Work-ready wiki: Supporting the learning and teaching of professional graduate attributes

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The paper presents the background, design and formative evaluation of a wiki of work-ready learning activities and teaching support resources to improve the learning of professional graduate attributes. The '*Improving graduate work-readiness*' project is a University of Technology Sydney curriculum renewal project involving five Faculties. The project aims to improve graduates' professional attributes and employability skills by designing new subjects, new subject modules and integrating short well-designed contextualised work-ready learning activities into existing subjects. The authors inquired of relevant professional societies their understandings of the key professional attributes required of a graduate in the contemporary workplace. These findings informed the design of a matrix of 11 professional attributes and associated sub-attributes and aligned understandings and skills that can be learnt. The work-ready wiki gives access to a matrix of generic work-ready learning activities and 16 matrixes of learning activities contextualised for each professional area of study involved in the project to-date. Work-ready activities contextualised for each profession maximises student relevance and motivation to learn. Maximising the ease of integration of work-ready activities into existing subjects has guided the design of the wiki-based learning activities. From the wiki practical teaching support resources can be downloaded to enable easier integration of the work-ready learning activities. The beginning of collections of work-ready learning activities can be found at <wiki.it.uts.edu.au/workready>.

Keywords: work-ready professional graduate attributes online teaching resources curriculum integration
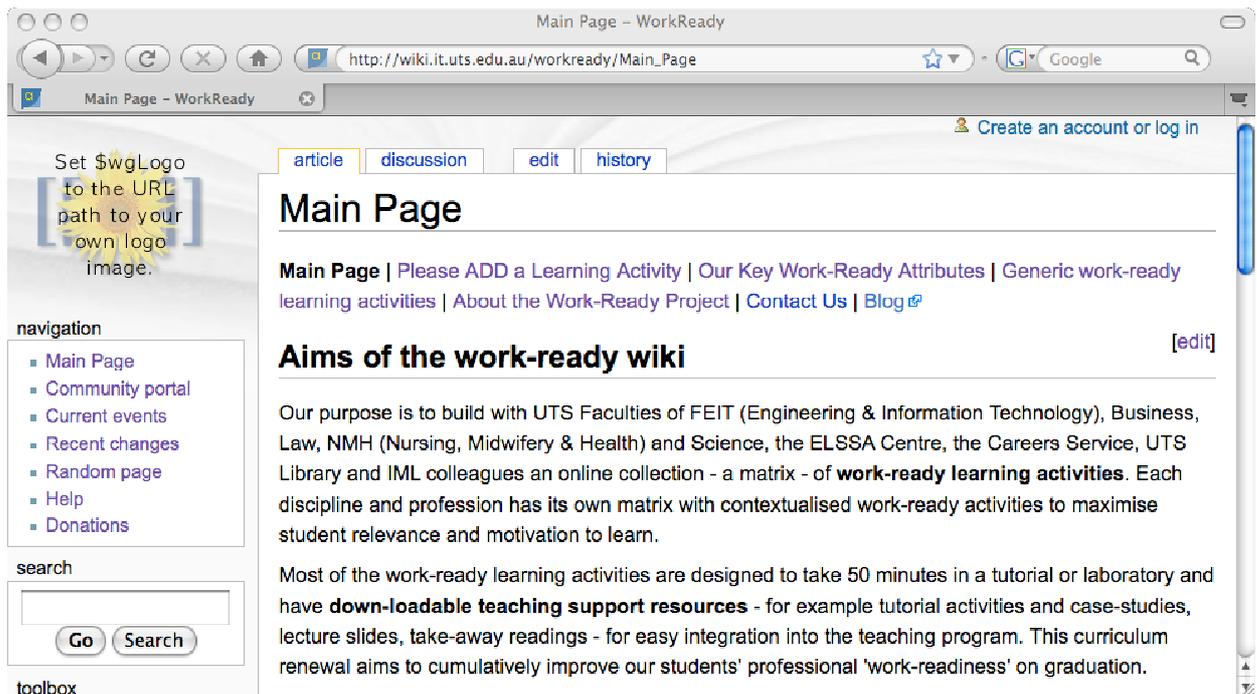
Introduction

Figure 1: Work-ready wiki main page introduction.

