Generic Attributes of Graduates

Background and Issues Paper prepared for the Graduate Attributes Working Group

Revised August 2003

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Purpose

This paper is intended to provide a starting point for discussion and debate by the Working Group. It proposes a general direction for the review of The University’s current statement of graduate attributes and a theoretical framework to support this. It includes a detailed plan for this work for 2003 and an indication of the stages for the following year.

It draws on the findings of the research literature in the field including educational research conducted at Sydney University. It also draws on other discussion papers including the recent report on Generic Attributes prepared for the Business / Higher Education Round Table, an EIP national employer survey, and a recent national project conducted by the ATN universities on graduate attributes. A bibliography and links to key documents can also be accessed on this site.

Introduction

Universities’ claims of generic graduate attributes are not new. Consider the attributes of graduates proposed by Reverend Dr John Wooley, Foundation Principal and Professor of Logic and Classics, in his speech at the inauguration of the University of Sydney:

Our undergraduates … will we may reasonably hope, possess a well cultivated and vigorous understandings; they will have formed the habit of thinking at once with modesty and independence; they will not be in the danger of mistaking one branch of science for the whole circle of knowledge, nor of unduly exaggerating the importance of those studies which they select as their own. Above all they will have attained the truest and most useful result of human knowledge, the consciousness and confession of their comparative ignorance.

(Wooley 1862 p 21)

However, in the past decade there has been a renewed interest in defining the qualities of graduates on the part of universities and government. This has been fuelled by many factors.

- The changing nature of society and work is being articulated in the demand for a university education to equip graduates to deal with uncertain futures. In defining their purpose and outcomes the traditional conceptual base of universities as solely ‘knowledge’ providers has been challenged to the extent that it may no longer be tenable (Barnett 2000). Universities are searching for alternative ideas upon which to base a conception of the place of the university in contemporary society.

- The number of students participating in university has increased. The massification of the higher education system has brought increasingly diverse students with correspondingly diverse needs and motivations and an increased ‘stake’ in higher education on the part of society. The increased ‘stake’ in the form of increased participation and funding has brought universities more into the public sphere with associated demands for accountability for society’s investment in such public institutions.
The demands for public accountability have been operationalised in quality assurance exercises, which have challenged universities to articulate their purpose and outcomes and demonstrate that they are achieving these effectively as a condition of ongoing public support.

Coupled with this, the emergence of alternative education providers has challenged universities’ monopoly as providers of higher education and lent added urgency to the need for universities to define the unique qualities of a university education.

These factors have contributed to many recent changes in university teaching and curricula, including the proliferation of university policy statements claiming particular qualities on behalf of graduates.

The Australian Context

These statements of generic attributes are also intended to reflect the influence of the particular university’s culture and values on the learning outcomes of graduates. For example the relationship between the institution and the world of work as seen in the Australian Technology Network (ATN) institutions and the research led teaching experience of research intensive universities. The extent to which current statements of graduate attributes actually differentiate between these different educational experiences is questionable.

It is apparent from a comparison with the descriptions of generic attributes claimed by other Australian universities, that the current statement of attributes of University of Sydney graduates does not differentiate the outcomes of a research intensive university experience from the outcomes of an undergraduate education at very dissimilar universities. (See Recommendation ii)

Most definitions of these generic graduate outcomes derive from the definition in the Higher Education Council (HEC) report *Achieving Quality*:

> These are the skills, personal attributes and values which should be acquired by all graduates regardless of their discipline or field of study. In other words, they should represent the central achievements of higher education as a process (HEC, 1992 p 20).

More recent Australian definitions (Bowden et al 2000, Hager et al 2002) emphasize the relevance of these graduate outcomes to both the world of work (employability) and other aspects of life. In particular the role of such qualities in equipping graduates as global citizens and effective members of modern day society who can act as ‘agents of social good’ has been emphasized in the Australian context.

Graduate attributes are the qualities, skills and understandings a university community agrees its students should develop during their time with the institution and consequently shape the contribution they are able to make to their profession and society.

They are qualities that also prepare graduates as agents of social good in an unknown future. (Bowden et al., 2000)

The Australian notion of ‘graduate attributes’ is broader than may be seen in some other countries’ higher education systems where a narrower focus on notions of ‘training’ for employable skills has dominated. In part this reflects the origin of such statements within the university community in Australia. The present statements were a response to attempts by a government in the early 1990’s to impose key competency statements on higher education with a clear agenda of linking education and employment. The academic led nature of statements of graduate attributes in the Australian context is a feature the university community is keen to preserve.

To ensure that international standards of quality are maintained, university curricula must continue to be informed by academic judgement. (AVCC, 1992 p3)
While preserving the university's ownership of such statements, efforts must be made to ensure such statements are understood as relevant and meaningful by other groups in society especially employers, professional associations and government.

Investigations of employers' satisfaction with graduate attributes would suggest that while they may prioritise many of the same attributes as the academic community they do not necessarily refer to these using the same language. Universities need to ensure (through their consultation and communication processes) that groups outside of the academic community can contextualise and understand such attributes in their own settings. (See recommendation v).

