

Conceptions of Generic Graduate Attributes

A phenomenographic investigation of academics' understandings of generic graduate attributes in the context of contemporary university courses and teaching

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CERTIFICATE OF AUTHORSHIP / ORIGINALITY

I certify that this thesis has not previously been submitted for a degree nor has it been submitted as part of requirements for a degree except as fully acknowledged within the text.

I also certify that the thesis has been written by me. Any help that I have received in my research work and the preparation of the thesis itself has been acknowledged. In addition, I certify that all information sources and literature used are indicated in the thesis.

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Abstract:

In recent years Universities have attempted to articulate the generic outcomes of the educational experiences they provide, beyond the content knowledge that is taught. In Australia these outcomes have come to be known as generic skills or generic graduate attributes, although they are also referred to by a range of other terms. Much like aspects of a mission statement, universities have claimed that these are the core outcomes of higher education at the particular institution and that every graduate of every degree will possess these. However there is considerable variability in what is claimed by different institutions, both in terms of which outcomes are included and the nature of these outcomes, ranging as they do from low level technical skills to complex personal attributes and values. As outcomes, this variability is magnified in the inconsistency with which such attributes are addressed in the curriculum and, where they are addressed, in the variety of pedagogical approaches employed. The observation of such variability was the starting point of this study.

This research is broadly situated within the phenomenographic perspective on teaching and learning (Marton & Booth 1997). In the investigation described in this thesis, phenomenographic analysis is used to identify and describe the qualitatively different ways in which a group of academics, from different disciplines, understand the teaching and learning of graduate attributes in the context of their own courses and teaching.

Four qualitatively distinct conceptions of the nature of graduate attributes and their place amongst the outcomes of a university education are identified. These are related to six distinct understandings of the way in which students develop such attributes at university. The relationships between these two hierarchical aspects of academics' understandings of graduate attributes, (conceptions of what it is that is taught/learnt and conceptions of how it is taught/learnt) constitute seven logical and internally consistent understandings of the phenomenon. These seven understandings represent three broad approaches to the teaching and learning of graduate attributes.

The conceptions identified in this analysis provide a way of making sense of the variety of policy statements and the range of curricula approaches reported in the literature. Moreover, these conceptions of graduate attributes provide a tool to support current attempts to implement systematic curriculum reform across a university.

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Chapter One: PHENOMENON

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PHENOMENON

Graduate Attributes: Setting the scene

The research described in this thesis had its origins in questions that arose in course of my discussions with colleagues whilst engaged in academic development work over several years. Ultimately the purpose of academic development in universities is to improve the quality of student learning (Ramsden 1992). As such, the facilitation of change in university teaching and learning processes often raises fundamental questions as to the intended purpose, outcomes and nature of universities in contemporary Australian society. What is the 'quality learning' such academic development aims at achieving? The specific issues this research seeks to explore had their genesis in such broad questions. In introducing the reader to this thesis it seems appropriate to first share some of the observations and reflections that led the author to this particular corner of the higher education field and ultimately contributed to the formulation of the specific inquiry described in this thesis.

Personal reflections: The genesis of the inquiry

It would seem to many observers that the nature of universities is changing. As a social institution they are struggling to remake themselves in response to internal and external forces and critical appraisal of both their processes and outcomes. Smith and Webster (1997) in their discussion of universities as an imagined community, have noted the impact of many factors as contributing to the changing face of such a community. These factors include; the changing relationship between the university and society, the rapid expansion of student numbers and the advent of mass higher education, the increasing heterogeneity of the student population and in particular the varied aspirations of students, the articulation between work and study, the evolving perception of students as consumers and the changing basis of funding and associated demands for accountability based on different views of 'quality'. Postmodern perspectives on the nature of knowledge have further challenged assumptions regarding the purpose of a university in terms of student learning outcomes. Moreover, the recent explosion of alternative education providers and the advent of flexible delivery of education using new communication and information technologies is

exerting a profound influence on the traditional forms and outcomes of university teaching and learning, with the advent of the virtual university an obvious example.

In seeking to accommodate new demands and reinterpret the university's purpose and role in the face of society's changing aspirations, universities have attempted to clarify the nature of the education they offer to their students and through them, their contribution to society (Barnett 1990). One way in which universities have sought to articulate this aspect of their role and purpose is through a description of the qualities and attributes of their graduates.

In Australia, these descriptions have tended to be the products of individual institutions rather than a national statement of the graduate outcomes of the country's or society's higher education system as a whole. The statements of 'graduate qualities' vary between institutions and across higher education systems, both within Australia and globally. The particular institution's values and beliefs as well as the political and social climate in which they exist, colour these descriptions of graduate attributes. In many cases, while supposedly anchored in the rich cultural traditions of the institution that produced them such descriptions arose, fully fledged, in a remarkably short space of time. The extent to which the rhetoric of such statements actually represents a shared understanding of the outcomes of a university education has been debated and remains unclear. Certainly existing graduate attributes statements reflect a bewildering array of understandings as to the core characteristics of a university graduate. Moreover, the extent to which present day university teaching and learning processes actually develop such outcomes in graduates is even less clear and certainly more contestable.

All publicly funded Australian universities currently have some form of statement of graduate attributes, primarily in response to Government requirements that they do so. While the rhetoric of such institutional policy may be clear, it would appear from conversations with academic colleagues and students, as well as from the literature and existing research on graduate attributes, that the individual members of the university community are somewhat less clear in their understanding of the purpose and outcomes of a university education as described by these statements of graduate attributes.

While Australian universities have been eager to claim various attributes on behalf of their graduates, there are indications that they have been less eager or less efficient in instituting practices designed to foster the development of such attributes in students.

In some institutions the assumption has been that students already developed such attributes as an outcome of the existing processes of university education. As such all that was required was an explicit statement of these outcomes, while the development of such outcomes was considered to be implicit in existing practice. Unfortunately the explicit statements of outcomes were rarely matched by explicit assessment of such outcomes in the existing university teaching and learning process. In other institutions and departments the formulation of such statements of graduate outcomes sparked a fresh round of curriculum development and teaching innovations targeting the achievement of a particular graduate attribute from the university's list, for example 'written communication'. Often the less popular or more problematic attributes on the list (for example 'ethical values') were ignored by such initiatives, perhaps on the premise that no single course could address all the attributes or that somebody else would cover these. Unfortunately it would seem that even when such curriculum development occurred, many of these innovations were ephemera, fading with the departure of the interested staff member or the withdrawal of funding support, or swept away in the face of competition for curriculum space to cover more vital 'content'. Despite the particular university's claims of particular attributes for all graduates, such curriculum reform appears to have been patchy and inconsistent not only in the attributes covered, but in the manner and extent to which they are covered. Often such initiatives are at the level of the individual teacher or subject and instances where statements of graduate attributes have played more than a minor part in overall course curriculum design appear to be rare in Australian universities.

The bewildering variation in statements of graduate attributes is mirrored in the variation in the university teaching and learning practice in the area of graduate attributes. In terms of confusion and variability, practice (for once!) mirrors policy. Certainly the overall picture of curriculum development at an institutional level in Australia appears to be incoherent and largely ineffective, and the picture is not one of a planned or theoretically informed development. This is similar to the picture seen in other higher education systems. This 'patchy' implementation is the case even in the United Kingdom's higher education system which has a considerably longer history of curriculum development in this area and where significant financial support has been provided for graduate attributes initiatives both by individual universities and across the

sector through various Higher Education Funding Council initiatives. Unfortunately, despite the support of such implementation strategies, progress towards a coherent approach to the development of graduate attributes remains elusive (Drummond et al 1998).

It is only in recent years that some Australian universities (notably members of the Australian Technology Network) have begun to develop implementation strategies to address institutional policies claiming such attributes. In the future it may be hoped that the development of these implementation strategies and accompanying resources will prove helpful in supporting academics in developing graduate attributes curricula, however it is too early to tell at present. Certainly it can be hoped that these implementation initiatives meet with more success than has been the case in most institutions in the United Kingdom.

However, in the author's opinion, it appears unlikely that any implementation strategy will be truly effective unless it also addresses the underlying confusion as to the nature of graduate attributes which is apparent in the both the policy statements and existing practice related to graduate attributes.

This study had its origins in such reflections. It arose from the author's personal experience of the confusion arising from the variation in how the members of a university community understood graduate attributes. It was with the intention of exploring this variation that this research set out. Perhaps understanding something about the different ways in which the academic members of the university community have understood graduate attributes would be helpful to us in moving towards achieving such outcomes with our students. It was with this goal in mind, and with the hope of contributing in some small way to the processes of academic development related to graduate attributes, that the inquiry described in this thesis was formulated.

Overview of the structure of the thesis

This thesis is divided into seven chapters, with chapter titles that reflect the approach taken in exploring the topic, (or 'phenomenon' as it would be termed in phenomenography), of graduate attributes. This titling of the chapters reflects the pervasive influence of the phenomenographic perspective on the writer's thinking in relation to the inquiry described in this thesis.

Chapter One: Phenomenon: The first chapter introduces the topic of the research - graduate attributes and locates the consideration of graduate attributes in the higher education context. It explores how significant forces impacting on the Australian higher education system have contributed to the emergence of claims of graduate attributes by Australian universities. The influence that these forces have had in shaping the sorts of attributes claimed is considered. In providing a broad overview of the area of inquiry the chapter introduces the intention of the research to investigate the nature of these attributes which universities have claimed on behalf of all graduates

Chapter Two: Variation: The second chapter explores the variation apparent in the literature on the topic of graduate attributes in greater depth. It considers the variation in the graduate attributes claimed in university policy statements and the variation in teaching and curriculum practice reported in the literature. This consideration highlights the absence of a coherent theoretical or conceptual basis for these accounts of graduate attributes. The apparent multitude of meanings given to the term graduate attributes is raised as an issue for investigation and a perspective which embraces such multiple views and understandings is suggested as relevant in undertaking such an investigation. This chapter focuses the inquiry on the question 'What are these things called graduate attributes?'

Chapter Three: Experience: The third chapter considers how, in the face of such apparent variation in understandings, such an investigation might be approached. The research tradition of phenomenography is introduced and its underlying ontological commitments examined. The particular relevance and utility of phenomenography to the proposed investigation is discussed. The focus of the inquiry is again refined, this time in light of the methodological considerations of the approach. Variation in academics' understandings - or conceptions - of the phenomenon of graduate attributes is identified as the object of study. The second part of this chapter describes how the research was planned and carried out with the intention of observing this variation. The chapter concludes with a discussion of the theoretical approach used in the analysis of the data and describes the use of 'experience' as the unit of analysis.

Chapter Four: Categories of Description: This chapter presents the results of the phenomenographic analyses as two outcome spaces. The outcome spaces describe the variation in understandings of two related aspects of the phenomenon of graduate attributes. These aspects comprise understandings of 'what' graduate attributes are,

and 'how' graduate attributes are developed. The different understandings of these aspects of the phenomenon, or categories of description, reflect the range of understandings present in the group of academics interviewed. Each qualitatively different understanding in the two outcome spaces is described in terms of the structure of awareness, a notion introduced in the preceding chapter, and illustrated with salient extracts from the interviews. The hierarchical relationship between the different categories of description in each outcome space is defined in terms of the structural and referential dimensions of these categories.

Chapter Five: Context: This chapter provides a link between the somewhat 'disembodied' categories of description in chapter four and the way individuals understood graduate attributes, which is considered in chapter six. This chapter considers two salient features of the context in which the individual accounts were based; contemporary university teaching and the disciplinary context of the individuals. The role of learning technologies emerged as a recurrent dimension of accounts of contemporary teaching contexts in the course of the interviews. The interviews provided a particular insight into how these academics approached the use of technology for teaching and this is considered. The disciplinary backgrounds of the individuals are also brought into the foreground in this chapter in preparation for a consideration in chapter six of the possible influence of disciplinary background in shaping conceptions of graduate attributes.

Chapter Six: Conceptions: Chapter six continues the presentation of the phenomenographic findings by considering how the categories of description are constituted in individuals' expressed conceptions. The hierarchical nature of the categories, which was introduced and defined in chapter four in terms of the structure of awareness of these categories, is explored further in this chapter. The ways in which individual transcripts incorporate aspects of the increasingly complex understandings of each aspect of the phenomenon are considered. A model of increasing complexity of learning outcomes is used to further illustrate the hierarchy of the first outcome space. Then a model of the teaching and learning process is used to depict the hierarchy of the second outcome space as an increasingly complete understanding of teaching and learning. The variation in conceptions is then overviewed and considered in terms of the issue of disciplinary context raised in chapter five. The chapter then considers the relationships between the two outcome spaces as constituted in the transcripts. The nature of the relationships is examined to determine if the relationships between categories of description are logical and

internally consistent. This lends further support to the coherent structure of the empirically derived categories of description identified in chapter four. The chapter concludes with a consideration of the seven logically consistent conceptions arising from the combination of the two outcome spaces. The key features of the variation in these combined conceptions are summarised in terms of three broad approaches or 'meta-categories' of conceptions differentiated by critical aspects of variation.

Chapter Seven: Learning: Chapter seven considers how the findings of the study might be useful. It does this by examining how we might use the findings for learning in the context of the issues raised in the introductory chapters of the thesis. The implications of the different conceptions of graduate attributes are explored with reference to considerations of the place of graduate attributes amongst the learning outcomes of universities, the disciplinary contextualisation of such attributes, assessment of learning, and notions of transferability. Arising from the different conceptions of the development of such attributes, the implications for current curriculum reform initiatives are discussed and the potential role of learning technologies in graduate attributes curricula considered. The way the identification of variation in understandings of graduate attributes and the characterisation of the nature of this variation might prove helpful in the broader context of curriculum reform and academic development in universities is discussed. This final chapter concludes with a consideration of some of the possible avenues for further research.

Graduate Attributes: The higher education context

Conversations about the generic attributes of graduates have become increasingly frequent in Australian universities over the past twenty years. Since their inception, universities have claimed that the education they offered imparted particular qualities to their graduates. However the recent interest in graduate attributes arises from the particular context (some would say predicament) in which today's universities find themselves and in many ways these conversations are a sign of the times.