Project context

Since the early 1990's a series of reports from government, professional societies, accrediting bodies and employers have articulated an expectation that universities should produce graduates that are more ready for work (Mayer, 1992; ACNielsen Research Services, 2000; ACCI & BCA, 2002; DEST, 2004; Precision Consulting, 2007). However, the traditional focus of the university curriculum is the disciplinary body-of-knowledge and profession-based understandings. This focus is no longer sufficient to meet various stakeholder needs for contemporary workplace professional attributes in our graduates (Litchfield, Nettleton & Taylor, 2008).

The importance of developing professional graduate attributes has been discussed and hotly debated in academic literature (Clanchy & Ballard, 1995; Finn, 1999; Holmes, 2002; Barrie, 2005; Barrie, 2006). Barrie and Prosser (2004, p.244) observe that graduate attributes "have their roots in the contested territory of questions as to the nature of knowledge and the nature of a university". Continuing pressure is influencing universities to re-think their understandings of graduate attributes and to start mapping the more systematic development of professional work-ready learning objectives and outcomes in curriculum design and renewal activities.

The '*Improving graduate work-readiness*' project is a UTS 2007-8 curriculum renewal initiative that aims to cumulatively improve graduates professional attributes by designing new subjects, new career-education subject modules and short work-ready learning activities to be integrated into the existing curriculum. In consultation with the professional societies represented in the project's original two Faculties of Information Technology and Business criteria for successful careers in the respective contemporary professional workplaces were identified (Nettleton, Litchfield & Taylor, 2008). These criteria for success in the workplace, together with findings from the cited reports, were used to identify eleven key professional work-ready attributes for our graduates.

The better development of these identified professional attributes in the existing curriculum cannot replace the extensive real-world understandings learnt through lengthy work-placements or on-the-job training. Nevertheless through curriculum renewal universities can more systematically and better address student learning of these attributes together with the traditional body-of-knowledge of each discipline and profession. These pedagogic outcomes can be combined and are not incompatible.

Professional societies involved in the project

After a preliminary literature review, representatives of six professional societies were interviewed to gather specific data. The societies interviewed were involved in the accreditation of UTS courses in the Faculties of IT and Business. Initial interviews were conducted during September to November 2007 with the following:

- Association to Advance Collegiate Schools of Business (AACSB) International,
- Australian Computer Society (ACS),
- Australian Human Resources Institute (AHRI),
- Chartered Institute of Marketing (CIM),
- Certified Practising Accountants Australia (CPA), and the
- Institute of Chartered Accountants in Australia (ICAA).

When there was no available accrediting body for an award course an alternative professional society was identified:

- Graduate Management Association of Australia (GMAA),
- Australian Marketing Institute (AMI), and the
- Certified Financial Analysts Institute (CFA).

The key question asked was '*what are the attributes of a professional work-ready graduate?*' In the interviews questions were asked about the professional societies understanding of what is meant by 'professional', the understandings, knowledge and skills employers look for in university graduates now and in the future, and their suggestions on how to improve graduates work-readiness. A summary report (Nettleton, 2007) of key findings was sent to all interviewees to confirm the intention and meanings of their comments.

The project's original Faculties of IT and Business have since July 2008 been joined by four others; Engineering, Law, NMH (Nursing, Midwifery and Health) and Science. As a consequence these further professional societies are being invited to be involved in the project:

- Australian Nursing and Midwifery Council (ANMC),
- Engineers Australia (EA),
- Law Society of New South Wales,
- Medical Technology Association of Australia (MTAA), and
- New South Wales Bar Association.

Work-readiness as defined by the professional societies

Many of the professional society representatives observed that large employers believe that while technical skills are important, they recruit for generic skills because they can train new graduates in technical skills, but often it is 'too hard' to train graduates on the generic skills of communication, teamwork, initiative, ability to develop rapport with clients, analytical skills, making sound judgments and applying their technical knowledge (Nettleton, Litchfield & Taylor, 2008).

These key graduate attribute descriptors were found to be common across all the professional societies:

- Global perspective,
- Communication capacity,
- Ability to work well in a team,
- Ability to apply knowledge, and
- Creative problem-solving and critical thinking skills.

