

DEVELOPING GENERIC SKILLS: EXAMPLES OF BEST PRACTICE

In July last year the Business/Higher Education Round Table (B-HERT) published a Position Paper on "ENHANCING THE LEARNING AND EMPLOYABILITY OF GRADUATES: THE ROLE OF GENERIC SKILLS". The Position Paper was prepared for B-HERT by a Task Force of its Members.

In an era when various new kinds of partnerships and relationships are developing between industry and higher education, and between the different sectors in education, a paper on generic skills is timely.

Generic skills and graduate attributes have emerged as vital issues for both educational institutions and the communities that they serve, including students, employers and governments.

The position paper outlines reasons for the growing interest in this topic. It locates this interest in other related educational developments, and describes a range of initiatives and practices that reflect the increasing importance of generic skills and graduate attributes for higher education, for business, and for the community at large. The paper outlines the nature and scope of generic skills before discussing the reasons why they have become a focus of policy interest.

The benefits of paying attention to generic skills for learning and employability purposes are considered in relation to relevant research findings. The holism, contextuality and relational level of generic skills as well as the links to lifelong learning are highlighted.

Examples of the incorporation of generic skills into higher education structures and courses are also described. There is also discussion of ways to close the 'employability' gap.

EDITORIAL

**PROFESSOR
ASHLEY
GOLDSWORTHY**
AO OBE FTSE FCIE



*Executive Director
B-HERT*

The paper then suggests a learning framework for generic skills at different levels.

Finally, the paper makes some recommendations in respect of further work that would be valuable in pursuit of the agenda to enhance the learning capability and employability of graduates.

It recommends that further work be undertaken to investigate, document and disseminate:

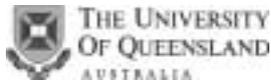
- 1) best practice examples of universities linking their teaching and learning initiatives in respect of generic skills to strategic planning, and approaches to assessment and curriculum design, particularly the work done by the ATN
- 2) how employers recognize and value generic skills incorporating the findings from the BCA/ACCI survey
- 3) what graduates perceive are their generic skills and areas of deficiency exposed in employment
- 4) an appropriate learning framework for generic skills.

Late last year I wrote to our higher education members and asked them to provide best practice examples and outline other initiatives they might be pursuing in this area. The result is in the following pages, which demonstrate both that the issue is being seriously addressed and that there are a variety of initiatives being pursued.

The authors are thanked for their contributions. ■

GRADUATE ATTRIBUTES

AT:



**PROFESSOR
MARGARET GARDNER**
*Deputy Vice-Chancellor
(Academic)*
&
DEBORAH MARTIN
*Senior Manager – Policy
The University of Queensland*

1. Graduate attributes, strategic planning, assessment and curriculum design

a. Introduction

The University of Queensland first adopted a set of generic skills, called "graduate attributes" in 1996 and committed in its Strategic Plan and Teaching and Learning Enhancement Plan to map these attributes to curriculum.

In 2000 work was begun on the ways to undertake the work of mapping and embedding graduate attributes in curriculum. The approach described below has the following features:

- Reconsideration and refinement of graduate attributes to reflect the overall strategic vision of the university
- A process for mapping graduate attributes in the curriculum and assessment that ensures the graduate attributes identified at University level are translated into programs and fields of study descriptions in ways that reflect the context and needs of those fields
- Support for embedding graduate attributes in all undergraduate programs and courses through a team of eight professional development staff from the Teaching and Educational Development Institute working in and with Faculties and Schools to map and embed these attributes in courses and programs
- A curriculum review process that invites reflection on the extent to which students are developing the desired graduate attributes and ways that the support for their development could be enhanced.

b. Graduate Attributes

In 2002 a more concise statement of graduate attributes was adopted. The attributes are intended to embody the research qualities that are a central part of the culture and strategic vision of The University of Queensland. Faculties were advised to translate these graduate attributes so that they reflected the context of their fields of study or disciplines and to add any discipline-specific graduate attributes applicable to their professional requirements. The current University of Queensland statement of graduate attributes is:

A University of Queensland graduate will have in-depth knowledge of the field(s) studied. In addition, graduates will display effective communication skills, independence and creativity, critical judgement and ethical and social understanding.

The key features of the graduate attributes indicated above are outlined below

In-depth knowledge of the field of study

- A comprehensive and well-founded knowledge of the field of study.
- An understanding of how other disciplines relate to the field of study.
- An international perspective on the field of study.

Effective communication

- The ability to collect, analyse, and organise information and ideas, and to convey those ideas clearly and fluently, in both written and spoken forms.
- The ability to interact effectively with others in order to work towards a common outcome.
- The ability to select and use the appropriate level, style and means of communication.
- The ability to engage effectively and appropriately with information and communication technologies.

Independence and creativity

- The ability to work and learn independently.
- The ability to generate ideas and adapt innovatively to changing environments.
- The ability to identify problems, create solutions, innovate and improve current practices.

Critical judgement

- The ability to define and analyse problems
- The ability to apply critical reasoning to issues through independent thought and informed judgement
- The ability to evaluate opinions, make decisions and to reflect critically on the justifications for decisions.

Ethical and social understanding

- An understanding of social and civic responsibility
- An appreciation of the philosophical and social contexts of a discipline
- A knowledge and respect of ethics and ethical standards in relation to a major area of study
- A knowledge of other cultures and times and an appreciation of cultural diversity.

c. Link between graduate attributes and the Strategic Plan

The graduate attributes are not only created to reflect the link between research and teaching, central to the University's mission, but also occupy a significant role in the strategic teaching and learning objectives of the University and the operational priorities of the Strategic Plan. The current Strategic Plan states that the University will "provide rewarding educational experiences that develop in graduates capacities for independence and creativity, critical judgement, effective communication and ethical and social understanding as well as in-depth knowledge of a field of study".

1. An appropriate learning framework for generic skills

The University considers that graduate attribute support can be found in both the *planned curriculum* (the goals, learning outcomes, assessment program and learning activities planned for students) and the *enacted curriculum* (the process and content of the learning experienced by students). The University's expectation is that, in mapping and embedding processes, Faculties will:

- Develop explicit and shared understanding of how the graduate attributes translate into meaningful and purposeful ideas which describe the aims and aspirations it has for its graduates
- Examine overall curriculum goals, learning objectives, learning outcomes, assessment programs and learning activities to pinpoint where a course or program already contributes to the development of graduate attributes
- Compare the descriptions developed (a) with the support provided and (b) to identify weaknesses and strengths in the support for graduate attributes across courses and programs
- Change and develop courses and programs so that its aims and aspirations for graduates are made explicit, and
- Change documentation and practices so that support for graduate attributes is also made explicit to other interested parties.

An electronic student learning portfolio supports students to provide evidence of the way graduate attributes have been developed. The electronic portfolio allows students to build evidence of particular assessment or learning activities. Currently the portfolio is being trialed in one large Faculty.

2. Generic skills, context and learning and assessment processes

The process of mapping and embedding graduate attributes has involved recognising the particular context and needs of different fields of study. It has also involved ensuring that these contextualised graduate attributes are embedded in learning and assessment processes.

Faculties have prepared profiles which provide a clear statement of the graduate attributes developed in each program / sequence of study and their relative importance in the program.

Examples of the way the graduate attributes identified by the University have been translated and interpreted in the context of different fields of study, can be seen in these examples from the medical and engineering programs.

While Engineering outlines:

"ability to appropriately select and assess the value of information and methods used to identify, formulate and solve...engineering problems" as one of the elements of the way its program will develop critical judgement in a graduate.

Medicine states:

"interpret the clinical history and physical findings obtained in order to define an effective investigative strategy and management program" (as one element among a number in relation to this attribute). Differences can also be found in the way ethical and social sensitivity is defined by field, for Engineering:

"understanding of the social, cultural, global and environmental responsibilities of the professional engineer and the need for sustainable development"

is part of the description, while Medicine points among other things to

"have developed appropriate sensitivity towards important issues such as death and dying" as well as recognise and analyse clinical, ethical problems arising from encounters in clinical settings".

¹ Given the large number of courses in the University and the need to ensure that this process was able to be completed with appropriate attention, it is being staged over three years, beginning with all first year level courses.

The attributes developed at program level have then been mapped to the courses that make up the program. This process is still in progress¹. Individual course profiles must all include a summary reference to attributes developed across the course and the manner in which they are developed (eg through learning activities, assessment) detailing

- The learning outcomes or goals or objectives that are intended
- The teaching and learning activities that contribute to the achievement by students of these learning outcomes; and
- The assessments that are used to measure the achievement of those outcomes.

3. Student perceptions of their generic skills

The process of embedding graduate attributes is supported by professional development staff. A major part of this process is for staff responsible for programs and courses to be able to reflect on the extent to which the outcomes sought are being met. To assist in this process, The University of Queensland has begun research into students' perceptions about the development of graduate attributes. At the end of 2001 the University conducted an extensive survey of its students to determine how satisfied students were with various aspects of their experience at the University. Surveys were sent to all first year, final year undergraduate and final year postgraduate coursework students.

For each of the attributes students were asked to indicate how much their major area of study had contributed to the development of these attributes, through providing a rating on a 5-point scale. The table below demonstrates results in relation to two programs for three graduate attribute scales.

Mean scores for First Year Undergraduate, Final Year Undergraduate (including Honours students) Students in the Bachelor of Science (S) and Bachelor of Arts (A)

Graduate Attributes Scale	First Year students		Final Year students	
Communication and Problem-Solving	3.22 (S)	3.67 (A)	3.78 (S)	3.85 (A)
Discipline Knowledge and Skills	3.69 (S)	3.85 (A)	3.93 (S)	3.93 (A)
Ethical and Social Sensitivity	3.15 (S)	3.82(A)	3.39 (S)	3.89 (A)

The table demonstrates that on the three graduate attributes scales means for final year students were higher than for first year students, indicating that students perceive that the experience at UQ is contributing to development of the graduate attributes. It also indicates something about the extent to which these students rank the relative level of development of particular attributes in Science and Arts.

Outcomes from this survey are provided to Schools and Faculties as one of the indicator areas to examine in relation to curriculum review. It is hoped that this feedback will assist along with input from relevant external parties to ensure that the graduate attributes sought are being developed effectively in students. ■

A FRAMEWORK FOR DEVELOPING AND ASSESSING GENERIC CAPABILITIES IN QUT LAW GRADUATES

QUT, like most other universities, has in recent times been giving greater attention to what students actually learn during the course of their studies, and to how learning occurs in different contexts. In particular, there are classes of skills and capabilities developed by graduates which are not specific to a particular discipline or profession.

Traditionally such generic skills and capabilities have not been an explicit academic target, but have been expected to emerge during the course of university disciplinary or professional studies, sometimes with the help of isolated units of study divorced from the rest of the curriculum.

Developing university-wide approaches to matters such as curriculum design, teaching and assessment, requires strategies and frameworks which must match broad institutional priorities with those of academic organisations units operating with a degree of independence and which are based on disciplinary or professional affiliations. Several approaches have been adopted at QUT to advance this agenda. These include the development of frameworks for understanding and action, in collaboration with QUT's four Australian Technology Network partners; articulation across the university of a set of desired graduate capabilities; and implementation of strategies for embedding these, alongside more specific learning outcomes, in the work of academic areas.

One such strategy involves QUT's Large Grants program, which provides assistance of up to \$150,000 over two years for major educational improvement projects. Project plans are developed within, and sometimes across, QUT's eight faculties, and are assessed by a panel not only on matters of feasibility and sustainability, but also on the match between institutional priorities and proposed projects. Over the past three years this program has supported several large-scale initiatives aimed at embedding generic graduate capabilities across a wide range of QUT's courses, and its large undergraduate courses in particular. This article briefly outlines one such initiative, in the Faculty of Law.

The QUT Law Faculty has undertaken a major reconceptualisation of the teaching and learning experience offered by its undergraduate law programs. The Faculty wished not only to address the generic issues of first year transition, it was also committed to providing a package of teaching and learning opportunities that

PROFESSOR
DENNIS GIBSON, AO

*Vice-Chancellor, Queensland
University of Technology*



combined substantive content, theoretical and practical knowledge with the development of certain generic (and some discipline specific) skills; all of this in a legal context to a basic level of competency for all students, regardless of the diversity of their prior background and experience. Further, just as the placement and assessment of substantive content is carefully considered in line with unit, year and course objectives, so also it was necessary to be deliberately cautious about the placement and assessment of generic (and discipline specific) skills as a "whole of course" exercise.

Capability and Skills Identification

The first step was to identify the generic and discipline-specific capabilities required by and of QUT law graduates. This was done using a variety of sources, including feedback from employers and graduates, surveys produced by various studies conducted by professional bodies, QUT's own university-wide list of graduate capabilities, and various international studies.

The six desirable capabilities of a law graduate, designed to encapsulate broad descriptors of graduate quality and expressed in terms of the abilities a graduate will be expected to possess upon graduation have been determined to be: Discipline Knowledge; Ethical Attitude; Communication; Problem Solving and Reasoning; Information Literacy; and Interpersonal Focus. More detailed descriptions of these capabilities may be found by following the web page link at the end of this paper.

The next stage in the process was to identify the various skills, and then to define the expected levels of achievement for each of those skills as a guide for both students and staff. It is important to emphasise that many of the skills identified interrelate. Very few generic or discipline specific skills exist in a vacuum: many skills draw upon others to demonstrate effective acquisition of a particular skill (for example problem solving) while some skills are so fundamental that they permeate the application of nearly every other skill (reflective practice is a good example). The fact is that generic and discipline specific skills interrelate with each other and also overlap and underpin effective (holistic) skills development and the ultimate attainment of the desirable graduate capability package.

The identified list of generic and legally specific skills for incorporation within the course were categorised broadly as:

- Attitudinal skills
- Cognitive skills
- Communication skills
- Relational skills.

Again, the further elaboration of these skill categories into more specific elements may be found by consulting the project web page.

To be of assistance in terms of how the various skills will be developed and assessed, each has been further de-constructed to identify the following order of detail:

- the broad *skill category*: from the four categories set out above;
- the *specific skills* within those categories;
- the *course objectives*: that is, the level of competency expected of a graduate by the end of his/her course regarding the specific skill; and
- the *demonstrated abilities* of the graduate for each of the skills: that is, a statement that to meet the (final) course objectives for the specific skill, the graduate will have demonstrated certain abilities.

At certain identified stages within the process, a student will need to be assessed on his or her level of attainment. The requirements for assessment and reporting led the Law Project Team to break down further each skill into three broad levels of progression or development. For each level, the skills need to be mapped onto appropriate core units within the years of the undergraduate curriculum ("appropriate" in the sense that there is thoughtful matching of skill with unit content in which the teaching, learning and assessment of the skill is to be embedded), so that it is clear which units take responsibility for a particular skill's development to which level of attainment. Each level of progression relates broadly to the notion that a student should move, in an incremental way, through various stages of development in the acquisition of skilled behaviour.

There needed to be objective assessment criteria specified for each level of each skill so that the student's progress towards the ultimate attainment of the skill (as designated by the stated course objective) can be assessed. Fundamental to nominating these levels of progression have been the dual imperatives of making explicit for students the incremental path of the skilling process (and thus also providing the opportunity for student reflection on their own development); and providing staff with the platform on which they can implement the particular assessment strategies in their own units.

This staged assessment of skill development also provides the framework for a reporting procedure that will eventually be used for the development of a student capability profile.

Embedding Capability Development and Assessment Practices

The undergraduate law curriculum was then reviewed in its entirety to embed this explicit approach to capability development. Central to the achievement of this objective has been the dual imperatives of integrating the skills within the processes and content of the substantive units and the striking of an appropriate balance as between skills development and content knowledge acquisition.

Skills integration requires *both* a macro course level approach, to ensure appropriate distribution of skills, and a micro unit level approach that encompasses a review of existing competency levels of students entering the unit, learning objectives, teaching methods and related assessment tasks.

While the undergraduate course undoubtedly has a significant role to play in student acquisition of skilled behaviour, it should be stressed that the classroom is not the only place where students are able to develop desirable

capabilities. Some skills are acquired in the activities of everyday life. Students should anticipate that, and take responsibility for, skills development outside of the classroom context. The course itself should be viewed as *providing the environment* for students to develop the nominated skills. In some cases, students should be directed to resources made available for self-development and improvement, but it may not be necessary to devote large amounts of course time to their explicit acquisition.

The Law Faculty has thus purposely developed the concept of both *implicit* and *explicit* development of skills. This notion is directed specifically at delineating between those skills for which a unit will take responsibility for explicit instruction and those skills which the unit recognises are desirable both generally (for law studies) and specifically (for the particular unit) but which will not be explicitly developed. The *implicit* skills are identified as matters which students should be consciously developing and refining or regarding which they should otherwise be seeking their own further instruction (for example basic computer skills, time management, and note-taking skills).

Assessment Practices

Reconceptualisation of the course in terms of student mastery of both content knowledge and skilled behaviour has required a re-evaluation of the validity and reliability of current assessment and feedback methods.

Of course, the role of any assessment will depend on the learning objectives being pursued. At a fundamental level of unit design, the type of information that can facilitate the efficacy of assessment tasks and *which should be communicated to students* is suggested by the following headings, all of which are directed at the necessity to be explicit about the skills objectives in the unit assessment information.

- State the skills to be explicitly and implicitly developed in the unit;
- Why these skills have been chosen for this unit;
- What is the learning objective in relation to the particular skills?;
- How will each of the skills be developed in the unit?;
- How does this unit's skills development relate to the year's curriculum as a whole and then to the course as a whole?

Equally as important as painting the big picture for students is the issue of explaining each piece of assessment to students in terms of, for example, what the skills objectives are for particular assessment tasks, and how such objectives link with those of the unit and with other units being studied by the student.