Today's statements of graduate attributes have emerged in response to some of the significant changes universities have undergone in recent years. Increasingly universities are being asked, both by the society in which they exist and by the members of the university community itself, to prepare an increasingly diverse student body, for a future that is largely unknown (Bowden & Marton 1998). The unknown qualities of this future relate not only to the changing pattern of work and employment, but also to the changing nature of society and the changing nature of knowledge itself. Moreover universities are being asked to demonstrate that they are achieving such goals in the context of calls for higher education to be accountable for both its processes and outcomes through quality frameworks informed predominantly by economic rationalist views of quality.

Emerging from the context in which today's universities find themselves are several forces that have shaped the phenomenon of graduate attributes in Australian universities.

The demand for employable graduates

Chief amongst the forces contributing to universities' renewed claims of graduate attributes, have been the, sometimes strident, demands for universities to 'produce' more employable graduates. These demands have been articulated by employers, governments and by the staff and students of the universities themselves.

The demand for more employable university graduates is related to broader social issues and to changes in the nature of work and the pattern of employment and the accompanying massification of higher education. No longer is a university education

limited to a small cohort of society, destined for employment in a narrow range of predictable contexts. The careers in which the increasing numbers of increasingly diverse graduates find themselves are likewise increasingly diverse (West 1998). Moreover these careers are no longer rationalistic or progressive in a linear sense. It is no longer likely that a graduate will remain in the same job or even the same field of employment throughout his/her working life (Candy et al 1994). As the pace of change in society accelerates, the workplace is becoming correspondingly more mobile. Old jobs or work activities are disappearing and new activities rise to take their place. Producing graduates with the attributes which equip them to meet the demands of occupational destinations which are diffuse and diverse is seen as one of the challenges facing present day universities (Smith & Webster 1997).

The limitations of knowing only what is required for one job or context are apparent to both employers and graduates, who instead value skills, knowledge and abilities, which will be transferable to new employment challenges. Employers do not wish to have to replace their work-force every time a new development changes the nature of their work. Similarly, graduates can no longer assume that the work they were equipped to do when they graduated, will remain the same, nor indeed might today's post-modern graduates wish it to (Brown & Scase 1997). The ability to flexibly respond to change in the workplace, by applying previously learned knowledge and skills to new contexts and activities, is of value to employers and graduates regardless of the profession or the graduate's field of study. As such, the ability of graduates to adapt and transfer existing skills to meet new challenges is perceived to be a desirable outcome of a university education from the workplace perspective. Not surprisingly, especially given the present positioning of universities to meet job market needs, 'transferable skills' and 'life long learning abilities' are frequent inclusions in the attributes of graduates claimed by universities.

Employers have increasingly articulated, through various graduate recruitment surveys and government reports, the need for graduates who 'not only add value but are likely to take the organisation forward in the face of continuous and rapid change' (Harvey & Knight 1996 p 47). In identifying the graduate attributes perceived to be important in fulfilling such a need, employers and researchers identify a variety of attributes described by various terminologies of skills, attitudes and abilities. Harvey and Knight (1996 p 57) provide the following summary of desirable graduate attributes commonly identified by employers:

Ability to deal with change and uncertainty
Ability to use information technology
Analytic capability
Commitment
Communication skills
Creative problem solving
Critical, reflective, lateral thinking, offering a broad view
Dependable, reliable, honest, ethical and [possessing] integrity
Energy, drive and enthusiasm
Enquiry and research skills: knowing how to find out
Flexibility and adaptability
Foreign language competence
Independent learner
Innovative, using initiative, seizing opportunities
Leadership skills and potential (management of people, vision, inspiration)
Logical argument
Numeracy
Organisational awareness
Planning ability
Self-assessment, self-reflection, self-awareness
Self confidence
Self management, time management, stress management
Self motivation and desire to achieve, self-promotion
Summarising, conceptualising and synthetic skills
Teamwork and cooperation
Understanding core principles of a subject area
Willingness to learn and continue learning

Some of the skills included on such employer lists have been perceived by some members of the university community to be beyond the scope or responsibility of university education. However in being seen to satisfy demands for graduates who possess abilities directly relevant to the world of work, universities have claimed many such employable skills on behalf of their graduates.

In Australia, employers' demands for such graduate attributes have frequently been voiced in accreditation exercises for the professional degrees, which have become an increasingly large part of the university landscape, and in employer surveys. A recent

Australian national survey of over a thousand employers has identified that employers of today's graduates continue to perceive such attributes as essential in the context of employment (DETYA 2000). Moreover this report noted that employers continue to report dissatisfaction with graduate's abilities in terms of many such skills, citing the greatest perceived graduate skill deficiencies to be: a lack of communication skills, a lack of interpersonal skills, and a lack of understandings of business practice. Many institutions also conduct their own surveys of the employers of their graduates. A recent survey at the University of Sydney (Adamson et al 1996) concluded that in the opinion of employers, graduates were still poorly equipped in terms of generic graduate attributes. In these surveys there is an implicit assumption that employers and academics are talking about the same things when they refer to the 'generic graduate attributes' - that the shared vocabulary reflects shared meaning. For example the assumption is that 'interpersonal skills' means the same thing to an academic as it does to an employer. The different frames of reference of these groups and the different perspectives they may bring to their interpretation of a graduate's capabilities are rarely considered in reading and responding to such surveys.

The need for employment related skills beyond technical or subject specific knowledge has been a central feature of Australian government reports on vocational education and training since the Finn report (1991) and the Mayer report (1992) which called for the development of:

Key competencies essential for effective participation in the emerging patterns of work and organisation. They (key competencies) focus on the capacity to apply knowledge and skills in an integrated way in work situations. Key competencies are generic in that they apply to work generically rather than being specific to work in particular occupations or industries. This characteristic means that the key competencies are essential for effective participation in work but are also essential for effective participation in further education and in adult life in general. (Mayer 1992 p 7)

The Mayer report recommended the following list of seven key competencies:

- Collecting analysing and organising information
- Communicating ideas and information
- Planning and organising activities

Working with others and in teams
Using mathematical ideas and techniques
Solving problems
Using technology
(Mayer 1992 p 5)

While the key competencies identified by the report had much in the way of 'face validity', particularly as they mirrored many of the lists of skills developed in American and United Kingdom education sectors, no theoretical or research evidence base was provided for such 'key competencies' (Beven & Duggan 1996). The Finn and Mayer reports focussed on schools and the vocational and educational training sectors of post compulsory education rather than on university education. However with the rise of professional degrees and the increasingly vocational focus of general university degrees, accompanied by the shift to a mass higher education system, the impact of such developments in the employment and vocational education sphere soon extended to the university context. The Australian Government report that crystallised the issue of employable skills for the higher education sector was the Higher Education Council (HEC) *Achieving Quality* report in 1992. It noted that from the perspective of employers and academics:

While discipline skills and technical proficiency were seen as important, and more so in some areas and for some purposes than others, so called higher level generic skills were seen as critically important and sometimes lacking. While it would not be claimed these characteristics are only to be found in graduates most commentators would acknowledge that [universities] must take responsibility for the specific development and refinement of these skills. (HEC 1992 p 20)

Once again the report did not provide a coherent theoretical framework or conceptual base for 'higher level generic skills' (Clanchy & Ballard 1995). Many higher education communities reacted in alarm to the perception that the *Achieving Quality* report was calling for the reform of university curricula solely to better meet the needs of employment. Many of the concerns expressed in response to the HEC report were about the perceived dilution of the university's education role through the substitution of a vocational training role. This concern to differentiate training from education was raised despite the fact that the earlier trend in the 1980's towards increasingly specialised and vocationally focussed degrees offered by universities had, to a large

extent, rendered many such arguments obsolete. The concerns voiced by universities in response to the *Achieving Quality* report also echoed many of the concerns raised in response to co-occurring moves to establish university assessment frameworks which reflected the newly developed competency standards in many professions (Harris et al 1995). In Australia the origins of competency based occupational standards and the competency movement in general had much in common with the genesis of universities statements of graduate skills and attributes. However the university community by and large rejected calls to impose a competency based assessment framework in higher education (Bowden & Masters 1993) with the Australian Vice-Chancellors Committee (AVCC) stating:

While the development of skills, knowledge and understanding is central to the role of universities, it is not the responsibility of universities to shape and re-shape programs of study in response only to changes in current professional or workforce needs. University education is about more than training for the professions. Competencies are necessary but not sufficient outcomes of a university education. (AVCC 1992 p 3)

Despite the apparent rejection of competency standards by the AVCC, the core competencies identified by the Finn and Mayer reports did find their way into universities through their inclusion in a modified form in many universities' statements of graduate attributes. In some ways statements of graduate attributes represented a compromise position on the part of the universities. The rejection of the need for competency based curricula reform was justified in part through the inclusion in statements of the outcomes of university education of the 'competencies which are necessary but not sufficient outcomes of university education.'

Smith and Webster (1997) summarise the concerns voiced by many academics who perceived a trend towards training rather than education and the positioning of universities as vocational credentialing agencies:

Universities might become reduced to the servant of the professions, employers and industry, and succumb to the penetration of the university by sponsors, by professional bodies seeking accreditation on their own terms, not to speak of the opportunistic search by some universities and departments for programmes of use to industry which suggest the trend is already well entrenched; and second that the university risks being

taken over by outside agencies if it defends itself only in these instrumental terms, since there may be others better equipped for the provision of such skills. (Smith & Webster 1997 p 10)

This excerpt also highlights a further element of the forces at work in the drive to make university degrees and graduates 'relevant' to employment. At the same time that universities' ability to provide an education that effectively prepared graduates for the world of work was being questioned in calls for the inclusion of more generic capabilities, universities were also being faced with an additional challenge. Over the past twenty years a range of alternative education providers have emerged to challenge the monopoly that universities had hitherto held as specialised providers of specialised education. Added to the proliferation of education providers has been the information technology revolution, which has potentially made vast quantities of information accessible to would be learners, and provided a new modality for education and training that freed both 'providers' and 'consumers' of the constraints of university campuses and institutional structures.

Public universities are being challenged not only by private universities but by further educational colleges and community colleges. There is as it were, an epochal shift away from universities as specialised providers of learning opportunities even for so called higher learning'. In such a fluid and challenging context universities are having to adapt, and very quickly, to a world in which they have lost or are losing their special status as producers and disseminators of knowledge. (Gibbons et al 1994)

While the employable skills agenda and competition for students seeking vocational qualifications were influential in shaping universities' statements of graduate attributes, these were not the only forces at work. In their engagement with such issues the university community also re-focussed its attention on a consideration of the broader question of the role of the university in society. In seeking to temper external demands for employable graduates in their formulation of graduate attributes statements, universities turned inwards. Efforts to describe the qualities of their graduates prompted the academic community to consider the role of a university education in preparing graduates who are able to contribute to society in terms other than those defined by their contribution through employment.

Questioning the foundations of the university

University communities have long held the belief that a university education offered more than simply the specific body of knowledge of the subject studied. Such beliefs have come to the fore again in response to what many perceived as the imposition of a restrictive and overly technical focus to the consideration of the qualities of a university graduate.

In seeking to respond to the challenges of rapidly changing context, and to position themselves favourably within the rapidly proliferating range of post compulsory education providers, universities have been forced to reconsider fundamental questions as to the very nature of universities, and in the context of statements of graduate attributes, the nature of a university education. The consideration of such questions by the broader university community of academics, students and managers has been accompanied by a renewal of interest in the philosophy of higher education, (or perhaps it has just made the contributions of such philosophy more visible through their relevance to some highly pragmatic questions).

Chief amongst those articulating the philosophical arguments in relation to the role of the university in contemporary society and, in the context of this discussion, questioning current descriptions of what might constitute a university 'graduate', is Ronald Barnett. In a series of texts on the nature of universities in the post-modern era Barnett argues that the current approach to describing graduate attributes, particularly in the context of the United Kingdom's positioning of such attributes as core skills and employment related abilities, does not do justice to the potential of a university education (Barnett 1990, 1992, 1994, 2000). The focus on skills and competencies inherent in many United Kingdom institutions' statements of graduate attributes is characterised by Barnett as limited and mechanistic and inappropriate to the goals of higher education. However his argument does not discount the notion of graduate attributes, although its postmodern perspective on the diverse and multifaceted nature of the modern university might at times suggest it. Arising from this critique and discussion of the employable skills agenda is the possibility that such generic and transferable skills might indeed be recast as graduate attributes that describe a university education, not employers' needs.

Is the university in such danger of being seduced by the glitz and glamour of the new performatives opening up for it that it fails to notice the quieter

murmurings that seem still to require that it hold to its earlier callings? Voices in the wider society speak of knowledge breadth critical reasons freedom and even critical conscience but voices speak more loudly of skills, impact, standards, accountability and efficiency. It is the louder and more strident voices that are noticed by the university. Even while the wider society is hesitantly intimating that it has a need of universities that live up to their own rhetoric as guardians of reason, so the university seems intent on construing itself in even narrower frames of understanding. A trick is being missed. (Barnett 2000 p 34)

Core to such a re-conceptualisation of existing UK (and other) statements of graduate attributes, is the importance of the university's critical appraisal of the conceptual basis upon which it defines its role and place. Barnett argues that the traditional basis of knowledge and truth no longer provides a satisfactory underpinning for the university, primarily as a consequence of the proliferation of multiple knowledges and ways of knowing which render the world ultimately unknowable. Certainly many advocates of graduate attributes would agree that a university education can no longer be solely about knowledge. Such a position is usually based on the observation that the exponential growth of new knowledge displaces old knowledge at a rate that would render such an education obsolete even before graduation, and that even if this were not the case, the store of current knowledge is simply too large to be knowable in the context of a three year undergraduate degree.

Barnett (2000) also considers some of the alternative conceptual bases that have emerged to supplement or replace knowledge as the underpinning concept of universities.