Although the above list is not exhaustive of the graduate attributes suggested by the professional societies, these are the ones considered most important across all the societies (Litchfield, Nettleton & Taylor, 2008).

Identification of key professional graduate attributes

Selection of the key professional work-ready graduate attributes has been informed by the interviews with professional societies and the DEST framework (ACCI & BCA, 2002). The DEST framework consists of eight key employability skills: communication, teamwork, planning and organising, technology, problem-solving, self-management, life-long learning and initiative and enterprise.

The professional societies highlighted the DEST attributes as well as the importance of professionalism and ethics, global perspectives and the ability to apply knowledge. In discussion with colleagues, information literacy and research were also identified as key attributes, and the application of knowledge was incorporated into a number of other key work-ready attributes.

Eleven key work-ready professional attributes have been identified in Figure 2. The twelve attribute 'other' is there to be inclusive of colleague's enthusiasms as yet not identified within the eleven key professional graduate attributes.

A matrix of work-ready learning activities for each profession

Relevant sub-attributes, understandings and skills that can be learnt are being identified for each key professional attribute to form the conceptual structure of a matrix which is the backbone of the work-ready wiki. These work-ready understandings and skills are then aligned with short 50 minute learning activities being designed by colleagues, educational designers and the project's UTS partners; the ELSSA academic literacy centre, the Careers Service, and the Library.

The first and most up-to-date matrix supports an online collection of generic work-ready learning activities. Then there is a matrix for each of our professional courses with contextualised work-ready learning activities. There are 16 professional matrixes in the wiki at the time of writing as shown in Figure 3.
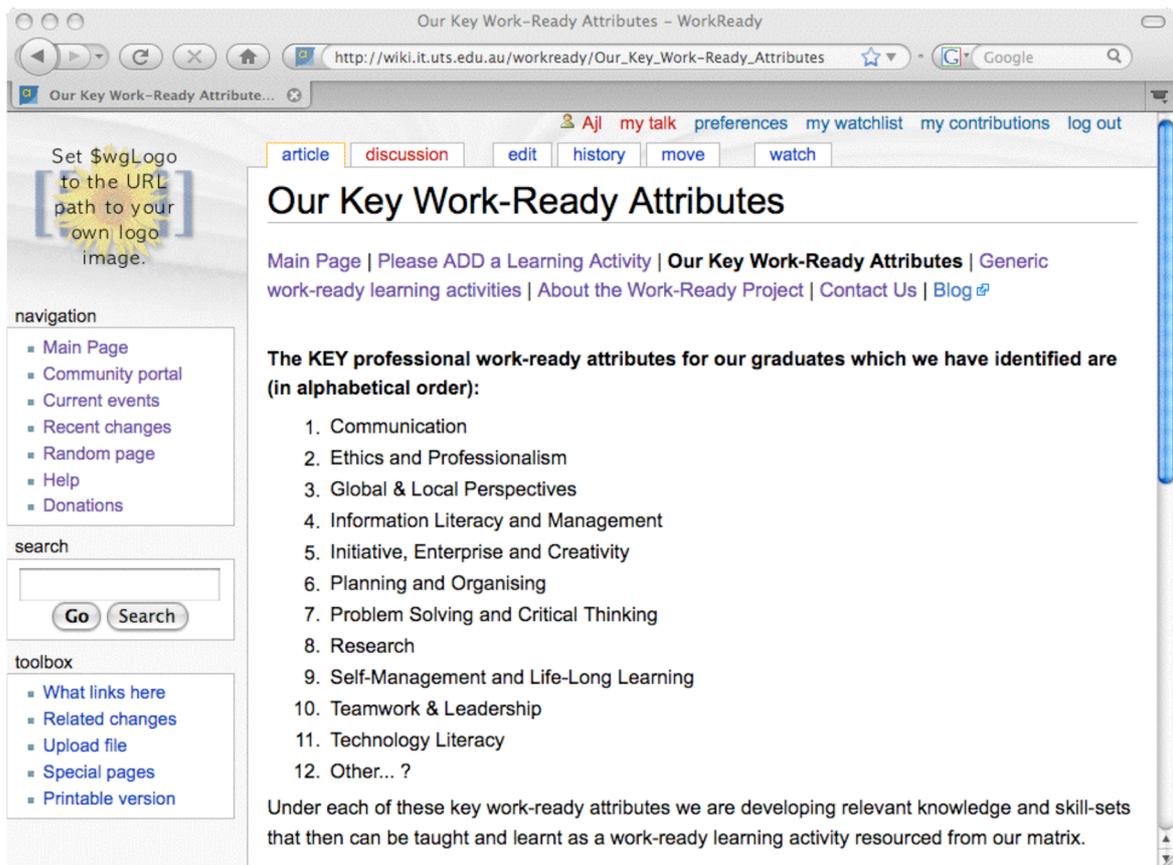
Figure 2: Work-ready project's key professional attributes.

