Faculty of Science TIF Project — Generic Skills

Selected Literature Review

A quick review of the efforts made by educational institutions, employer groups and governments to define the elusive notion of generic skills shows that there is very little in the way of consensus. The multitude of terminology used – generic skills, generic attributes, graduate attributes, employability skills, graduate capabilities, core skills, key skills, the list goes on – betrays the confused state of discourse around these issues. Bennett, Dunne and Carré (2000) chronicle the history of this discourse, pointing to its origin in the various crises in education over the past few decades, including a crisis in the perceived purpose of university-based education. 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.

One fundamental problem surrounding the discussion of generic skills is the lack of any theoretical basis underlying the choice and definition of the skills themselves. Bennett, Dunne and Carré (2000) argue that curriculum reform should be based on something more than a mostly arbitrary collection of skills seen as desirable by employers. Yet many universities are scrambling to put in place generic skills policies and programs with little solid educational or psychological theoretical base. As the authors put it, “prescription has outrun conceptualisation”.

With this in mind, this document provides an overview of the state of generic skills initiatives in Australian universities and the UK, with particular reference to those studies that have attempted the difficult task of establishing a theoretical framework for generic skills and their integration into university courses.

1. Defining generic Skills

The Australian Push

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 Department of Education, Science and Training (DEST) set up a team to work with a large number of employer groups, using focus groups, interviews and case studies, to identify the skills the employers deemed important, desirable or necessary for success in employment.

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
The report includes longer lists of ‘elements’ that define each skill (such as “Listening and understanding”, “Being assertive” and “Empathising” for Communication skills).

As lists of generic skills go, this is typical of many of the lists proposed by universities such as the University of Sydney (university policies on generic skills are discussed below). However, the Employability report carries the same baggage as other studies of its kind: 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?

The University of Sydney Academic Board responded to the Employability report (University of Sydney, 2002a), 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 (discussed below) 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. The committee states, “In our experience, employers of university graduates give more attention than the report recognises to [personal attributes, attitudes and understandings]”. Lifelong learning, curiosity, 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 UK perspective

As in Australia, the problems of defining and addressing generic skills in higher education have been debated for over a decade in the United Kingdom, however it is only recently that any kind of coherent picture has begun to emerge. Until the late 1990s, policies on generic skills and graduate employability contained a confusing mix of terminology and (typically long) lists of skills amounting to little more than ‘wish-lists’, indicating the pressure upon universities to mould curricula to accommodate the wishes of government and employers.

Bennett, Dunne and Carré (2000) have reported on a lengthy study of academic staff, student and employer perspectives of the skills associated with university education and employment, and how those skills are acquired at university and in employment settings. Their model of generic skills, based on their research findings, is “generic in that [it] can potentially be applied to any discipline, to any course in higher education, to the workplace or indeed to any other context”.

The model presents skills in four broad areas of ‘management skills’: management of self, of others, of task, and of information. These four areas break down into sets of subskills – for example, management of information includes “Use appropriate language and form in a range of activities”, while management of others includes “Take initiative and lead others”. The four management skills areas cover most of the skills encountered in policy documents and skills statements elsewhere, but provide a convenient, research based framework for those skills.

Many UK universities have undertaken studies to examine ways to embed generic skills into the undergraduate curriculum. The report An institutional approach to developing students’ transferable skills (Atlay and Harris, 2000) describes the University of Luton’s approach to identifying and incorporating generic skills within course programs. The skills were defined “after extensive discussion both institutionally and within departments, embracing consultations with the University’s employer partners as well as staff and students”, and fall...
into four groups: information retrieval and handling; communication and presentation; planning and solving; and social development and interaction. Module descriptions for each subject were rewritten to make the skills more explicit. A ‘skills template’ was constructed for each of the skill groups that provides descriptors for various levels of achievement for the different skills, and indicates the operational context where the skill development is expected to occur.

The University of Nottingham delivered their final report of their *Embedding Key Skills within a Traditional University* project, funded by the DfEE (Chapple and Tolley, 2000). The project aimed to embed generic skills into a range of undergraduate and postgraduate courses, and to find mechanisms to assess students’ development of those skills. Each discipline nominated the specific skills that were ‘naturally occurring’ within their existing course structures, and developed ways to make those skills explicitly recordable and assessable. The independent evaluator’s report on the Nottingham project indicates that there were serious difficulties encountered in defining and assessing the skills.

