the symposium on the 18.5.2011.

4. Information Gathering Techniques
The major sources of data for the audit and evaluation were document review (including web-sites), interview within a team meeting and observation of processes and products through case presentations within a symposium.

4.1 Appraisal of summative activities 2011
The Evaluation Team has participated in:
- Informal conversations with Reference Group members
- A half day evaluation meeting 16.5.2011
- Full day participation in the Symposium 18.5.2011

The meetings and the appraisal of documentation and early feedback from the survey proved valuable in terms of clarifying the expectations and insights of the Project Team. Willy Sher, Professor Levett-Jones, Professor Tony Williams and Dr Catharine Simmons were well prepared, presenting detailed progress reports on the project management and methodology together with relevant documentation. Members of the Project Team made themselves available for interview. The Project Team has been very responsive to suggestions resulting from the symposium.

5. Evaluation Findings
The Evaluator (M McMillan) has made the following observations:

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5.1. To what extent has the project been implemented as planned?
The project is being implemented in accordance with the proposed methodology and
timeline. Some variations have been implemented: that were designed to enhance the
methodology and quality of the outcomes:

The survey strategy was modified following the findings from work with Professor Stephen
Billet which informed the development of a similar survey and subsequent focus group
questions.

The focus groups were then to involve students from another University but this proved to be
complex given the impost on staff and the time available.

More in-depth analysis of activities within Construction Management placement experiences
was also undertaken.

Decisions on variation or enhancement of the project methodology are well documented
together with the rationale for the decision and ethics clearance processes. The Project
Manager has reported that the interviewing phase proved a challenge given the onerous
nature of sign off processes from relevant personnel (Heads of School, personnel in
workplaces where professional placements occur).

5.2. How well has the project been co-ordinated /managed?
The appointment of a dedicated project manager has facilitated effective administration of
the project. The project management appeared to be very efficient with productive working
relationships between the Project Leaders and the Project Manager. Both the manager and
leaders reported that weekly meetings ensured that all problems were identified and
addressed appropriately and relevant risk management strategies put in place and recorded.
The documentation related to the implementation of the project is comprehensive and
exemplary. The documentation is a significant feature of the project evaluation process and
the Project Manager has made every effort to make the project implementation process
accessible and transparent.

How well has the project been co-ordinated across different Faculties/ Institutions?
The project is being conducted by one Faculty and Institution, embracing several Schools
preparing health professionals for practice within the Symposium and within the Reference
Group.

The Reference Group membership provides an opportunity for other personnel and
institutional representatives to appraise the nature and extent of their involvement with the
project processes and outcomes.

5.3. How appropriate were the project activities in relation to the project staff
capabilities and the project resources available?
The evaluator responsible for summative appraisal conducted interviews with two project
leaders who acknowledged the invaluable input of the Project Manager. They all
acknowledged their greater insight into the complexities of student learning involving
stimulus material and events that focus on a range of disciplines.
The project team reported that they have received very good support from the Schools and
Faculty and the University.

5.4. Is the project meeting timelines and budget projections?
Budget details were not closely scrutinised because they do not indicate any issues for
concern.

5.5. What risk assessment and QA processes were put in place?
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and nursing
The team has been mindful of the need to seek feedback on relevance of learning materials to the preparation of beginning level health professionals and the need for a range of sources of appraisal of QA inputs as a continuous process throughout the project. The curriculum mapping processes and the presentation of case studies provided an opportunity to appraise the quality, feasibility and practicality of numerous disciplines and their experiences with the use of e-portfolios.

The website has been an integral component in disseminating project processes and outcomes.

5.6. To what extent have the intended outcomes been achieved?
At the time of the evaluation activities in May 2011, most outcomes seem achievable. The survey will be finalised in time for the final report.

5.7. What is the impact of the outcomes on student learning?
This is not able to be fully assessed at this time but symposium sessions, case presentations, preliminary interview data and document analysis have instigated the following piece of evaluative appraisal relevant to Points 5.7 and 6.