To optimise student relevance and motivation to learn there is a separate matrix of work-ready learning activities contextualised for each professional course involved in the project. Every generic learning activity is being contextualised to improve relevance for each profession's workplace and perspective. Thus the work-ready skills are learnt within their professional context. This supports the embedding of the learning of graduate attributes in the curriculum.

Academic involvement in the process of developing and sharing learning activities and experiences is being actively encouraged, as the importance of academic ownership of developing work-ready skills has been well recognised (Scoufis, 2000; Sharp & Sparrow, 2002) in the success of such projects. Hence the project has employed the following approach when contextualising each generic work-ready learning activity:

- The project team re-designs generic learning activities and embeds them in each profession's context,
- Academics and professional societies provide feedback on design improvements
- Learning activities are integrated into the wiki within each profession's matrix,
- Academics peruse, choose and integrate an activity into their subject, and,
- Academics and students provide feedback for improving the learning activity design.

In each matrix the learning activities are colour-coded as described in Figure 4. An academic searching for a suitable activity in their profession's matrix can see which activities are already taken or available or not yet created.

The wiki's work-ready learning activities

Each work-ready learning activity is designed for easy, effective and practical integration into the existing curriculum and teaching program. Academics can view, choose and download work-ready learning activity outlines that describe each activity using a standard one-page template. The learning activities are designed to take approximately 50 minutes and come with down-loadable teaching support resources including lecture and tutorial slides, tutorial and classroom activities, case-studies, and relevant handouts and readings.
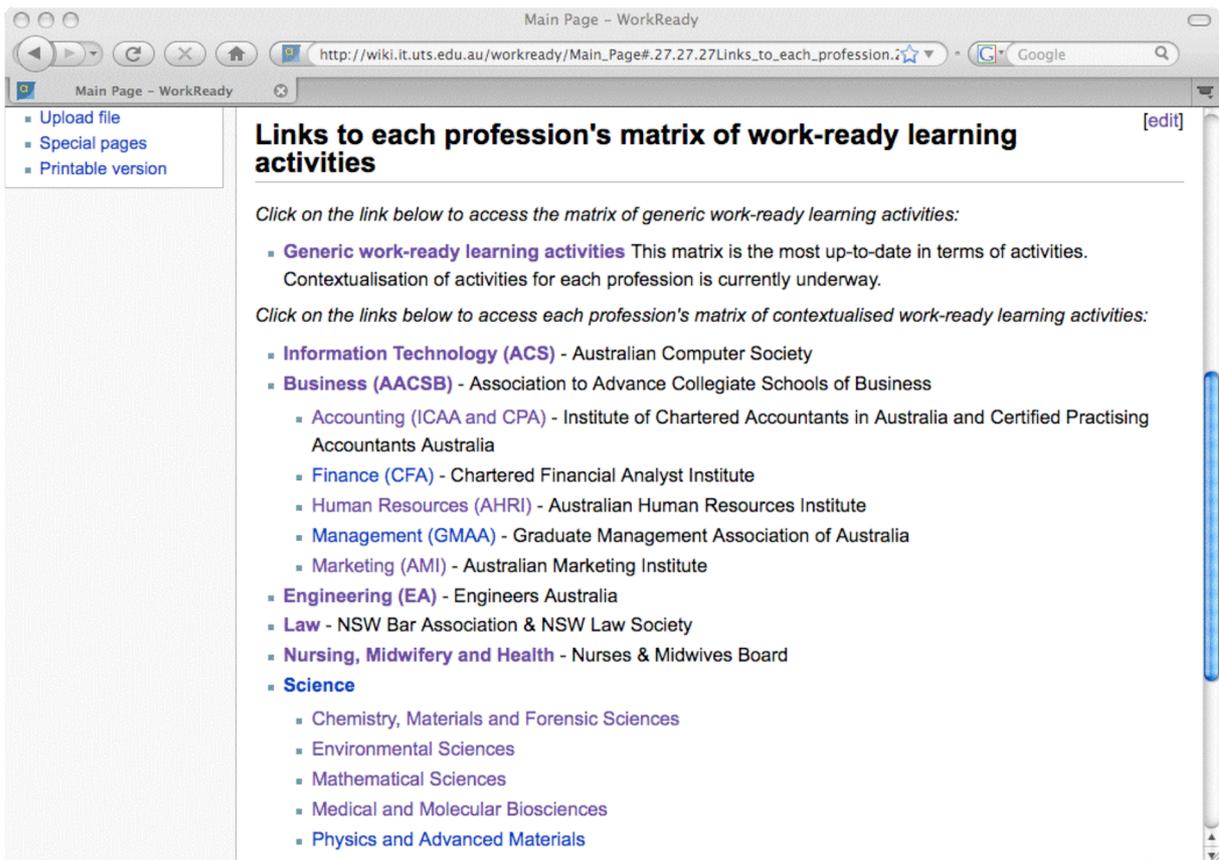
Figure 3: Click to each profession's matrix of contextualised activities