**Key features of definitions of graduate attributes**

Broadly speaking, generic graduate attributes in Australia have come to be accepted as being the skills, knowledge and abilities of university graduates, beyond disciplinary content knowledge, which are applicable in a range of contexts. University students are intended to acquire these qualities as one of the outcomes of successfully completing any undergraduate degree at university.

There are several key features to this definition of generic graduate attributes:

- These outcomes are referred to as **generic** in that they are claimed to be developed regardless of the field of study or domain of knowledge. That is not to say that they are necessarily independent of disciplinary knowledge. Rather that these qualities may be developed in various disciplinary contexts and are outcomes that in some way transcend disciplinary outcomes.

- They are abilities that are to be looked for in a **graduate** of any undergraduate degree. They are not entry level skills. Rather they are considered to be an important outcome of university level learning experiences.

- They are referred to as generic **attributes** rather than generic skills in recognition that as outcomes they encompass more than skills. An attribute is a more global term for outcomes that might encompass knowledge, skills, and attitudes.

- These outcomes are outcomes of the usual **process** of higher education. That is, they are not a set of additional outcomes requiring an additional curriculum. Rather they are outcomes that can be reasonably expected from the usual higher education experience.

However, while an expected product of usual university curricula, it may be that the efficient and effective achievement of such outcomes necessitates the review and improvement of existing curricula. This review and improvement of usual curricula should not necessarily focus on adding new 'generic' content to courses, rather it might involve teaching the same things differently. However, such enhanced curricula may also benefit from the provision of additional supporting curriculum strategies, more explicitly targeting generic attributes. The review of existing course curricula in particular represents a considerable challenge for the University.

The endeavour by universities to foster the development of generic capabilities in their students constitutes both a serious commitment to a broader notion of graduate quality in higher education and a significant challenge to conventional teaching and learning arrangements. (Bowden et al 2000 p 10)

**Curriculum strategies to address claims of generic attributes**

Broadly speaking graduate attributes curricula initiatives may be considered as falling into two main approaches: the stand-alone (or supplementary) approach and the embedded approach. A stand alone curriculum provides an additional learning experience to supplement that of existing university courses. On the other hand, embedded approaches seek to modify the existing learning experience of university courses to ensure such outcomes are achieved.
There are benefits and limitations to both approaches. Click here for a discussion of the merits of the two approaches. Appendix 1: Advantages of different curriculum approaches

While on balance the embedded approach has much to recommend it, such approaches are vulnerable in terms of the variable perception of staff regarding the relevance of such outcomes to a university education. In particular the variation in how such outcomes are understood to relate to discipline knowledge has implications for the way generic attributes are embedded within the curriculum. This variation in understanding is a recurring theme in much of the literature reporting on graduate attribute initiatives.

Despite innovative initiatives, the complexity associated with the development of these skills coupled to their permeation throughout courses ….leads to a level of confusion which is unacceptable. Radical rethinking of course structuring and delivery is required if these skills are to be addressed seriously in higher education. (Kemp & Seagraves 1995 p 327)

Current Status of GGA in Australian Universities: Initiating Change

Australian universities have claimed such outcomes in policy statements for over a decade. Currently the inclusion of a statement of such outcomes in university plans is a requirement of funding however the current climate of accountability is likely to bring additional scrutiny to bear on such claims. It seems reasonable to expect that universities will be asked to provide evidence that they have appropriate strategies in place to ensure such claims are realised and even to provide evidence of the actual achievement of such outcomes.

Two recent significant national reports on generic attributes in higher education in Australia (The BHERT discussion paper, Hager et al 2002, and the EIP report on Generic Attributes of ATN graduates, Bowden et al 2000) have pointed to the need for additional curriculum reform to fulfil universities current claims of such outcomes.

A recent national survey of Australian employers also suggests that university graduates may not possess the claimed attributes to the level desired by this group (see Hager et al 2002, Bowden et al 2000, DETYA 2000).

Internationally, reviews of university initiatives in the UK found that despite the existence of excellent isolated initiatives the overall picture is one of patchy uptake and implementation of graduate attributes curricula. Somewhat surprisingly this is the case despite a decade of extensive government funding through the HEFCE scheme.

The overall picture of personal and transferable skills in the UK higher education sector is not very encouraging. Certainly there is little evidence of effective practice on any large scale. There is however considerable evidence to suggest that, sometimes major, development programs have had only limited success. (Drummond et al 1998 p.23).

Interestingly these initiatives have rarely focussed on systemic change of existing teaching approaches.

Generic capabilities might also be ‘built on’ to the curriculum content without any alteration to the learning environment. Such approaches deny the holistic nature of capability and inhibit the integration of personal qualities, skills and knowledge…… (Bowden et al 2000)

Numerous universities have recently initiated projects focussing on generic graduate attributes. Chief amongst these has been the ATN universities and in particular the University of South Australia. These initiatives while marking a serious attempt at systemic reform do not address the underlying lack of a research-based theoretical or conceptual model of graduate attributes. It is proposed that the review of the University of Sydney’s Graduate attributes be research-based and academic led.
A framework for a shared vision

Understanding the difference in opinion held by members of the university community as to the place of such outcomes amongst the more familiar university learning outcomes and teaching strategies is a necessary precursor to any review of existing policy and meaningful and effective lasting curriculum development.