The case studies were very informative re the extent to which the universal application of portfolios is needed, feasible/practical and could be assured of a quality outcome. One symposium participant provided a really sound conceptual framework that embraced Higher Education attributes, graduate profiles outlining abilities, agreed standards expressed through competencies and the need for concomitant skills development. The cases highlighted the differences among disciplines and also provided some insight into the potential for the technology to be a major driver, the need to embed the resource into existing courses/subjects, the likelihood that passion sometimes drives ownership (and overzealous behaviour) in any of these initiatives, the need for careful consideration of the relevant assessment tasks and associated student load and academic workload.

6. Opportunities / Challenges and Lessons Learned
From the perspective of the evaluator, the opportunity for representatives of teachers of various discipline cohorts to be involved in the project has provided an excellent mechanism for quality assurance in learning events and constructive input into processes involved in learning and teaching. The Reference Group has been involved in a meaningful way in the design and implementation of the project. The positive response by the Project Team to the requirement for regular review and audit has proven to be a beneficial strategy for project management and has resulted in a very well organised and executed project. The platforms for support of e-Learning initiatives require special consideration around maintenance and portability across contexts.

As an evaluator responsible for a summative appraisal I would offer the following comments:

Workplaces offer the opportunity for students to continue their structured formal learning and to experience actual and contemporary practice (in this instance of nursing care of patients and health service delivery and construction management on building sites) gain new insights into the complexities of managing construction of building and owners of /workers on those buildings and/or engaging in meaningful management of therapeutic relationships and symptom management with patients and their families/significant others apply concepts learned in virtual learning situations and acquire new conceptual frameworks for professional practice, especially those related to ethical engagement and participatory management.

Given the above, there is a need for assessment of the extent of developments of elements of:

Acquisition of generic abilities

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The formal requirements as articulated within statements about professional competence Skill sets (both new skills and applications of those already acquired in simulated environments).

It is important to note that the rules and policies governing learning and teaching must be applied in the information fluent age. E-learning did not create bad behaviours within learners or teachers. While it is highly desirable to be information literate and aspire to information fluency, not all academics and students will be totally engaged with or appraised of the value of web enabled learning events such as those that form part of learning activities within portfolios. Indeed judgments have to be made about the ‘value adding’ of for example, some information available on social media: The skill is in appraising the worthiness of this information is critical in the contemporary learning environment.

Symposium sessions showed that historically there was greater structure and less ‘locus of control’ for the student. Shifts to more student centred assessment can result in limited guidance for the student about the purpose of the evidence of outcomes they produce and the criteria against which evidence will be assessed. Perceptions of a more ‘laissez faire’ approach are common in feedback from students about their clinical supervision, particularly when the guidelines for experiential learning do not provide guidance to the facilitators.

However the presentations at the symposium also stimulated some discussion around enduring characteristics of the two professional groups (nursing and construction management) that are central to this project. For example it was shown that in both Nursing and Construction Management, primary assessment strategies can still be described as subjective or pseudo objective and standardised site/ward/unit reports on individuals. In Nursing, Clinical Skills Assessment Tests (CSATs) used in the 1970s are still in existence as ‘stand alone’ skills tests or used within Objective Structured Clinical Assessments or Examinations (OSCA/OSCEs). Later portfolios using ‘critical incident techniques’ enabled greater reflection on significant learning events for students or ‘teachable moments’ for staff; portfolios based on competency standard domains and/or graduate attributes which have been in existence for nearly 3 decades were show cased within the symposium as having greater potential for alignment to learning from the dynamism of actual practice.

