

# A research-based approach to generic graduate attributes policy

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For many years universities around the world have sought to articulate the nature of the education they offer to their students through a description of the generic qualities and skills their graduates possess. Despite the lengthy history of the rhetoric of such policy claims, universities' endeavours to describe generic attributes of graduates continue to lack a clear theoretical or conceptual base and are characterized by a plurality of view-points. Furthermore, despite extensive funding in some quarters, overall, efforts to foster the development of generic attributes appear to have met with limited success. Recent research has shed some light on this apparent variability in policy and practice. It is apparent that Australian university teachers charged with responsibility for developing students' generic graduate attributes do not share a common understanding of either the nature of these outcomes, or the teaching and learning processes that might facilitate the development of these outcomes. Instead academics hold qualitatively different conceptions of the phenomenon of graduate attributes. This paper considers how the qualitatively different conceptions of graduate attributes identified in this research have been applied to the challenge of revising a university's policy statement specifying the generic attributes of its graduates. The paper outlines the key findings of the research and then describes how the university's revision of its policy statement has built upon this research, adopting a research-led approach to academic development. The resultant two-tiered policy is presented and the key academic development processes associated with the disciplinary contextualization of this framework are considered. The discussion explores some of the implications of this novel approach to structuring a university's policy, in particular, the variation in the relationship between discipline knowledge and generic attributes which was a key feature of the qualitative variation in understandings identified in the research.

## Introduction

Universities around the world have claimed various sets of generic attributes on the part of their graduates for many decades—in some cases since the inception of the university, as in the case of Cardinal Wooley's original statement in 1862 in his opening address at Australia's oldest university.

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Our undergraduates ... will, we may reasonably hope possess a well cultivated and vigorous understanding: they will have formed the habit of thinking at once with modesty and independence; they will not be in danger of mistaking one branch of science for the whole circle of knowledge, nor unduly exaggerating the importance of those studies 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, quoted in Candy, Crebert, & O'Leary, 1994, p. 21)

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Such statements of generic graduate attributes seek to articulate the nature of the education the university offers to its students and through this an aspect of the institution's contribution to society. In Australia, 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)

Unlike many generic, key or employable skills statements in the United Kingdom, Australian statements of generic graduate attributes (Bowden *et al.*, 2000; Hager *et al.*, 2002) explicitly 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)

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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 to a range of contexts. It is intended that university students acquire these qualities as one of the outcomes of successfully completing any undergraduate degree at university.

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

1. These outcomes are referred to as *generic* in that it is claimed they are 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.
2. They are abilities 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.
3. They are often referred to as *generic attributes* rather than generic skills in recognition that as outcomes they encompass more than skills and attitudes. As

well as being a more global term for such outcomes it is one that can encompass new or alternative conceptions of wisdom and knowledge.

4. These outcomes result from 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.

Such statements are typically claimed to reflect the collective understandings of the university community in terms of the generic outcomes of a university education (Bowden *et al.*, 2000). However, the experiences of authors reporting in the literature on initiatives to foster the development of such attributes either in their own classrooms or in academic development contexts would suggest the need to question the extent to which this rhetoric does reflect a shared understanding (Clanchy & Ballard, 1995). In much of the literature there is a suggestion of apathy and even resistance on the part of some colleagues to generic attributes initiatives (Holmes, 2000). Even where such initiatives occur, approaches to the teaching and learning of graduate attributes are hugely varied (Fallows & Steven, 2000) and, despite sometimes extensive support, have not always met with success when considered at an institutional or national university system level.

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[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, Dunne, & Carre, 1999, p 90)

Even though claims of graduate attributes sit at a vital intersection of many of the forces shaping higher education today (Barnett, 2000), they by and large lack the support of a conceptual framework or theoretical underpinning. Universities' endeavours to describe and foster the development of generic attributes of graduates are characterized by a plurality of viewpoints and approaches (Kemp & Seagraves, 1995; Coaldrake, 1998; Drummond *et al.*, 1998). Recent research (Barrie 2002, 2003, in press) revisiting the rhetoric of institutional claims of generic graduate attributes from the perspective of phenomenography (Marton & Booth, 1997) has shown that Australian university teachers charged with responsibility for developing students' generic graduate attributes do not share a common understanding of either the nature of these outcomes, or the teaching and learning processes that might facilitate the development of these outcomes. Instead academics hold qualitatively different conceptions of the phenomenon of graduate attributes, in terms of what is learned and how such outcomes are achieved. In the conceptions identified in this research particular understandings of graduate attribute outcomes are associated with particular approaches to the teaching and learning of such outcomes.

