The student - staff partnership: Pooling our expertise to develop a user-friendly skills web site

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Abstract: The Faculty of Science at The University of Sydney has initiated a number of projects in line with University and external trends towards improving the student experience. It has a strong ongoing commitment to the provision of a positive total experience for its students as evidenced by its Student Transition Workshop, the use of student-centred flexible learning and its use of ICT in teaching, especially in large first year classes. The philosophy for all projects has been that they are rigorously evaluated, comfortably sustainable and become core business of the Faculty of Science. More recently the Faculty has sought to raise awareness of the need to develop generic skills/attributes required for future employment by putting in place processes whereby students take responsibility for self assessing the development of these attributes during their degree program. This paper outlines the development of a web site for students, Life Long Earning, and discusses the way in which the iterative process with students and our own honest reflections changed the project from a somewhat academic view of skills and attributes to a student-friendly message about how to best prepare oneself for the job market.

Keywords: generic skills, generic attributes, skills web site, employability

Introduction
The growing emphasis on the development of generic skills in higher education has several sources. One is the increasing evidence of demand from business and employer organisations for graduates to possess generic skills. There are also various economic, technological and educational arguments that have brought generic skills to wider attention. This contemporary focus is really part of a bigger debate about the purpose of university education and how to develop well-educated persons who are both employable and capable of contributing to civil society (Kemmis 1998, Lea and Street 1999, Dunne 1999).
While generic skills tend to be incorporated into the university curriculum for use within the discipline area, it is now universally acknowledged that they will usually be transferred into new areas as graduates are employed. Meanwhile business and employers are seeking more than generic skills, as they look for graduates who are employable. Employability depends on several factors, including a self-belief and an ability to secure and retain employment, and being able to improve one's own productivity and income-earning prospects. These require the ability to both compete effectively in the job market and be able to move between positions, and ‘learning to learn’ for new job opportunities (ILO 2000). Hence, students need to be provided with opportunities that foster development of these skills, and mechanisms whereby they can determine their own levels of competence. Kirby (2000) has put these ideas into context by emphasising the shift to a knowledge-based economy that is accompanied by some seemingly intangible attributes like creativity, design flair, and innovative marketing. The DETYA-funded report *Employer Satisfaction with Graduate Skills* (2000) adds that employers perceive that many graduates are not employable within their institutions or organisations. In addition, the DEST and ANTA funded report *Employability Skills for the Future* (2002) emphasises the importance of workplace skills such as communication, teamwork, problem-solving, initiative, planning and organisation.

A further level of complexity in this debate hinges on defining the skills possessed by successful and employable graduate, and Bennett, Dunne and Carré (2000) have pointed to its origin in the various crises in education over the past few decades, focussing on a long-standing discussion of the perceived purpose of university-based education. In addition employer groups have weighed in, bemoaning university graduates’ lack of suitable skills and calling for universities to provide education incorporating long ‘wish-lists’ of skills and attributes that will make graduates more employable. However, Bennett et al. (2000) argue that curriculum reform should be based on something more than a mostly arbitrary collection of skills seen as desirable by employers. As a result many universities are scrambling to put in place generic skills policies and programs with little solid educational or psychological theoretical base.

The recent Nelson Report (Nelson, 2002a), *Employability Skills for the Future*, follows a series of governmental reports on the need to ensure Australia remains competitive in the ‘global knowledge-based economy’. The report states that young people require a set of skills to prepare them for employment and to ensure they are able to retain that employment in the future. The report outcomes list a large set of attributes and skills for employability identified from the research process. Desirable attributes (non skill-based behaviours) included ‘loyalty’, ‘commonsense’ and ‘sense of humour’. Eight ‘key skills’ were identified:

- Communication skills
- Teamwork skills
- Problem solving skills
- Initiative and enterprise skills
- Planning and organising skills
- Self-management skills
- Learning skills
- Technology skills