- Production: A set of interconnected ideas about work, economy, vocational, competence and skills. (Barnett 2000 p 48)
- Democracy: This is a constellation of concepts beyond knowledge and work including democracy, justice, citizenship and community. (Barnett 2000 p 50)
- Self: Autonomy, personal development, personal fulfilment, and personal realisation (Barnett 2000 p 52)
- Critique: Critical thought, higher education as opposition, critical self-reflection dissent and even revolution. (Barnett 2000 p 54)

Emancipation: Ideas of emancipation itself, liberation and freedom, and held jointly with the constellation of self is the idea of autonomy, held jointly with the constellation of critique is the idea of critical self-reflection. (Barnett 2000 p 56)

Barnett's (2000) ideas of 'Democracy', 'Self', 'Critique' and to a lesser extent 'Emancipation' reflect elements of many statements of graduate attributes. Possibly this is related to the origins of such statements in the growing realisation of the limitations of conceiving of a university education in terms of knowledge alone. The United Kingdom lists of 'core skills', reflect a strong focus on ideas of 'Production' as an alternative or supplement to 'Knowledge' as the conceptual base of universities although some lists of Personal and Transferable skills also incorporate elements of 'Democracy'. Australian statements of graduate attributes have sought to temper, possibly to a greater extent than has been the case in the United Kingdom, the demand for employable skills (Production) with attributes that capture other dimensions of the university's role in educating students as members of society, most notably qualities included in Barnett's (2000) concepts of Democracy and Self. However, notions of opposition, dissent, revolution, ('Critique') or emancipation, liberation and freedom ('Emancipation') are not frequent inclusions on Australian or United Kingdom lists of graduate attributes. Perhaps given the influence of government agendas in the construction of such lists these omissions are not surprising.

However Barnett (2000) further suggests that these alternative conceptual bases afforded by the place of the university in present society are also limited. In response to his suggestion that the world is radically unknowable, and that the multitude of frameworks of knowing and making sense of the world and our relationships to the world are all now highly contestable, Barnett (2000) proposes an intriguing new conceptual base for universities. This conceptual base he refers to as 'Fragility' and it centres on ideas of uncertainty, unpredictability, challengeability and contestability. This framework offers an as yet unexplored potential to inform universities' statements of graduate attributes and offers the possibility of aligning such statements with a coherent conceptual basis for the role of the university.

While a viable and robust conceptual basis of the university as an institution in the contemporary world remains elusive, it is apparent that in recent years universities have increasingly been prompted to turn inwards to consider their very nature and purpose. It is in the midst of this renewed round of questions as to the university's

purpose in modern society that the present-day statements of graduate attributes have emerged.

Thus far we have noted that the context in which graduate attributes statements have emerged in Australia is one that is characterised by demands for different sorts of graduates equipped to meet the changing requirements of work and society. In the context of such needs new education and training providers have emerged as competitors for the previously privileged role of universities in supplying such graduates. In seeking to defend their role, (or from a more cynical perspective, in seeking to reposition themselves in this newly competitive and critical market), universities have been prompted to reconsider some of their fundamental assumptions as to their purpose and role. At the heart of such questions is a search for a new theoretical and conceptual base to replace universities' traditional base as specialised providers of specialised knowledge to society's elite. Alongside and intimately related to these issues is a third feature of the context in which statements of graduate attributes have emerged, the advent of 'quality' in higher education.

Quality and accountability

Over the past two decades higher education systems have increasingly been asked to engage with issues of quality assurance. Today's universities are being held accountable in ways they never before have been, by students and society at large, for the education they provide. Economic analysts and government committees have consistently identified the link between the development of human capital in the form of the output of higher education and training systems and industrial productivity. Governments around the world have embraced the idea of the 'knowledge worker' as an essential element of an economically prosperous society (Harvey & Knight 1996).

Over the decade from 1987 to 1997 total enrolments at Australian universities increased by 67% to the extent where it was estimated that in 2000, 45% of the cohort who had recently left school would go on to enrol in higher education (Karmel 2000). This increase in participation in higher education was driven by increased student demand, partially as a result of increased high school retention rates and partially as a result of the return of many students to university to upgrade non-university qualifications. Accompanying and fuelling this demand, the Australian government instituted a policy to increase higher education places as part of its agenda for

economic growth. As a result the Australian higher education system has expanded with massive increases in student numbers and financial support from government although with a reduction in per capita funding in real terms.

Accompanying this significant investment of funds from both taxpayers and student fees has been the requirement for universities to demonstrate that they are spending these funds appropriately. The massification of higher education internationally has taken place in an economic climate of reducing resources and increased government control of publicly funded institutions such as universities (Harvey & Knight 1996). Woodhouse (1999) suggests the calls for higher education to be accountable for public funding can be seen as deriving from three key concerns.

Firstly are the higher education institutions explicitly planning and organising to produce the graduates required by society; i.e. are their objectives appropriate?

Secondly, is the money being well spent, i.e. are the higher education institutions operating efficiently?

Thirdly, are the higher education institutions producing the desired graduates, i.e. are they operating effectively? (Woodhouse 1999 p 29)

In seeking to address such underlying concerns different higher education systems have taken different approaches in operationalising these concerns in various quality assurance processes and mechanisms. Within each country's quality framework and approach, the various institutions themselves have responded to these underlying concerns in a variety of ways employing different strategies and sources of evidence. However, since the initial quality exercises of the early 1990's there has been a gradual shift from a focus on inputs (numbers of student enrolments, entrance scores, staff qualifications etc) to a focus on the processes and outputs of higher education. It is not the intention here to discuss the various issues relating to the fraught issue of quality assurance of higher education (see Prosser & Barrie 2003 for a recent discussion of this). However it is relevant that Australian universities' statements of graduate attributes have been formulated in the context of the Australian government's quality assurance agenda for higher education. This agenda positions quality in relation to expressed values, purpose and goals.

In the context of purposeful organisations and enterprises, quality can only be defined in relation to the articulated values, purposes and desired processes, experiences and outcomes. (Boyle & Bowden 1997)

This view of quality has seen statements of graduate attributes included in many universities' attempts to articulate their values, purposes and outcomes.

The formulation of statements of the attributes of graduates of the university can be seen as intimately related to the university's ability to respond to at least two of the three concerns identified by Woodhouse (1999) as underpinning the drive for quality assurance in higher education.

Are the higher education institutions explicitly planning and organising to produce the graduates required by society; i.e. are their objectives appropriate?

Amongst the strategies that many institutions adopted in seeking to respond to this sort of question it was clearly seen to be helpful to have, as part of the university's mission statement, an espoused commitment to producing graduates of the 'sort that are required by society'. It was in Australian universities' attempts to articulate how their graduates were 'appropriate' and possessed of those skills and abilities that were considered 'relevant to society' that many of today's statements of graduate attributes had their origins. Not surprisingly, given that these initial descriptions of graduate attributes were developed in the context of a government quality assurance exercise that had potential funding implications, many of the descriptions sought to explicitly align themselves with the government's agenda and rhetoric and were heavily influenced by the employable skills agenda inherent in the government's conception of quality. Quality assurance was predicated on a notion of quality as fitness for purpose, and the government's perception of 'purpose' included a strong focus on the production of an educated workforce as the key to the country's ongoing economic prosperity. What then of Woodhouse's (1999) other concern?

Are the higher education institutions producing the desired graduates, i.e. are they operating effectively?

Clearly being able to demonstrate that you are producing 'the desired graduate' is predicated on first being able to describe the desired graduate. Once again a

statement of the desired attributes of a graduate was seen as potentially helpful in the context of such quality assurance activities. However the quality assurance concerns related to 'effectiveness' have never been effectively met in the formulation of descriptions of graduate qualities. Universities have not yet been called upon to demonstrate that they are in fact producing graduates with such relevant and valuable qualities. Indeed, many universities' descriptions of graduate attributes were vague and non-specific and have been criticised as being impossibly difficult to demonstrate (Clanchy & Ballard 1995).

Of course statements of graduate attributes are not the only source of evidence that universities have called on to respond to such quality concerns. Evidence of the relevance and vocational nature of the degrees offered and the rates of graduation from these degrees and rate of employment of these graduates provided the basis for many responses. However, the early quality assurance agenda, marked by the *Achieving Quality* report of 1992 (HEC 1992), clearly positioned descriptions of graduate attributes as the 'core outcomes' of higher education, in the context of quality assurance exercises. Moreover the report explicitly linked the quality of such graduate outcomes with the quality of teaching and learning processes (Clanchy & Ballard 1995).

Since the *Achieving Quality* report universities have no doubt become increasingly sophisticated, not only in their understandings of quality, but in their responses to such calls. However, while it is now a requirement for funding that all university plans include a statement of graduate attributes (DETYA 2000) little progress has been made in terms of demonstrating that teaching and learning processes are resulting in university graduates who do indeed possess such attributes. It has been observed of higher education quality assurance in general that:

Curiously the drive for quality at a policy level has been almost independent of a clear assessment of the learning outcomes of higher education and implementation of procedures likely to lead to them. (Harvey & Knight 1996 p 67-68)

However there are recent indications that evidence of achieving such outcomes as well as evidence that universities have processes in place which might reasonably expect to achieve such outcomes, might form part of future quality assurance exercises (Gallagher 2001). Currently there is a renewed round of interest in graduate attributes

by those responsible for quality assurance in many Australian universities. Some institutions, such as the University of South Australia and Queensland University of Technology, have recently initiated major projects to develop new policies focussing on the implementation of graduate attributes teaching and learning strategies (Bowden et al 2000). Faculties in many universities have recently engaged in audits designed to 'map' the teaching of generic attributes within existing curricula. While other universities such as The University of Sydney and The University of Queensland have initiated research and development projects aimed at revising previous statements of graduate attributes.

Government demands for accountability and quality have not always been well received by some sectors of the academic community; echoing as they do the historical conflict between government control of universities and academic autonomy and raising the longstanding question of the balance between public and self regulation of universities. The quality assurance context in which many statements of graduate attributes were developed, may have contributed to the perception in some quarters that such statements were a managerial fad or meaningless marketing statements and bureaucratic rhetoric.

Despite much resistance, Australian universities continue to be subject to government quality assurance mechanisms. Statements of graduate attributes which purport to describe the generic outcomes of a higher education and in doing so say something about the universities' purpose in educating members of society, seem likely to play a continuing part in such quality assurance processes.

Like many features of universities, the origins of graduate attributes statements are complex. Given universities' perennial attempts to define the elusive qualities of a 'university man' (Newman 1987) statements of graduate attributes are not a new phenomenon at all. However the present day context in which descriptions of the graduates of today's universities have emerged has contributed much to the formulation of current statements of graduate attributes.

Overview of context

Statements of graduate attributes in Australia are in many ways a response by universities to the forces shaping higher education in contemporary society, in particular:

- 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
- 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 from 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.
- In defining their purpose and outcomes the traditional conceptual base of universities as specialised providers of specialised knowledge has been challenged to the extent that it may no longer be tenable, and universities are searching for alternative ideas upon which to base a conception of the place the university in contemporary society.
- 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.

This introductory chapter has sampled the dominant flavours of the context from which today's statements of graduate attributes have emerged, and which form the backdrop to the exploration undertaken in this thesis. We will now turn to a consideration of the variety of institutional policies describing graduate attributes in Australian universities and reports of graduate attributes curriculum initiatives, as the next step in framing the specific inquiry described in the remainder of the thesis.

Chapter Two: VARIATION

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Graduate attributes policy: Variation in what is espoused

Over recent years the tertiary education sector has increasingly become explicitly concerned with the development of 'graduate attributes'. The Australian government now requires that as a minimum, university plans should include a description of graduate attributes (HEC 1992). With the government increasingly seeking ways of making universities accountable for the quality of their processes and outcomes, institutional rhetoric claiming generic graduate attributes as a central outcome of a university education is being subject to new levels of scrutiny. The recent development of the Australian Council for Educational Research (ACER) Graduate Skills Assessment, as an Australia wide government funded examination is one example of the government's interest in defining and demonstrating graduate attributes as part of its assurance of the quality of higher education. Such scrutiny is, of course, not restricted to the government quality assurance agenda. Employer groups and universities themselves are investigating and evaluating the skills and attributes of the graduates they employ or educate and credential. In many cases such scrutiny reveals that graduates may be lacking in particular attributes or that universities are unable to convincingly demonstrate that graduates do indeed possess the intended attributes (Adamson et al 1996).

Broadly speaking, 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. While most universities in Australia have had statements of graduate attributes for some time, these graduate attributes are described and defined differently in different universities and education systems and a bewildering array of terms has emerged as a result. Such terms include generic, core or key skills, competencies or capabilities, personal or transferable skills, generic graduate attributes. While such terms are in common use they are typically only loosely defined, if at all. While the terminologies and specific definitions may vary, the characteristic that underlies all such descriptions, is the assumed generic and non-discipline specific nature of these qualities.

In Australia, most descriptions of graduate attributes derive from the definition included in the Higher Education Council (HEC) report *Achieving Quality* (1992); '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).

As noted earlier, this report emerged at a time of resistance on the part of many Australian universities to the competency movement and the then government's perceived attempt to impose an 'employable or key skills' or training agenda upon university curricula with the aim of ensuring education outcomes matched society's apparent economic needs. The *Achieving Quality* report, while still met with scepticism in some academic quarters (Harris et al 1995), prompted a largely pragmatic response on the part of many institutions. Rather than have such an employable skills agenda or framework imposed from without, universities sought to develop policies of graduate outcomes that suited their own views of the role and purpose of a university education. While still influenced by the government's economically driven, employable and core-skills agendas, the statements of generic graduate attributes of most Australian universities were developed within universities by members of the academic community. As such they were a university response to external forces rather than being developed and imposed by government from without.

To ensure that international standards of quality are maintained, university curricula must continue to be informed by academic judgement. (AVCC 1992 p 3)

Many of the taxonomies of graduate attributes developed by Australian universities include learning outcomes that represent a combination of skills, attitudes and values as well as knowledge. In seeking to describe the multifaceted nature of such graduate outcomes, the term 'attributes' is frequently used. In the remainder of this discussion the term attributes is used as a generic term to describe learning outcomes of various types including knowledge, skills and attitudes.