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These findings shed new light on universities' claims of a certain set of generic attributes on the part of all graduates, regardless of the particular degree studied. Such claims are currently being critically re-examined in some Australian universities in the

context of attempts to implement more systematic and widespread curriculum reform to address the efficient development of graduate attributes through university education. Such curricular reform and development poses a considerable challenge to existing policy statements and for the academic development units charged with supporting their implementation in curricula and teaching.

This paper considers the implications of the variations in understandings of graduate attributes identified in the research, in the context of a research-led academic development initiative. In doing so the paper considers how the empirically derived qualitatively different conceptions of graduate attributes might first be applied to the challenge of revising a university's policy statement of graduate attributes, as a precursor to developing a coherent approach to the development of these attributes in the context of students' experiences of university education. Such a research-based approach to the development of statements of the generic attributes of graduates has been conspicuously absent from most Australian universities' policy formulation in this area.

### **The research underpinning the policy revision**

Understanding the different ways members of the various disciplinary communities of the university conceive of generic graduate attributes in relation to the more familiar university learning outcomes is a necessary precursor to any review of existing policy and meaningful, effective and lasting curriculum development. Research into university academics' understandings of the place of graduate attributes in the usual university curriculum has highlighted the reality of these disparate views (Barrie 2002, 2003, in press). This research used a phenomenographic approach (Marton & Booth, 1997) and focused on the activities of university teachers charged with developing graduate attributes as part of the usual undergraduate experience. The research found that academics express very different understandings of graduate attributes as an outcome of a university education. These different understandings or conceptions of graduate attributes do not simply reflect disciplinary differences; that is, academics in widely different disciplines can share the same understanding of the nature of graduate attributes. Similarly, academics in the same discipline can hold very different understandings, which are realized differently in their teaching and curricula. Significantly, within a discipline, academics can hold fundamentally different understandings as to how generic such outcomes are. Importantly, the different conceptions identified position graduate attributes differently in terms of the nature and complexity of the skill or attribute and their relationship to discipline knowledge. This has implications for the ways that academics incorporate the teaching and learning of these attributes, claimed as outcomes in policy, in their teaching and curricula.

The research identified a hierarchy of four increasingly complex understandings of the nature of graduate attributes as *outcomes* (the first phenomenographic outcome space). Related to these understandings of outcomes were six different understandings of the *process* of teaching and learning such attributes and certain outcomes

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were associated with certain processes (Barrie, 2003). This paper is based on the results of the first phenomenographic outcome space. It discusses the application of the research findings regarding understandings of graduate attributes as outcomes to the description of graduate attributes in a university's policy statement. In doing so it considers how the tensions sometimes apparent in the relationship between discipline knowledge and generic attributes might be addressed from the perspective offered by the research. Variation in the relationship between discipline knowledge and generic attributes was a key feature of the different understandings of generic attributes identified in the research. Insights into these different relationships provide a way of recognising disciplinary differences and managing the tension between generic and contextual attributes, within a policy framework that is still generic and coherent across a large and diverse university.

The conceptions of generic attributes identified in the research can be described in terms of four categories representing qualitatively distinct understandings of how academics target graduate attributes in their courses.

### *1. Precursor conceptions of 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 from 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. 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. In this conception generic attributes are truly generic—they are the same regardless of which academic discipline the student is entering.

### *2. Complementary conceptions of 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.

### *3. Translation conceptions of 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 from discipline knowledge, 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 specialized and differentiated forms of underlying generic abilities which are developed to meet the needs of a specific discipline or field of knowledge. Because of their 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.