The Project Team is at present engaged on further development of the assessment framework, with the aim of producing a practical tool that can be used by staff (including sessional teachers) and which is also sufficiently rigorous to assure the quality of capability assessment tasks. ■

This article draws on material from more detailed paper prepared by Sally Kift, Assistant Dean of Teaching and Learning in the Faculty of Law and Project Team Leader. The full paper may be accessed at <http://www.aare.edu.au/02pap/kif02151.htm>

RESPONSE FROM THE UNIVERSITY OF ADELAIDE TO B-HERT PAPER ON:

'ENHANCING THE LEARNING & EMPLOYABILITY OF GRADUATES: THE ROLE OF GENERIC SKILLS'

The position paper from B-HERT is a timely initiative for assisting the higher education and business sectors continue a collaborative process that will enhance the employability of graduates and benefit Australian society. The paper "outlines the nature and scope of generic skills" and discusses "the reasons why they have become a focus of policy interest". The paper concludes with a series of recommendations for further work and proposes an "agenda to enhance the learning capability and employability of graduates".

ASSOCIATE PROFESSOR GEOFF CRISP

Director, Learning
and Teaching
Development Unit,
University of Adelaide



This response outlines the commitment of the University of Adelaide to developing appropriate University and program-based graduate attributes and meaningful approaches to embedding transferable capabilities (the University term used for generic skills) into curriculum design and assessment.

The University had, in its Learning and Teaching Strategic Plan 2000-2002, two priorities for 2002 under Lifelong Learning Skills:

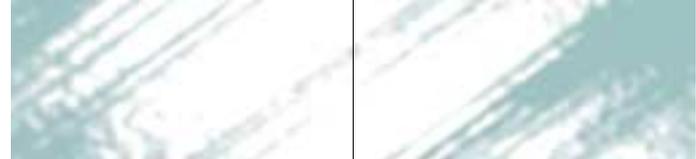
- *Contribute to the integration of graduate attributes into the University curricula.*
- *Encourage all Faculties to develop, review and integrate academic program specific statements of graduate attributes into the curricula.*

In May 2002 the University Learning and Teaching Committee (ULTC) established a working party with representatives from each Faculty and student associations to recommend a framework for the development of Graduate Attributes for each undergraduate and postgraduate coursework academic program based on the University's Graduate Attributes. This framework included the embedding of graduate attributes into the design and structure of courses and academic programs; curriculum development processes; assessment and academic staff development.

Graduate attributes should describe the essential qualities, knowledge and capabilities to be developed by students during their programs. They should encapsulate for a student, and the wider community, the defining characteristics of the University's degree programs, rather than be a list of skills that should be mastered. The Working Party was of the opinion that graduate attributes describe a set of characteristics that are designed to be transferable beyond the particular disciplinary context in which they are developed.

Developing academic program specific graduate attributes was seen as an essential component of the process as curriculum design and assessment are undertaken within Schools and the students would benefit from discipline specific language. In reviewing existing programs or developing new ones, teaching staff could then ensure that opportunities are explicitly provided for students to develop not only disciplinary knowledge, but also the graduate attributes related to their academic program. Students would be encouraged to reflect on the broader purpose of their university education.

The efficacy of University graduate attributes will be determined by which program specific graduate attributes are translated into meaningful learning activities and assessment tasks. Mapping program specific graduate attributes into courses is the primary path by which students will actually engage with the concept of transferable capabilities. No individual course is expected to develop every program specific graduate attribute, but it is expected that as students progress through a program



they will be provided opportunities to build a portfolio of activities and assessment tasks that, taken together, will have allowed them the opportunity to attain all program attributes.

Mapping is the act of tracing where support for the development of program specific graduate attributes occurs within a course. The processes of mapping and embedding program specific graduate attributes into courses at the University of Adelaide involves:

- developing explicit and shared understanding of how the University graduate attributes translate into meaningful and practical activities that embody the aims and aspirations of a Faculty for its graduates;
- examining and developing overall course goals, learning outcomes, assessment tasks and learning activities to articulate how and where a course contributes to the development of program specific graduate attributes;
- changing documentation and practices so that support for University graduate attributes is embedded in support and administrative services.

Students expect to find in the relevant course documents (those stating aims and objectives, learning activities and outcomes, assessment tasks) examples of which graduate attributes were being developed. Mapping program specific graduate attributes across all courses ensures they will become an integral part of all curricula. The processes of mapping and embedding program specific graduate attributes into courses involves developing overall course goals, learning outcomes, assessment tasks and learning activities to articulate how and where a course contributes to the development of program specific graduate attributes.

Students need to be aware of the importance of demonstrating their transferable capabilities. Student awareness is raised by including in documents related to academic advice the details of program specific graduate attributes. In order to encourage students to become actively engaged in the use of resources related to graduate attributes they should be able to construct a personal portfolio outlining their own academic and career profile, including details of courses studied, examples of work produced, and the capabilities and attributes developed. This process will be developed in 2003 in both a paper and online format so that students will be provided with a portfolio facility in which they can record details of courses studied, examples of assessment and work undertaken during the degree program and details of program specific graduate attributes and their transferable capabilities that have been developed in the academic program.

A University funded project, *Mapping Transferable Skills in the Undergraduate Science Curriculum*, provided a

*"mapping and embedding program
specific graduate attributes into courses
... contributes to the development of
program specific graduate attributes."*

model for Departments to use in curriculum planning and development (details may be found at: http://www.adelaide.edu.au/DVCE/students/transferable_skills.pdf/). This approach will be incorporated into the development of a student portfolio due for trial in late 2003. The student portfolio will contain:

- details of courses studied
- examples of assessment and work undertaken during the degree program
- details of program specific graduate attributes that have been covered in the academic program and their activities associated with enhancing their transferable capabilities.

The Academic Program Accreditation Review Panel (APARP) requires the formal inclusion of program specific graduate attributes for all new programs and major changes to existing programs and the reviews of existing programs. APARP proformas also require

a mapping of program specific graduate attributes onto the University graduate attributes and a list of the specific skills to be acquired by a student in a program, both discipline specific and transferable (details may be found at: <http://www.adelaide.edu.au/academib/aparp/>).

Many departments have embedded the development of generic skills into their learning and teaching plans. Examples include the Department of Anthropology, Department of Physiology and the School of Performing Arts (details for these respective plans may be found at: http://www.adelaide.edu.au/DVCE/policy/faculty_LT_plans.html). The Department of Anthropology introduced a newly designed undergraduate curriculum that associated student learning activities and assessment tasks with generic skills identified as appropriate to the discipline. The Medical School has developed a problem based learning approach to the medical curriculum and incorporated generic skills as a core component. For example, the core capability of "having a superior ability to integrate knowledge across disciplines" is developed from the problem based learning approach to the medical curriculum and resulted in the assessment tasks being totally integrated.

The "development of the capacity of self-audit and for participation in the peer-review process" now requires students to reflect on learning through a journal or portfolio (depending on the year level). The "ability to work effectively as a member of a team" is developed as the problem based learning approach requires students to work collaboratively and the assessment procedures now encourage this skill by using the non-graded pass.

These examples highlight the processes by which learning and teaching initiatives in respect of generic skills have impacted on curriculum design and assessment strategies within the University. ■

THE GRADUATE QUALITIES PROJECT

– HOW A UNIVERSITY BROUGHT EDUCATIONAL PROGRAMS INTO LINE WITH EMPLOYER EXPECTATIONS



PROFESSOR
BRUCE KING

&

ASSOCIATE PROFESSOR
TED NUNAN
University of South Australia

Introduction

Over the last decade, the University has moved in a systematic and planned way to change the way academic programs are conceived and delivered. The Graduate Qualities Project was a major part of that intervention and involved the implementation of a policy to change the outcomes of all programs. At its most simple, the policy required all courses to provide for the development of a range of capabilities in students, only one of which was disciplinary expertise, the conventional content of university courses, the rest being attributes long sought for by employers and the community at large.

The Graduate Qualities Project involved

- a major policy commitment to providing a different learning environment for students,
- supporting academic staff and students in understanding and implementing Graduate Qualities in the management of teaching and learning, and
- the creation of electronic tools, staff development approaches, and student learning support materials.

The University of South Australia is acknowledged by those familiar with Australian higher education as leading our universities in changing teaching and learning in this way (evidence below). Significantly, the University has moved beyond teaching interventions and added a strong focus on student involvement in their development of these distinctive learning outcomes. This has resulted in building linkages between the achievement of Graduate Qualities and using evidence of their achievement when students seek employment.

The achievements of the University

The University has achieved a number of significant milestones which include:

- policy development and planning involving a whole of institution change by identifying an agreed set of Qualities of a University of South Australia Graduate and making a commitment to their implementation,
- changes to all programs so that they are directed towards achieving the development of a profile of qualities in every graduate,
- changes to teaching, learning, and assessment in programs to foster the achievement of each Graduate Quality,

- reorganising learning support to provide advice and resources for students in developing personal learning approaches that incorporate the Graduate Qualities,
 - provision of tools to enable students to recognise, track their exposure to and record their achievement in relation to each of the Graduate Qualities, and
 - value adding to student records of the development and achievement of Graduate Qualities by linking these to employment opportunities.
- Evidence of the recognition of our leadership in this area comes from Michael Gallagher's paper presented at the IMHE General Conference of the OECD, Paris, Sept 2000, *The Emergence of Entrepreneurial Public Universities in Australia* looks at 'the university as developer of graduate attributes' in chapter 4. After discussing the work of the Australian Technology Network Teaching and Learning Group and a general discussion of the take up of graduate attributes in Australian universities, the paper states that:

'No Australian university has to this point adopted the holistic approach of Alverno College in the United States, which has developed a university wide strategy for curriculum integration and assessment focused on eight specific abilities. The University of South Australia is arguably however, the closest to this institutional model having worked since 1995 to integrate its seven graduate attributes within its quality assurance and improvement process' (page 29).

In implementing Graduate Qualities The Project involved professional development staff of the Flexible Learning Centre and a project officer in the following tasks:

- twelve small exemplar projects that involved teams of academic staff in introducing Graduate Qualities in particular teaching areas,
- the development of student orientation materials about the Qualities,
- the development of related teaching guides and student learning guides,
- establishing a software tool for the recording by students of their development and achievements within the Graduate Qualities and managing an 18 month trial involving students and staff in one of the Business Schools of the University,
- the monitoring of some ten subsequent projects within all teaching Divisions of the University on student recording of achievement of Graduate Qualities,
- the development of audit tools for determining the extent to which Graduate Qualities were incorporated in courses for use by professional development staff
- the reconceptualisation of learning support for students such that the development of the Qualities of a University of South Australia Graduate became a central organising theme in all programs, and

- the re-engineering of career services for students and potential employers of university graduates around the Graduate Qualities with emphasis on online provision of services for the international professional employment market in conjunction with TMP WorldWide.

The Qualities of a University of South Australia Graduate

The seven Qualities of a University of South Australia Graduate are generic statements that define both process and content outcomes with reference to their context of application and are set out in the table below.

Quality	Process and content outcomes	Context of application
1	Operates effectively with and upon a body of knowledge...	...of sufficient depth to begin professional practice
2	Is prepared for lifelong learning...	...in pursuit of personal development and excellence in professional practice
3	Is an effective problem solver, capable of applying logical, critical, and creative thinking...	...to a range of problems
4	Can work both autonomously and collaboratively...	...as a professional
5	Is committed to ethical action and social responsibility...	...as a professional and a citizen
6	Communicates effectively...	...in professional practice as a member of the community
7	Demonstrates international perspectives...	...as a professional and as a citizen

Extent to which the project is innovative and practical

The Project was innovative for three main reasons. First, it constituted a major change to the nature of teaching and learning at University level. It involved a policy and practical commitment to valuing the development of a set of attributes which went well beyond the fostering of disciplinary expertise which had traditionally been the principal focus of course content.

Second, the Project was created as part of a long-term change strategy that started with policy development and had targets for a ten-year period.

Thirdly, the Project led to other innovations involving Graduate Qualities - the key examples involve the ways in which the Graduate Qualities were used to address issues of inclusive education and the means by which students were empowered to record their development and achievement of Graduate Qualities as an endorsed adjunct to conventional academic transcripts.

Extent staff and students utilise or participate in the project

Staff, students and industry have been all been involved in the activities of the Graduate Qualities Project. The implementation arrangements for Graduate Qualities involved two major stages and intended clients and users have been involved as appropriate.

Stage one of the implementation process focused on changing courses and programs. During this stage the University facilitated staff participation through the funded exemplar projects described earlier. Over 63 teaching staff participated in exemplar project teams which engaged the students enrolled in over 32 courses across all year levels.

The second stage of implementation focused upon how students experience the Graduate Qualities and document

their achievement of the attributes involved in them. The Graduate Qualities Project sought to embed Graduate Qualities in the student experience through collaboration with one of the Schools of the University in a trial initiative that would afford opportunities for students to use a University-developed online tool to record their experiences and personal acquisition of those attributes.

The Graduate Qualities Project envisaged the following benefits for students:

- a heightened understanding of the importance of developing the Graduate Qualities for employment and citizenship,
- greater awareness of the ways in which their program of study facilitates the development of the Graduate Qualities,
- greater awareness of the ways in which experiences and achievements in the wider community contribute to the development of the personal attributes that constitute the Graduate Qualities,
- an understanding of the developmental processes involved in 'learning how to learn',
- active engagement in, and personal responsibility for, their own development of the Graduate Qualities, and
- increased employment opportunities through a greater capacity to understand and interact with the employment market.

The central feature of the above initiative was the potential it afforded for all students of the University to record their achievements and experiences in relation to the Graduate Qualities. This was facilitated through specially designed web-based software known as Transcript 2. The software provides a process for students to reflect on their experiences and their achievements and to record them against each of the Graduate Qualities.

"...the closest to this institutional model having worked since 1995 to integrate its seven graduate attributes within its quality assurance and improvement process."

The clients of the project were staff and students of the University and employers of our graduates. A good example of client satisfaction was fostered through an initiative of one of the Schools of the University that brought together students, student ambassadors, employers and teaching staff in meetings to show how the program of study concerned developed Graduate Qualities and how these qualities were recognised, developed and recorded by students. This was extremely successful, involving breakfast meetings at which staff and students made presentations regarding their intentions and the experience of the Graduate Qualities. Employers also provided feedback about the profile of qualities providing valuable input about the way the generic Graduate Qualities could be elaborated to best suit their needs. The Graduate Qualities Project provided a common framework that was used to communicate a profile of outcomes for the program in ways that teachers, students and employers could all understand and value.

Evidence of the success of the project

The Graduate Qualities Project sought a change that was long term and we were interested in the level of commitment that our staff brought to this new approach. One way of testing this was to see how many staff began to advocate these changes to their colleagues in other institutions through conference presentations or scholarly articles.

An analysis of education and practice publications by staff of the University of South Australia reveals that there are some 110 publications that dealt with the Graduate Qualities intervention in programs. Of these, 63 (or 57%) dealt with the overall effects of the Project, with the balance of papers addressing particular Graduate Qualities. Some 68 (62%) were presented or published in Australia and 51 (38%) presented or published overseas.

Concluding Statement

The University of South Australia sought to enhance the quality of the teaching and learning environment it affords students by a major policy commitment directed to changing the very nature of higher education provision. This involved a commitment to viewing disciplinary expertise as only one of a number of important outcomes of education for the professions and more directly linking University study to attributes sought in new graduates by employers. The Graduate Qualities Project sought to bring this policy commitment to realisation. Recognition of the success enjoyed by the University has already come from academic peers, senior Commonwealth Government officers and employers of our graduates. ■

"WELL, WHAT DO YOU KNOW?" - A SKILL PORTFOLIO PROJECT

Prologue

In the late 1990s, I, (Iain Hay), was approached by a graduating student trying to prepare a job application. I knew from teaching her in research methods classes that she had completed some remarkable 3rd year work involving community consultation, project management, group work, preparing, distributing and analysing a large scale questionnaire survey, and presenting research results at a public meeting. But she could not see that through this work she might have developed a wide variety of skills an employer might want. You might appreciate that I was flabbergasted when she responded to my question about what she had learned with "Well, I did a research project". It struck me immediately that despite my best efforts to point out to students what generic, or transferable, skills they had developed in class, the message had not sunk in. I set about resolving that problem by developing - initially in conjunction with staff in eight other academic units - the Flinders University Student Transferable Skills Solving project (STSP).

PROFESSOR IAIN HAY

*Head,
School of Geography,
Population & Environment
Management*



DR JANICE ORRELL

*Academic Coordinator,
Staff Development and
Training Unit,*



and

PETER TORJUL

*Head,
Careers and Employer Liaison
Centre,
Flinders University,
Adelaide*



In this short paper, Jan, Peter and Iain discuss the character of STSP, its diffusion through Flinders University, and its relationship to employability.

What is STSP? What does it do?

Unlike approaches deployed at some other universities that appear to emphasise instructor and institutional definition of the sites in which generic skills are developed (Hager, Holland & Beckett 2002, p. 13), STSP provides students with resources they require to create a personal portfolio of skills development as they move through any degree program. This strategy is, in part, an acknowledgement of the diversity of paths students can take through most academic awards. It is also a self-conscious attempt to help shift power over the organisation of learning from instructor to student.

The Project intends to help students identify, think about, and record transferable skills they develop on- and off-campus in ways useful to their personal development and to their search for both employment and other community roles. This is achieved in a structured way that allows students to 'map' their accomplishments against a set of the University's expectations of its graduates and thereby identify their own skills strengths and shortcomings.

All materials that help students amass evidence of their own skills development and reflect on personal strengths and weaknesses are set up on the STSP website (<http://www.ssn.flinders.edu.au/skills>).

The website provides instructions on how to create a transferable skills portfolio comprising personal topic diaries (describing skills developed in each topic [i.e., Flinders' term for a 'subject' or 'course'] in which the student is enrolled) and an index to topic diaries based on the University's graduate skills expectations, summarised down, for the sake of comprehensibility, from 17 skills into four categories:

- communication and presentation skills
- teamwork or interpersonal skills
- managing or organising/planning skills (including self-management)
- intellectual (analytical, design or problem solving) and creative skills.