(Graduate attributes initiatives in the United Kingdom) have had little impact so far, in part because of teachers' scepticism of the message, the messenger and its vocabulary and in part because the skills demanded lack clarity, consistency and a recognisable theoretical base. Any attempt to acquire enhanced understandings of practice through which to inform staff and course development initiatives thus requires the conceptualisation and development of models of generic skills. (Bennett et al 1999 p 90)

Recent research (Barrie 2003) into University of Sydney academics' understandings of the place of graduate attributes in the usual university curriculum has highlighted the reality of these disparate views. This research focussed on the activities of university teachers charged with developing graduate attributes as part of the usual undergraduate experience.

It identified a hierarchy of four increasingly complex understandings of the nature of graduate attributes as outcomes. (Appendix 2)

Related to these understandings of outcomes were six different understandings of the process of teaching and learning such attributes. (Appendix 3)

Certain outcomes were associated with certain processes (see Appendix 4 associations between outcomes and processes). These findings provide a way of understanding how the range of existing excellent initiatives within the university, (stand-alone as well as embedded), might be combined and integrated in an overall strategy.

This research provides a framework for making sense of the diversity of graduate attributes initiatives at the university. Case studies of University of Sydney initiatives have begun to be collected which illustrate the complementary nature of initiatives targeting different levels of graduate attribute outcomes.

These initiatives target graduate attributes in terms of:

A. Precursor Attributes: There is a group of strategies that reflect the perception that graduate attributes are undifferentiated foundation skills (like English language proficiency or basic numeracy). These skills are separate to discipline knowledge and learning however they are vital precursors to such learning. From the perspective offered by this understanding of graduate attributes, most students are expected to have these skills on entry. For those that do not, the development of such skills is best addressed by the provision of an additional remedial curriculum for those student who need it. This additional curriculum might take the form of an additional course on these skills or a series of remedial workshops or similar support provided by non-disciplinary teachers.

B. Complementary Attributes: There is a second group of strategies that address graduate attributes as higher (university) level, additional generic outcomes that usefully complement or round out discipline knowledge. In these strategies, graduate attributes are understood to be functional, atomistic, personal skills that, while an important addition to disciplinary learning, are quite distinct from other university learning outcomes. They might be addressed by the inclusion of an additional unit (or units) of study in a course, an additional series of lectures or workshops within an existing unit, or through the inclusion of a particular learning task to address the development of these attributes. This additional graduate attributes curriculum is part of the usual course curriculum for all students. From the perspective of these strategies, graduate attributes do not interact with discipline knowledge and the attributes are essentially generic, although different attributes might be more or less important in the context of different disciplines.
C. **Translating Attributes**: Other strategies at the University address graduate attributes as important university learning outcomes that allow students to make use of and apply discipline knowledge. These strategies position graduate attributes as clusters of personal attributes, cognitive abilities and skills of application. While still separate to discipline knowledge, from the perspective of these strategies graduate attributes are no longer seen as independent of this knowledge. Instead, the graduate attributes interact with, and shape, discipline knowledge (for instance through the application of abstract or context specific discipline knowledge to the world of work and society), and are in turn shaped by this disciplinary knowledge. Because of the relationship between graduate attributes and knowledge in the different disciplines, in these strategies attributes are differentiated by the discipline context. Rather than being generic, graduate attributes are specialised and differentiated forms of underlying generic abilities which are developed to meet the needs of a specific discipline or field of knowledge. Because of the intimate relation to discipline knowledge these attributes are usually developed within the context of usual classes, either as part of the usual course content, through the usual teaching processes of that content or (from a student-centred perspective), through the students’ engagement in the course.

D. **Enabling Attributes**: Other strategies at the University address graduate attributes, not as parallel learning outcomes to discipline knowledge, but as abilities that sit at the very heart of discipline knowledge and learning. Rather than clusters of attributes, graduate attributes are understood as interwoven networks of these clusters. These interwoven attitudes and capabilities give graduates a particular perspective or world-view (ie a way of relating to the world, or to knowledge, or to themselves). In these strategies, graduate attributes provide the skeleton to discipline knowledge and are learnt as an integral part of that knowledge. They might be learnt in the context of discipline knowledge as an integral element of students' experience of courses, or through students' engagement in the broader experience of participation in the university community. From this perspective, graduate attributes have the potential to outlast the knowledge and contexts in which they were originally acquired. Moreover they provide a framework for ongoing learning of new knowledge. As such the generic attributes transcend the disciplinary contexts in which they were originally acquired.

Some examples of these different strategies are provided in the case studies section of this web site.

**A hierarchy of complementary approaches: Policy**

The different understandings represent a hierarchy of approaches, with **Enabling** strategies subsuming and being supported by **Translating** strategies, which in turn are supported by **Complementary** and **Precursory** approaches.

As with most dimensions of human capability and knowledge, graduate attributes do not spring into being fully fledged. Such outcomes are more likely to be the result of staged process of development and achievement with the increasingly complex outcomes benefiting from different strategies at different stages in the process of acquisition.