The portfolios presented as case exemplars demonstrated the potential for a greater emphasis on empowering students through learning as a result of carefully crafted assessment activities; a structured framework with clear directions and criteria is essential. Foundational principles of assessment must not be compromised. Robust assessment is the essential ingredient in quality learning and teaching. Through meaningful work-based experiences, students gain an understanding of career options, career pathways and the skills necessary to attain occupational and professional goals. Work-based experiences facilitate goals clarity, confidence, motivation and capacity for career planning based on individual goals, values and strengths. Engaged and productive learners become self-sufficient and oriented to the professional task/s at hand.

The same principles of face and construct validity, currency and authenticity apply to any of the four categories of evidence that might be provided by learners/and or facilitators/peers in a portfolio:

- Real work/real time activities including direct observation and third party reports
- Structured activities, including reflection on simulation, demonstration and activity sheets
- Questioning processes, oral and written, around work related projects/activities
- Documentation of actual workplace experience/activities

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From the exemplars of cases presented at the symposium one could see that there are clearly dimensions of underpinning knowledge, ethics, attitudes, values, potential for creativity and management of relationships that are the essence of competence. The challenge is in designing assessment that demonstrates integration of these dimensions of professional practice across virtual and actual learning situations. There is also an imperative to do this in a way that enables a variety of assessors to discriminate among standards of performance and standardised practice. In particular there is a need to ensure judgment, attitudes and ethics are clearly part of the rigour applied to the assessor tasks, including the assessors within self and peer assessment tasks.
Appendix L: Pro forma - student survey instrument

Online Survey of Nursing and Construction Management students’ views about their Clinical/Industry Placement – work integrated learning

INFORMATION ABOUT YOU
1. How old are you?
   - 15 to 19
   - 20 to 24
   - 25 to 29
   - 30 to 34
   - 35 to 39
   - 40 to 44
   - 45 to 50
   - Older than 50
   Age grouping (use ABS groupings)

2. Are you:
   - Male
   - Female

3. What degree are you enrolled in:
   - Bachelor of Design (Architecture)
   - Bachelor of Construction Management (Building)
   - Bachelor of Nursing
   - Bachelor of Midwifery

4. How many years is it since you started your degree:
   - One
   - Two
   - Three
   - Four
   - Five
   - Six
   - Seven
   - Eight or more

5. Is your main activity as an employee of a company or as a student:
   - Employee
   - Student

6. FOR CONSTRUCTION ONLY
   Are you:
   - Working purely to complete the industrial experience requirements of your degree?
   - Working full-time in a field related to your studies?
   - Working part-time in a field related to your studies?
   - Working full-time in a field NOT related to your studies?
   - Working part-time in a field NOT related to your studies?
   - Not working at all?

YOUR CLINICAL - INDUSTRIAL EXPERIENCE / WIL
7. Have you completed the industrial/clinical experience required for your degree? (Yes / No)
8. How did you find out about the...

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requirements to do
industrial/clinical experience
requirements of industrial/clinical experience
Teaching staff
Other students
Blackboard
Employers
Other
(Please tick all that apply)

9. What was important for you to know before you started your industrial/clinical experience placement?
(Open-ended response)

10. How difficult was it to obtain a placement?
   □ Very difficult
   □ Difficult
   □ Easy
   □ Very easy

11. How well prepared were you for your industrial/clinical experience?
   □ Well prepared
   □ Prepared
   □ Not prepared
   □ Not at all prepared

12. How helpful were the following sources of advice…indispensable very helpful some help not helpful

   Other students
   Teaching staff
   Black board
   Previous work experience
   (Please tick all that apply)

13. What aspects of your industrial/clinical placement did you find helpful for your career plans?
   (Open-ended response)

14. What aspects of your industrial/clinical placement did you find difficult?
   (Open-ended response)

15. What effect(s) has your industrial/clinical experience / work had on your studies?
   (Open-ended response)

16. How was your industrial/clinical experience assessed?
   a) Not assessed
   b) Report
   c) Poster
   d) Presentation
   e) Other (please specify)