In other higher education systems different terms have emerged, with slightly different connotations attached to their use. In the United Kingdom for instance, the focus has remained more tightly on 'skills' (be they core, key, personal or transferable), although criticisms of the limitations of the term 'skills' are beginning to emerge in the literature (Holmes 2000). Once again however there is no agreed definition of 'skills' which is applied in all contexts. Tribe (1996) has proposed two models of core skills in the UK context, the 'society centred model' which focuses on the skills necessary for preparing

graduates for the labour market and the 'liberal model' which focuses on the value of education in and of itself.

In the American higher education system the phrase 'Employability Skills' is commonly used.

Employability Skills are transferable core skill groups that represent essential functional and enabling knowledge, skills and attitudes required by the 21st century workplace. They are necessary for career success at all levels of employment and for all levels of education. (Overtoom 2000)

Alongside core employable skills, the idea of transferable skills has also assumed a central place in UK discussions of core skills.

The issue of transferability is key to the concept of core skills...there are some skills which are by their very nature transferable to a variety of settings and ...they are therefore the core skill i.e. it is only skills which transfer which are core, all core skills are therefore transferable skills. (Department of Employment 1995, in Dunne 1999 p 9)

Fallows and Steven (2000) provide an overview of some of the variations on 'skills' in common use in the United Kingdom and offer the following attempts at definitions:

Transferable skills; skills which are developed in one situation and are useful when transferred to another; Key skills - skills which are important or can help unlock the doors to employment; Common skills - skills that are universal in nature and relevant to all students regardless of discipline; Core skills; skills that are central to students' experience within higher education. (Fallows and Steven 2000 p 8)

However despite this attempt to differentiate the terms, almost identical lists of skills are defined as 'core skills' in one context, 'key skills' in another, 'generic skills' in a third context and 'personal skills' in yet another setting. Recently the use of the term 'key skills' has become increasingly popular in the UK. However changing the vocabulary used does little to address any underlying conceptual variations in what the different terms actually represented (Dunne 1999). The variation in definitions of 'skills' in the UK is multiplied in the Australian context, which widens the scope of graduate attributes beyond skills,

to explicitly include knowledge, values and attributes. Moreover the variation and potential confusion multiplies when one considers that not only is there variation between institutions and education systems in the nature of what is being described as graduate attributes, but there is variation in which particular examples of skills or attributes or values etc. are included. For instance, even if two institutions based their statements of graduate attributes on an understanding that these are 'skills necessary for employment', what each institution identifies the particular employable skills to be, will in all likelihood be very different.

In both the UK and Australian higher education systems graduate attributes have often been categorised and grouped into clusters of related attributes. While, there is considerable diversity in how the attributes are organised, there are some clusters of attributes common to many taxonomies. Kemp and Seagraves (1995) in their review of the classifications developed in the United Kingdom higher education system identify the following groupings; written and verbal communication skills, interpersonal skills, problem-solving skills, numeracy and information technology skills. However, despite including some groupings in common, other institutions and authors group attributes differently, for example as personal skills, academic thinking skills, numerical and literacy skills (Somervell 1996), or as problem solving, communications and team work, managing and organising (Allen 1993), or communication skills, information management skills, skills in using technology, people skills and personal skills (Fallows and Steven 2000). Once again there is considerable variation even in attempts to impose a broad classification on lists of graduate attributes.

Different taxonomies include different levels of detail in the specification of generic graduate attributes. In Australia what have tended to be developed are lists of ten to twelve composite attributes with more specific attributes clustered under each. These lists of graduate attributes have been developed independently by the different universities and there is little consistency in the attributes included. A comparison of the actual graduate attributes specified by even a small number of different Australian universities reveals a variety of graduate attributes. The lists of graduate attributes vary, not only in terms of which attributes are included, but also with respect to the nature and level of the attributes described. Typically taxonomies from different institutions include different attributes that range from simple technical skills to complex intellectual abilities and ethical values. Each university's taxonomy of graduate attributes reflects, to a certain extent, the cultural idiosyncrasies and strategic directions of the institution. However, regardless of which attributes are included and

how these attributes are organised, they are claimed by the particular university to be valuable and achievable outcomes for all graduates, regardless of the specific discipline or field of study, or the teaching and learning process by which they are supposedly developed.

In identifying graduate attributes as the 'central achievement' of a university education, the *Achieving Quality* report could be considered to mark a significant departure from existing commonly held conceptions as to the nature of a university education (Clanchy & Ballard 1995). Studies of curriculum and teaching in universities over recent times have underlined the centrality of information or content as a defining feature of traditional university degrees (Kember & Gow 1994). University curricula focus teaching primarily on developing knowledge in terms of disciplinary content based outcomes, often to the detriment of the graduate attributes espoused (Aulich 1990, Fallows & Steven 2000). The rise of discrete disciplines within universities, (in particular the development of professional disciplines) and the increasing specialisation of knowledge and skills has resulted in the splintering and diversification of educational outcomes to an extent probably never before seen in the higher education sector (Bauman 1997). The development of varied 'experts' appears quite different from the prior, long held view of 'the cultivated man' (Newman 1987) as the outcome of a university education. Such differentiated disciplinary expertise must pose a serious challenge to any attempt to claim a homogenous or generic set of outcomes as the result of a university education.

Issues arising from the variation in policy

Universities' claims of graduate attributes are not new claims. Bowen (1977) in reviewing the goal statements of American educationalists, identified a list of generic graduate attributes for the American higher education system which included many of the same skills, values and attributes present in current descriptions of graduate attributes. The idea of generic graduate attributes is also a hallmark of many early conceptions of the role or mission of university education. Woollard (1995) notes the similarities between Newman's 1853 description of the 'university man' (Newman 1987) and the definition of core skills by the National Council for Vocational Qualifications (NCVQ) (NCVQ 1995). Similar graduate attributes were identified as the defining characteristic of a university education at the time of The University of Sydney's inauguration (Wooley 1862 in Candy et al 1994).

An analysis of the mission statements of universities in the United Kingdom (Watson 1996) revealed a tendency towards what the author described as empty 'marketing statements' and clichés. A survey of the mission statements of Australian universities (Candy et al 1994) revealed that in 1993, two thirds of Australian universities referred implicitly or explicitly to the graduate attribute of 'life long learning skills'. However, the same study reported a notable lack of actual practices that supported the development of such a graduate attribute. Given the lengthy history of the concept of graduate attributes, it is perhaps remarkable that universities have reclaimed these attributes with such enthusiasm yet with very little in the way of critical examination as to exactly what they are claiming.

On the surface it may appear remarkable that university policies are so actively espousing generic outcomes in the form of graduate attributes at a time when differentiation of disciplinary knowledge is at its greatest. However the renewed focus on graduate attributes may in part be a response to this very fracturing and diversification of knowledge. Universities are presently faced with preparing graduates for what can only be described as an uncertain future. Bowden and Marton (1998) see the renewed attention to graduate attributes as the capabilities that allow graduates to deal with unfamiliar problems in unfamiliar contexts as one reflection of the unpredictable and changeable nature of the modern world.

Universities, and those who work in the higher education sector, claim to value (in abstract at least) learning outcomes of the kind often specified as graduate attributes. For instance, it would be difficult to find a more popular notion amongst academics than developing 'life long learners'. However, there appears to be a significant discrepancy between such rhetoric and the realities of practice. The reasons for this disjunction are unclear although some inferences have been made with regard to the disciplinary and bureaucratic structure of university degrees, and the impact of changes to funding and increased numbers of students.

Many universities in Australia have now at least articulated the generic and professional attributes that their graduates ought to possess on graduation. Progress on translating these into practice has been slow. One barrier to progress is posed by academic territorialism and financial incentives for 'owning' student load. (Coaldrake 1998 p 12)

Popularly, universities are still seen by many of those who inhabit them, to have the potential to provide more than the instrumental knowledge and skills required for a graduate to enter their chosen sphere of work. The notion of a university education as a 'transformative experience' (Pascarella & Terenzini 1991) which develops the capacity for independent thought has many echoes in statements of graduate attributes. However the reality of such potential appears to remain largely unrealised, or at least unproven, in Australian universities. The tension between narrow, instrumental views of university outcomes and such broad graduate attributes, also remains unresolved. Moreover, the very idea of such generic graduate attributes is vulnerable to postmodern critiques that question such a shared vision of the outcomes of a university education. If universities are indeed diverse and chaotic, as postmodern perspectives view them (Smith & Webster 1997), then such a shared or generic set of outcomes is improbable.

None of the statements of attributes of Australian graduates make explicit reference to any underpinning theoretical or conceptual base for the university's purpose in contemporary contexts, and typically they only acknowledge obliquely that such statements are a reflection of such basic considerations. However, in their claim to be descriptions of the core qualities and abilities university graduates bring to society as a result of their experience of university, they cannot help but be informed, implicitly at least, by what the university community perceives its role to be in educating students. The absence of any clear articulation between statements of graduate attributes and these fundamental questions is an issue that various authors have noted (Barnett 2000, Smith & Webster 1997, Pascarella & Terenzini 1991, Clancy & Ballard 1995, Woollard 1995). The possible disarticulation and incongruity between such statements and how the university community perceives its role and purpose in the education of students may lie at the heart of much of the apparent resistance to the implementation of teaching and learning practices intended to achieve such outcomes. If the academics who are charged with developing such attributes do not share the same understanding of the purposes of a university education it seems unlikely, given their autonomy in teaching and course design, that their practice will align with such policy statements of graduate outcomes. Moreover there is the eclectic nature of the sort of attributes included on any institution's list both in terms of the type of outcomes specified (values, skills, capabilities) and the range of possible conceptions of the purposes of a university education embodied in the lists. Added to this is the vagueness and lack of specification apparent in many descriptions of graduate attributes, which is likely to lead to variable interpretations. In light of these issues it

seems reasonable to expect that such statements of graduate attributes will be interpreted in a variety of ways by different individuals; and depending on the individual's beliefs and understandings of the purpose of a university education, be seen as differently congruent with these beliefs and embraced and embodied in teaching practice, or not, as the case may be. This variability is not recognised as an issue in current university policies or implementation strategies.

Graduate attributes are the qualities skills and understandings a university community agrees its students would desirably develop during their time at the institution and consequently shape the contribution they are able to make to profession and society. (Bowden et al 2000)

The question that seems unanswered as yet is does the university community agree? Given that the university community does not seem to have come to an agreed understanding of the role of universities in today's contexts, agreement on the qualities that should define a university education also seems unlikely. Even if the set of statements are 'agreed upon', would they actually be understood in the same way by the different individuals who make up the community and are charged with putting such policy statements into practice? Epistemological perspectives embracing multiple understandings and ways of knowing would suggest not (Bowden and Marton 1998).

Certainly one of the questions which must be asked in response to the vast array of definitions, terms and attributes included by different institutions is the extent to which universities and the academics who work in them, share a common understanding as to what graduate attributes are. Are we all talking about the same thing? This is a more fundamental question than one about which attributes should be included on the lists, rather it is a question about the nature of the things that are being listed. It would seem likely that the variety of definitions and policy statements reflect different understandings and conceptualisations, of what graduate attributes are, even if there are shared common features to these understandings and a common use acceptance of the vocabulary of graduate attributes. Exploring the way these understandings might vary seems pertinent given the level and nature of the current interest in graduate attributes.

Having surveyed the rhetoric of policy let us now consider what is actually happening in university classrooms. Does academic practice reflect the espoused policies of graduate attributes? How are universities approaching the teaching of graduate

attributes? Are graduates achieving the attributes specified in the policies - diverse as these may be? More importantly, given the absence of a theoretical basis for graduate attributes in the literature and the apparent lack of a shared conceptual basis in policy statements and descriptions of graduate attributes, is the lack of a conceptual basis resolved in practice and is the variation observed in the espoused claims of graduate attributes policies addressed and elucidated?

Graduate attributes practice: Variation in curricula and teaching

In the absence of research reporting the underpinning conceptual basis of graduate attributes and the variations in policy, it is pertinent to consider the literature which purports to describe attempts to develop and demonstrate such attributes as an outcome of university education.

While all Australian universities have for some years, had policy statements claiming generic outcomes on the part of graduates of the institution the indications are that this has not been matched by systematic curriculum development aimed at achieving such attributes.

In the United Kingdom where significant financial support has been allocated through Enterprise in Higher Education funding, indications are that despite the introduction of innovative practices in some areas, as a whole, the higher education sector has not effectively addressed the issue of generic skills. The conclusion of a major UK skills project supported by the Fund for the Development of Teaching and Learning identified that despite continued interest in skills, attempts to develop curricula which effectively achieved such skills, had met with limited success:

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)

These authors argue that the patchy uptake of personal and transferable skills initiatives does not reflect a lack of understanding as to what constitutes good practice, rather that it is a consequence of the approach taken in promoting and managing

change. However it seems unlikely that given the sometimes considerable local and system wide support for such initiatives, change management strategies alone could be responsible for such a poor outcome.

Kemp & Seagraves, (1995) similarly questioned higher education's ability to deliver in terms of transferable skills and their investigation of practice in a single university identified that the picture of skills development was 'incoherent'. Furthermore they identified that in courses that professed to be developing particular skills, students sometimes perceived they had received no instruction or additional help in the development of these skills. This finding echoes that of Dunne (1999) who concluded that in a survey of thirty three departments, there were few teaching and curriculum developments that focused on core skills. Furthermore this study found that even where such developments were claimed, the claims were often not supported by evidence in the form of curriculum documentation or students' report of their learning as having incorporated the development of core skills. Kemp and Seagraves (1995) concluded that:

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)

Despite the Australian government's current higher education policy and the adoption by universities of formal policies proclaiming the development of the generic attributes of graduates, there does not appear to have been a significant change in the actual practices or outcomes of university education in Australia. Clanchy and Ballard (1995) in considering the Australian higher education system conclude that despite the rhetoric of the tertiary education sector there remain considerable barriers to the adoption of graduate attributes in the curriculum - primarily the 'pervasive vagueness' and inconsistency which characterises the definition of what is being developed. These authors argue for further definitional work of the kind proposed in the present research.