Policy statements listing graduate attributes might also reflect a layered or staged development of such attributes, (particularly given the hierarchical nature of understandings of graduate attribute outcomes held by the academic community). For instance, while a policy may ultimately aim to specify graduate attributes in terms of **Enabling** approaches (incorporating outcomes of a particular type and the related processes by which these outcomes might be developed), it might also incorporate the specification of **Translating** approaches, as steps towards the achievement of the higher level outcomes. Such a layered policy can also incorporate the specification of the **Complementary & Precursor** strategies as providing valuable non-discipline based support for all students and specialised support for students who lack the basic entry level skills.

In this way, it is possible for the existing conglomerate lists of different types of generic skills to be re-organised, rather than redeveloped from scratch and the role of the different types of initiatives already in
place to be recognised. An example of such a layered approach to the organisation of graduate attributes representing different conceptions is provided in the link below.

An example of hierarchically layered policy & practice (Appendix 5)

In this example the nature of the graduate attribute outcome - as interwoven networks of abilities, clusters of specialised skills, atomistic undifferentiated personal and functional skills and low level atomistic skills is shown on the left hand side of the table. Lower level atomistic conceptions of the exemplar skills listed at the bottom of the table might support and contribute to the linked clusters of skills and ultimately to the interwoven networks of abilities which characterise higher level conceptions of graduate attributes. The associated curricula approaches to the teaching and learning of such attributes in disciplinary contexts are indicated in the right hand column of the table.

In the example an understanding of generic attributes in terms of outcomes such as scholarship and global citizenship (Level D) can be seen to subsume the discipline specific, level (Level C) understandings of generic attributes as including disciplinary writing conventions and research methodologies and ethics protocols. These contextual (in terms of the discipline) linked clusters of abilities are in turn supported by an understanding of generic attributes as useful general abilities such as essay writing skills or an understanding of the principles of academic honesty or plagiarism. Such a layered policy statement even provides scope for conceptions of graduate attributes as pre-entry skills such as English language competence requiring remedial intervention for some students.

Inherent in such a hierarchical or layered policy statement of graduate attribute outcomes is the accommodation of the related range of processes by which such outcomes might be fostered in students.

Some Issues to Consider

This variation in understanding helps explain the variable uptake of graduate attributes curricula across courses at the University of Sydney and the diversity of approaches currently taken in fostering outcomes of different levels. It also highlights some potential barriers to curricula reform seeking to integrate such learning within existing curricula.

1. Academics do not hold a shared understanding of graduate attributes as representing the core achievements of higher education as a process.

This is exacerbated by current statements of graduate attributes that combine relatively low level generic skills with higher level discipline-relevant outcomes and list component skills as equivalent to the overarching abilities they support. Moreover the attributes listed in current policy are open to interpretation in light of these different understandings - for instance 'written communication skills' might mean the ability to write grammatical English or it might mean the ability to construct a structured essay or it might mean the ability to craft a scholarly journal article. All quite different outcomes.

These different perceptions exist despite the current University policy requirement that such outcomes are developed by all undergraduate students regardless of their degree and that graduate attributes be clearly incorporated in the learning outcomes stated in all unit of study outlines.

2. Some understandings of graduate attributes are incompatible with the University's efforts to encourage an embedded approach.

If graduate attributes are not seen as outcomes which are part of the core business of university education then academic staff will logically see little relevance in including them in their curriculum, even if there are additional resources and time allocated to by the institution to support this.

3. Understandings of graduate attributes as low-level skills are incompatible with the understandings expressed in government policy and recent higher education discussion papers.
It is important that the process of revision of the University's current policy, while still academic-led, reflects the university's intention to ensure its aims and goals are relevant and aligned with government policy and society's (employers' and students' in particular) needs and expectations.

4. **If graduate attributes are understood only in terms of precursor or associated strategies then this would require the resourcing of an additional parallel generic skills curriculum.**

Even if start-up funding was available such resourcing is unlikely to be sustainable in the current higher education funding climate. Moreover the lessons from higher education systems where such funding has been available would suggest that it has not achieved lasting and systemic curricula reform.

5. **Translating strategies can encompass a variety of teaching strategies, some of which while compatible with embedded approaches and outcomes of the kind espoused by government policy, are teacher focussed strategies and as such may not represent the most effective or efficient process of acquisition of such outcomes.**

The research literature on university teaching and student learning has convincingly argued the link between student focussed approaches to university teaching and curriculum and high quality learning outcomes (Prosser & Trigwell 1999, Ramsden 2003). Type II Approaches do not encompass this more effective student centred perspective. The development of student focussed approaches to curriculum design and teaching is a key element of current teaching and learning policies at The University of Sydney. *(Link: The Management and Evaluation of Course Work Teaching)*. Curriculum reform targeting this level of outcome might lead to the inclusion of additional taught generic attributes content, or the adoption of different teaching techniques without any fundamental change in the curriculum (See the ATN Report for a discussion of this issue).