17. How could your industrial/clinical experience / WIL have been improved?
   (Open-ended response)

18. How effectively did your industrial/clinical experience relate to your University courses?

Facilitating work integrated learning (WIL) through skills-enabled e-portfolios in construction and nursing
19. How could your industrial/clinical experience have been better integrated into your course curriculum? (Open ended response)

20. Overall, how important do you believe the industrial/clinical experience is to your professional preparation?
- Most important
- Important
- Not important
- Not at all important
Appendix M: September newsletter, 2010

**Project Updates**

Welcome to the second newsletter for our ALTC funded research on the use of e-portfolios for work integrated learning for Construction Mgt and Nursing education. So far we have conducted several phone interviews across the country with clinical coordinators and construction staff who organise student placements. Willy and Ning also conducted a focus group workshop at a Construction Education Conference this year to ascertain Construction staff views on issues with industry placements (using a SWOT analysis). Similarly Catharine and Lynette attended the Network of Clinical Coordinators (NCC) meeting and conducted a focus group with NCC members. One issue which was discussed by participants from both disciplines was the concern that when students are on placement, their input and skills are not valued by industry. For instance students are sometimes viewed as a burden in the work place or asked to complete menial jobs. Such views and actions can affect students’ learning experiences. We will keep you updated on findings from the study as more analysis of data is conducted.

Thank you to all of you who participated in our recent phone interview / focus group session! Your contribution to the project is much appreciated. We are hoping to complete the remaining 20 minute phone interviews by the end of the month (September). If you have not yet been contacted and would like to participate in this phase of the project please email or call Catharine (4921 5782) to arrange a day.

**E-portfolio practices**

What is an e-portfolio? Wenmoth’s (2008) diagram offers a good visualisation of different types of portfolios - from assessment to personal presentations to CVs - and shows how they are stored as e-portfolios online and the different types of applications that can be then linked into the platform storage. From the interviews conducted so far it is becoming apparent that some universities are gradually introducing and trialling the use of e-portfolios in the curricula and in particular using them for documenting students’ experiences whilst they are completing their clinical placements.

Learning from each other

Some participants have commented ‘why Nursing and Construction’? Besides these disciplines having large student numbers who engage in WIL, this alignment has already offered benefits for the disciplines. For instance, nursing has well established assessment procedures for student clinical placements whereas Construction industry placements are generally not formally assessed. Construction can learn from these clinical placement procedures to see ways industry placement could be assessed.

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Introducing the Research Project

What do the Construction Management (CM) and Nursing disciplines have in common? They both have substantial placement components as a requirement of accreditation. What does the world of work and university education have in common? “Not much” according to some students’ responses reported a recent CM education report! This report found that students often saw work integrated learning (WIL) and university experiences as unrelated and questioned as to how the theoretical concepts taught at university related to the world of work. This issue shared by both disciplines (CM and Nursing) is seen as important.

To address this issue our research project will investigate student and staff experiences for managing and engaging with WIL. As part of this investigation we will research innovative IT systems, Web 2.0 technologies and e-portfolio platforms that have the potential to foster and document competencies whilst students are on their placements. In addition, we will be identifying synergies between these two diverse disciplines. Overall, the project is exploring opportunities these technologies provide as the solution to improving students learning experiences.

Project update

The project was approved by the Australian Learning and Teaching Council (ALTC) in October and progress is on track. We have submitted our ethics application and convened our first reference group meeting (which provided informative feedback).

You and the Project

We will soon be conducting phone interviews with staff at universities that offer CM and Nursing degrees. We wish to speak with staff who oversees students’ placements. If you have this responsibility, we encourage you to participate in these interviews. It is intended that this research and resulting report will reform our curriculum structures and placements with consideration given to the potential use of e-portfolios and their role in supporting students involved in these activities. Focus groups with students and staff will also be conducted later this year. These will focus on the individual experiences of WIL and e-portfolios in Schools of CM and Nursing. We encourage you to support this project and will be contacting Heads of Schools in the near future. We look forward to your participation in this project throughout the year ahead.

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