The index serves as the student's personal 'map' of skills strengths and weaknesses. The website also encourages completion of a record of extracurricular development.

The site discusses what each of the skill groupings means and sets out sources of opportunity that exist to develop skills both on- and off-campus. For instance, under the grouping 'teamwork and interpersonal skills', Flinders expects its graduates to have the capacity for cooperation and teamwork; management and supervisory skills; and the ability to appreciate different viewpoints and cultural perspectives. STSP suggests these skills mean that one can share ideas and responsibility; take initiative in a group where appropriate; and negotiate solutions when opinions differ. To the surprise of some students, there are sources of opportunity to develop these skills on campus including, for example: participating in group projects or acting as a facilitator in tutorials/meetings.

The final components of the website are blank skills diaries and indexes, examples of completed portfolio elements, and hotlinks to relevant sites such as the University's Study Skills and Careers Centres.

STSP Diffusion through Flinders University

The adoption of STSP at Flinders is enhanced by support at the institutional, departmental and individual level, especially the endorsement of senior management and involvement of teaching colleagues. However, there are major challenges to adoption of innovative practices in higher education. Factors that can impede the spread of innovation include resistance to change, undervaluing teaching compared with research, and individual or departmental isolation (Hannan & Silver 2000).

In our experience making the new ideas and resources known in places where they can be used is difficult in a climate of increasing demands on university academics. Demands include many new teaching and learning directions (such as flexible education, problem-based learning, and work-based learning), and changes across the sector such as increasing quality assurance and

"An advantage...is that innovations can be thoroughly integrated to create new, more authentic and effective practices..."

accountability measures. As a result, teaching teams, departments, and disciplines may tend to resort to protective cocooning, which results in 'silo thinking'. Each area reinvents similar strategies for similar challenges and problems without sharing and building on each other's accumulated expertise. It can also be difficult to encourage academics to adopt something they haven't created or experienced themselves as learners or teachers, especially if the innovation is from a different discipline.

The progress of innovative change is often slow and sometimes frustrating. However, quick uptake is not necessarily good as it can become a hasty 'add-on' without reflection about or modification of existing practices. An advantage of measured uptake is that innovations can be thoroughly integrated to create new, more authentic and effective practices that are best suited to the local context.

A 'one-size fits all' approach would not work. Therefore the Flinders strategy to encourage dissemination of STSP aims to accommodate cultural differences among academic areas and break down the disciplinary silos. The strategies for dissemination, and the innovation itself, need in-built flexibility to enable localised uptake. The dissemination of STSP across Flinders University is assisted by a number of structural and operational features. We are a relatively small institution with central support units that link to, and between, the Faculties and disciplines.

The promotion of the value, role, and uptake of STSP has generally occurred through staff involved at its inception. This has been largely in the social sciences and the humanities. STSP was developed in 2000 with support from a Flinders University Teaching and Learning Innovation Grant (of \$10,000). It involved key individuals in each academic organisational unit of the Faculty of Social Sciences. A number of individual topics or subjects, associated with mostly vocationally oriented degree programs in this Faculty are, with some success, incorporating the resources and activities into their activities.

Wider dissemination is facilitated by an Academic Development program that can address specific needs within or across Faculties and academic units. The STSP website and transferable skills concept is promoted by the Flinders educational development team in university-wide workshops, and in dedicated teaching team-based and discipline-based review and development consultations. In addition the Academic Development program has a *Teaching for Learning Website* that is a resource for teaching staff. One segment of the site promotes the development of generic, transferable skill in degree programs and has a link to the STSP website.

Other University structures concerned with enhancing teaching and learning promote the use of STSP. These include an advisory group to the Pro-Vice-Chancellor (Academic) and the four Faculty Teaching and Learning Committees. Communication about teaching and learning innovations within Flinders is facilitated because it is largely a single location institution.

Uptake of STSP is further supported by the use of various grant schemes to link ongoing teaching and learning innovations. Flinders has developed its own program of innovations grants that, as part of its conditions, encourages applicants to build on the ideas of previous projects. The dissemination of STSP is enhanced by participation of staff in two major externally funded projects. First, the cross-campus CUTSD funded 'Practicum Project' brought together cross-Faculty staff from programs with off-campus field or workplace components. Participants shared expertise about teaching, supervision, assessment, and management in field education. So within these largely vocational awards the issue of transferable skills development has naturally been addressed and enhanced by the incorporation of STSP. Second, Flinders University Science and Engineering Faculty gained a large national Science Lectureship grant focusing on Science and Technology Enterprise Partnerships (STEP). A goal of this grant is to develop undergraduate science programs which include timely and relevant application of learning to industry, and information about science-related employment. It was recognised that students in more Science and Arts degrees, particularly those with no field component, would benefit greatly from a transferable skills component in their undergraduate courses. STSP, adopted and modified within the STEP program to suit the Faculty context, provides a foundation for Science students to monitor and demonstrate their own acquisition of a range of employment related attributes.

A range of initiatives within the Flinders Careers and Employer Liaison Centre (CELC) augments the uptake across the University.

STSP and Employability

As part of the staff selection process employers are seeking demonstrated evidence of students' skills. This evidence can include knowledge of an academic speciality but also covers workplace skills such as communication, problem solving and teamwork. The report *Employability Skills for the Future* (DEST, 2002) presents an industry perspective that education providers will need to ensure that students develop these skills. The STSP plays a significant role in the development of this employability.

Through the STSP students can also begin to plan and develop strategies that address skill deficiencies and build on their experiences. By linking the STSP with the Flinders Graduate Skill Development Program students enhance their skills through programs such as:

- Degree Plus – students develop and apply skills such as managing an effective team, managing diversity, presentation skills, time management, project management and communicating effectively. These complement students' academic activities and are integrated as part of teaching programs and are also available as an extracurricular activity.
- Corporate University Skills Program – provides student training in key transferable skills to develop 'graduate readiness' as a preparation for their careers and lives in the community. Students undertake a variety of skill development activities and challenges designed to develop key skills for management and leadership.
- External programs – the University's Graduate Skill Development Coordinator currently facilitates three external skill development programs which allow students to work with major state and national employers.

STSP has increased the profile of the programs developed by the University to assist students in making the transition to employment. The material produced by students can be used when preparing their CV, application letters and most importantly addressing selection criteria. The project complements the job search materials available from the CELC website. For example, Centre's materials on preparing selection criteria encourage students to use a four stage process to respond to criteria. The STSP provides the building blocks for this by providing the evidence for students when preparing a response to criteria such as 'highly developed communication skills'.

The CELC is currently incorporating the STSP into its career and skill awareness raising programs targeted at first and second year students. These programs encourage students to develop a focused skill development action plan for their time at university.

Conclusion

STSP is an example of a program where some of the 'boundaries' between the components of a degree program and between the university and the world of work are broken down. The university integrates its approach to assisting students to develop their employability and achieve a smooth transition to employment by linking together academic staff across disciplines, the Careers and Employer Liaison Centre, and employers.

At a practical level, STSP helps students generate the resources they need to make claims against employment selection criteria. Just as importantly, it helps students reflect on the extent to which they have, or have not, developed particular generic skills. Through its requirement that students develop their own skills portfolio, rather than collating and reciting institutionally generated statements, STSP can contribute to students' developing a capacity for lifelong learning. It can foster self-directed remedial action and help students see the value and strengths (and perhaps also the shortcomings) of their degree program and their engagement with it. ■

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RMIT UNIVERSITY- INITIATIVES IN DEVELOPING AND RENEWING CURRICULA TO A CAPABILITY BASED APPROACH

Robyn Lines, Manager, Program Renewal Group, Office of the PVC (Teaching and Learning), RMIT

The RMIT Strategic Plan and Direction to 2006, commits the University to developing "programs that reflect growing areas of employment and individual and community aspirations". The plan identifies building "capability based curricula" as central to achieving this aim in a complex and changing world where graduates must be prepared to actively and productively engage as professionals and citizens.

At RMIT, the development of a capability based curriculum requires that program teams identify, through consultation with all stakeholders, the holistic, integrated capability that is the desired outcome from the program of study. This integrated capability refers to the ability to act in previously unencountered situations relevant to the professional and civic contexts the student will encounter upon graduation and requires the ability to discern what is salient in novel situations and to design and take appropriate actions. This overall capability is then differentiated into the profile of specific capabilities, abilities and skills that must be developed and integrated to achieve the desired result. This capability profile includes what are often referred to as generic skills.

The curriculum designed to achieve the capability outcomes needs to provide opportunities for students to learn and rehearse each specific dimension of the overall capability (such as communication skills, teamwork or specific technical skills) but also to demonstrate their ability to integrate these by addressing significant, complex practice situations. Finally, our capability approach requires that the curriculum promotes student involvement as partners in their achievement of capability through an explicit focus on their development throughout the program.

The profile of capability to be developed within each program at RMIT is determined at the level of the program, however, there is University level commitment to each graduate from RMIT having an awareness of indigenous issues and global sustainability concepts (including environmental sustainability) and an orientation to and ability to sustain life long learning.

Our commitment to a capability based curriculum builds upon a history of attention to the development of students' abilities as key outcomes of learning at RMIT. Salient features of our current approach which are more strongly developed than previously include the focus on the determination of the capability profile at the program level (neither controlled by the University or left to individual courses) and the much enhanced linkage of the approach to strategic planning practices within the University.

Linkages of the capability based approach to curriculum to University strategic planning

The capability based approach we have adopted poses three key questions.

- What are the direction and dynamics of the environment graduates will encounter,

- given this environment, what is the nature of the capability required and

- given this desired capability outcome, what are appropriate curriculum designs, teaching, learning and assessment strategies to achieve this outcome?

The first of these questions links directly to the University's annual Profile Process, a key part of our strategic planning, which aims to ensure the relevance and quality of our portfolio of programs; and develop opportunities for research and consulting. At a more detailed level, this question is also pursued through the Program Quality Assurance (PQA) system that has, as one of its criteria, the justification of need for an academic program in terms of both student demand and employment opportunities. The PQA system is also vitally linked to the second and third of these key questions through its focus on educational design, continuing quality assurance and responsiveness to stakeholders.

In determining the strategic directions for our portfolio of programs, the RMIT Planning Group prepares industry dossiers that are kept up to date through a process of industry consultations. These dossiers assist the University to identify emerging trends and opportunities for new programs. The data also provides a broad level of understanding concerning the desired graduate capabilities for emerging industry fields and significant changes in direction or emphasis for students entering established industry sectors.

New opportunities are identified and sometimes the requirement for existing programs to be reviewed to meet changing demand is indicated from these consultations. These suggestions are combined with the outcomes from the continuous PQA cycle of five year industry/professional reviews conducted within and across Faculties to develop the profile of curriculum developments and renewals to be undertaken within the University. The system combines the benefits of a broad based, industry wide strategic focus from the "top" with the "on the ground" intelligence of staff working in individual professional fields and in community and civic contexts. The curriculum development or renewal process then proceeds in accordance with the University's PQA processes.

The first stage of curriculum development or renewal involves extensive stakeholder consultation to establish at a more detailed level the nature of the need and the profile of capability (including what are referred to as generic skills) desired as the outcome of the new or renewed program. Typically the stakeholders involved in this consultation include representatives from industry and professional

associations, students, alumni and academic staff. For some sectors community groups are also consulted. A conceptual framework based on Socio-ecological systems theory (Trist, Emery and Murray, 1997) guides the consultations which result in a detailed understanding of trends within particular professional domains, the implications of these for program positioning and the profile of capability that represents the desired outcomes of the program. This profile of capability needs to address both professional abilities and incorporate abilities related to the broader purposes of a university education for responsible citizenship and continued learning.

Approaches to curriculum design and assessment

The consultations we have undertaken since establishing this approach to curriculum development or renewal have been conducted across a wide range of professional domains. These reveal that while respondents' perceptions reflect their unique context and circumstances, all have described their 'world' as complex, interdependent and dynamic. While there are clear distinctions in the technical abilities demanded by particular professions/disciplines, there is a consistent concern that in adapting to an uncertain future all graduates will require a set of personal and professional capabilities that extend well beyond a narrow technical focus. These are the qualities often referred to as generic skills.

The program level consultation process allows us to avoid separating generic skills from professional ones by delineating the specific nature of these so called generic skills in relation to the particular professional capabilities desired. While the capabilities desired go "beyond" specific knowledge, they are not "knowledge-independent". Learning of content is not dismissed in capabilities-driven curriculum, but it is dealt with and learned in a different way from traditional curriculum. It is a means to an end (graduate capabilities) rather than an end in itself.

The capability profile developed for each program teases out to a significant level of detail what is meant by "communication" or "interpersonal skills" for example, in nursing, in medical radiations, in Chinese herbal medicine or in chemical engineering or disability studies.

Having a profile of capability, no matter how detailed or carefully developed, does not automatically generate a detailed curriculum design. It does, however, pose a range of questions that need to be addressed in any curriculum. These suggest particular approaches to structure, teaching and learning and assessment.

The curriculum must provide space for students to practise and demonstrate their ability to integrate specific skills learned in various different courses and contexts so that they can address significant, novel and messy, "real world" problems and professional practice situations. This can take many curriculum forms that include work integrated learning streams, clinical practicum, studio courses and problem or research based capstone courses. The curriculum must also provide opportunities for students to become critically aware of their own developing capability. Once again this can take a variety of forms which include learning portfolios that are sustained over the whole program of study, specific portfolio courses at points throughout the curriculum, extensive self and peer assessment practices with follow up review and planning.

Once an overall conceptual approach to the curriculum has been devised, the capability profile is mapped over the proposed structure and adjustments made until the best fit is achieved. The role of each course in the program in fostering and assessing dimensions of capability is documented in a Reference Course Guide that provides a performance specification for the course in terms of capability development, learning outcomes and appropriate teaching, learning and assessment approaches. It is well established that assessment is a key determinant of student learning. Assessment in a capability based curriculum needs to progressively develop ability. The RMIT capability approach recognises various "levels" of outcome, "scoping, enabling, training and relating" (Bowden et al, 2000) in capability development which assist in framing assessment of capabilities through different courses. Assessment that directly tests abilities to discern relevant aspects in real-life, messy, multifaceted situations is an essential feature. (Bowden and Marton 1998, p 167)

Learning framework

A capability based approach to curriculum is consistent with a constructivist approach to learning. Students are active in constructing meaning, critically evaluating their developing understanding and capability and shaping their learning experiences. Variation theory (Bowden and Marton, 1998), in particular, provides the learning framework at RMIT.

Variation theory argues that developing the capability to discern the relevant aspects of a situation comes from experiencing variation in situations and contexts so that similarities and differences are perceived and ways of identifying the most relevant aspects are developed. The key is in not just having varied experience but also actually experiencing the variation, which requires that it be the subject of reflection and analysis. Without this reflective, analytic activity varied experiences in themselves are insufficient to develop capability (Bowden and Marton, 1998, p 154). The theory also suggests that the more the situations dealt with by students resemble the complexity and multi-factorial nature of real-life the more likely that a robust and effective capability will be developed.

The RMIT approach does not position the learning of generic skills as a thing in itself differentiated from the learning of discipline skills or developing technical capability. Nor does acquiring the current knowledge content that the teachers possess become the goal for students. Their goal is to develop their own capabilities to deal with an unknown future by interacting with the world using current knowledge. ■

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ENHANCING THE LEARNING AND EMPLOYABILITY OF UNIVERSITY GRADUATES

ASSOCIATE
PROFESSOR
OWEN WATTS

Director,
Strategic Support Unit
Office of the Senior
Deputy Vice-Chancellor
Curtin University

Setting the Scene

In formulating its Teaching and Learning Plan for 1994-96, Curtin acknowledged the growing demands of government, employers and the students, to make explicit the outcomes of learning that provided the added value to a university education. In particular, major publications such as the NBEET Report (1992), Mayer Report (1992) and reports from stakeholders such as the Institute of Chartered Accountants (1994), Business/Higher Education Round Table (1992) and Australian Association of Graduate Employers (1993). Curtin established seven capacities to demonstrate that its graduates were "equipped for careers and employment in their chosen field". These were: mastery and practical application of knowledge; communication skills (including IT skills); critical evaluation; creativity; teamwork; problem solving and decision-making, and responsiveness to the Australian and international communities.

In the revision that followed for 1997-2000, Curtin had the advantage of the examples being provided by other universities as Liverpool and Oxford Brookes, and especially from among its Australian Technology Network (ATN) partners, in particular, the University of South Australia and the work of Numan and King. The university continued to refer to "graduates' capacity to demonstrate" though 'graduate attributes' was used at the School level. The list of capacities was elaborated to include: valuing, mastery and application of knowledge; understanding and mastery of technology, including information technology; communication skills; critical evaluation; creativity, problem solving and decision making; a practical attitude to workplace requirements; ability to work independently or in teams as required; a sense of service and social justice and ethical behaviour; and, an ability to make positive contribution to Australian and international communities. It was this list that became the university's accepted position though there was no endorsement by Academic Senate nor any sense of contractual obligation as was occurring at the University of South Australia.

Following the university's changed planning model, the Teaching and Learning Plan 2001-05, sets an Objective "To review and revise programs regularly in light of Curtin's mission and values" of which the first target is "Curtin-endorsed Graduate Attributes incorporated into all courses/units". The initial step has been to amend the New Teaching Development template to require Schools to identify and to indicate how the particular graduate attributes are to be embedded. Academic Senate will be asked to endorse a list of Curtin's graduate attributes. The attractiveness of the University of South Australia seven graduate qualities is persuasive.

The lack of endorsement should not, however, be taken as showing a lack of willingness to engage in the curriculum reform necessary or in the staff development required to incorporate graduate attributes into courses. At Curtin, the greatest success has usually been to allow ideas to work through the community and to be adapted to suit differing professional and discipline needs.