### *4. Enabling conceptions of 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 (a way of relating to the world, or to knowledge, or to themselves). In these strategies, graduate attributes provide the skeleton for 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 generic attributes transcend the disciplinary contexts in which they were originally acquired.

The four categories of description (different understandings) identified in the research are hierarchical, with enabling strategies subsuming and being supported by translation strategies, which in turn are supported by complementary and precursor approaches. Such a hierarchy is logical, not only in terms of the features of the empirically-derived categories of description, but also pragmatically. As with most

dimensions of human capability and knowledge, graduate attributes would not be expected to spring into being fully fledged. Such outcomes are more likely to be the result of a 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 the understandings of graduate attribute outcomes expressed 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 more discipline-based translation approaches, as steps towards the achievement of the higher-level outcomes. Such a layered policy can also incorporate the specification of complementary and precursor strategies as providing valuable non-discipline-based support for all students and specialized support for students who lack the basic university-level entry skills.

The research has been applied in this way to the task of revising the University of Sydney's policy statement specifying the generic attributes of its graduates. The application of this research to the task of revising and implementing a university's policy statement on graduate attributes is presented here as an example of research-led academic development. From this perspective, it was possible for the university's existing, conglomerate list of different types of generic skills to be re-organized, rather than redeveloped from scratch. This approach also allowed the role of the different types of initiatives already in place to be recognized. Inherent in such a hierarchical or layered policy statement of graduate attribute outcomes is the accommodation of different understandings of graduate outcomes as increasingly complex skills or abilities and as outcomes with different relationships to discipline knowledge, as identified in the research. In particular, the policy accommodates the significantly different conception of generic attributes as outcomes that are either clusters of personal attributes, cognitive abilities and skills of application or outcomes that represent interwoven networks of these clusters. It also articulates the variation in the relationship between disciplinary knowledge and graduate attributes. These two qualities are key features of conceptions in the translation and enabling categories.

### **Policy revision**

The revision of the university's policy statement of graduate attributes was an initiative of the Chair of Academic Board and the Pro-Vice Chancellor (Teaching and Learning). In undertaking this initiative the university's academic development unit adopted a research-based approach. This approach aimed to use the insights from research to make sense of the diversity of existing practice while providing some coherence across the institution and permitting realistic implementation.

As a first step the findings of the research were used to inform a consideration of current graduate attributes policy and practice at Sydney University and several other

Australian universities. From this investigation two key factors stood out, in terms of approaches to framing statements of graduate attributes, which provided an insight into possible reasons why previous implementation of curricula and teaching to develop graduate attributes was so patchy.

Typically, statements of graduate attributes were a conglomerate of different level skills and abilities in which graduate attributes were described as piecemeal and atomistic skills. For example, the university's previous list of skills was organized as if thinking skills had nothing to do with cognitive abilities or communication skills, and as if generic attributes had nothing to do with discipline knowledge. More importantly the list did not bear much resemblance to the sorts of holistic and integrated human capabilities that the university's rhetoric espoused for its graduates. There was a problem with the nature and organization of the list rather than simply which items were included.

Typically, existing graduate attributes curricula included a range of approaches. These ranged from doing nothing, to utilising different add-on curriculum strategies or embedded approaches, to strategies where such attributes formed the very core of the curriculum. How to make sense of this variety? In light of the importance of teachers' conceptions of teaching and learning in shaping teaching practices and curricula (Prosser & Trigwell, 1999), such a range of curricular approaches could be considered to reflect fundamental differences in what academics understood graduate attributes to be and how these might be taught or learned. The research provided a description of the key features of these different approaches to teaching generic attributes and how these different approaches related to each other (Barrie, 2003).

In effect, the variation in conceptions of graduate attributes identified by the research provided a way for the group charged with the review of the policy to recognize and understand the variation implicit in existing practice and policy. The framework identified by the research suggested a way to structure the university's policy and also provided a tool that allowed the project group to organize the rather chaotic mix of graduate attributes curricula strategies already in place in relation to this policy. Moreover, the hierarchical structure of the framework helped to highlight some of the gaps in existing curricular strategies. In a general sense the research's description of the various understandings of graduate attributes provided a tool to help members of the university community talk about graduate attributes. It helped bring to the surface some of the implicit assumptions held by academics about such outcomes. In doing so it helped those who might be resistant to the idea of graduate attributes to more easily understand the different perspectives their colleagues held.