As lists of generic skills go, this is typical of many of the lists proposed by universities. However, the *Employability* report reverts to the same questions summarised above: to what extent is a set of skills identified by employer groups a suitable basis for reform in university education? What theoretical basis underlies the identification of these groups of skills that makes them appropriate for university courses? A Business & Higher Education Round Table policy document (Hager, et al., 2002) makes sound educational arguments for an increased focus on generic skills in university education, in particular
emphasising the strong links between the kinds of learning experiences that foster the development of generic skills, and those that feature ‘powerful’ teaching and learning environments that lead to deep understanding. It also, however, attacks the notion of measuring isolated skills, such as with the Generic Skills Assessment, emphasising instead the contextual nature of generic skills. Transferability of skills is seen as confidence in diverse contexts:

While we might want to say that university graduates develop a range of generic skills, of more significance is their capacity to deploy suitable combinations of these attributes to deal with the particular professional situations in which they find themselves … Rather than being viewed as discrete skills that people learn to transfer, generic skills should be seen as learnt capacities to handle an increasing variety of diverse situations (Hager, et al., 2002).

The University of Sydney Academic Board responded to the *Employability* report (University of Sydney, 2002), criticising the report for ignoring or downplaying the particular strengths of graduates from a research-based institution. While recognising that a focus on graduate employability is important in informing the review and creation of courses, the main point of contention between the University’s policy on generic skills and the *Employability* report is that the *Employability* skills do not reference knowledge skills such as having a specialist body of knowledge and scholarship or research skills. Lifelong learning, curiosity, and the ability to deal with uncertainty, an inquiry-based approach to problems – these are all strengths of graduates from a research-intensive university environment. The *Employability* skills understate the value to employers of the very skills that make university graduates special.

The University of Sydney’s Policy on Generic Skills (University of Sydney 1997), passed by the Academic Board in 1993 and revised in 1997, lists the following set of skills: Knowledge Skills; Thinking Skills; Personal Skills; and Practical Skills. While this list contains many elements that overlap strongly with the Nelson skills list, it is evident from the inconsistencies in terminology and the lack of concrete definition of what is meant by these skills (or are they attributes?), that they are not derived from any deep understanding of how generic skills are conceptualised. They have, however, led to many different initiatives within the faculties, schools and departments across the University.

**The current project goals and methodology**

The project was set up to encourage students to take responsibility for developing generic attributes that embody the values of scholarship, citizenship and life long learning, and which may be directly related to the qualities sought by employers. The project also provides mechanisms to allow students to self-assess the development of these attributes throughout their degree program. One of the essential features of the project was to develop a student-friendly web site that fulfilled the requirements of the project but that would be sustainable over time with minimal input from the Faculty.

The goals of the project were to:

- develop clear explanations of the core generic attributes and defining levels of competence;
- provide students with a framework to understand the nature of the core generic attributes by developing a series of case scenarios on them;
- help students learn the language of these attributes so that they can identify them in curricula and in advertisements etc from employers;
- help students identify from their learning opportunities the ongoing building of desirable attributes;
- develop a mechanism for students to self-assess their awareness and competence for the various attributes.
The project was supported during its development by a project team, a planning committee and a reference group. The project team consisted of a project manager and a small group of academics who conceptualised the project. The planning committee consisted of the project team and some senior stakeholders and its task was to help develop the initial planning document. The reference group consisted of colleagues from around the University, mostly from the Faculty of Science but not exclusively. The reference group were contacted electronically about the project milestones and asked for electronic feedback as the project developed. During the implementation of the project undergraduate and graduate student volunteers from within the Faculty of Science were invited to participate in the project to steer the developments and provide example portfolios.

The project was originally conceptualized within a framework consisting of a preliminary phase, a development and implementation phase and an evaluation and reporting phase. Because of the iterative process taken, the development, implementation and evaluation phases became intertwined. One of the important aspects of the preliminary phase was associated with the articulation of related language used by employers. This process involved the compilation of a list of terms used by employers when referring to the qualities they seek in graduates and the collection of some typical job advertisements. These were eventually incorporated into scenarios with real employers indicating what they were looking for in graduates. In addition a review of the existing literature on generic attributes was conducted and current programs about generic attributes were surveyed to create a catalogue of generic attributes and skills. Finally a compilation of attributes and skills was created within a matrix (see Figure 1) to show the interrelationships.