Figure 4: Sample of the generic learning activity matrix

The work-ready teaching and learning resources are held in the UTS Digital Resources Repository. For full copyright compliance only UTS staff can down-load the work-ready support resources.

Work-ready learning activities may have introductory, intermediate and advanced versions which may be suitable for use in both undergraduate and postgraduate programs. It is intended that the work-ready website will expand to include other digital learning resources, for example, audio, video, online tools, learning software, etc.

The current status of our generic and contextualised matrix's of work-ready learning activities can be viewed at <wiki.it.uts.edu.au/workready>.

Figure 5 below provides an example of the one-page work-ready learning activity template describing a 6-step group collaborative problem solving model (Bolton, 1987).

V7: Work-Ready Learning Activity: 2008 UTS LTPF Curriculum Renewal Project
Template and Learning activity design by Andrew Litchfield © 2008

Matrix Reference #:	11.3.1intro
Matrix Workready Attribute:	**11. TEAMWORK: GROUP PROBLEM SOLVING**
Generic/Profession:	Generic + contextualised case-studies for each profession
Course Graduate Attribute to be developed:	BScIT.GA1 – Work in collaborative environments BBus.GA2 – Communication & interpersonal skills + also relevant for the MIT, MPA, MBA, and other courses
Student Learning Level:	Introductory – best learnt in 1st year Bachelor & 1st year Masters
Best time in Semester:	As soon as possible after student teams have formed
Teaching Time required:	Total: 50 minutes (UTS one hour)
Lecture/Tutorial/Laboratory:	Tutorial or laboratory and can be introduced in lecture

Learning Activity Name:	**6-STEP COLLABORATIVE DECISION MAKING METHOD**	
Learning activity objective/s: what will the students learn?	Introduction to a method to support learners understanding and skill development in collaborative decision-making to improve teamwork dynamics and teamwork outcomes.	
Teaching & Learning strategy: eg. classic teaching cycle, case-studies, games, role-plays, simulations, other active learning strategy.	The teaching strategy is to use the classic cycle; 1. Presentation of 6-step decision making model. 2. Guided team practice #1: case-study & discussion. 3. Guided team practice #2: case-study & discussion.	10 mins 15 mins 15 mins 10 mins
	Plenary discussion + take-away reading & independent practice case-studies for skill mastery.	50 mins
Content synopsis: a short overview of about 100 words more content details can be links from the teaching resources available as listed below.	The 6-step collaborative problem-solving method has many applications at home, at work, and never-forget university! This is a most important personal & professional understanding and skill and its use has favourable consequences; Step 1. *Define* the problem in terms of *needs*, not solutions. Step 2. *Brainstorm* possible solutions. Step 3. *Select* the solutions that will best meet all members' needs. Step 4. *Plan* who will do what, where, and by when. Step 5. *Implement* the plan. Step 6. *Evaluate* the problem-solving process and, at a later date, *evaluate* how well the solution turned out.	
Assessment: · as part of a teamwork task · as part of a reflection task · potential exam questions	This work-ready learning activity supports improved teamwork outcomes which are usually assessable. The assessment could also be part of a student reflection on teamwork when relevant to your subject. There is potential for exam question/s on the 6-step model.	
Student learning resources available:	Link to a soft copy of Chapter 14 'Collaborative Problem Solving: Seeking an Elegant Solution' from Bolton, R. (1987)	