The policy was revised in the following ways:

1. The existing statement listing attributes of graduates of the university was revised to reflect the hierarchical nature of these generic graduate outcomes.
2. In identifying the over-arching graduate attributes (as attitudes or stances towards the world and the graduate's place in the world), the broader notions of the university's mission were embodied in terms of alternative conceptions of knowledge and wisdom.



3. The policy was revised to include a statement that more clearly identified graduate attributes as university-level outcomes related to, and developed in the context of, discipline knowledge and the broader experience of belonging to a learning community.
4. The revised policy statement, while recognizing that stand-alone initiatives provide valuable support, clearly identified that the university would adopt as its main strategy an approach to the development of graduate attributes which was embedded in existing disciplinary curricula.
5. The revised statement, while academic-led, was made relevant outside the university community through appropriate consultation with employers, government, past graduates and current students.
6. The revision recognized that the effective achievement of such outcomes would require the fostering of a student-centred approach in these embedded curricular strategies which was aligned with the university's general teaching and learning policies, and would be supported by the adoption of research-led teaching strategies.

### **What was developed: a research-based policy framework**

In line with the university's mission the revised policy identifies three holistic overarching attributes as important outcomes of university education: scholarship, global citizenship and lifelong learning. In terms of the hierarchy of understandings identified in the research, these outcomes are analogous to the top level enabling conceptions of graduate attributes. These are defined as follows:

1. Scholarship: *An attitude or stance towards knowledge*: Graduates of the university will have a scholarly attitude to knowledge and understanding. As scholars, the university's graduates will be leaders in the production of new knowledge and understanding through inquiry, critique and synthesis. They will be able to apply their knowledge to solve consequential problems and communicate their knowledge confidently and effectively.
2. Global citizenship: *An attitude or stance towards the world*: Graduates of the university will be global citizens, who will aspire to contribute to society in a full and meaningful way through their roles as members of local, national and global communities.
3. Lifelong learning: *An attitude or stance towards themselves*: Graduates of the university will be lifelong learners committed to and capable of continuous learning and reflection for the purpose of furthering their understanding of the world and their place in it.

The policy recognizes the development of these three overarching enabling graduate attributes as being supported by the development of skills and abilities in five key clusters. These five clusters embody the next level of the hierarchy, the translation



Figure 1. Enabling graduate attributes and translation-level attributes

conception of graduate attributes as disciplinary clusters of personal attributes, cognitive abilities and skills of application:

1. Research and inquiry: Graduates of the university will be able to create new knowledge and understanding through the process of research and inquiry.
2. Information literacy: Graduates of the university will be able to use information effectively in a range of contexts.
3. Personal and intellectual autonomy: Graduates of the university will be able to work independently and sustainably, in a way that is informed by openness, curiosity and a desire to meet new challenges.
4. Ethical, social and professional understanding: Graduates of the university will hold personal values and beliefs consistent with their role as responsible members of local, national, international and professional communities.
5. Communication: Graduates of the university will recognize and value communication as a tool for negotiating and creating new understanding, interacting with others, and furthering their own learning.

As is the case with the underlying phenomenographic research framework itself, the policy's top-level enabling attributes are, in effect, a different way of understanding the five translation-level attributes (Barrie, 2003). The policy might be thought of as describing the same attributes in two different ways (see Figure 1). It is the features (derived from the research) implicit in these two different levels of description that give the policy both its coverage and its disciplinary relevance.

The aim was to develop a revised policy statement of the generic attributes of graduates that would provide a degree of coherence across the university. The policy

needed to be university-wide and relevant to the broader institutional focus and the university's place and purpose in contemporary society. Yet this institutional relevance also had to be clearly achievable in each of the different disciplinary contexts of the 17 faculties of the university. The university's mission statement suggested broad outcomes for graduates related to the nature of the institution and its academic community. In particular, the distinctive features of a research-intensive undergraduate experience were articulated in the notion of graduates who were contemporary scholars, and the idea of graduates as lifelong learners capable of participating, through their work and personal life, as members of a global society.