![Skills matrix](image)

Figure 1. Skills matrix
This mapping process was particularly useful to the project team in defining the scope of the project and providing a framework on which to build the materials for students. However at this time it was already acknowledged that the complexity of the matrix precluded it being used as a map for students. Its content therefore had to be translated into a more digestible model for the web site. Initial student input indicated that they perceive they have a fairly good basic understanding of the skills involved, but need help with the development of portfolios that could be used when applying for a job.

**Key characteristics of the web site**

Creating a student-friendly approach required us to develop relevant ways to illustrate the acquisition of skills to the students. We planned to achieve this with a range of activities and in a range of levels by using examples from junior and more senior units. Students can visit pages which specifically deal with:

- ‘*What employers are looking for*’. We contacted employers of science graduates and asked them what they really want in an employee. Their answers to our questions are on the site for student to think about.
- ‘*Developing your skills*’. We discuss the skills that students need to develop and show them how to equate learning opportunities with skill development.
- ‘*How to build a portfolio*’. We describe a portfolio and compare it to a CV and show students how to construct their own portfolio and to reflect on a) the skills being developed and b) the growing portfolio and what is missing.
- ‘*Preparing job applications*’. This helps students think about how to sell themselves. This section includes CVs of several graduates as well as examples of matching a portfolio with job selection criteria.
- ‘*Case studies*’. This includes examples of graduates in the workforce, and how they go to where they are today.

These pages help scaffold students’ use of the web site and encourage them to recognise the value of the skills, and to take responsibility for practising them and monitoring their progress. The concept of scaffolding was also used for the focus of self assessment, mainly through comparison with student experiences and examples provided.

One example of scaffolding is the way a skills assessment is presented. Using an example of a first year student, Jane Doe, the students can visit her personal information and see how she has used her activities to complete a checklist table (Figure 2). Her personal information includes a range of activities in which she has identified the development of certain skills.

**Evaluation as part of the development process**

The development and evolution of the web site was driven by a series of student trials using volunteers who were sometimes available for all of the trials. They usually had some set activities to do before a focus group discussion in which we listened to their comments on the work they had done for us and moved on to the next area of evaluation. The first trials centred around the idea of the site and its content, how it could work for students, what should be emphasised, how we could showcase the generic attributes. The later trials focused on the development of the web site, how student-friendly it was, how it could be improved, what was missing from the student perspective.
<table>
<thead>
<tr>
<th>Event/Activity</th>
<th>Skills involved</th>
</tr>
</thead>
<tbody>
<tr>
<td>Member of a soccer team; organised the annual trophy night</td>
<td>Teamwork; leadership</td>
</tr>
<tr>
<td>Member of the Grade 12 High School debating club; runners up, NSW competition</td>
<td>Written and oral communication; teamwork; self-awareness</td>
</tr>
<tr>
<td>Bush care volunteer during years 11 &amp; 12</td>
<td>Responsibility and awareness; commitment; self-management</td>
</tr>
<tr>
<td>Casual work in a fast food outlet during last three years of school</td>
<td>Responsibility; teamwork; self-management; self-confidence; work ethics</td>
</tr>
<tr>
<td>Student Point of Contact officer during O-Week</td>
<td>Leadership; empathy; sensitivity; flexibility; oral communication</td>
</tr>
</tbody>
</table>