6. **Translating and Enabling strategies (which incorporate student focussed teaching approaches) are consistent with both the intention of the University's policy on graduate attributes and its general policy on teaching and learning. However, these most sophisticated understandings bring a different set of challenges.**

Type III Approaches incorporate three different perspectives. These are characterised by two distinct higher level understandings of the nature of graduate attributes as transformative outcomes - and two distinct embedded and learner-focussed approaches to the development of these outcomes. These are compatible with university policy and find support in the research literature on university teaching and learning (Prosser & Trigwell 1999, Ramsden 2003) and contemporary philosophical perspectives on higher education (Barnett 2000). However the challenge of supporting staff in making explicit to students, graduate attribute outcomes that are embedded, not only in disciplinary learning outcomes, but in the process of disciplinary teaching and learning as well as the broader experience of university, is formidable. However, by addressing this, The University would be positioning itself to be at the forefront of teaching in this regard.

7. **While the different approaches provide a hierarchy of increasingly complex outcomes they do not provide a way of assessing different standards of achievement at each level of outcome.**

The issue of assessment of graduate attributes is a key aspect to be addressed in any implementation strategy. The nature of the hierarchy is however compatible with the "Grade Descriptors" approach the ITL has adopted in supporting the University in moving towards standards based assessment. It would be possible to develop a set of generic descriptors for graduate attributes outcomes at the top level of the hierarchy. These could then be contextualised in course and discipline settings by faculties in much the same way that they might contextualise the graduate attribute learning outcomes.
Recommendations  (Endorsed at Meeting of GGA Working Group on 14 March 2003)

Building on the work undertaken in 2002 (see project plan) the next stage of the GGA project is for the core working group to establish some broad policy directions prior to expanding the working group to support the faculty consultation and implementation stage. The following recommendations will provide direction for the next stage of the project:

Preliminary policy directions - (Stage 2 project plan - Semester 1, 2003)

Recommendation (i) That the existing statement listing attributes of graduates of the University of Sydney be revised to reflect the hierarchical nature of these outcomes.

Recommendation (ii) That in identifying the over-arching graduate attributes (and component skills and abilities), the distinctive nature and outcomes of a research intensive undergraduate experience be articulated and the university mission be embodied.

Recommendation (iii) That the policy describing attributes of a graduate of Sydney be revised to include a statement that more clearly identifies graduate attributes as university level outcomes related to, and developed in the context of, discipline knowledge.

Recommendation (iv) That the revised policy statement, while recognising that stand-alone initiatives provide valuable support, clearly identify that the University is adopting as its main strategy, an embedded approach to the development of graduate attributes through incorporation in existing disciplinarily curricula.

Recommendation (v) That the revision of the university's current statement of graduate attributes ensures the new statement, while academic-led, is relevant outside the university community through appropriate consultation with employers, government, past graduates and current students.

Policy Formulation & Initial Implementation: (Stage 3 project plan- Semester 2, 2003)

Recommendation (vi) That the effective achievement of such outcomes will require the fostering of a student centred approach in these embedded curricula strategies which is aligned with the University's general teaching and learning policies, and will be supported by the adoption of research led teaching strategies.

Recommendation (vii) That following the revision of the statement of graduate attributes and the incorporation in the policy of clear strategies to achieve the intended outcomes; ongoing support processes, monitoring systems and reward incentives be put in place to encourage effective (demonstrable and explicit) incorporation of graduate attributes in unit of study and degree program curricula.

Additional recommendations for Implementation are expected to arise from the discussions of the Working Group as the focus extends to implementation in the second half of 2003 and 2004. (See Project Plan 2003).
Stage One: (2002) Preliminary Investigation and data gathering

1. Develop Project plan and employ Research Assistant

2. Develop a set of case studies of best practice that reflect the variety of understandings held by University of Sydney academic staff of generic graduate attributes and the teaching and learning processes by which these are developed.

3. Establish a working group to revise the current University of Sydney graduate attributes to reflect higher level understandings of generic attributes in a research-intensive university.

4. Prepare a discussion paper to support the case studies

Stage Two: (2003) Preliminary Policy directions

1. Discussion and revision of draft discussion document and preliminary recommendations for policy directions & discussion and revision of GGA project plan for 2003

2. Establish ITL web site to support project: Discussion paper & links to key documents, resources, case studies etc.

3. Draft a revised statement of the existing graduate attributes using the hierarchical model of outcomes (4 levels) - which clearly embodies the University’s mission in terms of RLT, internationalisation etc. and is congruent with the theoretical perspective of the University's Teaching and Learning policies. [See Recommendations page 10]

4. Use case studies collected in 2002 to illustrate the range of approaches at each level of the framework to support consultation [See Project plan Stage One - 2002]

5. Development of Generic Grade Descriptors to describe levels of attainment of endpoint attributes.[See issue 7 page 10 of draft Discussion document]

6. Endorsement of draft policy statement by Stage One Working Group (College Representatives, Chair Academic Board, PVC T&L & ITL) for consultation and further development in Stage Two.

Stage Three: (2003) Policy Formulation

7. Expand working group to include faculty representatives and representatives of other key stakeholder groups (Library, Learning Centre etc) to facilitate stage 2.

8. Internal consultation & piloting of policy and framework. This will include contextualisation of outcomes and approaches by faculties/schools (focussing on level 3) and non-disciplinary centres (focusing on level 3, 2 and 1). This will also incorporate piloting with Uniserve Record of Achievement project in Science.