2. The GSA: Assessing generic skills

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 ACER 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 VLLN 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 communication, interpersonal understandings, problem solving and critical thinking – leave out the very skills that universities are geared to teach.

The BHERT Round Table policy document addresses the importance of generic skills in university education, as part of a “bigger focus on the purpose of university education … how to develop well-educated persons who are employable and capable of contributing to civil society”. However, it recognises that employer-articulated needs do not necessarily define suitable sets of skills for university education, and suggest, “An important task is to unpack what [employers] are really saying and put it into an education framework”.

The policy document 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 GSA, 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”.

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3. Incorporating generic skills into courses: the ATN

With pressure from government and employer groups for change, the time for considering generic skills in academic environments has come. Many institutions across Australia have implemented policies and programs geared towards defining and developing generic skills within their courses. Some of these are institution-wide, large-scale initiatives, others are at the level of individual degrees or units of study.

Perhaps the largest initiative belongs to the Australian Technology Network’s graduate Capabilities Project (Bowden et al., 2000). The Network (UTS, QUT, Curtin, RMIT and UniSA) has collaborated on a conceptual framework for the development of programs that incorporate teaching and learning environments promoting a university’s nominated set of graduate capabilities. The definition of such capabilities is left to the individual universities.

The ATN project sets out six principles for the development of graduate capabilities within courses:

1. Desirable capabilities are most successfully formulated at both the university and the course level.
2. The development, practice and assessment of graduate capabilities is most effectively achieved in the context of discipline knowledge.
3. Exposure to and reflection on a variety of teaching and learning experiences fosters a focal awareness of graduate capability development.
4. Assessment should align with the course/subject goals and teaching and learning practice.
5. A package for the assessment of graduate capabilities should include items designed for a range of purposes.
6. Students benefit from progressive feedback on their development of graduate capabilities.

The project describes a series of case studies of courses within the ATN where different capabilities have been developed, and provides extensive guidelines for staff developing programs based on the capabilities framework.

While it avoids the theoretical problems associated with defining the capabilities themselves, the ATN project gives a solid framework for the design of courses and the benchmarking of skills and capabilities within those courses. The attainment of capabilities is described at four qualitatively different levels, in order of increasing complexity of understanding: the scoping level, the enabling level, the training level and the relating level. University courses, the ATN team argues, should aim at the highest level in this hierarchy.

4. The University of Sydney’s approaches to generic skills

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
- Personal Attributes
- 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 School of Biological Sciences have introduced skills-based resources at various levels – for example, the Intermediate Generic Skills web pages (University of Sydney, 2003a) introduce students to some of the skills required for writing and presenting in biology, referencing academic literature and so on. This is similar to the “No-frills Generic Skills” website created in Physiology (Frommer, undated), with online documentation about the scientific method, writing in science and learning skills.

The Faculty of Engineering, Strategic Plan for Teaching and Learning, 2000-2004 (University of Sydney, 2000), states the goal of supporting students in developing Engineering and University generic attributes, through building the attributes into each unit of study, and implementing testing of skills at entry and at graduation to monitor progress. Engineering is also introducing a Faculty-wide first-year unit with some basis in generic skills such as communication and problem solving.

The Faculty of Science has attempted to address generic skills through a series of initiatives (culminating in this project). The Schools of Biological Sciences, Physics and Chemistry collaborated with the library on the development of a Science Skills Course (Taylor, 2003). Initial discussion of the nature of the course debated whether it should be a stand-alone unit or an integrated program within laboratory units in each discipline, and whether it should play a remedial role or be compulsory for every science student. The trial-run of this course, with a small group of students in 2002, encountered serious logistical problems, including the difficulty of interpreting and assessing the generic skills, and a lack of available resources for students (and staff) to make sense of the skills they are meant to be learning.

The Faculty of Rural Management at the University’s Orange campus has implemented a plan for first-year students’ academic orientation and transition (University of Sydney, 2002b) that includes an objective to “enhance students’ learning by developing their knowledge and skills, including generic skills”. The Faculty has produced its own set of nine ‘capabilities’, which overlap in many areas with the University’s generic skills.

The Institute for Teaching and Learning has embarked on a project to revise the University’s statement on generic skills (University of Sydney, 2003b), and to provide a set of resources to support staff in encouraging students to develop appropriate skills and attributes. In the course of this project they will form a working group, seek a theoretical basis for the generic skills and graduate attributes valued by the University and employers, and suggest processes to benchmark students’ development and achievement of the skills.

**References**