Many researchers have consistently identified that high-level graduate attributes are most effectively developed in the context of discipline knowledge, embedded within disciplinary curricula rather than addressed by stand-alone strategies that are divorced from discipline content (Bowden *et al.*, 2000). This does, however, stand in some tension with the notion of a common set of outcomes across these different disciplinary contexts. In those faculties where external professional accrediting requirements existed, the statement of graduate attributes also needed to be appropriate to various employer groups and accrediting bodies.

So the possibility of effective implementation at a faculty level required that the university policy recognize and value the intimate connection between the development of attributes and the disciplinary context in which they are developed, while at the same time articulating the shared institutional commitment embodied in the university's mission. Thus the policy statement explicitly articulated the hierarchical relationship between the top-level enabling attributes and the subsumed third-level translation attributes.

Clearly a university policy statement based solely on a translation conception of graduate attributes would stand in tension with the requirement that the policy be university-wide, relevant across the many disciplines represented in the university and articulate a shared understanding of the outcomes of university education. Hence the policy also articulates the three holistic overarching attributes as important shared outcomes of university education: scholarship, global citizenship and lifelong learning. This two-tiered policy provides a framework which is structured to reflect both the enabling conception and the translation conception of graduate attributes.

Explicitly recognizing the discipline focus and non-generic nature of graduate attributes inherent in the translation conception elements of the policy statement potentially allows contextual relevance to be highlighted. This sort of two-tiered policy on graduate attributes suggests that when the policy is adopted by a faculty it should maintain a strong disciplinary focus, even to the extent that *details* of the five clusters of personal attributes, cognitive abilities and skills of application which constitute generic attributes at this level of the statement of attributes be written in the language of the discipline.

However, such a framework is only the first step in allowing such disciplinary relevance to be realized. This process of interpretation of the details of the five common clusters specified in the policy will be discussed in the next section.

Before considering this aspect of the policy revision, what of the other

conceptions of graduate attributes identified in the research: the complementary and precursor conceptions? These conceptions are not articulated on the policy statement describing the final outcomes of a university education. Complementary and precursor conceptions of graduate attributes are considerably different to the higher-level attributes described by translation and enabling conceptions and do not, of themselves, represent the sort of outcomes of an undergraduate education espoused by the university. However the hierarchical nature of the categories of description, upon which the policy is based, recognizes the role of such precursor and complementary level abilities and the associated strategies to develop such skills. Strategies at this level might include, for example, introductory library skills courses and cross-institution introductory academic writing and plagiarism courses. Initiatives such as foundation generic skills and transition to university programs, while insufficient on their own, provide a valuable and in many cases necessary foundation for the development of translation and enabling level graduate attributes. The hierarchy provides a way of seeing how existing strategies at this level (for instance a library skills course) articulate and lead to the development of more discipline-specific academic and information literacy skills, which in turn contribute to the development of outcomes such as the capacity for lifelong learning in graduates.

### **Developing interpreted statements of the policy in the disciplines**

Importantly, the features of the translation conception identified in the original research revealed that the particular skills and abilities that comprise the five key translation-level clusters are likely to vary from discipline to discipline. This is a function of the intimate relationship between generic attributes and discipline knowledge in this conception. In addition, understandings of the teaching and learning of such translation attributes were of the development of such outcomes by students within a disciplinary context.