9. External consultation with industry and key government groups. Feedback from consultation and revision of Statement of Graduate Attributes prior to submission to Academic Board for approval

10. Mapping of framework across degrees/schools - a self-assessment audit process which can build on the consultation and pilot process.

11. The identification of a strategy to provide ongoing curriculum development support across the faculties.
Stage Four: (2004) Implementation of policy at degree and unit of study level

12. Development of support processes, monitoring systems and reward incentives to be put in place to encourage effective (demonstrable and explicit) incorporation of graduate attributes in unit of study and degree program curricula. (See recommendation iv)

Some possibilities to consider include using the USE / SCEQ data, building GGA into Faculty T&L Plans and the Academic Board reviews, a special VC's Award focussing on GGA or the incorporation of this into the award criteria. The Stage One Working Group will be asked to consider what these processes might be during the second half of 2003 Meeting and develop some detail for this final recommendation.
Appendix 1: Advantages of different curriculum approaches

Bolt on curricula make the achievement of such generic outcomes explicit. As a discrete component of a degree course structure they can be targeted for support through the allocation of additional resources. They are typically taught by individuals with relevant expertise who value the achievement of such outcomes. Moreover, in the context of quality assurance audits, they can be clearly identified as strategies the university has in place to address graduate attributes. On the negative side, bolt-on initiatives - on their own - are not particularly effective at achieving high-level graduate attribute outcomes. They are typically perceived by students as having little to do with their disciplinary studies and encourage a disjunction between the acquisition of such attributes and the acquisition of disciplinary knowledge and expertise.

The development, practice and assessment of attributes is most effectively achieved within the context of discipline knowledge. (Bowden et al 2000)

Such initiatives require additional resources - both in terms of start up funds to support development of the new curricula and funds to support ongoing teaching. The bolt on approach also requires additional resources in terms of space in an already crowded curriculum and time in students' busy lives. Moreover the indications are that such initiatives do not last after the individual championing the initiative leaves, or additional funding is withdrawn, hence the sustainability as well as the effectiveness of bolt-on initiatives has been questioned (Barrie & Jones 1999, Bowden 2000, Holmes 2002).

Embedded initiatives rely on university teachers' incorporation of strategies within their existing curricula. This may already be happening or it might necessitate changes to the course content, or to the way the content is taught by teachers and learnt by students. At present such changes are, to a large extent, determined by the individual teachers' understandings of the nature and place of such outcomes amongst the more familiar disciplinary learning outcomes of the course. If the teacher does not perceive such outcomes as relevant or important they are unlikely to be included. The way they are embedded varies too - dependent on the teacher's understandings of these generic attributes (Barrie 2003).

On the positive side embedded strategies are consistent with the claim that such outcomes are achieved by the usual higher education process (not some extra process). As part of the usual curriculum they do not require the development and ongoing resourcing of an entirely new curriculum to parallel existing courses. Moreover, depending on how they are embedded, they do not necessarily place an additional demand on already stretched staff and student time in terms of teaching and learning on such courses. The embedded approach also supports the integration of such learning with disciplinary learning, potentially highlighting the relevance and application of such learning for students.

Generic capabilities are best developed when they are embedded in the process and content of (discipline) learning. (Bowden et al 2000)

A significant drawback of the embedded approach arises from the same quality that makes it so effective. When the learning of generic attributes is embedded in the experiences of learning the discipline, such learning may be invisible. That is, the development of generic attributes is often not made explicit (to students in particular) through course outcomes, teaching or assessment strategies, even if the development of generic attributes is implicit in the teacher's understanding of the aims of the course and approach to teaching.

The implicit focus on generic attributes typical of many embedded approaches means there is a risk that even where the intention is that students will acquire such attributes, this may not be the perception or experience of students.
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<thead>
<tr>
<th>Referential (what is meant)</th>
<th>Additive:</th>
<th>Transformative:</th>
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<tbody>
<tr>
<td>Structural (internal and external horizon)</td>
<td>GGA are discrete from other university learning outcomes</td>
<td>GGA are integral to university learning outcomes</td>
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<tr>
<td>Integral substrate:</td>
<td>A: Necessary basic PRECURSOR skills but irrelevant as they are a prerequisite for university entry</td>
<td></td>
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<tr>
<td>Application:</td>
<td>B: Useful skills that COMPLEMENT or round out disciplinary learning</td>
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<tr>
<td>Unrelated:</td>
<td>C: These are the abilities that let students TRANSLATE make use of or apply disciplinary knowledge in the world</td>
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<tr>
<td>Irrelevant:</td>
<td>No aspect of GGA in the foreground, they are ignored at university level. The relationship to other learning outcomes is as low level skills that permit acquisition of content</td>
<td></td>
</tr>
<tr>
<td>What is in the foreground are functional atomistic personal skills that are not related to discipline knowledge</td>
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<td>B: Useful skills that COMPLEMENT or round out disciplinary learning</td>
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<td>What are in the foreground are clusters of linked abilities and skills of application. These abilities are relevant to discipline knowledge</td>
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<tr>
<td>What are in the foreground are networks of inter-woven abilities and aptitudes for learning. These aptitudes shape disciplinary and other knowledge</td>
<td></td>
<td>D: They are the scholarly abilities that infuse and ENABLE university learning and knowledge</td>
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Academics’ understandings of Generic Graduate Attributes
Categories of Description

A - PRECURSOR: Some academics understand generic attributes as necessary basic precursor skills and abilities. However, the expectation is that students will already possess these and that any teaching of such skills at a university level would be remedial only. As such, these skills are seen as largely irrelevant in the context of the courses these academics teach. While the generic skills might be a necessary precursor to the learning of subsequently taught discipline content, no relationship between the attributes and the resultant discipline knowledge acquired through a university education is apparent in this conception.