While the overall picture of curriculum development focussing on graduate attributes might be inconsistent and patchy the literature does contain numerous reports of curriculum initiatives targeting particular attributes. Indeed this forms the bulk of the

body of research literature on the topic of graduate attributes. While this literature does not engage with the underlying conceptual basis for graduate attributes it does suggest that from the perspective of the academics involved in such curriculum initiatives, the development of such attributes is a valuable endeavour.

In overviewing the literature reporting on such curricula initiatives it is apparent that these reports reflect quite different underlying approaches to the development of graduate attributes. One categorisation of these approaches that has gained prominence is that used by Drummond et al. (1998).

The first approach these authors identify has been the provision of stand-alone courses focussed on the development of particular graduate attributes, for example courses on study skills or writing skills. These courses or units are also referred to as 'bolt-on' curricula in that they accompany existing university curriculum. These stand-alone courses may be a common course that is taken by students from different degree courses or disciplines or they may be developed as an additional module within a degree program. The course is taken in addition to the students' usual studies and may or may not contribute towards accumulated credit points for a degree. These courses or modules may or may not be integrated within the degree structure. In some cases the module is one that forms an integral part of one or more degrees, contributing credit towards the attainment of these degrees. In such cases the course may be an elective - taken by choice, or it may be a core unit of study - taken by all students. The stand-alone approach might involve a single subject or module or it might involve a sequence of subjects over the course of the degree. In other cases such courses are not integrated within a degree. That is they are not part of any degree structure and are taken voluntarily by students based on perceived needs or interests.

There would appear to be limitations to the reliance on stand alone courses to teach all graduate attributes. Given the sometimes extensive, lists of graduate attributes developed by universities, this approach could necessitate several additional courses or modules for students in an already crowded curriculum. More significantly, in view of the role of context in applying graduate attributes and the possible disciplinary specialisation of graduate attributes, the appropriacy of such segregated, decontextual courses is questionable. The importance of context in student learning has been clearly established by many authors (Entwistle & Ramsden 1983, Trigwell & Prosser 1991). Stand-alone courses potentially ignore the role of disciplinary context and are

limited in terms of application and perceived relevance to students. As such, graduate attributes courses of this type may not provide significant inherent motivation for student engagement with such learning. Stand-alone courses have also been criticised for reducing generic graduate attributes to the lowest common denominator (Bowden et al 2000). While such an approach may be appropriate for some attributes and for some students with particular difficulties in certain skill areas, for example basic literacy, such an approach may not be suitable for students seeking to extend their competence beyond a base level (Bonanno & Jones 1996).

The strategy of offering stand-alone generic attributes units is not one which has been successfully implemented in the Australian university system. Instead the approach has often been to assume that existing subjects and programs of study will incorporate such attributes within their curricula. Unlike many UK universities where additional funding was available for the development, implementation and evaluation of curriculum and teaching initiatives to promote the development of personal and transferable skills in students, the development of graduate attributes curricula in Australian universities has been largely un-resourced. Perhaps as a consequence, there do not yet appear to have been any rigorous evaluations of significant, successful university wide initiatives reported to accompany the rhetoric of policies of generic attributes of Australian university graduates. Some universities in the United Kingdom have undertaken university wide curriculum reviews and initiated sweeping curriculum reforms associated with personal and transferable skills development. For example, The University of Wolverhampton has developed separate credit recognition within assessment of courses for personal and transferable skills components, students are required to demonstrate through a record of achievement that they have successfully completed studies integrating a range of personal and transferable skills (Somervell 1996). Such explicit recognition of the graduate attributes across the university curriculum or assessment is rare in Australian universities although a recent initiative at the University of South Australia is seeking to address this issue. In most Australian universities such attributes are not usually included in course or degree assessment criteria and are not referred to in the assessment policies and practices of the university. However, in many Australian universities it remains an implicit assumption that generic attributes will be taught embedded within the traditional disciplinary curriculum (Bowden et al 2000). Consequently, it is at the level of individual teachers' unit of study curricula and teaching that the graduate attributes must be valued as learning outcomes if graduates are to develop these.

This second approach may be described as an embedded approach. In such approaches the development of graduate attributes is embedded within existing curricula rather than achieved through the provision of an additional course. The degree of embedding varies; for instance graduate attributes might conceivably be embedded in elective or core units and might be an assessable or non-assessable component of these units.

The embedded approach does afford greater opportunities *prima facie* for the integration of graduate attributes with the disciplinary content. Such an embedded approach is potentially congruent with integrated notions of capability (Stephenson 1996) and implicitly conceptualises graduate attributes as being integrated with disciplinary knowledge and skills in the context of professional activities (Beven & Duggan 1996). The embedding of graduate attributes in discipline curriculum would also appear to address issues of contextualisation of graduate attributes and disciplinary specialisation of graduate attributes (Bowden et al 2000). Such an approach also recognises the influence of students' perceptions of relevance on their engagement in learning (Prosser & Trigwell 1999).

The third broad approach identified by Drummond et al (1998) is one that is particular to a subset of degrees, those with a more vocational or professional focus. In such contexts the use of professional placements, work experience, internships or work projects has been developed as a way of targeting graduate attributes. Such courses usually require students to spend time on a 'work' placement or might involve the completion of a project drawing on such work contexts. Typically underlying these curriculum approaches is an implicit conception of graduate attributes as professional or employment related skills. These workplace curriculum strategies could be examples of a stand-alone curriculum approach or an embedded approach, however they are notable in that they utilise the context afforded by work for learning.

Within these three broad approaches (Drummond et al 1998) there is an enormous diversity of curricula strategies targeting an equally diverse range of graduate attributes. The pedagogical intentions that underpin these variations are not usually explicit. The authors of reports of graduate attributes curriculum typically put forward an argument for why the particular attribute is valuable, usually based on the key rationales provided for higher education's current interest in graduate attributes discussed in the opening section of this chapter. Authors usually offer a description of their curriculum development and in some cases provide some form of evaluation of

the initiative. Typically the argument in these reports would run along the lines of the following example:

- Engineering associations have indicated the need for our graduates to have better developed communication skills.
- The university has included communication skills in its statement of graduate attributes.
- So we developed a module to teach engineering students communication skills.
- The module targeted the students' ability to write a technical report and structure a verbal presentation.
- We made some videos of good and bad presentations and developed some examples of reports. We used these in a series of seminars to teach students about aspects of professional communication.
- The initiative was successful with 85% of participating students indicating on the end of semester survey that they felt the course had helped them develop professional engineering communication skills.

Such accounts are primarily descriptive and the basis for the attributes themselves and the relationship between the attributes and other facets of university learning is not dealt with. Instead the authors take such considerations as a given. And maybe they are. Certainly the value of the particular attributes targeted are usually convincingly argued, for instance the value of communication skills for graduates, however there is typically no theoretical framework within which the description of such an attribute is situated.

Bennett et al (1999), in one of the few studies that have attempted to address the theoretical implications of different curriculum approaches to the development of graduate attributes, expand upon the basic framework of three structural approaches used in much of the literature. These authors identify the six different patterns in a sample of generic skills curricula. These authors characterised their sample of generic skills curricula in terms of the way these curricula combined a focus on; disciplinary content knowledge, disciplinary skills, workplace awareness, workplace experience, and generic skills (Figure 2.1). The arrows between the different elements of the curriculum in the model represent the way different aspects of the curriculum might interact; for instance workplace experience might also be involved in the development

of disciplinary skills. The overlap of the generic skills element represents the potential interaction of the generic skills elements of the curriculum with each of the other curriculum strategies.

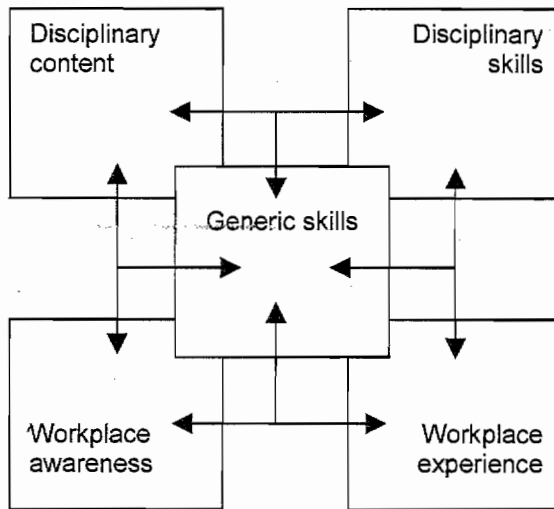
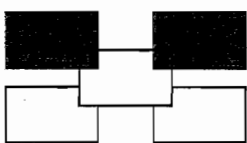
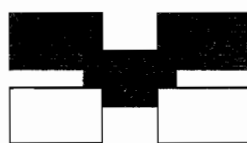


Figure 2.1: A model of course provision (Bennett et al 1999)

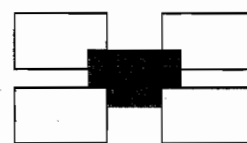
Using this model of curriculum, six different curriculum strategies were identified by the authors (Figure 2.2). The six different strategies represent different combinations of the various curriculum elements (shaded boxes in figure 2.2) and reflect different curriculum arrangements in terms of how the development of generic skills (centre box in each pattern in figure 2.2) was positioned in relation to the other elements of curriculum.



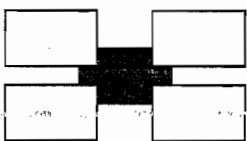
Pattern 1



Pattern 2



Pattern 3



Pattern 4



Pattern 5



Pattern 6

Figure 2.2: Patterns of generic attributes curricula (Bennett et al 1999 p 84)

The six different patterns identified describe strategies for teaching of generic skills by teaching disciplinary content, or the teaching of disciplinary skills, or the teaching of workplace awareness or through workplace experience - or through various combinations of these strategies. These authors describe generic skills curriculum as representing different elements and interactions of these curriculum components, for instance a strategy of teaching generic skills in the context of workplace experience is contrasted with a strategy of teaching generic skills as a separate module.

In their discussion of the different curriculum patterns observed the authors suggest that the variation in approaches to teaching graduate attributes is related in part to disciplinary variation in how a particular generic skill is constituted as part of the core knowledge of the discipline:

There is enormous variation across disciplines about what are considered the necessary core or disciplinary skills and as a consequence in the generic skills planned for. In some disciplines generic skills may be seen as core skills e.g. the teaching of presentation and communication skills in departments of drama or law. In other departments these same skills will be considered as generic and may be taught in separate bolt-on courses. So the same skills can be taught either as specific discipline related or as more flexible generic skills. (Bennett et al 1999 pp 80-81)

However, implicit in the suggestion that such curriculum variation might arise from disciplinary differences in how core knowledge and skills are defined and hence how generic skills are defined, is the possibility that there may be variation in how generic skills themselves are defined and conceptualised. This variation is largely ignored by Bennett et al in the positioning of graduate attributes as secondary to the definition of the 'core' of the discipline knowledge i.e. it is seen primarily as a disciplinary variation. However the literature is characterised by reports of different strategies within a single discipline. The variation in the curriculum strategies might not simply be a consequence of the disciplinary definition of the content as Bennett et al argue, but might also arise in part from the definition of the generic skills themselves. That is to say, there might be important variation, not only in how discipline knowledge is defined but also in how generic skills are conceptualised and defined which leads to variations in how curriculum is designed to develop such skills. As a supposed central outcome of university education it seems probable that academics would have some implicit

conceptualisation of these generic skills themselves, rather than these simply being what is 'left over' as a result of how a particular discipline constitutes its knowledge.

The model proposed by these authors is no doubt useful in terms of classifying the different curricula strategies employed by academics. However it does not address the issue that underlying such curricula strategies appear to be quite different understandings of what generic 'skills' might be, not just variation in what is included in discipline knowledge. Indeed in their conclusion these authors note that the drive to develop graduate attributes curricula:

Has 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)

The different curriculum strategies described in the literature certainly position generic skills in different ways in relation to other elements of the curriculum. This variation may reflect more than the extent to which particular disciplines see particular skills as relevant to discipline content. The variation might instead reflect very different pedagogical intentions on the part of teachers and variation in what the curriculum writers understand the nature of 'generic skills' to be.

Issues arising from the variation in practice

In much the same way that the variations in universities' statements of graduate attributes reflected a diversity of understandings as to what such attributes are, the published examples of curriculum initiatives described reflect a variety of conceptualisations of the intended outcomes of such initiatives. In some cases the curriculum developments described target discrete technical skills - for example use of a particular technology such as the internet, in other cases they target personal skills such as teamwork, in some cases they appear to be quite discipline specific - for example communication skills for medical students, and in other cases more generic - as in a course on information literacy skills for university.

The three main approaches apparent in reports of graduate attributes curricula also suggest significant differences in what graduate attributes are understood to be. That is, differences in how graduate attributes are conceptualised by the curriculum writer and teacher. The approach of stand alone courses seems to implicitly underline a separation between graduate attributes and other elements of university learning and points to the development of graduate attributes divorced from the context of the disciplinary studies. Moreover, implicit in some accounts of such initiatives is a suggestion that the development of graduate attributes requires an additional expertise to that of the disciplinary teacher, for instance the provision of writing skills courses by 'writing experts' rather than discipline based academics. In such accounts the graduate attribute is positioned almost as a disciplinary area in its own right. This seems somewhat at odds, with views of graduate attributes as the core outcomes of higher education.

Taken as a whole, the range of examples of curriculum initiatives reported in the literature does not paint a picture of a coherent practice. In much the same way that the policy statements of universities were diverse and appeared to embody quite different understandings of graduate attributes, the practice which purports to develop graduate attributes is similarly variable - to the extent of being chaotic. Each initiative taken singly often has merit and the rationale provided for the focus on each particular attribute is sound in general terms. However, when such reports are looked at collectively it seems apparent that initiatives are often targeting quite different outcomes, often in very different ways.

In many cases the curriculum initiatives described relate to individual units of study and address only particular attributes without regard for how other attributes are developed. The level of integration is typically limited and there are relatively few examples of pervasive integrated curriculum strategies such as that of Alverno (O'Brien 2000) and recent initiatives such as The University of South Australia (Nunan et al 2000). The scarcity of such examples supports the finding of a 'patchy uptake' in more general reviews of graduate attributes curriculum initiatives (see for example Fallows & Steven 2000, Drummond et al 1998, Dunne 1999).