**Jane Doe’s Skills Checklist**

<table>
<thead>
<tr>
<th>Communication</th>
<th>Information Literacy</th>
<th>Research &amp; Inquiry</th>
<th>Ethical, Social &amp; Professional Understanding</th>
<th>Personal &amp; Intellectual Autonomy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral ✗</td>
<td>IT literacy</td>
<td>Critical thinking</td>
<td>Responsibility</td>
<td>Independent learning ✗</td>
</tr>
<tr>
<td>Written ✓ ✗</td>
<td>Information evaluation</td>
<td>Problem solving</td>
<td>Understanding</td>
<td>Self-management ✓</td>
</tr>
<tr>
<td>Non-verbal</td>
<td>Information searching</td>
<td>Analysis ✓ ✗</td>
<td>Awareness</td>
<td>Goal skills ✓</td>
</tr>
<tr>
<td>Teamwork ✓ ✗</td>
<td>Library skills</td>
<td>Dissemination</td>
<td>Sensitivity</td>
<td></td>
</tr>
<tr>
<td>Leadership ✓</td>
<td></td>
<td></td>
<td>Empathy ✗</td>
<td></td>
</tr>
<tr>
<td>Networking ✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 2. Use of a table to reflect on personal acquisition of skills

The trials conducted in May and August 2003 evaluated the overall scheme of the project and the material planned for the web site. During this period, the iterative trial process led us to review the structure of the web site and to develop what we thought would be a more user-friendly web structure. In May 2004 students were asked to comment on the web structure, its navigability, ease of use, use of icons, etc. At this point the students were able to better express what they thought was of pivotal importance to them and this was, not the extensive identification and defining of attributes into clusters and subsets, but how to think about their individual skills, the development of these, what opportunities there were in a degree program, and how to apply for jobs. The title *Life Long Earning: matching your talents with employers' expectations*, and the site itself, are direct consequences of these discussions.

Several of the higher-year students mentioned that these trials had made them keenly aware of the sorts of issues they will face upon graduation, and expressed a wish that they could have been exposed to this project early in their studies. Some of them suggested, however, that the project would only become important to many students late in their degree, perhaps too late, and that first-year or second-year
students might simply put off reflecting on their skill development in favour of other priorities. The students generally agreed, however, that given enough exposure they would be likely to at least try out a web site based on these ideas. Overall the students believed that the aims of the project were worthwhile and that, if done well, the project should be a valuable addition to the university learning environment for undergraduate students. The students emphasised the need to demonstrate clearly the project’s value. Some of the main points of the discussion are summarised below:

- Emphasise that employers have noted a lack of skills in university graduates and then show ways to develop these skills;
- Build the skill groups into unit of study information and evaluation so that students used the language and ideas regularly;
- Ensure that the materials are student-centred, using relevant examples and language.

Design of the actual web site commenced in January 2004 after we had taken on board the comments from the trials in 2003. This site (Figure 3) was completed and ready for students to trial in May 2004. The site emphasised the skills groups by the use of coloured icons in the top right position on the home page and students were first asked to explore these skills.

![Figure 3. The generic skills web site trialled by students in May 2004](image)

In this trial we aimed to test the navigation, relevance and clarity of the developed web site. Students were asked to view and use the site to complete exercises and a questionnaire before attending a one-hour discussion group. In the discussion sessions a number of themes kept re-emerging. As a result the site was completely overhauled in response to the feedback. The web site structure was flattened to improve navigation. Pictures were added and a more ‘edgy’ design was used to appeal to students. The focus of the web site changed from an academic discussion on defining generic skills to ways in which students can use and develop generic skills to become more employable (Figure 4).
The final meetings with students gave us very positive feedback:

*The site was excellent with enough clear icons to toggle between pages. The site map was very useful for the impatient surfer. Quick links drop-down menu was excellent and convenient.*

*I strongly believe that this site is a lot more relevant than the last one. With the last one, I had trouble believing the information presented - it lacked real-world situations. However, I believe you have addressed this aspect well in the new web site.*

*[Best features of this site are] the clear links to the PDF files of the various resumés. Great for the novice. The feel good image of this enhanced version.*

With this positive evaluation, our web site design phase was deemed complete and the site was ready to be launched for formal evaluation by students in a small group of degree programs. These students are still being asked about the site and their comments have yet to be discussed by the development team.