links to online resources access details for hard-copies	*People Skills*. Link to generic and contextualised case-studies for independent practice.
Academic teaching resources available: links to online resources access details for hard-copies	Link to ppt lecture & tutorial slides on the 6-step method. Link to various contextualised case-studies for both guided and independent practice of the 6-step model in tutorials or labs.
Copyright status: permission sought if required	One chapter paper handout is fair use for educational purposes in Australia.
Acknowledgements: who is responsible for the design of the activity?	Generic learning activity designed by Andrew Litchfield <ajl@it.uts.edu.au> based on the work of Bolton, R. (1987) *People Skills*, Simon & Schuster.

Figure 5: Example of a work-ready learning activity one-page description

Formative evaluation of the work-ready wiki

The initial evaluation of the work-ready wiki began in July 2008. Individual semi-structured interviews were used for data collection. This method provided opportunities for feedback on specific issues, while also allowing for the emergence of issues related to the complexity of embedding the teaching and learning of work-ready attributes into the curriculum. Academics were invited to comment on a number of aspects of the wiki, including ease of use and navigation and views on applicability of the available resources to specific teaching contexts.

Six UTS academics were interviewed: three from the Faculty of Business, one from the Faulty of Engineering and IT, one from the Faculty of Nursing Midwifery and Health, and one from the Careers Service. Each of these participants either had some involvement in the first phase of the project, or had expressed an interest in the wiki. Two of the interviewees had used a wiki resource or a modified wiki resource in their teaching; one academic had developed a complete work-ready subject module module, and the other three academics had not used the wiki in their teaching.

An interview script was developed collaboratively by the evaluators and the project team leaders. A computer was available for participants to search for wiki resources that they wished to discuss and the Project Manager was present to deal with any additional questions, technical questions or need for clarification when necessary. Although the interview script gave structure to the interview session, the conduct of the interview was more conversational in style. Each of the interviews was transcribed, and then summarised by the evaluators. The transcripts were analysed for common themes, perceptions and opportunities for improvement.

Positive responses have been summarised as follows;

- The general structure of the wiki was viewed favourably,
- The wiki is viewed as a valuable repository of shared materials. One participant noted that the wiki is flexible and can be adapted to developing faculty needs,
- Most of the participants commented on the teaching materials, and one suggested that it was also a potentially useful repository of administrative tools which would aid efficiencies in managing marking, and be a beneficial teaching resource,
- The participants generally found the wiki easy to use and navigate,
- Five of the interviewees could see the value of contributing to the wiki as a component of a Teaching Portfolio.
- One participant made comments that it brought thinking about work-ready attributes to "front of the brain",
- One participant commented that it minimised the risk of introducing a teaching innovation, because someone in a similar UTS context had successfully used it previously,
- One participant commented that it was a very valuable resource for someone beginning to design a new subject,
- Two participants suggested that academics may find an idea and modify it themselves for their own purpose, even though it is not contextualised for their subject. This was viewed as positive.

There were also some suggestions for improvement;

- Investigate the possibility of putting the wiki behind a UTS firewall,
- Provide a facility to track use by academics,
- Measure the use of a particular wiki learning activity,
- Log student numbers against activities when completed to avoid duplication,
- Add ratings to each resource to produce some sort of "Citation Index" for its use,
- Support for new contributors from the project team,
- Local-area champion presents the wiki at a Faculty Teaching and Learning Committee, or Course Committee meeting to stimulate dissemination.