Strategies for Accelerating Change

Based on a growing awareness of the importance of the Course Experience Questionnaire (CEQ) and the Graduate Destination Survey (GDS), the University Quality Office undertook a survey of over one thousand employers of Curtin graduates in 1995/6 and again in 1998, to provide more meaningful data on the strengths and weaknesses of graduates in employment. Feedback interviews were also held with selected groups. The findings showed that Curtin graduates were highly regarded with excellent knowledge skills, teamwork and acceptance of responsibility but generally had poor communication skills. More importantly, the Graduate Attribute Survey (GAS) was used as a focus for discussions with Schools about how to review their courses to ensure such skills were being included.

A further strategic impetus was provided through the Curriculum Enhancement Project that undertook a university-wide Study of Generic Attributes in the Curtin Undergraduate Curriculum (1999). The study found that many Schools had already begun to change their courses to include the

coverage of graduate attributes, both in the identification of the appropriate attribute and in the assessment of them. The role of the professional bodies within a university such as Curtin cannot be overlooked. A very high proportion of Curtin courses are professionally oriented and subject to professional accreditation. The movement among such bodies to require courses to include broader 'industry-related outcomes, personal skills and attributes in students' has often been the force for change. The Australian Institute of Mining and Metallurgy, the Institute of Chartered Accountants in Australia, the Nurses, Teachers, Physiotherapists, Pharmacists Registration Boards, and

"...many Schools had already begun to change their courses to include the coverage of graduate attributes..."

the Institute of Engineers. Australia have made major contributions to the change process. Every professional course has an element of practical workplace assessment that plays a major part in the transfer of skills and learnings between university and the world of work.

Terminology

One aspect of this discussion that causes great confusion is the different terminologies that are used. *Generic skills, graduate skills, graduate attributes, graduate qualities, graduate capabilities, professional skills and employability skills* are currently used though each represents a slightly different philosophical positioning and attention to outcomes. Curtin has used 'graduate attributes' in its Teaching and Learning Plan though that term is not fully accepted by industry.

In the ATN Report *Generic Capabilities of ATN University Graduates* (2000), the authors note that almost any combination of the nouns and adjectives can be taken as synonymous. What is central to the understanding is that the attributes are not specific to any distinctive knowledge, language and tests for truth that constitute a discipline; their development rests on the specific provision to foster them, albeit within the context of disciplinary knowledge.

As a member of the ATN universities, Curtin was a partner in the DETYA funded project to look at how the universities were embedding graduate qualities within their curricula and how students might report their own achievement. The basis for the project lay in providing examples from across the universities where pilots were being undertaken in major curriculum changes and staff development activities. The modules provide a staff development resource to assist staff to review and revise course curricula in order to foster generic capabilities in a more systematic manner.

Good Practice in Planning a Learning Framework for Generic Skills

At Curtin, the most thorough engagement with the complex staff development and curriculum changes has occurred in the Curtin Business School. CBS is the largest of Curtin's Divisions with a significant international enrolment and extensive partnerships with overseas providers. In 1998, following advice from its external Advisory Committee and input from several of the related professional bodies in Accounting, Business Law, Information Systems, Finance, Management and Marketing, Valuers and Banking, a Task Force was established to develop the Integrated Professional Skills Project. Members of the Task Force included CBS staff, staff from the Library and the Centre for Educational Advancement, students, former students and employers. The task was 'to enhance the professional skills and employability of CBS graduates by integrating the teaching and assessment of key professional skills into the 23 majors of the Bachelor of Commerce degree'. The timeframe was three years to develop the skills, review and revise the curriculum, assist staff in the development and determine how the skills were to be assessed.

The Task Force agreed on a set of generic skills that they chose to call 'Professional Skills'. They included: communication (including writing, speaking out, and presenting), computer literacy, information literacy, team

working (including time management) and decision-making. Each skill was represented by an icon making it easier for both staff members and students to identify which skills were being dealt with in the unit and how each might be assessed. The interim report of the Task Force (1999) became part of the ATN Report to DETYA as one of the illustrative case studies and is available at <http://www.ct.uts.edu.au/Curtin.commerce.htm>. As the Task Force recognised, the entry skills of students were fundamental to what could and should be done in the early stages of a degree course. Deficiencies needed to be rectified in the early semesters of study or the students would not perform to their potential throughout their university studies. The emphasis on communication, information and computer skills in the core semester was supported by evidence from the ACNelsen survey of employers (1998). Deficiencies in understanding of grammar and syntax, lack of knowledge of style of writing in a business context and lack of skill in making oral presentations were widespread among the very diverse student body of local school leavers, VET transfer and international students. Among the School's twinning partners the problems were equally varied.

For each skill, staff members were provided with a rationale for the skill, how the skill could be addressed, what outcomes could be expected, appropriate assessment of the skill and a set of strategies for guiding the review of the staff member's unit. Curriculum writing teams were developed for each area, the whole course mapped against the skills, gaps identified, and modifications to the skills list, where appropriate, could be considered.

Staff development teams were also established to assist in the process. The timeframe for the conceptualisation, planning, course mapping and re-writing was difficult to maintain.

Few areas met the first year targets. Gradually, the use of the icons has been a major factor in helping overcome resistance. By 1999 over one thousand students were participating in the Professional Skill program in the common core semester, and by 2002, all incoming students were involved in the program. The process was greatly facilitated when the Graduate School of Business took to the task as part of the Equis accreditation process.

helping overcome resistance. By 1999 over one thousand students were participating in the Professional Skill program in the common core semester, and by 2002, all incoming students were involved in the program. The process was greatly facilitated when the Graduate School of Business took to the task as part of the Equis accreditation process.

Assessment

A Professional Skills Portfolio (PSP) approach is being used to develop, assess, document and showcase students' professional skill development over the three-year undergraduate program. Curtin is looking at the electronic versions of the portfolio used by its partners University of South Australia and Queensland University of Technology. Information Systems has developed a local version though it lacks interactivity. Much remains to be done to assist both teaching staff and students in the use of the PSP.

Within the units, the icons guide students as to which of the skills is being developed and assessed. All units in the common core semester allocate at least 5% of the total marks to achievement and demonstration of the professional skills component.

International Application

In 2001, the School of Accounting responded to a request from a twinning partner at SPACE, Hong Kong to implement special provisions of the professional skills, in writing and speaking out. Peer assessment was used together with consensus meetings and lecturer feedback. The students were invited to evaluate the effectiveness of the learning methods. Responses showed significant increases in perceptions of both skills and highlighted positive personal outcomes. Students also found the experience interesting and useful socially in terms of friendships gained, all of which they would find useful in their careers.

Dissemination Across the University

The lessons learned through the CBS experience have proven valuable to the other teaching areas at Curtin. Schools such as Biomedical Sciences have taken the model further, adding such skills as Practical Competence and Awareness of Issues Affecting Health Science Professionals (see the website <http://humanbiology.curtin.edu.au/hb133/getready.htm> for an example). Curriculum mapping has assisted staff members to identify the gaps. The use of icons has been a major factor in assisting teaching staff to think through the embedding of professional skills within their courses. ■

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PROFESSOR PETER MCPHIEE
President, Academic Board



and

PROFESSOR CRAIG MCINNES
Director, Centre for the Study of Higher Education, The University of Melbourne

THE UNIVERSITY OF MELBOURNE RESPONSE TO THE RECOMMENDATIONS OF BUSINESS/ HIGHER EDUCATION ROUND TABLE PAPER ON: 'ENHANCING THE LEARNING & EMPLOYABILITY OF GRADUATES: THE ROLE OF GENERIC SKILLS'

As at other universities, there has been at the University of Melbourne the development of attributes statements as required by DEST reporting processes: 'generic skills' are of central importance among those attributes. The development of processes for gauging and monitoring whether attributes are in fact developed by courses is, however, far less advanced. This response addresses ways in which the University is seeking to develop these processes.

Developing the 'Attributes of the Melbourne Graduate'

In 2001 a series of statements of 'Attributes of the Melbourne Graduate' was developed, and adopted by the Academic Board: a generic statement, and statements specific to Bachelors, postgraduate coursework, Masters by Research, and PhD graduates (the first of these statements is attached). These desired attributes include both the relevant knowledge and skills in a particular discipline or professional field and a range of generic skills and attributes necessary for graduates to be able to contribute effectively to their communities wherever in the world they choose to live and work.

In 2001-02 all subject coordinators were required by the Academic Board to formulate generic skills outcomes statements aligned with these desired attributes.

There is now a quality assurance imperative that the Academic Board develop a strategy whereby the acquisition of graduate attributes may be monitored rather than simply articulated as desired outcomes.

There are several existing surveys which provide valuable quantitative evidence of student perceptions of their generic skills. Among them are the:

- University of Melbourne Quality of Teaching questionnaires
- Course Experience Questionnaire
- Postgraduate Research Experience Questionnaire
- Melbourne Graduate Survey

All of these, of course, are limited to student perceptions of the value of their education in developing skills rather than furnishing evidence of this development.

There are fewer existing tools which provide evidence of external perceptions of whether Melbourne graduates have appropriate attributes. These are nevertheless valuable, and include:

- Employer surveys and advisory groups
- Reports from professional accreditation of courses
- New PhD examination report forms which request external examiners to address the generic as well as discipline-specific qualities of theses.

Other universities

Concern with the development of generic capabilities of students is most developed in the Australian Technology Network (ATN) universities, where there is a collaborative project involving the five ATN members. The process is particularly developed at RMIT, QUT and the University of South Australia. The Business/Higher Education Round

Table paper on *Enhancing the Learning and Employability of Graduates: the Role of Generic Skills* specifically refers to the work of the ATN as 'best practice' to be encouraged across the sector. We have reservations about an over-emphasis on the professional roles of graduates and the potential for an incremental shift to this competency-based approach to higher education.

Current Activities at Melbourne

The University of Melbourne prefers an approach similar to that of the University of Queensland, where the embedding of graduate attributes in curriculum design, description and outcomes, and assessment practices, will be linked to rolling course reviews. We believe that the monitoring of the development of graduate attributes is best undertaken at the level of matching attributes and assessment practices.

The Teaching and Learning Quality Assurance Committee (TALQAC) of the Academic Board uses its annual Teaching and Learning Performance Reviews to ask faculties to articulate the ways in which their courses develop generic skills. Among those questions posed to faculties during the 2002 visits were:

How has the implementation of the statements of generic skills, developed for each subject and course at the request of the University's Academic Programs Committee affected teaching and learning in the Faculty? For example, is closer attention now paid to the actual design of teamwork tasks undertaken in classes? Have the lists of undergraduate and postgraduate attributes been helpful here? How does the faculty evaluate whether students are developing these generic skills from the course? Have subjects and course descriptions all been updated to include generic skills statements?

Student focus groups were asked:
Are you aware of the attributes to be acquired by students of your degree program and do you think you are developing them?

- The 2003 review of assessment across the University by TALQAC will consider recommending that all course (and, where appropriate, individual subject) descriptions address the ways in which and to what extent specific attributes are developed by particular assessment tasks.
- Examination report forms for Masters by Research as well as PhD theses may request examiners to address the demonstration of salient attributes.
- The University's Teaching and Learning Management Plan (attached) lists the achievement of relevant targets in strategies 2 and 3. ■



ROBBIE COLLINS
Lecturer Graduate Attribute Programs

ALISA PERCY
Lecturer Learning Development

BRONWYN JAMES
Lecturer Learning Development
University of Wollongong

Outline what University of Wollongong has done in relation to:

“best practice examples of universities linking their teaching and learning initiatives in respect of generic skills to strategic planning, and approaches to assessment and curriculum design”

and

“an appropriate learning framework for generic skills”

1. Overview

An organisational culture change associated with student development of graduate attributes is under way at the University of Wollongong. Part of this change is an ongoing discussion of the meaning of 'graduate attributes'. 'Graduate attributes' is the term identified and adopted by the University of Wollongong in association with 'generic skills' development. The following paper identifies the related organisational culture change in terms of the particular policy framework and the learning and teaching framework operating at this University. The paper also outlines some practical examples of the ways in which graduate attributes are being embedded into the undergraduate curriculum. A more extensive mapping of examples and strategies for embedding graduate attributes in the learning of students is currently being undertaken by a cross faculty team of academics. At Wollongong, the overarching paradigm is that ownership by academics of the process of development and implementation of the attributes is a critical step and that this step is tied in with a re-examination of the learning and teaching process across the university.

2. Policy framework

2.1 Strategic plans and support structures for graduate attribute development and implementation

The attributes of a University of Wollongong graduate are clearly stated in the *Strategic Plan 2002 - 2005* and their

attainment is identified as "a key measure of the University's achievement of its core functions." Graduate attributes are underpinned by a comprehensive set of 'tertiary literacies' encapsulating the widely discussed concept of 'generic skills' as well as a range of values, attitudes and professional capabilities intended to enhance students' learning and employability. 'Tertiary literacies', in University of Wollongong parlance, include academic, information, computer and statistical literacies and professional practices. Indeed, 'graduate attributes' and 'tertiary literacies' are often used interchangeably so that proactive development of tertiary literacies in students is seen as the means by which graduate attributes are attained. The two major strategies for such proactive development are curriculum integration of the tertiary literacies and the development of generic graduate attributes programs.

Supporting the *Strategic Plan* at policy level is the *Learning and Teaching Strategic Plan 1997 - 2003* (LTSP) in which a core priority is the provision of "an environment in which students become skilled in actively pursuing discipline-specific and tertiary literacies knowledge and critical understanding". Other Policies and Codes of the University support this priority and revisions of these documents of leadership are being considered at present.

Updating and layering of policy is a reflection not only of organisational changes in perception and implementation, but also of attempts to articulate policy in such a way that ownership can occur in practice.

Structures to oversee the implementation of tertiary literacies initiatives are identified in the LTSP in the form of:

- a framework of responsible bodies at different levels of the University academic hierarchy;
- support structures in the Academic Services Division which have matching missions through and across the University hierarchy to promote collaboration in "the design and implementation of curriculum elements aimed at acquisition of tertiary literacies and discipline specific skills." (LTSP, p.7)
- administrative process requiring that the graduate attributes/tertiary literacies be addressed in course approval and review, in subject proposals, subject outlines and Faculty Rolling Plans. Academics thus must consider how they are meeting the need for graduate attribute outcomes.

2.2 Issues and challenges

The issue at this university, as it is perhaps in most universities, is how to make policy implementation a meaningful activity and not merely a box ticking exercise for the various agendas set by University and non University hierarchies.

Nunan (1999:5) provides indicators for how to achieve a meaningful engagement with graduate attributes policy. He suggests that an institution's commitment to graduate qualities is characterised by "the extent to which curriculum design for courses is directed towards achieving a particular set of qualities, and the extent to which formal assessment and reporting (both formative and summative) are shaped by the qualities". Using Nunan's (1999:5) measures, Wollongong has made significant steps on the path to "commitment to graduate qualities". Policy and administrative structure work together to support curriculum design for achievement of graduate attributes. At the practical level, both curriculum design and assessment processes work towards supporting student acquisition of graduate attributes through curriculum integration and generic graduate attribute programs.

Promotion of the quality of educational practice

Strategy	Actions planned	Performance measure	Expected outcome/target	Officer responsible
Strategy 2 Embed the Nine Principles of Teaching and Learning in the educational practice of faculties, departments, individual academics and in the expectations of students	Use TALQAC reviews to facilitate faculties' evaluation of the acquisition of generic skills and graduate attributes.	TALQAC indicators <ul style="list-style-type: none"> • student and graduate perceptions of their acquisition of the attributes • employer perceptions of graduate attributes • questions of Faculties as to how they assess the effectiveness of the transfer of skills and attributes 	At least 75% agreement that attributes have been achieved in each course by students in Melbourne Graduate Survey (2 years out) Reports from each Faculty implemented by 2004 as part of OPR	Chair, TALQAC
Strategy 3 Ensure that modes of assessment are making an effective contribution to the quality and standards of learning outcomes	Establish a University-wide review of assessment and grading practices and how these relate to the quality of student learning. Share good practice about ways of linking assessment to generic skills and graduate attributes.	Completion of review	By end of 2003	Chair, TALQAC
		TALQAC report on findings from course reviews	University approach to the measurement of achievement of graduate attributes by end 2004.	Chair, TALQAC President, Academic Board

3. The learning framework

3.1 Curriculum integration

Wollongong's major graduate attributes strategy is curriculum integration. Policy and practice reflect the understanding that all students enter the university setting with diverse ranges of knowledge and experience, and that all students benefit from a developmental focus on skills acquisition inside their degree program from their first to final year. This focus, however, is intended not to be 'tacked on' via separate skills subjects. Rather, it is through the careful integration of skills development activities and resources within subject curricula to enhance students' learning and performance. By the end of first year, students should then be ready to develop those skills further to more sophisticated levels and expand their professional skills in order to be ready for employment by their final year of study, or, in the case of Research Graduates, to "build on the attributes associated with undergraduate and postgraduate coursework degrees and apply these to research-related contexts." (Strategic Plan 2002-2005)

This integrated and developmental approach described above is being achieved through partnerships involving faculty teaching staff and Academic Services including Learning Development, the Library and Educational Development. This partnership supports flexible delivery and student-centred learning approaches matching the integrated delivery of graduate attributes. These Academic Services support units facilitate a focus on learning and teaching across the university and newly appointed academic staff are required to take part in an Introduction to Tertiary Teaching aiding the achievement of student-centred learning and curriculum integration of graduate attributes.