B - COMPLEMENT: Some academics have a conception of generic attributes as useful additional skills that complement or round out discipline knowledge. What are in the foreground are functional atomistic personal skills that are quite discrete from other university learning outcomes. They are generic skills acquired as the result of a university education and are therefore understood to be outcomes that are part of the university syllabus but separate and secondary to the learning of disciplinary knowledge.

C - TRANSLATE: Some academics have a conception of generic attributes as clustered personal attributes, cognitive abilities and skills of application that let students make use of or apply disciplinary knowledge, thus potentially changing and transforming disciplinary knowledge through its application. The attributes are learning outcomes which graduates possess in partnership with discipline knowledge. The graduate attributes are closely connected with, and parallel, discipline learning outcomes.

D - ENABLE: Some academics expressed a conception of generic attributes, not as separate learning outcomes, but rather as inter-woven abilities and aptitudes for learning that infuse and enable all scholarly learning and knowledge. These abilities are seen as integral to disciplinary knowledge rather than being learning outcomes that were separate, (either as independent or linked outcomes) to discipline knowledge, as in the previous three categories of description. In this conception, graduate attributes are an integral substrate of discipline knowledge and are the core of all scholarly knowledge and learning.

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Understanding Graduate Attributes
Appendix 3: Academics conceptions of how generic attributes are developed.
Second phenomenographic Outcome Space

<table>
<thead>
<tr>
<th>How generic attributes are developed</th>
<th>Referential (what is meant by the structure)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Supplementary</td>
</tr>
<tr>
<td>Structural (internal and external horizon)</td>
<td></td>
</tr>
<tr>
<td>Focus on Teacher and Teaching</td>
<td>Not part of any curriculum</td>
</tr>
<tr>
<td></td>
<td>A secondary curriculum</td>
</tr>
<tr>
<td></td>
<td>Disciplinary Curriculum content</td>
</tr>
<tr>
<td></td>
<td>Disciplinary Curriculum process</td>
</tr>
<tr>
<td>Structural (internal and external horizon)</td>
<td></td>
</tr>
<tr>
<td>Focus on Learner and Learning</td>
<td>Course experience</td>
</tr>
<tr>
<td></td>
<td>University experience</td>
</tr>
<tr>
<td></td>
<td>4. TEACHING PROCESS: Generic attributes are taught through the way the course disciplinary knowledge is taught</td>
</tr>
<tr>
<td></td>
<td>5. ENGAGEMENT: Generic attributes are learnt through the way students engage with the course's learning experiences</td>
</tr>
<tr>
<td></td>
<td>6. PARTICIPATORY: Generic attributes are learnt by the way students participate and engage with all the experiences of university life</td>
</tr>
</tbody>
</table>

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Understanding Graduate Attributes
Academics conceptions of how generic attributes are developed.  
Categories of Description

1 - REMEDIAL: Some academics perceived that the development of generic attributes was not part of university teaching and not generally the responsibility of university teachers. The teaching of such attributes was considered to be the role of previous educators. However, students who had not developed such attributes were considered to require remedial teaching in order to develop generic skills and attributes.

2 - ASSOCIATED: The development of generic graduate attributes involves the teaching of these skills and attributes as an isolated subset of the teaching of the discipline or course. A ‘generic attributes’ curriculum is included as an addition to the usual curriculum. Unlike the previous conception, the teaching of such attributes is seen as important and ideally is included in the curriculum for all students. However, the teaching of such skills remained secondary to, and less important than, disciplinary teaching.

3 - TEACHING CONTENT: Some academics considered that generic graduate attributes were part of course content and are taught by teachers alongside the teaching of disciplinary content knowledge. Conceptions in this category involved the teaching by discipline teachers or non-discipline teachers in collaboration with discipline experts. Rather than being a separate supplementary curriculum, in this conception the course curriculum is perceived to include the teaching of both the discipline content and the generic attributes and the teaching of the generic attributes is integrated with the teaching of discipline content. The focus remains on teaching rather than learning.

4 - TEACHING PROCESS: Some academics perceived the development of generic attributes as being through the way the disciplinary knowledge was taught. The process of teaching disciplinary knowledge provided the opportunities for students to learn generic attributes. They were not necessarily taught as part of the content, as in the preceding conception, however the way the content was taught facilitated the learning of the attributes. The process of teaching was the focus of this conception. The focus in this conception is still on the teacher. However rather than a focus on what is taught, the focus is on the way the curriculum is taught – a focus on the teaching process of the curriculum rather than the taught curriculum content.