In recognition of this, the revised university policy encouraged the *interpretation* of these five clusters by different disciplines. To facilitate this interpretation, a working group was established comprising a Dean's nominee from each of the 17 faculties of the university. Working with colleagues in their respective faculties, each of these representatives developed a list of discipline-specific skills and attributes that would constitute each of the five clusters of attributes specified in the central policy. For example the Conservatorium of Music developed a set of skills and abilities that would constitute research and inquiry skills in their discipline, and the faculty of Engineering developed a different list to explicate the notion of research and inquiry in their unique disciplinary context. In some faculties, particularly those where there was a professional accreditation requirement, there already existed industry statements of graduate attributes for these professions. These statements were already a feature of the curriculum in these faculties and were also incorporated into the faculty's statement of attributes under each of the five clusters. For example the faculty of Engineering considered the Institute of Engineers Australasia statement of require

ments for an engineering graduate (see Barrie, Jain, & Carew, 2003, for a discussion of the different contextualized attributes and the industry mapping process). In each case the statements of faculty graduate attributes were encompassed within the five clusters identified in the central policy framework, giving added support to the clusters identified. These clusters were identified on the basis of a review of similar universities' statements and the subsequent supplementation and re-organization of the university's existing statement of attributes within the hierarchical structure identified in the research.

This process provided each faculty with the opportunity to realize discipline-specific translation-level attributes within the shared framework of the university's statement of attributes of all graduates. The faculties' interpretations of the university policy identify attributes that are specific to their own disciplinary context, and as such are written in the language of the discipline. This ensures that the attributes are relevant to students and potentially meaningful to employer groups and external accrediting agencies. At the same time each faculty's interpretation is based on the shared university framework, providing coherence across the institution.

While the development of each faculty's interpreted statement of graduate attributes necessarily involved consultation with the members of the university community in each faculty, a further, more extensive process of consultation on each faculty's statement is currently underway. This second-stage consultation process is grounded in a web-based curriculum mapping exercise using each faculty's statement of graduate attributes. This process involves the coordinators of each unit of study in the faculty considering the extent to which each of their faculty's graduate attributes are developed in their units of study. While curriculum mapping of generic attributes is a common feature of many universities' attempts to assure the development of graduate attributes, in this case such mapping is being used as a consultation process rather than simply as an audit. The consideration by academics of their faculty's interpretations of the university's graduate attributes in the context of their own curricula is providing a site for conversations amongst academics and between academics and members of the university's graduate attributes project group as to their varying understandings of generic attributes. The categories of description on which the statements are based provide a valuable common vocabulary for these conversations. In going beyond the surface acceptance of a shared understandings of terms like 'communication skills', the research findings provide a way of allowing academics to understand more easily how their individual understandings might differ from, or be similar to, those of their colleagues. As a result they may more clearly see where their own teaching and curriculum strategies fit into the faculty's and university's overall strategy.

To date the feedback from faculty representatives, and the data collected in the mapping exercise, indicate that the faculty-based statements of graduate attributes have a high level of acceptance with academics and the structure of the central policy is effectively accommodating the diversity of discipline-based practice in a coherent manner.

## Conclusion

This paper has presented a research-based academic development initiative. The research finding of variation in academics' conceptions of graduate attributes has been applied to the task of revising a university's policy statement of the generic attributes of its graduates. This sort of research-based approach to the structuring of statements of graduate attributes has been missing in Australian universities' formulation of policy statements. Instead, statements of generic graduate attributes have typically been based upon compilations of those attributes which are perceived by various stakeholders to be popular or important, apparently without any understanding or significant critical scrutiny of the nature of the outcomes these attributes represented. Clearly the phenomenographic research into academics' understandings of graduate attributes used in the undertaking described in this paper provides only one such research perspective on the nature of the items included in lists of graduate attributes. Graduate attributes policy formulation and implementation strategies will also clearly be usefully informed by other research in various contexts.

However, the findings of the research described in this paper have provided a helpful framework for making sense of the diversity of graduate attribute initiatives in place at the University of Sydney, as well as a framework for the revision of the current policy statement of graduate attributes. In particular the research provided a different way of approaching the task of developing a policy statement of graduate attributes, as a hierarchy of increasingly complex outcomes ranging from precursor and generic foundation skills to contextualized disciplinary abilities and complex human capabilities and aptitudes. In doing so the research framework provides a way for different disciplines to interpret graduate attributes in the context of their own epistemologies and discipline knowledge. At the same time it also highlights how these disciplinary interpretations might build on institution-wide foundation skills programs and still relate to the overall picture of the truly 'generic' outcomes of a university education.

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