3.1.1 Examples of initiatives aimed at integrating/mapping graduate attributes inside curricula

- A "curriculum-integrated information-literacy programme in the Bachelor of Nursing course at the University of Wollongong designed to assist students to learn how to become research confident by developing an ability to access and appreciate relevant research findings and, in time, apply these skills to their future clinical practice." (Shorten, A, Wallace, MC & Crookes, PA 2001).
- Design of an undergraduate Electrical Engineering subject to focus on team work. The subject centres on a team based project. Students are provided with explicit instruction and resources on team work issues, are provided with a number of opportunities to practice "team work", are assessed formatively and summatively on their team work and the products arising from that team work.
- In the Faculty of Law, reworking of subjects to identify means to scaffold graduate attributes through linking substantive and skills subjects over a number of years. Tertiary literacies and skills are linked through assessment, content and reflection.
- Top down review of curricula. In Commerce, for example, a mapping project sought to identify where and how Graduate Attributes were embedded, resulting in, at program level, a Bachelor of Commerce curriculum review, and at the Department School level, an Accounting and Finance Specialisation review.
- The development of a prototype website of best practice examples of teaching to achieve Graduate Attributes in seven of nine Faculties. In 2003, a cross Faculty group of Academics have embarked upon a project to "illuminate the Attributes of a Wollongong Graduate", intending to identify and make more readily available effective online and face-to-face teaching and learning strategies. This

group's discussion has as one of its central agendas the creation of broad ownership of the product of their research.

- The development of a computerised tool already at testing level by an Associate Lecturer for monitoring the achievement of graduate attributes in assessable tasks.

Each of these examples suggest a shift in the University's culture of teaching and learning. They provide evidence of a closing gap between policy and practice and evidence of involvement and ownership of the task at all levels of the university. That, the discussion of Graduate Attributes is being driven as much by those engaged in teaching as by those developing policy is most significant. Leadership support for such interrogation and the articulation of best practice on University websites suggest a desirable meeting of policy and practice. Support includes various grants and awards related to teaching and learning development at the University. Of interest here, for example, is the Educational Student Development Fund (ESDF). This is a set of grants awarded annually to individuals and teams of staff who have ideas for the development of teaching and learning. Since 1996, the ESDF has arguably allocated approximately 75% of its dollars to projects enhancing graduate attribute development in teaching and learning environments at the University. Certainly projects aimed specifically at Graduate Attribute development have been significantly rewarded in recent years.

3.2 Generic graduate attributes programs

The University of Wollongong also understands that not all courses have had the benefit of curriculum integration, and that there are some skills that can be learnt via institutionally implemented generic programs. These 'extra-curricula' programs correlate with the curriculum-integrated approach and are coordinated by a Lecturer, Graduate Attributes Programs, a position designed to coordinate both generic and discipline-specific programs in pursuit of Graduate Attributes.

3.2.1 Examples of generic graduate attributes programs

At present there are several different initiatives associated with Graduate Attributes Programs:

- The Introduction to Information Literacy (ILIP) which has been a compulsory supplementary program at the University since 1997. In 2003 ILIP has been extended to Postgraduate Coursework students and the ready acceptance of this rule change at Academic Senate suggests the success and recognition amongst academics for the Undergraduate ILIP. More importantly however, are Faculty initiatives which tie the compulsory program to the introduction and embedding of the graduate attributes. For example, Nursing requires completion of ILIP in the first two weeks of session in order that the next step in insuring students have the nursing specific information literacy skills they require to complete their studies and to step out into the world as registered nurses.
- An Introductory Statistical Literacy Module (which in at least one faculty is being adopted as a Compulsory Introduction for students).
- Basic Computing Self Paced Training.
- An Electronic Attributes and Outcome Portfolio (being developed under the guidance of Faculty Academics and the Careers Service).
- Collaboration between the Lecturer Graduate Attributes Programs and faculties where vocational outcomes are unclear to develop Internship models so students define vocational options and skills.

Despite their 'bolt-on' nature, successful implementation of these generic programs depends (as do the integrated programs) upon partnerships between faculty and support services. These generic graduate attributes programs are adjuncts to the strategy of curriculum integration in that they also facilitate the change in culture needed to embed graduate attributes in all parts of courses as well as providing some of the links to reflective learning processes. This means students are encouraged to use learning from all parts of their lives in the achievement of graduate attributes.

4. Conclusions

In conclusion, with regard to the teaching and learning of graduate attributes, over the past ten years the University of Wollongong has made considerable progress towards bridging the gap between policy and practice. This has been achieved through policy, structures and strategies geared towards appropriate curriculum design and assessment practice. While a gap still exists, it is evident that changes in organisational culture are occurring. ■

ENHANCING THE LEARNING AND EMPLOYABILITY OF GRADUATES



Introduction

As outlined in B-HERT's Position Paper on 'Enhancing the Learning and Employability of Graduates: The Role of Generic Skills' (Hager et al. 2002), there has been a recent upsurge in interest in the development of 'generic skills' in university graduates. Driven mainly by concerns about improving the employability of new graduates, it has focused on employer satisfaction with graduate attributes. As the DETYA-commissioned study Employer satisfaction with graduate skills found, chief areas of employer concern relate not to disciplinary knowledge but to more generic attributes such as "the capacity for independent and critical thinking", "creativity and flair", communication (especially oral communication) skills, interpersonal skills and an understanding of business practice' (AC Nielson Research Services 2000).

To address these concerns, Victoria University Academic Board established a Core Graduate Attributes Working Group in April 2001, to oversee the development and implementation of an agreed set of core graduate attributes (CGAs) and to develop a process for including evidence of these attributes in the student portfolio. The Final Report and recommendations of the Working Group (Gabb et al. 2002) have been adopted by Academic Board and now constitute University policy.

The learning framework informing the development of the CGAs derives from Ernest Boyer's four complementary

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University of Wollongong *Strategic Plan 2002-2005* <http://www.uow.edu.au/about/stratplan/>

scholarships of discovery, integration, application and teaching (Boyer 1990). Boyer's focus was on the academic working in a university – where the scholarship of discovery is what goes by the name 'research', integration entails making connections within and across disciplines, application implies a focus on professional practice and 'real life' problems, and teaching focuses on the transmission, transformation and extension of knowledge. But, as Candy (2000) has argued, the same four scholarships are useful for how we conceptualise the activities of knowledge workers outside the university. Given that our graduates will be knowledge workers of one form or another in their respective careers, Boyer's four scholarships can also be used as a conceptual framework for the preparation of our graduates.

Core Graduate Attributes

Using Boyer's framework in conjunction with information from employers, Victoria University has adopted five core attributes as essential for all our graduates. A graduate of the University should:

- (i) be an effective problem solver in a range of settings, including professional practice
- (ii) be able to locate, evaluate, manage and use information effectively
- (iii) communicate effectively as a professional and as a citizen
- (iv) work both autonomously and collaboratively as a professional
- (v) work effectively in settings of social and cultural diversity.

All five CGAs address the issue of employability – but not exclusively so. They are also designed to help our graduates function effectively as students and as citizens. This is especially evident in the CGA (v) – A Victoria University graduate can work effectively in settings of social and cultural diversity – which recognises the rich combination of backgrounds within the University community and encourages a deeper appreciation of individual, group and

human heritage. It implies a capacity to work effectively in diverse settings and to relate well to people from diverse backgrounds. It is the University's policy that graduates should gain a greater familiarity with different cultural settings and the processes of cultural contact in a globalising world, including an appreciation of the value of their personal cross-cultural resources.

In developing the five CGAs, Victoria University is adopting a curriculum integration model within all undergraduate courses. This approach is based on the development of CGAs in a disciplinary context within existing subjects rather than in isolation as additional subjects. Where stand-alone modules are used to support the development of CGAs, they need to be linked strongly and explicitly to other subjects in the course in which they are embedded. Formal assessment tasks will be designed, within the context of the particular discipline, to assess student achievement of CGAs across an entire course and throughout the whole degree program. Criteria for the satisfactory achievement of each CGA will be clearly defined, with input where appropriate from professions and professional bodies. The minimum level defined by these criteria must be achievable by most students and achieved by all graduates. To enable weaker students to reach the defined minimum level, funding will be made available to provide necessary intensive programs.

We are now at the stage of 'mapping' our existing curricula against the five CGAs of each undergraduate course. This will be carried out during the first semester of 2003 by course teams, who will need firstly to interpret the various CGAs in the context of their particular discipline. For example, being an effective problem solver [CGA (i)] will mean something different for an engineer and a social worker. Then the teams will focus on learning and assessment activities and 'map' the CGAs that are being assessed by each one. The gradually rising level of skills required by the sequence of assessment tasks will be documented using a template of generic criteria to be agreed across the University. During this process, minor curriculum modifications will be made immediately where appropriate, and any major changes deemed necessary will be prepared for later implementation.

Business and Law

In many cases the mapping exercise will document existing good practice. For example, in 2001/2 the Faculty of Business and Law launched a pilot Faculty-wide certification program which requires students to do a set of skills deemed essential for business graduates. Identified essential skills encompass Generic skills (inter-personal skills, presentation skills, entrepreneurialism, and analytical and/or strategic skills), Business skills (business professionalism, and global and cross-cultural awareness), and Industry-specific skills (industry awareness and networking, preparation for work, and work ethic/experience). Specific examples of activities were provided as suitable indicators for each skill category, intentionally including existing course capstone subjects, particularly relevant course subjects (such as Business Communication, Interpersonal and Organisation Negotiation, Innovation and Entrepreneurship, and Business Ethics), as well as existing programs offered by the Cooperative Education Unit and a variety of existing extra-curricula programs such as Young Achievement Australia and commercially-guided entrepreneurial ventures like *The Practice Firm*. The pilot program targeted final year students who had completed Cooperative Education (industry placement), and is currently being reviewed with a view to further integration into the Faculty- and University-wide portfolio scheme later this year.

Human Movement, Recreation and Performance

Within the Faculty of Human Development, the School of Human Movement, Recreation and Performance has developed a Career and Professional Development Program as part of the core curriculum in undergraduate (and some postgraduate) courses. The program incorporates career placements linked to career development curriculum. Students completing a Recreation Management course, for example, complete the following Career and Professional Development subjects during the three years of their course:

First Year
Recreation Career Dev't 1. (1 hour class x 12 weeks) & Recreation Career Placement. (70 hours)
Second Year
Recreation Career Dev't 2. (2 hour class x 12 weeks) & Work Integrated Learning subject
Third Year
Recreation Career Dev't 3. (2 day workshop) & Recreation Career Placement. (175 hours)

After each placement, students are required to submit a substantial business report, in which they are required to analyse competencies/generic skills that were used on the placement and to provide evidence that they have achieved these competencies in industry. The competency section of the report is directly transferable to a resume. Students find and apply for their own placements on the basis of progressive Career Development classes, which prepare them, inter alia, to communicate their relevant generic skills to prospective employers.

The Curriculum

The Career Development curriculum is based on a corporate career-planning model encompassing: self-awareness, opportunity awareness, decision-making and goal-setting, and formulation of action plans. Curriculum content is sequential, with subjects graded to encourage students to devote appropriate time and energy to this important area. Classes are structured to encourage students to network between themselves and to develop a career pastoral relationship with the lecturer. The experience of developing desired generic competencies is reinforced during Career Placements, where students are required to analyse and to provide evidence for the skills they have applied.

The Career and Professional Development Program consciously incorporates in its core course curriculum development the five CGAs the University has targeted. The structure of the Program provides students with the opportunity to demonstrate individual achievement of these attributes through a combination of conventional academic certification (subject grades), incremental portfolio-building over the length of the course, and the Career Placement reports analysing and providing evidence of CGA application in the workplace.

This accords with the University's policy of encouraging each student to build up a compendium of evidence for the achievement of each core attribute. Following the Working Group's recommendations, much of this evidence will be student work prepared for formal assessment tasks in the subjects of the student's course (and therefore already validated), but it may also include certificates of achievement for non-credit modules and scores obtained for relevant non-course tests, such as the Graduate Skills Assessment test. The portfolio may also include work prepared by the student outside of formal University studies, but this would not be validated by the University.

Student portfolio activities at first year level will lay the foundation for an understanding of individual career development in the context of growing self-awareness. They include a detailed explanation of the five CGAs and provide direction for what kinds of evidence to include in a portfolio. In later years, exercises for clarifying their values in relation to life and work planning enable students to update and expand the evidence categories to meet professional/industry requirements and their own emerging sense of career direction. The emphasis on self-awareness and opportunity awareness distinguishes this approach from portfolio models which are simply a collection of evidence.

In addition, it is proposed that, on the basis of the evidence in their portfolio, each student be required to draft a two to four page summary statement targeted at potential employers, summarising the student's development of each of the CGAs over the whole course. Completion of a satisfactory portfolio summary will become a requirement for the completion of all undergraduate courses. As with other aspects of CGAs, the summary statements will be assessed – not as evidence of achievement of the CGA, but for its effectiveness in summarising the student's development in each attribute. The purpose of this task is to encourage students to reflect on their personal development in the area of CGAs, and on the evidence for this that they have accumulated in their portfolios.

Outcomes

In moving in this way to a more systematic and explicit approach to developing generic skills, we believe that we will significantly enhance employment outcomes for Victoria University graduates. In addition (as I have implied in connection with the CGA addressing social and cultural difference), in presenting education not only as an individual asset but also as something contributing to the collective good, we believe that we will significantly enhance citizenship outcomes for our graduates. ■

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ENHANCING LEARNING AND EMPLOYABILITY OF ENGINEERING GRADUATES AT CENTRAL QUEENSLAND UNIVERSITY: A TEN-YEAR PROJECT

Background

The Bachelor of Engineering (BE) program at Central Queensland University (CQU) seeks to prepare professional engineers for work in industry. The BE has been restructured from a traditional engineering program with a strong focus on discipline content knowledge to a program where students and staff are committed to the development of generic (or professional practice) skills and professional identity required of practising engineers. This change is the result of more than ten years of collaboration between Faculty staff, students, industry, schools, and the profession, and an ongoing process of review and quality improvement.

In the early 1990s, the BE program, along with similar programs at other institutions, experienced difficulties with poor student motivation, high attrition and concerns expressed by employers about the lack of generic skills in graduates. One response at CQU was the introduction of a four and a half year BE Co-operative program (Co-op), introduced in 1994 to improve students' transition from study through to work, to improve development of professional practice learning outcomes, and to actively engage students and responsible learners in the teaching/learning experience. Co-op students complete two six-month periods of paid, supervised and approved work, one being the first half of Year 3 and the other the latter half of Year 4.

PRUE HOWARD,
DAVID JORGENSEN-JAMES
Goldston Faculty of Engineering and Physical Systems

FONS NOUWENS
Division of Teaching and Learning Services

Employer comments that graduates lacked key generic skills such as written and verbal communication, teamwork and problem solving skills was commonplace. Further to this, staff also became involved in research into the development of generic or professional skills.

One of the issues was the apparent "tick a box" approach to learning taken by students. Students were passing individual courses, and then failing to integrate that knowledge into further learning. This was apparent in both technical and generic knowledge and skills areas. The lack of integration of content, material and skills development, along with lack of context for learning, was identified as a major problem. From 1994 onwards, staff of the faculty were researching alternative methods

of developing these attributes and became involved in the 1996 Institution of Engineers Australia (IEAust) *Review of Engineering Education*.

Based on this, the Faculty restructured the BE into a hybrid Project-Based Learning (PBL) format, which was introduced in 1998. This change sought to develop Professional Engineer Generic Attributes that were ultimately defined in the *IEAust Manual for the Accreditation of Professional Engineering Programs* (1999). The PBL approach resulted in a restructure of the traditional engineering program that required students to take six to eight courses in each term. The hybrid PBL course structure requires that in each academic term students take:

- two 6-credit unit courses that may follow a 'traditional' pattern of technical lecture/tutorial courses
- one 12-credit unit 'project course' that uses a PBL approach to develop technical and generic skills in an integrated and contextualised manner.

The PBL approach has been progressively introduced through the year levels in the BE and BE Co-op programs since 1998, with the first cohort completing the program in June 2002. Two innovations adopted to support the PBL approach to the development of generic skills are an engineering induction program and provision of unlimited access Project Studios for students to work in collaboratively.

LEARNING AND TEACHING GENERIC SKILLS

The BE Co-op program

The Co-operative Education program has had a major impact on learning and teaching. Students develop an appreciation of the context of professional practice that informs their responses to both PBL and traditional courses on return to on-campus study. With exposure to work as a professional in engineering organisations, students begin to see themselves as engineers, think like engineers and act like engineers. They become more motivated to learn, they take responsibility for their learning, and approach learning with a more holistic perspective that promotes development of generic attributes and professional identity. By immersing students in professional practice, work placements provide an essential integrative experience of generic skills that is missing in many undergraduate programs (Holmes 2000).

An increasing number of students complete work placements outside Australia and benefit the program by broadening perspectives of cultures and engineering practice.

Project Based Learning

Education literature has, for at least twenty years, agreed that project-based learning has many advantages. It engages students, improves student motivation, reduces attrition and leads to deep, contextual learning (Biggs, 1999). Collaborative PBL projects provide an integrating context for practising and developing generic skills alongside developing technical knowledge. It also supports holistic development of professional identity.

The PBL process is particularly important for development of generic graduate attributes as it provides students with a group of peers with whom they can share experiences, reflect on these experiences, and begin to articulate their strengths and weaknesses in a safe learning environment that encourages further learning. Project teams meet regularly with their supervisor who facilitates the learning process and encourages students to develop responsibility for their learning. The BE is designed to promote development of the

specific generic graduate attributes defined in the *Manual for the Accreditation of Professional Engineering Programs* (1999), summarised as follows:

- ability to apply basic and advanced discipline knowledge;
- ability to communicate, work in teams and solve problems;
- ability to apply critical, sustainable and systems thinking;
- commitment to lifelong learning and to respond professionally and ethically to social, cultural, global and environmental issues.

As a hybrid PBL program, 50% of the academic program time is allocated to project courses. This program structure provides for systematic development of generic attributes through:

- a one-week Faculty induction program to develop basic teamwork and communication skills and to prepare for a collaborative and formative learning environment
- early PBL project courses which involve students in a sequence of short projects to further develop frameworks for thinking about communication, teamwork and other generic attributes and provide students with opportunities to practice and improve skills
- traditional content courses which provide a structured introduction to basic science, mathematics and engineering and to specialist discipline knowledge and skills

“One of the issues was the apparent “tick a box” approach to learning taken by students. Students were passing individual courses, and then failing to integrate that knowledge into further learning.”