Diversity in curricula approaches is, of itself, not necessarily a concern, although the search for a theoretical framework to bring a measure of order to such seeming chaos is inherently attractive and some would say, overdue. However, the serendipitous

approach to curriculum development on the part of individual academics (even in the rarer cases where it is at the level of a course team or a whole department) is of concern, if at an institutional and system level there is not evidence of all graduates actually achieving the full range of attributes claimed as core outcomes of their university experience. Reviews such as that offered by Drummond et al (1998), which identify the absence of effective system wide approaches to the development of graduate attributes clearly suggest that current strategies might be improved. Moreover, the perceived need for systemic implementation strategies indicated by current attempts to develop institutional implementation strategies for individual universities (see for example Nunan et al 2000 and Bowden et al 2000) also suggests there is a need for more coherent and effective teaching and learning practices in this area. The absence of a theoretical or conceptual base to explain the current variation in understandings of graduate attributes and approaches to the development of such attributes represents a considerable barrier to the development of effective systemic implementation strategies.

While many universities have embraced the concept of graduate attributes at the level of institutional policy there does not appear to have been a widespread acceptance or implementation of such policies at the level of courses and individual academics' teaching practices. Considerable debate continues within academic circles as to the place of graduate attributes in higher education (Woollard 1995, Kemp & Seagraves 1995, Bowden et al 2000). There are also indications that there is considerable variability amongst individual academics and departments in terms of acceptance of graduate attributes in the context of teaching innovations and curriculum development (Akerlind & Jenkins 1998, Barrie & Jones 1999, Bennett et al 1999). Despite the repeated calls in government reports (HEC 1992, Dearing 1997), for higher education to incorporate the development of graduate attributes, and despite the explicit policy statements developed by institutions espousing such graduate attributes, it would appear that there remains considerable resistance on the part of many members of the academic community to notions of curriculum reform targeting graduate attributes.

There nevertheless still appears to be much scepticism among university tutors to this view of education, who believe it is not part of their role to provide skills for employment. (Bennett et al 1999 p 72)

Drummond et al (1998) note that in one institution in the United Kingdom, the response was one which showed little sympathy for an agenda which was perceived to be

discordant with 'academic priorities'. This is a recurrent underlying issue which emerges from a consideration of the reports of graduate attributes curriculum developments and initiatives by some universities to establish a more coordinated approach to developing graduate attributes. There is a suggestion in much of the literature that considerable barriers exist to the implementation of graduate attributes curricula. Amongst these barriers the resistance to such initiatives on the part of some staff is often noted. In many cases authors paint a picture of a curriculum initiative that has occurred primarily as a result of the personal commitment of the individual and sometimes without the support the community in which she or he works. This is the case even where the institution has a clearly specified list of graduate attributes.

The literature reporting curriculum initiatives explicitly targeting graduate attributes appears to represent a variety of understandings of the nature of the outcomes being targeted and a variety of approaches to developing such attributes. What then of more general teaching and learning contexts within universities. Many Australian universities claimed the development of graduate attributes was already implicit in their existing teaching and curricula. Although as noted earlier, assessment practices rarely provided evidence of such outcomes being taught and assessed.

The extent to which existing curriculum and teaching and learning strategies have developed graduate attributes in Australian universities is unclear. However many authors have pointed to the need for curriculum review in light of policies claiming particular generic attributes of graduates (Adamson et al 1996, Bowden et al 2000). The curriculum documentation of Australian university courses does not usually refer to graduate attributes and assessment of many university courses remains focussed on recall of factual content with little or no assessment of graduate attributes. While Australian universities claim such generic attributes as outcomes of undergraduate degrees there appears to be little evidence provided that teaching and learning practices are in place to support students in achieving such outcomes.

It might be reasonable to assume that the current levels of interest in graduate attribute outcomes on the part of the various stakeholders in higher education is leading to changes in university teaching and assessment practices in order to facilitate the development of such attributes. However, there does not appear to have been a significant shift in general teaching practices associated with the adoption of policies relating to the development of graduate attributes of graduates (Drummond et al 1998, Bennett et al 1999).

Research investigating conceptions of teaching and learning held by academics in Australian and overseas universities, continues to identify a preponderance of transmission models of teaching and learning. Such conceptions of teaching are related to passive acquisition of factual content as opposed to development of skills, applied knowledge and abilities of the type specified by some statements of graduate attributes (Dall'Alba 1992, Kember & Gow 1994, Prosser Trigwell & Taylor 1994). A recent report (Bowden et al 2000) by a group of Australian technology universities has recommended a particular teaching strategy, one that is clearly relevant to the employment focussed understanding of graduate attributes on which the report is based:

Generic capabilities are most readily developed within authentic learning environments.....authentic learning environments foster personal responsibility for learning. They link experience, previous understandings and new knowledge in a way that is readily apparent to the learner. They also simulate situations in which students may ultimately be employed.... Such learning experiences are ultimately more powerful than teaching from information transfer alone. (Bowden et al 2000).

This report also goes on to advocate a particular approach to teaching as being central to the development of effective curriculum and teaching strategies which foster the development of graduate attributes:

The development of a generic capabilities program requires commitment from all members of the course team and this commitment involves the adoption of a student-centred approach to the curriculum process. (Bowden et al 2000)

While the adoption of a student-centred approach is clearly desirably pedagogically (Prosser & Trigwell 1999), and may represent a trend in higher education (Marton et al 1997), the literature on university teaching and learning does not yet contain reports of ~~staff across an entire university adopting such student-centred approaches in their~~ teaching and curriculum development. Indeed even many of the curriculum initiatives reported in the graduate attributes literature do not adopt such an 'authentic learning or student-centred' approach. Instead the various accounts of graduate attributes initiatives reported represent a considerable diversity of approaches to developing such outcomes, including teacher-focussed, information transmission approaches (Prosser

& Trigwell 1999). Many of the teaching strategies described in accounts of graduate attributes curricula are familiar to many academic staff, for example developing communication skills through group based learning, developing problem solving abilities through problem based learning, developing autonomy through self assessment etc. However, the use of such strategies is not widespread, and in the absence of university policy or other forms of institutional support, choice of teaching strategies remains largely at the discretion and inclination of the individual teacher.

The Australian Technology Network (ATN) report (Bowden et al 2000) is significant in that it marks perhaps the first attempt at a coherent strategy for implementation of graduate attributes developed in Australia. It goes beyond policy statements of outcomes and lays the groundwork for policy statements of implementation. It identifies a set of principles for curriculum development and provides case studies to demonstrate these principles and support implementation efforts. Its publication makes a considerable contribution to the field, particularly in terms of the assessment of levels of attainment of graduate attributes.

While at present the guidelines have only been implemented 'in at least one course at each of the five universities', it will be interesting to observe the impact of the project on teaching and learning practice more generally within the ATN universities in the future.

The project bases its recommendations on a view of graduate attributes as 'the qualities, skills and understandings a university community agrees its students should develop during their time at the institution' (Bowden et al 2000). However, while acknowledging the underlying variability in how graduate attributes are described, the project does not consider what such variability might mean and does not identify a conceptual basis for such attributes. As such, the report does not tackle the question of the extent to which the university community is presently able to agree on such issues.

Many of the individual members of the university community may, on first glance, espouse agreement with the rhetoric that students should develop attributes 'beyond the disciplinary expertise or technical knowledge that has traditionally formed the core of most university courses' and that these attributes 'are qualities that also prepare graduates as agents of social good in an unknown future'. However, the question that must be asked in response the current diversity of practice is the extent to which the individual members of the university community really do agree on this issue, when they are faced with decisions about designing and teaching their own curricula.

If all academics agreed and shared a common understanding of such outcomes and the place of such outcomes in university curricula then why the diversity of current practice? It seems more likely that the different individuals who make up the university community have a variety of different views on the subject of graduate attributes. The variation in current teaching practice would suggest that individuals' understandings of graduate attributes vary, not only in terms of what graduate attributes are and the place of such outcomes amongst the more traditional outcomes of a university education, but also in terms of the role these individuals should play as teachers and designers of curricula to develop such attributes and what these curricula approaches might be.

The question of the extent to which the university community agrees about graduate attributes remains unaddressed in the literature. The extent of variation in teaching practice within a single university, let alone across several universities, as in the ATN group, would suggest the university community is far from 'agreed' on what graduate attributes are, let alone which amongst such attributes might be important and how they might be taught. Questions of how such attributes might be efficiently taught and learnt appear somewhat 'academic' in the absence of this initial agreement or at least an understanding of the variations in agreement.

Having considered the variation in policy and practice let us step back and consider the implications of this variation for the present study.

Implications of the variation

As described in the previous pages, the literature dealing with graduate attributes is characterised by considerable variation both in how universities and higher education systems describe graduate attributes, and in the practices used to develop such attributes. There is no coherent theoretical framework or underpinning conceptual basis put forward in the literature as a basis for either universities' formulation of graduate attribute statements or the strategies by which individual academics or course teams approach the development of such attributes. The research literature in the field of generic graduate attributes has primarily taken the following forms:

- (1) Descriptive reports of what universities say they are doing to develop such attributes in students. This has included the development and publication of lists of graduate attributes and evaluations reporting on the presence (or absence) of

generic attributes curricula within the university and accounts of initiatives to map lists of generic attributes onto existing university curricula.

- (2) Descriptions and evaluations of specific curricula initiatives to address particular generic attributes. For example a report of the evaluation of a course in critical thinking skills. Such research has sometimes included the proposal of a definition of the particular skill being considered and a rationale for why the particular attribute is a valuable outcome.
- (3) Evaluations of students' attainment of particular generic graduate attribute outcomes. This literature includes reports of employer surveys of satisfaction with particular employable skills as a subset of generic graduate attributes and reports of students self report of attainment of particular generic skills using tools such as the Generic Skills scale of the Course Experience Questionnaire (CEQ). In a similar line the recent development of the ACER test of graduate skills marks a new initiative to evaluate a particular subset of generic attribute outcomes.

What has been missing is research identifying the theoretical and conceptual basis for such attributes. One is left wondering; *What are these 'things' that universities call generic graduate attributes?* This is a more fundamental question than what combination of skills, attributes and knowledge should be included on the graduate 'shopping-list', it is about the nature of the things on the list, and the nature of the list itself.

Implicit in statements of graduate attributes are beliefs about the intended purposes and outcomes of a university education. While such beliefs have far reaching implications they provide an implicit conceptual basis for descriptions of graduate attributes. However, this conceptual base is not something that is adequately addressed in the formulation of graduate attributes statements or the descriptive accounts of curriculum initiatives that make up the bulk of the graduate attributes literature. Statements of graduate attributes are intended to describe an important aspect of the outcomes of a university education. Exactly which aspect of a university education they describe is often only vaguely spelt out and such definitions vary between institutions and individuals. For example in some statements graduate attributes are described as 'core outcomes of higher education beyond knowledge', in others the 'core outcomes including knowledge'. In other policy contexts they are 'skills relevant to the world of work' while in other instances they are described as 'attitudes

and abilities that equip graduates as agents of social good' or as 'personal skills' that appear to have little to do with university. Even when the policy statement does describe what the list of graduate attributes is supposed to represent, the diversity of practice seen in various Australian and international universities would suggest that the common vocabulary of these definitions might not share much in the way of a common underlying meaning.

It is certainly hard to accept the formulation of statements of graduate attributes as agreed descriptions of possibly an important (even core?) aspect of a university education, in the absence of some clarity on the part of the university community as to what the purposes of higher education are. Judging by the level of argument and debate that has emerged in the philosophy of higher education literature, the university community is somewhat less than agreed as to what the outcomes of university education should be. Despite this, statements of graduate attributes, as a shorthand description of some aspect of the outcomes of a university education, have been formulated and are enshrined in policy in all Australian universities. The lack of a cogent conceptual base for these statements renders it even less likely that these statements of graduate attributes describe some 'agreed upon' aspect of the outcomes of higher education. In fact it is more likely that the outcomes these statements attempt to describe will be highly contested territory.

What then of the issue of variation in vocabulary? Many different terms are used to refer to graduate attributes in the policy statements of Australian universities. While the terms skills, attitudes, values etc usually have very different underlying meanings, they are often used interchangeably when referring to graduate attributes. The recent Australian Business Higher Education Round Table discussion paper on generic skills observes:

The term 'generic skills' is widely used to refer to a range of qualities and capacities that are increasingly viewed as important in higher education. These include thinking skills such as logical and analytical reasoning, problem solving and intellectual curiosity; effective communication skills teamwork skills and capacities to identify access and manage knowledge and information; personal attributes such as imagination creativity and intellectual rigor; and values such as ethical practice; persistence, integrity and tolerance. This diverse collection of qualities and capacities is distinguished from the discipline specific knowledge and associated technical skills that traditionally are

associated with higher education.... When people talk about 'generic skills' they are referring to a very mixed bag of things that as well as having skill components, equally involve attitudes, values and dispositions.....A term such as attribute is probably a better descriptor of the collection of qualities that together constitute 'generic skills'. However given the wide currency of the term 'generic skills' in the community generally this discussion paper will retain the terms whilst recognising that it is being used in a very broad sense. (Hager et al 2002 p 1-2)

Despite concerns raised as to the different nature of the abilities referred to by such terms (Bennett et al 1999, Holmes 2000) they have come to be accepted as synonyms when referring to graduate attributes. While a shared (albeit varied) vocabulary has emerged to refer to graduate attributes, this does not imply that there is a shared underlying understanding of what is meant by these terms:

While there is evidence of an emerging single language, this exists in terms of common words not common meaning. (Hirsh & Bevan 1988)

The variety of terms used in both policy and accounts of practice would suggest that rather than a common meaning there are a variety of meanings underlying the use of the term 'graduate attribute'. The picture that emerges in the literature is one of a diversity of understandings, on the part of the individuals and institutions that make up the higher education community, as to how graduate attributes are conceptualised. At a macro level this manifests in considerable differences between institutions and higher education systems in how graduate attributes are defined and hence considerable variation in the sort of outcomes identified as 'graduate attributes'.