Almost all participants commented that dissemination and embedding into curriculum was a major challenge, one stating that it was a much more difficult challenge than the technology behind it. There were a number of different views on how the modules could be integrated into curriculum. Some viewed the wiki learning activities as non-assessable, while others saw that to integrate work-ready attributes into the curriculum, there is a need for them to be incorporated explicitly into a subject design and outline. It was noted by one participant that the wiki learning activities were good because they did not create more marking, but this did not really ensure that learning work-ready attributes were really embedded into the curriculum. The modules provide activities which command different teaching and preparation times. Although some will fit within a 50-minute period, some would take longer, and are potentially useful assessment tasks.

A number of participants viewed the wiki as a resource of material that had been through a quality assurance process. The quality assurance process was viewed as very important. Although the process of submitting material to the wiki was relatively smooth, some assistance from the wiki administrators was seen as valuable. This raises the issue of sustainability of the process of contributing to, and maintaining the wiki. These suggestions for improvement are currently being implemented as much as possible to improve the wiki's usability and sustainability.

Work-ready curriculum renewal

Improving the learning of professional graduate attributes in the existing curriculum cannot replace the extensive real-world understandings learnt through lengthy work-placements or on-the-job training. Nevertheless through curriculum renewal universities can more systematically and better address student learning of these attributes together with the existing bodies-of-knowledge of each discipline and profession. These pedagogic outcomes are not mutually incompatible and can combine and reinforce each other through best-practice curriculum and subject design.

Significant university curriculum renewal and change is notoriously difficult due to the complexity of historical interests and other perspectives. In the UTS experience stand-alone resources which are not integrated, not contextualised and are developed without the buy-in of academics, tend not to be used.

 Our three main strategies for curriculum integration are:

1. Each Faculty's Associate Dean Teaching and Learning is developing a *top-down* work-ready curriculum integration strategic plan relevant to local cultures and practices, for example, attribute mapping in courses, targeting core subjects,
2. The *bottom-up* availability of relevant work-ready learning activities with down-loadable teaching support resources to minimise academic time and effectively support integration into existing subjects, and
3. Collegial *side-ways* peer support with local-area leaders given financial incentives to pilot integrating work-ready learning activities, host local awareness raising seminars and to review their profession's contextualised learning activities.

By October 2008, approximately 230 work-ready learning activities and ideas had been developed, posted to the wiki and were available for use. Local-area leaders had been appointed in each Faculty. Two academics had selected a work-ready learning activity from the wiki and integrated it into their subject. Other subjects have embedded a learning activity into their subject for delivery in 2009. Four work-ready seminars have been conducted as part of the dissemination strategy, whilst others are currently being scheduled. The local-area leaders were at varying stages of editing and providing feedback on the learning activities for their profession.

Many of the understandings and skills in these professional graduate attributes are already in the 'hidden' university curriculum and can be made more visible and more systematically taught. Curriculum renewal in university education is difficult and takes time.

Conclusion

The extensive real-world understandings learnt through lengthy work-placements or on-the-job training cannot be replicated or replaced by changes to the existing university curriculum. Nevertheless the need for substantial curriculum renewal to better develop graduates professional attributes is becoming increasingly recognised.

The *'Improving graduate work-readiness'* project at UTS aims to better support the development of professional attributes in the curriculum through designing new subjects, new modules, and online work-ready learning activities. These activities are designed to develop the identified key professional attributes within the existing curriculum. There is a separate matrix of contextualised learning activities for each profession in the project to maximise student relevance and motivation to learn.

Work-ready curriculum change can be enabled through the development of local-area implementation strategies and the ready availability of appropriate teaching strategies and supports. Change can be supported by online access to a choice of relevant learning activities and easy-to-use effective teaching and learning support resources.

Government, professional and employer stakeholders will no doubt continue to define and search for the perfect university 'renaissance' graduate for sometime to come. Meanwhile at UTS substantial curriculum renewal to better develop graduates professional attributes is happening supported by the online wiki access to work-ready learning activities and down-loadable teaching support resources.

Acknowledgments

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