- later PBL project courses which involve more complex and larger projects that require higher levels of specialist discipline knowledge and skills. Students extend specialist discipline knowledge and skills in conjunction with generic skills and professional identity.
- final year projects which provide opportunities for further development and for holistic, formative and then summative assessment of each student's achievement of their generic attributes.

The PBL approach was adopted from 1998 not only because the Co-op program required early development of employability and generic skills, but also in response to changes influencing engineering education and the engineering workplace. These include a shift away from mathematics and sciences in high school education, the move to mass education and increasing diversity of students' backgrounds, and changes in the workplace (e.g. multi-disciplinary teamwork, need to address social, cultural and environmental issues, automation of many analytical tasks in the engineering workplace, and disappearance of middle levels of management that once assisted neophyte engineers to make the transition from study to work (Sennett 2001)). The report *Changing the Culture: Engineering into the Future* (1996) highlighted fundamental problems with the traditional course structures. These included rote learning, excessive workloads, closed book examinations, fragmented knowledge, poor generic skills and very poor understanding of professional identity.

Developing positive learning relationships

The PBL program involves students early and heavily in team projects. The Faculty arranges a one-week induction process for all students in the first week of their first term of study. This induction seeks to break down barriers to interaction, both between students and staff and among the students.

Many students view education as a competitive process; and so it is important to quickly develop a collaborative learning culture. The program also requires students to take responsibility for their learning, and to develop a productive relationship with project supervisors, to see them as people who can help them learn, not as teachers who stand in the way of a 'good result'.

Project studies

To support PBL activities and to promote development of a supportive learning environment for both PBL and traditional courses, the Faculty provides students in each year of the program with a separate 'Project Studio'. These studios are places where project teams collect resources and work together and individuals work alone on projects or private study. They support learning by providing:

- a well-resourced and secure space where teams can meet and engage in project work, and leave products of that work for a period of time
- a comfortable space where students can get to know and understand each other better, to support development of communication and teamwork skills required in projects
- a safe, shared space where students can ask peers (and teaching staff) questions and seek support, encouraging collaborative learning
- opportunities for teams to compare notes and learn informally about each other's projects.

ASSESSMENT AND CURRICULUM DESIGN

Traditional norm-based assessment develops a competitive environment in which student performance is measured, one against the others. It is difficult to encourage collaboration in these circumstances. Such an environment is dysfunctional in the workplace (Scott & Harter 2002).

As a result, the Faculty developed the practice of criterion-based assessment that defines clear standards of performance required in student work and measures individual student performance against these standards. This approach promotes productive collaboration by encouraging students to work together to learn, as the projects are the learning environment, not the assessment tool. It also promotes reflective learning and teaching by encouraging students to not fear exposing their difficulties and weaknesses to peers and project supervisors so that learning can proceed quickly and skills are developed with the least frustration.

Assessment practice emphasises formative development and building of professional identity. Generic skills and personal and professional identity develop unpredictably. Students learn from experience and there may be latent periods between experience and insight (HEC 1992). Reflecting upon and learning from failure can be much more powerful than learning from success. PBL projects and Co-operative experiences provide vehicles for development of generic skills and professional identity, which can then be assessed. The practice of assessment of outcomes from student projects has developed with emphasis placed on formative assessment of the products and processes of projects to

achieve required outcomes, and holistic summative assessment of individual portfolios, including peer and self-assessment, use of journals and reports, and interrogation of metacognitive and reflective processes. Emphasis has moved to assessment of what students learn from project experiences, and how they reflect upon and express this learning.

Work placements are a major element in the development and assessment of professional practice learning outcomes in the BE-Co-op Program. Assessment is based on employers' evaluation of student performance, a weekly reflective journal kept by students, and student self-assessment of the work placement experience. The criteria for evaluation include IEAust Continuing Professional Education requirements for graduate engineers. Thus students practise application of the continuing education requirements of their professional body before they graduate.

A STRATEGIC RESPONSE

The CQU strategic vision beckons acknowledgement as a leader in learning and teaching, and for promotion of development that meets the needs of its Central Queensland communities. The BE Co-operative program, through its responsiveness to the needs of students and industry, and as a result of persistent support from teaching staff

“fundamental problems ... included rote learning, excessive workloads, closed book examinations, fragmented knowledge, poor generic skills and very poor understanding of professional identity”

committed to preparing students for practice as professional engineers, has been an important element in building credible acknowledgement that the University can achieve its vision and demonstrating adherence to its positioning statement: 'Where students come first'.

The BE Co-operative program has established a reputation for excellence with employers, schools and continuing and prospective students. Graduate employment rates are very high, and employers routinely offer the Faculty more Co-op work placement positions than can be filled with the number of students available. First year entry requirements for the BE Co-operative program are high compared to other CQU programs. Ongoing development of the program and application of better and more flexible pedagogical approaches has improved student retention rates, assisting more students to achieve their aspirations.

The program supports learning community values outlined in the CQU Strategic Plan. The development of the BE Co-operative program demonstrated commitment to the CQU Teaching and Learning Plan, providing examples of good teaching as defined in the Plan, and of the development of qualities, skills and attributes that CQU undertakes to develop in its graduates.

CONCLUSION

The BE Co-operative program combines traditional lecture/tutorial methods of teaching discipline content; a PBL approach that develops both technical knowledge

and generic skills and a professional attitude, and the industry placement that introduces learners in a supportive way to professional practice. These three elements provide a balanced program framework that gives appropriate weight to all three important areas of cognitive interest (Habermas 1996)-technical knowledge, practical knowledge and the integrating knowledge of personal/professional identity-that are critical to effective professional practice.

International and Australian reaccreditation, by the Institution of Engineers Australia was successfully achieved in 2002. Following the development of the Accreditation Submission document, auditing the structure and operations of the program and in the light of feedback from the IEAust, students, industry and staff, the program is being reviewed. The audit of generic graduate attributes developed during the accreditation process is being used to prepare a more refined, explicit and structured curriculum framework for generic graduate attributes through knowledge, skills and attitude development that articulates basic expectations for these in Term 1, Year 1, and provides a framework of increasing complexity for these attributes through to final year capstone projects.

The effectiveness of the program in developing generic graduate attributes and employability can be judged by high graduate employment rates and low student attrition. ■

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GRADUATE ATTRIBUTES AT:



ASSOCIATE PROFESSOR LORRAINE MARSHALL

Head, Student Learning, Teaching and Learning Centre, Murdoch University

Introduction

Murdoch University has a strong commitment to ensuring that graduates have the generic skills and attitudes required in the workplace. The university has demonstrated this commitment by developing a list of attributes and by implementing a university wide process to ensure their integration into the curriculum of all degree courses. The university is using Graduate Attributes to help give effect to the teaching and learning components of its strategic plan, and has embedded a requirement to report on Graduate Attributes into the academic planning and School review processes. For example, one of the terms of reference for School reviews requires that Schools 'review how graduate attributes are addressed in the majors offered'¹. The focus is increasingly on Schools as the primary vehicle for curriculum review and development. The alignment of this Graduate Attribute process and the University's strategic planning is an iterative and developing process, but the School reviews are pivotal to ensuring quality in teaching and learning across the university. In addition, the results of these School reviews and the data collected for them on Graduate Attributes will ultimately feed into the forthcoming Australian University Quality Audit.

In 2000 Murdoch adopted a set of seven Graduate Attributes (Table 1) and a process to map these within core units across the university. The attributes are similar to those developed in many other universities in that they include both the skills and values deemed important for the employability of graduates. The skills component of the list includes those skills that students require while studying as well as the professional skills required in the workplace. Murdoch is the only Australian university to include interdisciplinarity as a Graduate Attribute, and this combined with social justice reflects the University's strategic plan and the particular nature of study at Murdoch University.

The university wide Graduate Attribute project is led and coordinated by a full time senior staff member of the Teaching and Learning Centre (TLC) and to date has been resourced by Teaching Development Fund.

Graduate Attributes in first year foundation units

For many years Murdoch University has developed the generic skills of its beginning students through foundation units which are compulsory for all first year students, and are designed to introduce students to University study (generic learning skills) and to provide them with a broad perspective (interdisciplinarity). Thus, these units provide a natural home to kickstart the development of several of the Graduate Attributes required of graduates. In 2001 a review of foundation units² reported on the strong contribution these units make to the development of the Graduate Attributes, but recommended that excessive reliance not be placed on the units for this purpose, with their primary purpose being the promotion of learning skills and the development of the distinctly Murdoch experience of interdisciplinarity. The Graduate Attributes process instituted at Murdoch University has provided a clear strategy for ensuring that the generic learning skills and the understanding of interdisciplinarity that students develop in foundation units are scaffolded and further enhanced throughout the degree program.

Mapping the Graduate Attributes in units

The University requires that all degree programs (majors) record how the objectives, content, learning activities and assessment of each core unit within each major map to the Graduate Attributes. The rationale for mapping at the unit level is to avoid duplication of work by different majors using the same unit. Initially the mapping was completed by pencil and paper using grids. However, this system made it difficult to collect consistent and meaningful information on a university wide basis, did not facilitate the documentation of changes and improvements for the quality auditing process, and did not provide easily accessible and retrievable information for the curriculum renewal of individual units and majors. To overcome these shortcomings a web-based mapping tool was developed following consultation with academic staff from across the University. This tool and its application are one of the most innovative features of the Graduate Attributes process at Murdoch University.

The web based mapping tool allows individual unit coordinators to input their unit objectives, content, learning activities and assessment (as required by Academic Council). Once entered these are then mapped to the seven attributes. Some of the Graduate Attributes are divided into

sub attributes (Table 1) for ease of mapping and to ensure that the data collected has the potential for curriculum redesign. The tool also produces reports graphically and as text on individual units or whole degree pathways. In other words, the maps of individual units that comprise a major are collated graphically and as text to provide an aggregated picture of how the attributes are addressed across the three or four years of each undergraduate degree. These study pathway reports are crucial for the curriculum development process. An added feature of the tool is that unit coordinators can align their unit objectives to the content, teaching activities and assessment. The tool also has the potential for further development for unit design, and at a later date as a web based self access tool so students can view and plan their own Attribute development. A demonstration of this tool is available on: <http://www.tlc.murdoch.edu.au/gradat/>.

The mapping of individual units using the tool is being driven by the need to provide information to School reviews. In areas where high staff workloads have slowed the Graduate Attributes process project assistants enter the key characteristics of each unit into the mapping tool and then teaching and learning staff meet with individual coordinators to assist them map and align their units. These consultations between unit coordinators and Teaching and Learning staff have provided a valuable opportunity for conversations with individual academic staff about their units. Although time consuming, this process has increased the acceptability of the University's Graduate Attributes agenda and has been effective in a number of ways including:

- Most coordinators who have completed the mapping of their units have been positive about the process and about the mapping tool, even those who were initially resistant have quickly warmed to the process.
- Many staff have been resistant to the process because it is seen as an accountability driven process, so in working with the mapping process it has been important to find a balance between the university's need for accountability and using the Graduate Attributes to enhance teaching and learning.
- Unit coordinators have been grateful for the assistance and are planning to revamp their units as a result of the conversation about the design of their units. Many staff adequately develop the disciplinary content of their unit but many routinely neglect to show in their study materials where and how they teach the attributes. This focus at the unit level has provided many staff with ideas about how to rewrite their materials and how to construct unit objectives and learning outcomes, and has helped to ensure that unit objectives are aligned with assessment.
- The potential for the mapping tool as a curriculum development tool is being explored.

Curriculum design and redevelopment of units and degree programs

The purposes of the mapping process were outlined in a Report to Academic Council, (November 1999) and included the following:

- To indicate where strengths and weakness may exist in aligning sections of units e.g. aligning assessment with unit objectives;
- To indicate areas where omissions or duplications exist when aligning units to graduate attributes;

¹ Guidelines for School Reviews, 2002. <http://www.murdoch.edu.au/vco/secretariat/admin/gdlines/schoolreviews.html>

² Academic Council minutes, January 2003, 'Foundation Unit Review', <http://www2.murdoch.edu.au/admin/ctees/ac/2003/jan/fur.html>

- To indicate areas where omissions or repetitions exist when aligning courses to graduate attributes;
- To provide an opportunity for lecturers (and tutors) to communicate at a professional level about what they are trying to achieve for students;
- To illuminate areas where unit development may need to be undertaken;
- To identify the developmental path of units within a course or major.

This list has provided a useful guide for the curriculum renewal of units that comprise a major of study. Once the units in the study pathways have been mapped the primary purposes of the process as outlined above is addressed. School meetings have been held to examine the overall results of mapping and to determine changes to be made. In the case of the new Chiropractic major meetings are planned with members of the profession to look at how the attributes will be developed across the five years of the degree. A Graduate Attributes database is under development to provide learning activities and teaching notes for use by staff on teaching the Graduate Attributes. Materials written by TLC staff have provided the first materials for this data base, and as part of each of the Graduate Attributes projects examples of best practice by academic staff across the university are being collected to add to this data base.

Further developments on Graduate Attributes

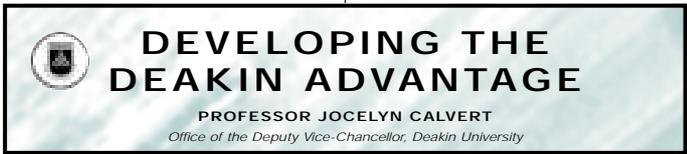
In the past three years experience working with the Graduate Attributes has highlighted the need to re-assess both the attributes themselves and the process. A new Pro-Vice Chancellor (Academic) is providing strong leadership to ensure that the curriculum renewal process at the School level includes the inclusion of Graduate

Attributes. In addition, several issues in relation to Graduate Attributes are being examined including:

- Re-examine the list of Graduate Attributes in the light of feedback from staff and employers and to ensure alignment with the University's new Strategic Plan;
- Examine whether the Attributes that address generic skills should be treated differently from the Attributes that address values and attitudes, for example, should certain attributes be frames as 'gained' (or 'all graduates must have') and other attributes as 'all graduates must be exposed to';
- Explore how the University might approach assessment of the Graduate Attributes and how this might impact on the University's 'Code of Practice - Assessment';
- Examine the relationship between Graduate Attributes and the new Strategic Plan, and the Graduate Skills Assessment and the Course Experience Questionnaire;
- Examine how the Graduate Attributes and University's new Flexible Delivery process can be aligned.

Conclusion

At Murdoch University a fully integrated and systemic approach to the development of Graduate Attributes across all majors is a relatively new venture. This process is being achieved in three overlapping stages: developing and reassessing the list of Attributes, ascertaining where and how these Attributes are currently covered in courses across the university, and curriculum renewal to ensure all majors embed the Attributes across a degree course. The most innovative aspects of this process have been the development and use of the web based mapping tool and the resource database and the use of School reviews as a systematic way to facilitate the process. ■



Attributes of a Deakin graduate: the Deakin Advantage

Deakin first articulated a university list of graduate attributes in a document entitled Principles of Teaching, endorsed by its Academic Board in 1998. In 1999, this list came under review as part of the development of the university's teaching and learning plan. The process of developing the plan engendered a university-wide discussion of generic skills and graduate attributes and resulted in a revised statement on graduate attributes. Deakin's graduate attributes take account of the knowledge and skill requirements of particular disciplines while also specifying the more general personal and context skills and knowledge that will serve graduates in their future lives. In this way, Deakin seeks to establish a distinctive Deakin Advantage for its graduates while ensuring that its development is appropriately adapted to particular programs of study.

Discipline-specific attributes

- In their major field or fields of study, Deakin graduates should have:
- an understanding of, and the ability to work with, a systematic body of knowledge, based on the highest standards of scholarship and research, to a level of mastery appropriate to the level of award;
 - an understanding of the professional, industrial and social contexts appropriate to the major field of study; and
 - the ability to identify, gather, retrieve and operate on textual, graphical and numerical information at a standard appropriate to the discipline area and level of award.

Generic attributes

Personal skills

- All Deakin graduates should have the following personal skills:
- a good standard of oral and written communication and presentation;
 - a capacity for teamwork and collaboration;
 - an ability for critical thinking, analysis and problem solving;
 - organisational and personal management skills;
 - information technological literacy; and
 - a capacity for lifelong learning and an appreciation of its necessity.

Citizenship

- All Deakin graduates should have an understanding of:
- ethics, social responsibility and cultural sensitivity;
 - international perspectives and competence in a global environment; and
 - the principles and applications of sustainable development.

The role of the teaching and learning plan

Deakin's Teaching and Learning Management Plan 2000 – 2002 was strategic in the sense that it identified a number of priorities for action during the triennium and set out broad strategies for achieving them. The first objective in the plan was to certify that undergraduate courses incorporated the development of specified generic skills.

- The broad strategies outlined in the plan were threefold:
- progressively incorporate the development of the Deakin Advantage into courses and certify this through the course accreditation process;
 - assist academic staff to do this; and
 - assist students to recognise and document their skills.
- To provide advice to the Academic Board (via the Teaching and Learning Committee) on the implementation of the strategies, the university established a Deakin Advantage action team. Team members included academic staff from each faculty, staff from academic support divisions and students.

The action team spearheaded internal discussion of the Deakin Advantage and articulated the university's approach to its development. The outcomes of its work are embodied in policy and guidelines approved by the Academic Board:

- a policy on the Attributes of a Deakin Graduate;
- Guidelines for Developing the Attributes of a Deakin Graduate; and
- Guidelines to Assist Students to Recognise their Deakin Advantage Skills.

This account draws heavily on these documents.

Curriculum and assessment principles

At Deakin, graduate attributes are explicitly developed in the context of undergraduate courses of study. The university has taken the view that their development should not be isolated in separate units of study nor treated as distinct from the course curriculum. This requires a comprehensive focus on courses or majors, rather than their constituent units or subjects, when considering how to incorporate the Deakin Advantage.