The lists of supposed skills tend to consist of a varied mix of different sorts of things including personal qualities, values, particular skills as well as the ability to apply knowledge and understandings. Quite how these differ from each other and how they can, if different sorts of things, be linked together as similar (i.e. all transferable skills) is not explained. Nor is explanation provided for how these transferable skills give rise to (cause) performance. Nor is there an explanatory theory of the contexts or domains within which 'transfer' supposedly takes place. There are then serious problems with current formulations. (Holmes 1995 p 23)

The variations in the definitions of a graduate attribute are reflected in the idiosyncratic lists of attributes compiled by different institutions. This lack of coherence is multiplied in individual academics' and course teams', attempts to develop curricula to target their particular interpretations of graduate attributes. Regardless of the variability in definitions and terms used, the indications are that the agreement espoused in policy statements is not matched by the reality of practice.

Taken in isolation the various curriculum initiatives typically have a sound rationale for targeting a particular outcome and each initiative is often framed against the backdrop of a university statement identifying such outcomes as valuable. However, these individual initiatives do not add up to a coherent approach to developing the full range of graduate attributes described by university statements and across an institution such implementation is inconsistent. In universities where initiatives have been implemented the variation in the approaches described would further suggest variation in understandings as to the graduate attributes described in the institution's policy statements.

The university statements are often non-specific and open to interpretation in various ways. In some cases a university policy of developing particular attributes through courses and teaching even appears to be interpreted as 'not relevant in my context' and there are indications of considerable resistance on the part of some academics to taking responsibility for teaching the graduate attributes espoused by the institution. If there are a variety of meanings inherent in how academics understand and conceptualise graduate attributes then such resistance might be expected. If an individual academic understands graduate attributes to be a set of low level employment related skills, s/he may not see these as valid components of a curriculum defined in terms of the traditional basis of discipline knowledge. Such an understanding might evoke the response: 'Is it really my responsibility to teach my English Literature students basic numeracy skills?' In much the same way, if an individual understands graduate attributes to be personal values or attitudinal and dispositional qualities, she may not perceive that it is the role of her course to develop such attitudes. For example: 'Is it really my job as a university lecturer to teach my accounting students about ethics or the value of sustainability?' It might well be that the lack of agreement or shared understanding as to what graduate attributes are, contributes in part to the resistance voiced by some individuals in response to calls to incorporate such attributes in their curricula and teaching.

Universities are aware of the current patchy implementation of graduate attributes curricula and have recognised the need to address the development of graduate attributes through more systematic curriculum reform and academic development strategies. This is indicated in recent initiatives such as the ATN project (Bowden et al 2000) and is foreshadowed in the Australian Business / Higher Education Round Table (BHERT) discussion paper on Generic Skills and Higher Education (Hager et al 2002):

Virtually all Australian universities have developed statements of graduate attributes. However developing a statement of graduate attributes is the easy part. Ensuring that the curriculum, teaching and assessment in the university does indeed promote the development of the attributes is a much larger undertaking. (Hager et al 2002 p17)

The BHERT paper notes the recent development of several university wide initiatives to develop curricula which foster the development of generic skills. However none of these initiatives appear to have addressed the basic consideration of what the academic staff charged with developing these curricula actually understand graduate attributes to be.

The ATN project bases its recommendations on a view of graduate attributes as 'the qualities skills and understandings a university community agrees its students should develop during their time at the institution' (Bowden et al 2000). As part of the resources developed by the project team there are a series of prompts for reflection intended for use in introducing a graduate attributes policy to staff. Amongst these prompts for reflection are the following:

- Locate a copy of the relevant documents and describe how these capabilities are seen or described in the courses you offer in your own faculty or discipline area.
- What aspects of the university position on generic capabilities seem very sound to you?
- What aspects do you think should be different?

Implicit in these prompts is the recognition that different individuals may well have different ideas about the place of graduate attributes in a university education. The project indirectly acknowledges the underlying variability in how graduate attributes are described and recognises that individual academics might have very different ideas about the notion of graduate attributes, and as a consequence value them quite

differently. However, as noted previously, the project does not consider what such variability means and does not identify a conceptual basis from which to make sense of or deal with such variability. Addressing these issues seems a necessary preliminary task to implementing the recommendations proposed in the report.

A commitment to the espoused graduate attributes is a prerequisite for effective implementation across an institution. The diversity of current practice would suggest that agreement about graduate attributes might not be easily reached. Given that the variation in current statements of graduate attributes probably owes much to the origin of such statements in the contested and hotly debated territory of the underlying nature and purpose of a contemporary university education such agreement seems unlikely. The multiple perspectives that are apparent in discussions as to the purpose of a university education are likely to be mirrored in multiple understandings of graduate attributes as a description of the generic outcomes of a university education. Resolving such multiple perspectives and reaching agreement might not be possible, at least in the absence of an agreed conceptual base for the role of a university education. While university policy may claim one thing, and employers and government demand something else, it is the diverse community of university academics itself which seems least clear on the question of graduate attributes.

Under current and emerging political, economic and social conditions the meaning of higher education is being remade. It seems clear that the notion of 'transferable skills' will form a key part of that remade meaning. The question is what meaning will be attached to the notion of transferable skills and who will determine that meaning. (Holmes 1995 p 27)

An unanswered question

A coherent conceptual framework for the notion of graduate attributes is currently conspicuous by its absence. Moreover, the variation in policy and practice would suggest that rather than a single underpinning model or concept the university community currently holds a variety of understandings or conceptualisations of graduate attributes.

There does not appear to be any model of graduate skills that accommodates the views and policies of different staff and institutions. (Fallows & Steven 2000)

The lack of a coherent conceptual framework to underpin arguments for the inclusion of graduate attributes in university curricula poses a considerable barrier to systematic implementation of curricula to achieve the espoused outcomes. The 'patchy' implementation and resistance reported in the literature would suggest that debates amongst the members of university communities as to the place of generic graduate attributes in their courses and teaching appear to be far from over. At present it would appear that many of the participants in these debates are engaging in such discussions, and attempting curriculum reform, with the presumption that the shared vocabulary of the arguments represents a shared understanding of the meanings inherent in the terms. The diversity apparent in the statements of graduate attributes themselves, as well as the diversity seen in reports of graduate attributes curricula and reports of academics' attitudes to calls for the development of such curricula would suggest that this is not case. We are left asking, 'What are these things that the academic community refers to as graduate attributes?'

Calls for research to address the lack of a conceptual base for notions of graduate attributes have peppered the literature for the past decade however to date this research has not been undertaken. Instead the body of work on graduate attributes has continued to grow with efforts to develop and revise statements of graduate attributes and design new curricula to achieve such outcomes and new strategies to demonstrate that graduate have achieved such outcomes. However the nature of such generic graduate outcomes and the place of such outcomes in the context of more traditional framings of a university education in terms of discipline knowledge, remain largely unexplored.

This territory invites exploration and holds the promise of findings of relevance to much of the work currently occurring in universities in the field of graduate attributes. This then is the territory that that the current research will explore. However this territory is vast, and the search for a coherent conceptual basis for graduate attributes will not be a simple or singular undertaking. How then might such an exploration usefully be started?

A 'collective' conceptual basis for graduate attributes?

In the absence of a conceptual base, variation and diversity appear to be the defining characteristics of Australian universities' approaches to graduate attributes.

The literature reveals a lack of a shared understanding of the term graduate attributes. Lists of desirable attributes are proposed, curriculum initiatives described and outcomes claimed, without really coming to grips with what such attributes are. Instead the collective nature of the attributes themselves is assumed. What is missing is a conceptual framework that would provide some underpinning to the phenomenon of graduate attributes, and hopefully provide a holistic structure within which the diverse range of existing terms and strategies could be understood.

The variation in the lists of graduate attributes developed by universities and the variation in the practice would suggest that the individuals involved in formulating such lists and teaching such curricula - the academic community of the university - have different understandings of graduate attributes. Trying to make sense of this variation might prove helpful in identifying a conceptual framework for graduate attributes. Such a conceptual framework would have to accommodate the complexity of the diverse and varied views of graduate attributes rather than seeking within these varied views for the one 'right' way to understand graduate attributes.

Such a variety of views and understandings is perhaps not unusual in universities, or indeed in any aspect of the postmodern world. Bowden and Marton (1998) suggest that contemporary universities are best understood in terms of the collective consciousness of the organisation. The community of individuals who make up the university, each with their individual ways of seeing the world, see various aspects of the world of the university, (things like teaching and research), in a variety of different ways. These ways are not positioned as right or wrong, merely different. Different ways of understanding might be more or less complex ways of seeing the same thing, not right or wrong ways. Just different and more or less complex. Together these different understandings constitute a collective consciousness rather than a single shared awareness.

If we are in the same material and social context we usually take for granted such a shared nature of the perceived world around us. Such an assumption may turn out to be unjustified - in fact it is quite often unjustified. Frequently we see a context, a situation or a phenomenon, which 'objectively' is the same in

qualitatively different ways. If we become aware of others' ways of seeing this then we have a certain degree of collective consciousness. We are simply aware of some of the ways in which something appears to others and if we are, we have an interpretative framework for making greater sense of whatever the others may say about the shared object of attention. (Bowden and Marton 1998 p 189)

Might being aware of the different ways academics see graduate attributes be helpful in 'providing an interpretative framework for making greater sense' of graduate attributes? Bowden and Marton argue that the variety of ways of seeing 'something' makes up the 'something' and understanding the different ways that an aspect of the world is understood is what is required to really understand it.

By becoming aware of others people's ways of seeing various phenomena one's understanding is enriched and therefore becomes more powerful; one can see one's way of seeing exactly as a way of seeing (rather than seeing what something is like), and individual awarenesses are linked to each other forming a collective consciousness. (Bowden and Marton 1998 p 191)

Statements of graduate attributes and the curriculum and teaching designed to achieve such attributes might be thought of as another aspect of the collective consciousness of the university community. This community 'sees' graduate attributes in a variety of different, more or less complex ways. These different ways of seeing or conceptualising graduate attributes are manifest in the variety of different statements of graduate attributes and the variety of different teaching and curriculum practices designed to achieve such attributes.

Understanding the variety of ways in which the university community understands graduate attributes might provide a conceptual base which accommodates the variety of understandings evident in policy and practice and be more fruitful than searching for a single unifying model. Moreover, such a single theory or unifying model of graduate attributes seems likely to be elusive given the apparent diversity of conceptual underpinnings to graduate attributes implicit in policy and practice.

Might the variation which was itself was seen to underline the absence of a coherent conceptual base actually prove a valuable resource in seeking to better understand the nature of graduate attributes? Can the variation provide the answer to the question

'What are these things referred to as graduate attributes?' Before considering this in terms of a methodology and research approach, let us look back on the phenomenon in light of this question.

Reflection on the phenomenon

This chapter has built upon the authors personal reflections and observations of practice sketched in the opening chapter. It has set the scene for the present inquiry and positioned statements of 'graduate attributes' in the broader context of higher education in Australia.

The first part of the chapter introduced statements of the attributes of graduates as a means of defining the outcomes of a university education and noted that the context in which universities attempted to develop these descriptions of outcomes contributed much to the definitions that emerged. Statements of graduate attributes represented a university response to many of the external and internal forces that have influenced higher education in the past two decades. While these forces have shaped statements of graduate attributes, they were however developed within universities, rather than being a set of outcomes imposed on universities by the Australian government.

In considering some of the significant recent influences on higher education and the context from which graduate attributes emerged in Australia the chapter has considered the ways in which these forces have played a part in shaping today's statements of graduate attributes. Amongst these forces was the perception that higher education had an increasingly prominent role to play in the economic reform agenda for Australia. In particular it was expected that the newly massified Australian higher education system should reposition itself to better meet the needs of the employment sector. This expectation was articulated in calls for universities to produce more 'employable' graduates. Statements of graduate attributes which emphasised employment related skills were an element of Australian universities' responses to such calls and descriptions of graduate attributes were advanced in support of universities' claims that they were indeed producing the desired graduates.

More broadly, changes in the nature of society, beyond the world of work, and changes to the nature of knowledge and the proliferation of alternative ways of knowing have prompted universities to question the nature of a university education in the post

modern world. Such considerations have also been articulated in universities' statements of graduate attributes. Statements of graduate attributes sought to describe aspects of the outcomes of a university education and the formulation of such statements emerged in the context of the debate as to the broader purposes of a university education. Many statements of graduate attributes, as well as describing the attributes relevant to the world of work sought to describe the attributes of graduates developed in the course of a university education that equipped them to be valuable members of today's and tomorrow's changing society.

The increasing prominence of higher education and the increasing level of social investment in universities brought with it increased scrutiny. Like many public institutions universities have been subjected to calls that they are accountable for both their processes and outcomes as a condition of ongoing public support. This accountability has been framed in terms of fitness for purpose and based on a definition of quality as value of money. Central to universities' responses to such calls for accountability has been the need for universities to define their intended outcomes and demonstrate that they are achieving such outcomes. As part of this response, statements of graduate attributes have contributed a generic description of university outcomes that could be seen to be relevant to society's perceived needs. Universities have not yet convincingly demonstrated that they are indeed achieving such outcomes.

Despite the lengthy history of graduate attributes, and their relationship to such topical issues in higher education, the underlying theoretical and conceptual basis for such statements has been by and large unexplored. While this absence has been noted, a shared understanding of such attributes has been assumed by most of the authors of the policy statements and the authors of reports in the literature dealing with curriculum initiatives in this area. While a shared, though variable, vocabulary has emerged around the topic of graduate attributes, the assumption that this reflects a shared understanding of the conceptual basis of graduate attributes has remained undemonstrated. Statements of graduate attributes as generic outcomes of a university education are implicitly linked to underlying conceptualisations as to the purpose and nature of a university education. Authors writing on the philosophy of higher education have consistently questioned the assumptions inherent in statements of graduate attributes in the context of critiques on the conceptual basis of universities. However despite calls for research into the underlying theoretical and conceptual base for claims of graduate attributes, this research is still lacking. There is no coherent or plausible conceptual framework for graduate attributes advanced in the literature. Indeed, the

notable absence of any coherent conceptual framework or theoretical underpinning of the concept of graduate attributes appears to be one of the few consistent features of the literature on graduate attributes.