**Reflections**

When we began this project, our understanding of generic skills and attributes had been formed from extensive literature reviews and discussions with other educational researchers. From this we built a picture of generic skills, literally a map, that comprised a hierarchy with graduate attributes like citizenship, scholarship and life-long learner at the top, and skills groups such as communication skills and interpersonal skills below. This organisation directed our initial planning for the project, and the creation of the web site based on the skills map, focusing on educating students about the different skills and attributes they needed to develop throughout their studies and asking them to keep track of their development of these skills.

The initial creation of a structured timeline for development and evaluation of the project allowed a number of staged opportunities for reflection. These occurred at a number of points when students were
asked to provide feedback on the early stages of the development of skills materials and descriptions. Thorough feedback on these early stages of the online material allowed us to quickly realise that we needed to dramatically adjust our perspective. The early web site reflected our conceptions as educators of generic skills, with skills and attributes at the core and information about careers and employment at the periphery. Our student focus groups reminded us that we needed to approach generic skills from the students’ perspective. They are less interested in learning about generic skills from an academic or theoretical point of view, more interested in information that will directly help them find a job or move into a career when they leave university.

Our reactions to this shift in viewpoint, midway through our carefully-crafted timeline, were varied. Some of us were initially reluctant to shift the focus away from the generic skills; might this perhaps diminish the academic quality of the information? Would a focus on jobs dilute other aspects of the generic skills map, such as becoming a good world citizen? These questions, while important, still reflected a teacher-centred viewpoint.

However, further discussion convinced us that the only way the web site would be attractive to students, for use as an independent resource, was if it presented information that they considered valuable. The generic skills matrix thus became an underlying layer of the material and its importance was emphasised through the employment and career focus. For example, interviews with employers clearly show that they look beyond discipline training in graduates; they desire communicators, leaders, team-players and initiative-takers.

As a result of exhaustive discussions at each stage, a key factor in the overall success of the final web site as a user-friendly student support ‘mechanism’ has been the team’s willingness to document and act upon these reflective processes. Feedback, from presentations about the project and our reflections, has indicated that such soul-searching is rarely documented, perhaps being viewed by some as a failing in a project. The reflection involved us in admitting mistakes or misconceptions, and in making quite drastic changes to viewpoints, plans and philosophies with regard to designing such a student-friendly web site. Students meanwhile were more than happy to engage in constructive dialogue on our efforts, and to work with us to maintain the integrity of the concept while improving the ‘outlook’.

The present version of the Life Long Earning web site reflects this distinct shift from teacher-centred to student-centred learning. The positive feedback we have received from students and educators certainly suggests the shift was the right one. The site is currently being transferred across three other Faculties (Agriculture, Engineering, Veterinary Science) in our College and discussions are being held as to how the Faculty of Science at the University of New South Wales can use the site for its students.

**Future directions**

Once the skills are identified, of course, the question of assessing those skills must be addressed. The Nelson Report, *Striving for Quality,* (Nelson, 2002b), proposed the use of a standardised skills assessment test, the Australian Council for Educational Research Graduate Skills Assessment (GSA), to measure student performance on generic skills upon entrance to and exit from their degrees. This would provide a way to monitor the ‘value added’ by universities in terms of skills that promote graduates' employability. However, a number of educational groups have responded negatively to this report, including the Victorian Language and Learning Network (Clerehan et al., 2002) and the Business and Higher Education Round Table (Hager, Holland and Beckett, 2002). The Victorian Language and Learning Network response questioned the validity of the GSA test and national testing in general, on grounds of equity and cultural inclusiveness. They note that the skills outlined in *Striving for Quality* are not suited to psychometric testing, and the subset of these skills included in the GSA test – written
higher education in a changing world

communication, interpersonal understandings, problem solving and critical thinking – leave out the very skills that universities are geared towards teaching. There has been no attempt to assess the acquisition of skills by students in this project. The project team’s philosophy is that along with the skills of life long learning go the skills of life long self assessment and that, as it is the employer that ultimately makes decisions about new employees, it is the individual who should be assessing his/her own development of skills. Our development process allowed students to be heavily involved in the creation of this resource, we should now have the confidence to leave the use and success of the initiative in their hands.

References


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