Deakin's policy states that the 'Deakin Advantage shall be developed progressively throughout a program of study'. Guidelines advise that faculties should 'specify the skill levels they expect of commencing students and, if they admit students without these skills, ... provide opportunities for students to develop them in the early stages of their program.' It is expected that a 'student's awareness of the Deakin Advantage is established during the orientation and transition period of initial enrolment, and commitment to its development is supported and reinforced throughout that student's university life.'

Murdoch University's Graduate Attributes & the Sub-Attributes	
Attributes	Sub-Attributes
Communication To demonstrate oral, aural, and writing skills of a high level, including the ability to use electronic media and computers for report writing and presentations.	<ul style="list-style-type: none"> • Oral skills • Aural skills • Writing skills • Computer skills
Analysis & Problem Solving Ability to think clearly, critically and creatively when solving problems to solve experience, reason and training into considered judgement.	<ul style="list-style-type: none"> • Analysis • Considered Judgement • Problem Solving
Social Interaction A capacity for and understanding of teamwork, including the demands of tolerance and mutual respect for others, resolving conflict and the negotiation of outcomes.	<ul style="list-style-type: none"> • Teamwork • Tolerance & Mutual Respect • Conflict Resolution • Negotiation
Indepth Professional Knowledge Use and maintain knowledge about a discipline, in terms of theoretical, conceptual and methodical elements, striving continually and independently to secure further knowledge and understanding with appropriate ethical standards, and where appropriate, defined professional skills.	<ul style="list-style-type: none"> • Discipline Knowledge • Independent Learning • Ethics & Professional Skills
Social Justice An acknowledgment of and respect for equality of opportunity, social justice and social responsibility of the individual and the community, in the light of awareness of one's own values and the values of others and the differences that exist.	<ul style="list-style-type: none"> • Social Justice
Global Perspectives Ability to understand and respect the social, biological, cultural and economic interdependence of global life.	<ul style="list-style-type: none"> • Global Perspectives
Interdisciplinarity To be aware of the interconnectedness of human knowledge and acquire knowledge and understanding of fields of study beyond a single discipline.	<ul style="list-style-type: none"> • Interdisciplinarity

Course certification

Several factors contributed to Deakin's decision to certify that the course incorporates the development of the attributes, not that the student has acquired them. First, integrating development of the attributes into courses means that they are developed in different ways and to different levels, and therefore not amenable to standardised assessment; this consideration is primarily relevant to the discipline-specific and citizenship groups of attributes. Second, as stated earlier, some skills and knowledge are best assessed through their expression in practice and after graduation. Third, there was concern that not all students would take advantage of opportunities to develop the range of attributes and that administering a system to confirm minimum levels of achievement for each graduate was beyond the capacity of the university. Fourth, the university was concerned about the possible legal implications of guaranteeing the achievement of attributes.

Deakin certifies that courses incorporate the development of the Deakin Advantage through the accreditation process. Courses undergo review for continuing accreditation on a normal cycle of five years. Accreditation panels, which include internal and external members, review, as part of the process, the strategies employed in the course to develop the graduate attributes. By the end of 2002, 38 percent of Deakin undergraduate courses had been certified and the target for 2003 is 70 percent.

When students graduate from certified courses, their transcripts will contain a statement attesting that their courses incorporated the development of the listed attributes comprising the Deakin Advantage.

Staff development and support

In 2000, the Academic Board approved guidelines for developing the Deakin Advantage. These guidelines set out the underpinning principles, elaborate the meaning of each attribute with examples of qualities that are likely to constitute evidence of the attribute, and provide illustrative educational strategies as examples of how an attribute might be developed. These strategies place particular emphasis on active learning, multiple learning contexts and varied learning experiences.

To assist academic staff to implement the Deakin Advantage, faculties have access to central resources and funding for academic professional development. In addition, an induction program for new staff includes introduction to the Deakin Advantage.

Focusing on courses and majors has meant that course teams need to work collectively to review their units and plan how to incorporate the graduate attributes. This process of mapping and embedding has helped to strengthen commitment and understanding.

Involving academic support staff and students, as well as academic staff, in the articulation of the Deakin Advantage through policy and guidelines has contributed a richness to educational strategies and resulted in faculties working collaboratively with academic support divisions. Library and information skills, information technology skills, academic skills and career development can be, and are increasingly, incorporated into academic programs with the assistance of staff and resources from academic support areas.

Student awareness and articulation of skills

Deakin's policy document states that 'all students shall be assisted, as part of their courses, to recognise and document their skills and knowledge.'

The university recognises that it is important to gain student as well as staff commitment to the concept and content of the Deakin Advantage. In promoting the Deakin Advantage to students, Deakin aims to build 'a sense of mutual obligation, with students and staff committed to the concept and content of the Deakin Advantage.' This is done through a combination of 'public promotion and actions that constructively build and support a student's educational experience.' University promotional materials and the handbook increasingly make reference to the Deakin Advantage. In addition, unit guides given to students at the beginning of each semester are required to contain information about how the unit contributes to the development of the Deakin Advantage.

In 2002, Deakin conducted a trial of an electronic learning portfolio program. Such programs enable students to document their learning experiences and can be customised to help make the connection between particular learning experiences and skill development. The university is considering whether to acquire appropriate software and integrate it into the learning management system for use by all students and staff.

Continuing development

Deakin's Teaching and Learning Development Plan 2003-2005 continues the emphasis on developing the Deakin Advantage by the following means:

- through the accreditation process, all undergraduate courses will be certified as satisfying the Deakin Advantage by start of the 2005 academic year;
- new and current staff continue to be supported through induction and academic professional development programs;
- students will be assisted to document their skills and knowledge; and
- as the Deakin Advantage becomes an integral part of studying at Deakin, efforts will expand to promote it to prospective students, advisors and employers.

Monitoring achievement

Through the accreditation and certification processes, Deakin ensures that its undergraduate courses develop the Deakin Advantage through curriculum and assessment.

Deakin obtains student perceptions of their development of the graduate attributes in two ways. First, Deakin students are asked to evaluate each unit in which they are enrolled; some core items in the questionnaire are specifically concerned with graduate attributes. Second, the national Course Experience Questionnaire provides feedback on some of the graduate attributes in the Deakin Advantage; Deakin now uses both the Generic Skills Scale and the Graduate Qualities Scale.

As part of the Teaching and Learning Development Plan 2003-2005 agenda, Deakin will revisit the question of setting and assessing graduate achievement of the Deakin Advantage attributes against specified standards. ■

MAJOR SPONSOR



Results of the 2002 Awards

for Outstanding Achievement in Collaborative R&D

Applications were sought earlier in the year and were judged by an experienced panel of judges under the chairmanship of Professor Leon Mann, Pratt Family Chair in Leadership and Decision Making, University of Melbourne and President of the Australian Academy of the Social Sciences, comprising:

Dr Annabelle Duncan
Chief of Division, Molecular Science,
CSIRO

Dr Bob Frater, AO
Vice-President for Innovation,
ResMed Ltd

Ms Lesley Johnson
Director of Strategic Initiatives,
Australian National Training Authority

Mr Peter Laver
Chairman, Ceramic Fuel Cells Limited

Dr Jane Munro, AM
Principal & Chief Executive Officer,
Firbank Grammar School

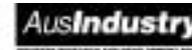
Dr Peter Scaife, Director
Centre for Sustainable Technology,
The University of Newcastle

The criteria for evaluation included:

1. Innovativeness
2. Strength of the relationship between collaborating partners
3. Outreach inclusion (e.g. overseas – to other groups, companies)
4. National benefits
5. Cultural impact on the partner/organisation.

To be eligible at least one of the partners in the project or program had to be a member of B-HERT.

B-HERT wishes to acknowledge the generous support of the following organisations:



MAJOR SPONSOR

The Industry Research and Development Board is an independent statutory body whose purpose is to administer specific Federal Government programs in support of industry-based innovation, and to provide advice to government on national industry-based R&D strategies and priorities. By these means, the IR&D Board has as its broad mission to increase the level and commercial success of industry-based R&D in Australia. In line with industry assistance programs, the IR&D Board utilises the services of AusIndustry (within the Dept of Industry, Science and Resources) as a single point of contact for businesses wishing to access the innovation programs.

AusIndustry, the Federal Government's program delivery agency, is involved in a range of measures designed to encourage industry innovation. Specifically, it aims to encourage research and development and innovation within Australia. Programs administered through AusIndustry include the R&D Tax Concession and a range of programs which provide targeted support for basic R&D through to commercialisation and technology diffusion.

SPONSORS



The Minister for Education, Science and Training, the Hon Dr Brendan Nelson MP, presented the Awards at a gala dinner at the Sheraton Towers Southgate in Melbourne on Wednesday, 20 November 2002.

The winning entries were:

Small-Medium sized Companies and Project/Program 18mths – 5 years in train

Sponsor: The Australian National University
Winner: The University of Queensland and Alchemia Pty Ltd

Title: **Liposaccharides in Drug Delivery**

This program provides the expertise of Alchemia in synthetic carbohydrate chemistry with that of Professor Toth in drug delivery and vaccines development. Carbohydrates play a major role in a number of diseases, including cancer, viral and bacterial infections, cardiovascular and immune disorders and transplant rejection. They have potential application as therapeutics, diagnostics and vaccines. The program is divided into separate research projects. The first is aimed at improving the oral delivery of poorly absorbed drugs. Professor Toth has found that the use of lipids in conjunction with carbohydrates can be used to enhance oral absorption of a number of poorly absorbed drugs. The research program is applying this technology to potential drug candidates of high commercial value. The second program is aimed at the development of novel carbohydrate vaccines for the treatment of cancer and viral infections.



All winners are pictured with Dr Mark Toner, President, B-HERT and Dr Brendan Nelson, MP, Minister for Education, Science and Training.

Professor Istvan Toth
University of Queensland

Small-Medium sized Companies and Project/Program more than 5 years in train

Sponsor: Central Queensland University
Honourable Mention:

University of Newcastle, Innova Soil Technology Pty Ltd, MCM Manufacturing Pty Ltd and Combustion Instrumentation Pty Ltd

Title: **Development of an Innovative Process for Contaminated Soil Treatment**

The University of Newcastle's strong R&D base, specialised expertise and analytical laboratory facilities, provides a firm foundation for Innova Soil Technology Pty Ltd to offer contaminated soil remediation services both in Australia and overseas. The project is based on the development and patenting of an innovative, energy efficient, thermal desorption system suitable for the in-situ remediation of soil contaminated with hazardous organic compounds such as coal tar and pesticides. Key innovative features include: a unique approach to thermal energy recovery; complete conversion of gas phase contaminants to innocuous substances; rapid gas quenching to ensure superior emission control (particularly the prevention of dioxin formation); and utilisation of the "green" process waste products. Development of links with relevant industry and a recent R&D Start program concessional loan has allowed Innova to commercialise the technology.

In short, this project focuses on the development of a technologically innovative and environmentally friendly approach to contaminated soil remediation. This process is designed to minimise energy consumption and Greenhouse gas emissions, and ensure that dioxin species will not be produced in the waste gas. This is a unique feature of the direct-fired dryer used to treat contaminated soil. In addition, the cleaned soil is not destroyed as in incineration processes and can be reused as structural fill, or as a component (when suitably mixed with "green waste") of top soil (due to the modest temperatures used for desorption (separation) of hydrocarbons to the gas phase).



Dr John Lucas
Innova Soil Technology Pty Ltd



The winning entries were:

Large Companies and Project/Program 18mths – 5 years in train

Sponsor: Edith Cowan University
Winner: Curtin University of Technology, Core Laboratories Australia Pty Ltd, Woodside Energy Pty Ltd, Metasource Pty Ltd, Clearer Sky Pty Ltd, Sanchez Technologies (France) and Shell Development

Title: **LNG Micro-Cell Technology**

Professor Robert Amin from Curtin University of Technology has developed an innovative technology, the LNG Micro-Cell. The LNG Micro-Cell enables the conversion of natural gas to liquid natural gas (LNG) in small-scale production by means of an innovative transportation refrigeration system.

The LNG Micro-Cell is a unique scientific contribution. The LNG Micro-Cell is a world-first; until now, the technology to produce LNG economically on a small scale has not existed.

With natural gas being heralded as the century's fastest growing energy source, the benefits of the LNG Micro-Cell are broad and significant.



Professor Robert Amin
Curtin University of Technology

Large Companies and Project/Program more than 5 years in train

Sponsor: RMIT University
Honourable Mention:

The University of Queensland and Alcan Gove Pty Ltd

Title: **Revegetation of Bauxite Refining Residue**

A major environmental concern in alumina production is the disposal of the sodium saturated, saline and strongly alkaline bauxite residue. Revegetation of residue impoundments by soil capping has been attempted, but over time the capillary rise of sodium and alkalinity degraded the soil cover layer, and revegetation failed. To address this problem Alcan Gove and the University of Queensland staff developed the concept of a vegetated soil cover from which contaminating salts are regularly leached by rainfall. A key aspect of this soil cover design is the use of treated residue as soil material and readily accessible and locally available neutralising materials. We have found that part of the residue stream, the residue sand, can be neutralised with seawater to produce a medium that will support plant growth. The inclusion of a relatively thick layer of this neutralised residue sand overlying the finer bauxite residue limits capillary rise of salt and ensures leaching of salt from the cover during the monsoonal wet season.



Mr Ian Fulton
Alcan Gove Pty Ltd

Outstanding Achievement in International Collaborative R&D

Sponsor: The University of Sydney
Winner: CRC for Eye Research and Technology (The University of NSW) and CIBA Vision/Novartis
Title: **The SEE3 Project – New Extended Wear Contact Lenses providing Hassle-Free Vision Correction**

The Co-operative Research Centre for Eye Research and Technology, collaboration with CIBA Vision, a developed a breakthrough highly oxygen permeable soft contact lens. The new lens is designed to be worn continuously for a month of day and night wear without affecting the eye, providing safe, convenient vision correction for millions of people. Safe continuous wear has been the 'Holy Grail' of the contact lens industry. The 'Focus Night and Day(tm)' lens has now been launched internationally and is rapidly taking a major role in the contact lens and vision correction market. The lens is expected to earn Australia a multi-million dollar income from worldwide sales, which will be used to fund future research, to create new jobs and postgraduate student positions, and to support continuing education for the eyecare professions.



Dr Keith McLean
CSIRO Division of Molecular Science

The winning entries were:

Outstanding Achievement in Collaborative R&D involving a CRC

Sponsor: Queensland University of Technology

Winner: The University of Queensland (Divisions of Mechanical Engineering and Mining & Minerals Process Engineering), BHP Billiton Mitsubishi Alliance, Australian Coal Association Research Program, P&H MinePro Services, Hatch Associates, Hofmann Engineering and other sme sized enterprises: Team Engineering, Tritonics and WBM

Title: CRC for Mining Technology and Equipment (CMTE)

The Universal Dig and Dump (UDD) project is today being pointed to as an example of world-best practice project management. UDD radically alters a dragline (the "workhorse" machine in an open cut coal mine) to give it enhanced functionality and increased productivity to an extent previously thought unachievable. If the same productivity increase achieved on the first retrofitted UDD dragline could be achieved on all of the draglines in Australia, then 25% could immediately be added to the bottom line of the Australian open-cut coal industry (representing \$180m profit (or \$1.1b revenue) per year. In only three years, the CRC for Mining Technology and Equipment (CMTE), in concert with its research and industry partners, has taken UDD from a concept through to its successful application on a full-scale machine. The multi-million-dollar project generated more than 200 jobs for engineers, operators and technical personnel across six large and small organisations, involved expertise ranging from mechanical, mining and electrical engineering to control theory, and most importantly, successfully applied a step-change technology in an industry not known for its radical technology shifts.

Honourable Mention:

CSIRO Sustainable Ecosystems, Mackay Sugar Co-operative Association Ltd, CANEGROWERS, Mossman Agricultural Services, CSR Sugar Ltd, Maryborough Sugar Factory Ltd, Sugar Research and Development Corporation and CRC for Sustainable Sugar Production (James Cook University)

Title: Options for Alternative Sugarcane Supply Arrangements – CRC Sugar

This project is about streamlining the complex operations involved in harvesting, transporting and supplying sugarcane from up to 10,000 paddocks on 500 farms to a nearby sugar factory, over a six month harvest season, in a way that exploits regional, seasonal, varietal and crop variations in crop yield and sugar content. Modelling studies showed that efficiency gains of 7-11% (potentially worth millions of dollars in a mill region) are possible, with existing infrastructure. The challenge has been firstly to collate the requisite technical, logistics and economic information to formulate and solve the immensely complex optimisation models involved; and secondly, to work participatively with all those involved in the growing, harvesting and milling sectors to 'ground truth' these complex models to evaluate the alternative options. The latter part of the project has included commercial implementation of the industry's preferred options, to directly assess the gains in profitability.



Dr Mike Hood
CRC for Mining Technology and Equipment



Dr Andrew Higgins
CSIRO Sustainable Ecosystems



Note in your diary – applications for this year's Awards for Outstanding Achievement in Collaboration in Education and Training will be called in May 2003.

2002 Award for:

The Best Entrepreneurial Educator of the year



The winner of the:

2002 Best Entrepreneurial Educator of the Year:

Dr John Bailey

Adjunct Professor (Entrepreneurial Strategy)
1990 to present, Swinburne University of Technology.
Associate Professor (Entrepreneurship)
1991 to present, Melbourne Business School.
Adjunct Professor (Management)
2000 to present, RMIT University.
Visiting Professor (Entrepreneurship)
2000 to present, Australian National University.

"It gives me great pleasure to support the nomination of Dr John Bailey for the Award. I have known John in several capacities for over eight years and can unreservedly state that John is a world class entrepreneurship educator and a great asset to Australia. John has been both an academic and a "pracademic" (practitioner academic) in entrepreneurship over the last twenty years. He currently teaches not only at AGSE but several other universities as well.