5 - ENGAGEMENT: Rather than being understood to be a function of the way the teacher taught, in this structure of awareness the focus is on the way the student learns. The development of the attributes is understood to relate to the way the students interact with the learning experiences of the course. The focus is not on the teaching of either the disciplinary content or generic attributes or on the teaching process, rather it is on the way that the students engage in learning disciplinary knowledge. This focus on the way the learner engages with learning reflects an awareness that the way a student learns is a function of more than just the way the teacher teaches.

6 - PARTICIPATORY: As with the preceding category, the learner is the focus of this conception rather than the teacher, and the way the learner engages in learning is what is important. However in this structure of awareness the learner’s engagement in learning is not restricted to the way the learner engages in the formal teaching and learning experiences of the course. Instead in this conception it is the way the student participates in the broader experience of university life. Academics with conceptions in this category perceived that graduate attributes were developed though the student’s engagement in the learning experience of belonging to both the intellectual and social community of the university, of which the formal course was only one part.
### Synthesis focussing on Referential and Structural Aspects

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Not part of usual university teaching or learning</td>
<td>Generic attributes are taught as a separate, discrete subset of the teaching in university courses.</td>
<td>Generic attributes are taught in the context of teaching the disciplinary content knowledge</td>
<td>Generic attributes are taught/learnt through the way the course disciplinary knowledge is taught</td>
<td>Generic attributes are learnt through the way students engage with the course’s learning experiences</td>
<td>Generic attributes are learnt through the way students engage with the all the experiences of university life</td>
</tr>
</tbody>
</table>

#### A. Precursor
Necessary basic skills but irrelevant as they are a prerequisite for entry

- **Quadrant 4**: Additive outcomes taught in a teacher focussed way in a supplementary curriculum

#### B. Complement
Useful skills that complement or round out disciplinary learning

- **Quadrant 1**: Additive outcomes taught in a teacher focussed way in a supplementary curriculum

#### C. Translation: These are the abilities that let students make use of or apply disciplinary knowledge

- **Quadrant 2**: Transformative outcomes taught in a teacher focussed way integrated within a curriculum

#### D. Enable: They are the scholarly abilities that infuse and enable personal & disciplinary learning and knowledge

- **Quadrant 3**: Learner focus
- **Quadrant 4(a)**: Additive outcomes taught in a teacher focussed way in a supplementary curriculum
- **Quadrant 4(b)**: Learner focus

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Appendix 4: Approaches to the teaching and learning of Graduate Attributes

Category I: Additive outcomes taught in a teacher focussed way in a supplementary curriculum

1. Graduate attributes are basic prerequisite skills which students should already possess, they are only taught in remedial classes at university (A:1)

2. Generic attributes are skills and abilities that can complement, but not modify disciplinary knowledge and are taught to all students as an unrelated add-on to the existing curriculum. (B:2)

Category II: Transformative outcomes taught in a teacher focussed way in an integrated curriculum

3. Generic graduate attributes make disciplinary knowledge relevant and are taught as part of discipline content. (C:3)

4. Generic graduate attributes make disciplinary knowledge relevant and are learnt through the process of teaching discipline content. (C:4)

Category III: Transformative outcomes taught in a learner focussed way in an integrated curriculum

5. Generic graduate attributes make disciplinary knowledge relevant and are learnt through the way students engage with the course’s learning experiences. (C:5)

6. Generic attributes are complex abilities that infuse learning and knowledge and are learnt through the way students engage with the course. (D:5)

7. Generic attributes are complex abilities that infuse learning and knowledge and are learnt through the way students engage with university. (D:6)
APPENDIX 5: Layered policy and practice: An example of interaction across different conceptions of graduate attributes outcomes & processes

<table>
<thead>
<tr>
<th>What graduate attributes are</th>
<th>Mission statement: Graduates of the university will be scholarly citizens able to contribute to humanity through their work and participation in society.</th>
<th>How learnt</th>
</tr>
</thead>
<tbody>
<tr>
<td>D: Interwoven networks of higher level learning abilities and aptitudes that provide a framework for discipline knowledge</td>
<td>Scholarship</td>
<td>Global Citizenship</td>
</tr>
<tr>
<td>6: Learnt through whole university experience</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5: Learnt through course experience</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C: Linked clusters of specialised skills and abilities related to discipline content</td>
<td>Written communication capabilities as required for the preparation of journal articles in the discipline</td>
<td>Knowledge of and respect for ethics and ethical standards in relation to the discipline</td>
</tr>
<tr>
<td>4: Taught by course teaching process</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3: Taught as part of course content</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C4</td>
<td>Understanding of the professional’s social and civic responsibility</td>
<td>Specific technical laboratory report writing formats</td>
</tr>
<tr>
<td>C3</td>
<td>Oral communication skills relevant to participation in intellectual debate and discussion.</td>
<td>A discipline relevant knowledge of other cultures and times and an appreciation of diversity</td>
</tr>
<tr>
<td>B2</td>
<td>Higher level Atomistic, undifferentiated personal and functional skills unrelated to discipline content</td>
<td>Creative thinking skills</td>
</tr>
<tr>
<td>2: Taught as adjunct to course</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A1</td>
<td>A: Lower level atomistic skills unrelated to university</td>
<td>English language skills</td>
</tr>
<tr>
<td>1: Taught in remedial classes</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>