John is one of the most rounded entrepreneurship educators in the country. He is highly competent and valued not only in the classroom, but also in Boardrooms in his capacity as corporate entrepreneurship educator. This combination of academic teaching and executive development is rare in Australia and indicates his outstanding attributes.

John has also contributed to the wider field through his research, his books and other publications. He is a frequent presenter at conferences both in Australia and abroad. His advice is sought by government policy makers as well as by corporate clients.

Dr John Bailey is a great example and mentor for the further development of a robust entrepreneurship education and research capacity in Australia – something the country needs.

Professor Adolph Hanich

Director, Australian Graduate School of Entrepreneurship, Swinburne University of Technology

John Bailey has been involved with entrepreneurship education in Australia since 1975, both as an academic within universities and also as a consultant and practitioner in large organisations.

MAJOR SPONSORS



Recent B-HERT Publications

As a unique group of leaders in Australian business, professional firms, higher education and research organisations, the *Business/Higher Education Round Table (B-HERT)* sees as part of its responsibility the need to articulate its views on matters of importance germane to its Mission. From time to time B-HERT issues Papers in this context – copies of which are available from the B-HERT Secretariat at a cost of \$9.90 (GST incl.) per copy.

B-HERT Paper No. 6 (February 2003) – Research Issues for the Service Sector, particularly for Community Service Professions and Export Services

This paper attempts to define the service sector, particularly on two important areas, the community services sector and the export industries sector.

Position Paper No. 10 (September 2002) – The Importance of The Social Sciences To Government

Social policy is concerned with a range of human needs and the social institutions created to meet these needs. The social sciences cover a wide array of complex issues and disciplines. Government activities are now centrally related to social policy and the boundaries between social, economic and science policy are blurred. Commonwealth Government expenditure on social security and welfare, health and education amounts to some 65% of total expenditure and indicates the importance and persuasiveness of social policies. The social sciences and policies are important in ensuring the maintenance and functioning of a stable society by attempting to provide a more equitable distribution of wealth and income and ensuring an understanding of governance and institutions of civil society. Universities play a key role in providing social science courses which educate graduates in a philosophy, knowledge and the new developments of social science. The enables government agencies to access skilled social scientists who are capable of developing and implementing new social science policies appropriate to meet the needs of an ever changing world.

Position Paper No. 9 (August 2002) – Enhancing the Learning and Employability of Graduates: The role of Generic Skills

In an era when various new kinds of partnerships and relationships are developing between industry and higher education, and between the different sectors in education, a paper on generic skills is timely. This paper outlines the nature and scope of generic skills beyond discussing the reasons why they have become a focus of policy interest. The benefits of paying attention to generic skills for learning and employability purposes are considered in relation to relevant research findings. The holistic, contextual and relational level of generic skills as well as the links to lifelong learning are highlighted. Examples of the incorporation of generic skills into higher education structures and courses are also described.

There is also discussion of ways to close the 'employability' gap.

The paper then suggests a learning framework for generic skills at different levels.

Finally the paper makes some recommendations in respect of further work that would be valuable in pursuit of the agenda to enhance the learning capability of employability of graduates.

Position Paper No. 8 (July 2002) – Higher Education in Australia – The Global Imperative

This paper is B-HERT's submission to the Nelson Review of Higher Education.

B-HERT Paper No. 5 (June 2002) – The Facts – (Higher Education in Australia – Today Compared with Yesterday and the Rest of the World)

A compendium of statistics on higher education. Copies are available at \$19.95 (GST incl.)

B-HERT Paper No. 4 (February 2002) – The Knowledge-Based Economy: Some Facts and Figures

An update to B-HERT Paper No. 2 which provides some useful and interesting comparative data on Australia's relative global position within the context of the knowledge-based economy.

Position Paper No. 7 (January 2002) – Greater Involvement and Interaction between Industry and Higher Education

This paper looks at the need for a more enhanced partnership between the business community and higher education.

Position Paper No. 6 (August 2001) – Sharing Administrative Functions at Lower Costs

This paper highlights an innovative approach to achieving savings in administrative activities.

Position Paper No. 5 (June 2001) – What is Needed to Make Australia a Knowledge-Driven and Learning-Driven Society?

This paper aims to identify major public policy challenges that stem from a proper understanding of the nature of knowledge and learning.

Position Paper No. 4 (February 2001) – The Critical Importance of Lifelong Learning

This paper aims to establish the significance of lifelong learning in the Australian context. Drawing on analyses of lifelong learning policies and practices in Australia and other OECD countries the paper seeks to identify a number of policy priorities for government, particularly in the areas of lifelong learning, business and higher education.

DIPLOMA IN BUSINESS PRINCIPLES

Who should attend?

This is a course designed to be user friendly and practical in its content. The **Diploma in Business Principles** is suitable for new starters to the world of business, recent graduates (particularly but not exclusively) from non-business disciplines such as law, engineering, the arts or the health sciences, and small to medium business operators.

What is the Program?

The Program has been carefully structured to address the most common area of activity in business where, irrespective of the level at which an employee is working, there is every likelihood that person will need to understand what constitutes sound business practice. The list of topics covered is comprehensive and it is difficult to dismiss any one of them as not basic to business activity.

The subjects covered include:

- **Financial Management** – this module introduces participants to the principles and practice of basic accounting and finance. The emphasis is on accrual accounting and the transactions most likely to be encountered by the participants.
- **People Management** – participants are introduced to the systems for people management in organisations, including recruitment, training, and performance management including coaching.
- **Working in Teams** – participants will understand the importance of effective teams in the business environment of today and are introduced to team dynamics and preferences within teams.
- **Leadership** – this module provides participants with an understanding of the similarities and differences between management and leadership; the need for leaders to be able to vary their style; and the challenges facing leaders in the business world.
- **Financial Institutions and Markets** – an overview of Australian financial institutions and markets is provided, including the banking system, stock market and associated financial markets. Included in this module is a session on superannuation.
- **Contract Administration** – this module is aimed at providing participants with a basic knowledge of contract law and the processes associated with the efficient administration of contracts.
- **Sales and Marketing** – Participants will understand the difference between sales and marketing and the development of marketing, from strategy to earning customer loyalty.
- **Corporate Ethics and Values** – issues of corporate ethics are considered, together with the importance of clearly defined values in creating successful corporate cultures.
- **From Data to Knowledge** – participants will understand the importance of knowledge management as a key competitive edge in today's business world and the relationships between data, information and knowledge. The role of IT as a business enabler is also dealt with.

- **Communication** – participants are introduced to the practice of effective business communication, including presentation skills and managing meetings.
- **Corporate Law** – Participants are given an overview of the principles of corporate law, legal structures, and the roles and responsibilities of Board of Directors.
- **Innovation, Creativity & Entrepreneurship** – this module deals with the mindsets and skills associated with creativity and innovation as well as the qualities and practices associated with successful entrepreneurship. Participants consider how to apply these mindsets and skills in their organisation/business.
- **Practical Taxation** – participants develop a basic understanding of the Australian taxation system, including company tax, PAYG and GST. The role of the Australian Taxation Office is considered, including its regulatory and audit functions.
- **Personal Effectiveness** – participants are introduced to techniques such as time management, project planning and career planning to enable them to maximise their personal effectiveness in the workplace. Their role in the delegation process is also considered, and participants are encouraged to set personal and professional goals.
- **Workplace Health and Safety** – this module deals with a range of issues which participants need to be aware of in fulfilling their responsibilities, including OH&S legislation, Equal Opportunities, stress management and maintaining a balance between work and social life. Participants consider practical issues within their own workplaces.

What is the Need?

A number of research studies have been conducted in recent years relating to the attributes and quality of graduates/new starters entering the workforce. A consistent theme that emerges in each study is the lack of practical business skills and the surprising lack of understanding of day-to-day business practices.

The purpose of the **DIPLOMA IN BUSINESS PRINCIPLES** is to provide to new graduates, particularly (but not exclusively) from non-business disciplines, others entering business for the first time, and small to medium business operators with a basic introduction to practical business. New graduates and new starters enter the workforce often with little or no understanding of the day-to-day operation of business and face the daunting task of learning on the job, often with embarrassing or even serious consequences. Small to medium business operators face a similar task of 'learning on the go' often diverting them from more immediate matters.

The need for this sort of program has been identified on a number of occasions, but little action has been taken to address the need.

B-HERT sees this as an important educational and training initiative in enhancing, in a very practical and user friendly way, the knowledge and skills of graduates, business operators and others entering the workforce for the first time.

What are the Benefits of the Program?

To the participant

To most people entering the workforce for the first time there are numerous aspects of business and the workplace which are completely foreign or unknown. Their productivity is obviously adversely affected by this, as is their personal sense of well-being and job satisfaction. In many instances it may take years before an employee comes across some of the aspects covered in these topics.

The aim of the program overall, is to provide graduates, new starters and business operators with the basic knowledge and skills necessary for them to be effective in the professional world of today. In a program of this nature, it is not possible to deal with topics in depth. Where participants wish to pursue topics in greater depth, we shall provide them with links to business schools and other providers as well as reference material.

The benefits to participants include:

- A convenient and quick way to acquire a wide range of basic business skills to immediately enhance their performance and motivation at work;
- Access to highly qualified and experienced consultants with whom they can discuss their real life issues as they make the transition from study to the world of professional work;
- Access to leaders from their own organisation to whom they may look for advice on an on-going basis;
- Access to advice and material which supports their on-going learning, including contacts with business schools and other providers of management education and development.

To the employer/business owner

This program fast-tracks the employee to a level of understanding of the way business operates which would otherwise take months or even years. Many large organisations conduct similar induction programs for their own employees, which are usually spread over a period of months or in some cases a couple of years. For those employers who do not have the resources or the inclination to do the training themselves this program provides the ideal solution at a reasonable cost. As the program is conducted out of hours the employer does not lose out on employee productivity.

Given the importance of service delivery it is now employee skills that can provide the differentiating value between businesses. Such a program also complements the change in organisational structures and flexible work patterns that have developed over the last decade. **THE DIPLOMA IN BUSINESS PRINCIPLES** is a cost effective and practical way of endorsing and supporting employee empowerment.

Course Schedule

Melbourne (commences 8 July 2003)

Brisbane (date tba)

Sydney (date tba)

Adelaide (date tba)

Other centers (dates tba)

Course Enrolment Form

Contact B-HERT Secretariat at bhert@bhert.com
ph: 61 3 9419 8068 or download from website:
www.bhert.com

SIFE AUSTRALIA ON TRACK TO DOUBLE PARTICIPATION IN 2003

Over a 5 week period, from late February through to the end of March, the CEO of SIFE Australia, John Thornton, will be visiting the majority of Australian universities in a recruitment drive to take the number of participating institutions from the 16 that contested the 2002 National Championship, to 32 in 2003.

SIFE's mission, as members will recall, is to challenge university students to make a difference in their own lives by developing their leadership, teamwork and communication skills. They are encouraged to do this through learning, practicing and teaching the principles of free enterprise so as to empower others in their communities and enhance their economic prospects.

USQ's Fraser Coast SIFE team were the 2002 National Champions, while the other competitors comprised ANU, Bond, CQU, Edith Cowan, Flinders, Griffith, Macquarie, Melbourne, Murdoch, RMIT, Tasmania, UniSA, UNSW, UQ and UWS.

John's itinerary takes in Perth and Darwin in late February, the ACT and Country NSW in early March, then Queensland, Victoria and Tasmania in the second half of March. He will be calling in on Faculties and Schools of Business but would also like to speak to student representatives from AIESEC clubs, Commerce societies or Golden Key associations.

John reports that the Students in Free Enterprise message has been enthusiastically received by staff and students alike in his university visits to date. He looks forward to the same level of response from corporate members of B-HERT to enable a matching expansion in the level of support!

Members of B-HERT not already involved in SIFE are encouraged to contact John Thornton on 0417 811 877 or by email to john.thornton@sifeaustralia.org.au for more information on the opportunities provided by the program. ■

DISTINGUISHED SPEAKER SERIES

In 1998 B-HERT introduced a Distinguished Speaker Series of addresses each year featuring eminent "thought leaders" speaking on topics of interest to both the business community and academe.

We are delighted to announce the following Distinguished Speaker for 2003.



General P. J. Cosgrove AC MC, Chief of the Defence Force, will deliver a dinner address in Sydney, on **Friday, 20 June 2003**.

Peter Cosgrove was born into an Army family in Sydney in 1947. After secondary schooling at Waverley College he entered the Royal Military College, Duntroon in 1965, graduating in 1968 to the Royal Australian Infantry Corps.

He served initially with the 1st Battalion, the Royal Australian Regiment (1RAR) in Malaysia before joining the Australian Reinforcement Unit at Nui Dat in South Vietnam in August 1969. While in Vietnam he served with 9RAR and as a platoon commander at HQ 1st Australian Task Force.

In his subsequent service he has served with 5RAR and later as Adjutant 5/TRAR, and as Commanding Officer 1RAR between 1983 and 1985. He also commanded the 6th Brigade and the 1st Division at Enoggera in Brisbane.

General Cosgrove has commanded the Methods of Instruction Team based at Ingleburn, NSW, instructed in tactics at the Infantry Centre at Singleton, where he was also later Commandant and Director of Infantry. He has been the Commandant of the Australian Defence Warfare Centre at RAAF Williamtown, and also of the Royal Military College Duntroon. He attended the United States Marine Corps Staff College at Quantico, USA in 1978, and was the Australian exchange instructor at the British Army Staff College, Camberly from 1984-1986. He has also attended the Australian Joint Services Staff College and the Indian National Defence College.

He has served as a staff officer at Headquarters Field Force Command in Sydney and at Army Headquarters in Canberra. In 1972 he was Aide de Camp to the Governor General, Sir Paul Hasluck, and in 1987 Military Assistant to the Chief of the General Staff.

In 1999 as Commander of the Deployable Joint Force Headquarters he assumed command of the International Forces in East Timor (INTERFET) until the force was withdrawn in February 2000. On his return to Australia he was appointed Chief of Army and in July 2002 assumed the position of Chief of the Defence Force.

For his service with INTERFET he was advanced to Companion of Military Division the Order of Australia (AC), having previously been a Member of the Order for his service as Commanding Officer, 1RAR. He was awarded the Military Cross for his service with 9RAR in South Vietnam, and has received several foreign awards including the Companion of the New Zealand Order of Merit, a Commander of the United States Legion of Merit, the Tong II medal from the Republic of Korea, and the Grand Chant of Infante Dom Henrique from Portugal. In 2001 he was the Australian of the Year.

General Cosgrove and his wife Lynne have three sons. He is a passionate rugby supporter, owns a set of golf clubs and enjoys the occasional game of cricket. He reads and listens to music for relaxation.

Members are asked to note this date in their diaries. Further information will be given in due course.

B-HERT MEETING DATES FOR 2003

Please note the following dates for B-HERT meeting for 2003:

Friday, 20 June 2003 - Sheraton on the Park, Sydney

4.00pm-7pm followed by dinner at which General Peter Cosgrove, AC MC,

Chief of the Defence Force, will deliver the after-dinner address.

Tuesday, 25 November 2003 - Sheraton Towers,

Southgate, Melbourne

2.30pm-5pm (inclusive of Annual General Meeting),

followed by Awards dinner.

MEMBERS OF THE BOARD

Dr Mark Toner
(President)
Company Director

Professor
Denise Bradley AO
Vice-Chancellor, The
University of South Australia
Professor Gavin Brown
Vice-Chancellor
The University of Sydney

Mr Russell Cooper
Chief Executive Officer
SITA Environmental Solutions

Professor Kerry Cox
Vice-Chancellor
University of Ballarat

Professor Ruth Dunkin
Vice-Chancellor
RMIT University

Professor Helen Garnett
Chief Executive, Australian Nuclear
Science & Technology Organisation

Mr David Hind
Managing Director, South Pacific
BOC Gases Australia Limited

Ms Judy Howard
General Manager Woolworths
Academy Woolworths Limited

Professor Michael Osborne
Vice-Chancellor
La Trobe University

Professor Millicent Poole
Vice-Chancellor
Edith Cowan University

Mr Rob Stewart
Company Director

Professor Iain Wallace
Vice-Chancellor Swinburne
University of Technology

Executive Director:

Professor
Ashley Goldsworthy
AO OBE FTSE FCIE

Assistant

Executive Director:
Christopher
Goldsworthy

Executive Assistant:
Anne Munday

The purpose of the Business/Higher Education Round Table (B-HERT) is to pursue initiatives that will advance the goals and improve the performance of both business and higher education for the benefit of Australian society.

It is a forum where leaders of Australia's business, research, professional and academic communities can address important issues of common interest, to improve the interaction between Australian business and higher education institutions, and to guide the future directions of higher education.

Mission Statement

In pursuing this mission B-HERT aims to influence public opinion and government policy on selected issues of importance.

B-HERT believes that a prerequisite for a more prosperous and equitable society in Australia is a more highly-educated community. In material terms it fosters economic growth and improved living standards – through improved productivity and competitiveness with other countries. In terms of equity, individual Australians should have the opportunity to realise their full social, cultural, political and economic potential.

The membership of B-HERT comprises, by invitation, the chief executives of leading Australian businesses, professional firms and associations, public research organisations and the vice-chancellors of Australian universities.

B-HERT pursues a number of activities through its Working Groups, and active alliances with relevant organisations both domestically and internationally. It publishes a regular newsletter (B-HERT NEWS), reporting on its activities and current issues of concern relevant to its Mission.

BUSINESS/HIGHER EDUCATION ROUND TABLE A.C.N. 050 207 942
1st Floor, 24 Brunswick Street, Fitzroy, Victoria 3065. Locked bag 4115, Fitzroy
MDC, Victoria 3065. Telephone: 61 3 9419 8068 Facsimile: 61 3 9419 8276
Email: bhert@bhert.com Website: www.bhert.com