In exploring this issue further we turned to an initial consideration of the variety present in statements of graduate attributes. It was noted that these statements are prefaced with a variety of descriptions such as 'core outcomes' or 'employment related skills' and that the attributes listed are typically a combination of different sorts of things, skills, abilities, attitudes, values etc. We observed that there is little consistency between institutions or between different higher education systems as to the lists of attributes that have been developed and suggested that this variability reflected a range of understandings of the concept of graduate attributes.

Having identified considerable variety at the level of the statements of graduate attributes we then considered the nature of the curriculum initiatives reported in the literature on graduate attributes. These curriculum initiatives were also seen to be highly variable, representing a diverse range of strategies to achieve an equally diverse range of intended outcomes. The variability in underlying conceptions seen in the policy statements was also apparent in the reports of practice that make up the bulk of the literature on graduate attributes. The reports of curriculum initiatives were also characterised by the absence of a coherent theoretical or conceptual base to the statements of graduate attributes they sought to achieve. The variety of approaches taken to achieving these outcomes lends further support to the suggestion of a diversity of understandings as to what graduate attributes are.

The defining characteristic of the existing literature and current practice in the area of graduate attributes is variation. This variation suggests that there is no single shared understanding as to what graduate attributes are and underlines the absence of a conceptual base for notions of graduate attributes. We are left wondering: What are these things we call graduate attributes? It was with the hope of contributing in a small way to the search for an answer to this question that this research sets out.

An investigation of the apparent variability in underlying conceptions of graduate attributes seems timely. Particularly so given the reports of patchy uptake and implementation of graduate attributes curriculum development and reform internationally and the current focus on graduate attributes in the Australian higher education system. In light of the perceived need to develop more effective

implementation strategies and policies to achieve the aims espoused in the statements of graduate attributes several Australian universities are developing strategies to more effectively embed the development of graduate attributes in university curricula. These initiatives while useful have not yet advanced a coherent conceptual or theoretical framework for graduate attributes. These projects have recognised the need for the university community to 'agree' on such attributes as a precursor to successful implementation. However they have not yet addressed the extent to which the university community is able to agree on the attributes included on the list, or even the nature of the list itself. Given the variability of understandings of the concept of graduate attributes seen in current practice such agreement may not be forthcoming.

Indeed, an agreed understanding of the concept of graduate attributes might not be possible in the presence of the considerable variation apparent at present. However a level of shared awareness of the diversity of conceptualisations of graduate attributes might be a helpful step towards this goal. A recognition and appreciation of the variety of understandings of graduate attributes might provide a starting point for efforts on the part of the university community in either reformulating existing statements of graduate attributes and implementing curriculum and teaching reform to more effectively achieve the outcomes espoused in such statements.

The current diversity of practice related to graduate attributes, while part of the 'problem' representing as it does the lack of a conceptual basis for graduate attributes, might also represent a way forward. In closing this chapter, Bowden and Marton's (1998) idea of collective consciousness as an awareness of the multitude of ways of seeing graduate attributes was introduced. It was suggested that understanding the variety of ways in which the university community understands graduate attributes might provide a conceptual base which accommodates the variety of understandings evident in policy and practice and be more fruitful than searching for a single unifying model. Such an approach to the question of "what are these things called graduate attributes?" is predicated on a particular way of understanding the world.

Let us explore the way of knowing on which Bowden and Marton's (1998) idea of a collective consciousness is predicated, and see if it offers hope of a solution to the dual dilemma posed by the observed variation in policy statements and academic practice and the absence in the literature of a conceptual basis for graduate attributes.

Chapter Three: EXPERIENCE

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EXPERIENCE

In the preceding chapters we surveyed aspects of the field of knowledge that touch upon the phenomenon of generic graduate attributes. In doing so we identified a need for further research of a particular nature and proposed an inquiry into some of the assumptions underpinning current thinking on generic graduate attributes. This inquiry is centred on the question 'What are these things we call graduate attributes?'

This chapter will consider the nature of such an inquiry and present a new way forward in approaching the question of what are generic graduate attributes. This chapter will explore phenomenography, a methodology that aims at descriptions of variations in experience. In doing so this chapter will first introduce the phenomenographic **approach** and identify how this methodology is well suited to the present inquiry and how it might contribute to furthering our understanding of generic graduate attributes. The second section of the chapter will describe the **situation** in which the present inquiry is based. In doing so it will consider how the phenomenographic approach was applied to the question at hand and describe how the data was collected and analysed. This chapter will lay the groundwork for engaging with the results and discussion to follow.

Overview

The review of the literature dealing with generic graduate attributes presented in the preceding sections highlighted the apparent variation in policy and practice and revealed the absence of an adequate account of the conceptual basis of such attributes. While much has been written on graduate attributes curricula, very little has been written reporting on the conceptual basis of such attributes. What literature there is, consistently identifies the need for more work at a conceptual level (Clanchy & Ballard 1995, Bennett et al 2000). The literature describing curriculum development related to particular attributes is considerable (for example, Assiter 1995, Fallows & Steven 2000), particularly for attributes such as critical thinking abilities (for example Ennis 1989) and communication skills (for example Barrie & Jones 1999) and more recently information literacy (Bruce 1998, Candy 2000, Council of Australian Librarians 2001). However, this literature accepts, but does not substantiate, the existence of a

shared understanding of the notion of generic graduate attributes. In essence the present study aims to contribute to the exploration of the underlying conceptual and definitional basis of what have come to be termed 'generic attributes of graduates' and it will do so by considering variations in how academics talk about generic attributes of graduates. The variation that suggested the presence of different understandings, will become the focus of the inquiry.

At the heart of this research is a question about what academics 'mean' by 'generic attributes of graduates'. In seeking to answer such a question the nature of the research object, the purpose and process of the research task and the intended applications of the research outcomes were important in determining the choice of research methodologies. Methodological considerations are inextricably tied to ontological considerations (Marton 2000) and the results of research are interpreted in light of the methodology that was used to obtain them.

Phenomenography is not a method of itself. Although there are methodological elements associated with it.... phenomenography is rather a way of, or an approach to, identifying, formulating, and tackling certain sorts of research questions, a specialisation that is particularly aimed at questions of relevance to learning and understanding in an educational setting. (Marton & Booth 1997 p 111)

This chapter will consider some of the ways in which the comparatively recent research 'tradition' of phenomenography is particularly suited to the nature of the questions raised in relation to generic graduate attributes in the preceding discussion.

The theoretical foundations for the selected research approach will be established and some of the key findings of other phenomenographic research, which are particularly relevant to the present study, will be identified.

We will consider how a phenomenographic approach might be relevant in the context of the questions posed in this research and the focus of the inquiry will be more tightly specified. Variation in academics' conceptions of the phenomenon of generic graduate attributes will be identified as the object of study.

We will then consider how such variation might best be observed in a research study and describe the use of phenomenographic interviews as an approach to exploring variation in individuals' understandings of a phenomenon.

We will then turn to a description of the interview context in which the present study was situated and the way the data was collected and prepared for analysis.

The question of how phenomenography approaches issues of reliability and validity is then considered.

The chapter concludes with a discussion of the theoretical approach used in the analysis of the data. This section introduces the idea of 'experience' as the unit of analysis and describes how the idea of different structures of awareness will be used to present the nature of the variation in experience of graduate attributes in the subsequent chapter.

The phenomenographic approach to describing conceptions is closely related to the view of the research objects. The phenomenographic approach taken in this study exerts a profound influence on the results obtained and the way these results might engage the reader. Certainly the research approach selected has contributed greatly to shaping the thinking of the author on the topic of graduate attributes.

What are generic graduate attributes? A new approach

To recap: to date research in the field of generic graduate attributes has primarily taken the following forms:

- (1) Descriptive reports of what universities say they are doing to develop such attributes in students. This has included the development and publication of lists of graduate attributes and evaluations reporting on the presence (or absence) of generic attributes curricula within the university and accounts of initiatives to map lists of generic attributes onto existing university curricula.
- (2) Descriptions and evaluations of specific curricula initiatives to address discrete generic attributes. For example a report of the evaluation of a course in critical thinking skills. Such research has sometimes included the proposal of a definition of the particular skill being considered and a rationale for why the particular attribute is a valuable outcome.
- (3) Evaluation of students' attainment of particular generic graduate attribute outcomes. This literature includes reports of employer surveys of satisfaction with particular employable skills as a subset of generic graduate attributes and reports of students self report of attainment of particular generic skills using tools such as the Generic Skills scale of the CEQ. In a similar line the recent development of the ACER test of graduate skills marks a new initiative to evaluate a particular subset of generic attribute outcomes.

The defining feature of this research has been the variation in what is described as generic graduate attributes.

What has been missing is research identifying the theoretical and conceptual basis for such attributes. What are these 'things' that universities call generic graduate attributes? This is a more fundamental question than what combination of skills, attributes knowledge should be included on the graduate 'shopping-list', it is about the nature of the things on the list, and the nature of the list itself.

In seeking a new way forward in exploring the meaning of generic graduate attributes, this research sets out to critically explore academics' understandings of graduate attributes, by considering how they are conceptualised in the context of contemporary

teaching and learning practices at one Australian university. To the author's knowledge, no other published research has sought to explore generic attributes by identifying the variation in the conceptions held by individual academics of aspects of the phenomenon of generic graduate attributes.

Perhaps, in part, this research has been missing because research into the nature of learning outcomes and knowledge, and how such knowledge is learned, has not always proved particularly helpful in the context of university teaching and learning (Prosser & Trigwell 1999).

Educational research is based on various different theories of learning and perspectives on the nature of knowledge. Recently a new approach to researching such questions has emerged that is proving helpful in the context of teaching and learning in universities. This research approach has come to be known as phenomenography. Over the past 20 years, phenomenographic research has provided many useful and influential insights into teaching and learning (Entwistle 1997, Bowden & Walsh 1994, Bowden & Marton 1998, Prosser & Trigwell 1999). The usefulness of these insights is, in part, because the underlying assumptions of the approach allow researchers to look at learning in a new way, one that avoids many of the limitations that beset educational research in the past.

Phenomenography is concerned with describing experience, more specifically with describing different ways of experiencing. This focus is quite different from the cognitivist concern with describing mental representations or memory for instance. In a cognitivist view thoughts and conceptions are things that go on in people's heads, they are hidden and to be inferred. Much of the research on learning has been from such a cognitivist perspective and as such based on 'unverifiable frameworks' or models of what is going on in someone's mind (Marton & Booth 1997 p 113). Phenomenography is concerned with ways of experiencing rather than 'thinking' in the psychological or cognitivist sense.

Phenomenography has as the object of its research human experience, not human behaviour or mental states or the nervous system (Marton & Booth 1997 p 116). Phenomenography shares this object of research with 'phenomenology', however phenomenology has an important difference. Unlike phenomenography, phenomenology aims at developing a single theory of experience by using a particular method, the study of the researcher's own experience. Phenomenography on the other

hand turns outward and studies the experiences of others with the aim of identifying the structure of the variation in these experiences rather than seeking a single theory or 'essence'.

Like phenomenology, phenomenography is a second order rather than first order account of the world. Rather than making statements about the phenomena themselves, phenomenography makes statements about the ways people experience these phenomena. In phenomenography individuals are seen as bearers of fragments of differing ways of experiencing a phenomenon. The description reached is a description of variation on a collective level and in that sense the individual voices are not heard (Marton & Booth 1997).

Phenomenography: Foundations of the research approach adopted

The defining difference between the phenomenographic approach and other perspectives underpinning much educational research, is phenomenography's non-dualistic view of an individual's relation to the world. As a result, a phenomenographic perspective does not involve individuals having fixed mental models representing their understanding as in the cognitivist and individual constructivist perspectives, or learning behaviours or roles in society as in behaviourist and situated cognition perspectives. Rather, individuals constitute their own relationship with the world in terms of their experiences and awareness of the world. According to Cope, Garner and Prosser (1996), a phenomenographic perspective sees knowledge as relating individuals to the world.

According to Säljö (1997 p 174), 'Cartesian dualism, starting out with a prior commitment to separating mind and action, reality and our awareness of it, results in an impoverished and abstract understanding of significant psychological phenomena such as human development, learning and experience'. Such a dualistic view of the learner-world relation underpins much educational research. The different dualistic views of the learner-world relation have important implications for the way research into student learning has been conducted and the usefulness of the results of such research for improving teaching and learning.

Studies from a behaviourist perspective concentrate on behaviour and as such are unlikely to provide insight into students' conceptual understanding or the teaching and

learning processes associated with such understanding. The understanding and generalisation of underlying brain mechanisms and functions pursued by research from a cognitivist and constructivist perspective was once thought to have direct implications for the teacher but now the direct links seem less clear (Entwistle 1997a). Ramsden notes that 'Teachers and students tend to describe the processes of learning in the language of content and context, rather than mental operations or the structure of cognitions' (Ramsden 1987 p 277). According to Marton and Booth (1997), research from a situated cognition perspective involves describing a world observed and interpreted by the researcher. Yet, students' perceptions have been shown to be different from an external observer's perceptions and vital to the approach students apply to their studies and the quality of their learning outcomes (Ramsden 1988). Consequently, the non-dualistic phenomenographic perspective places an emphasis on interpreting students' and teachers' perceptions of their own learning and teaching experiences at the centre of efforts to improve learning and teaching (Prosser and Trigwell 1999).

Phenomenography is based on the idea that a particular phenomenon can be experienced in a limited number of qualitatively different ways. A way of experiencing a phenomenon is a particular structure of awareness: A particular structure of awareness is made up of a number of aspects of a phenomenon, simultaneously present and related in a particular way. Some aspects are in the foreground and some in the background depending on relevance and context. A different way of experiencing a phenomenon involves more or less aspects of the phenomenon simultaneously present in the thematic awareness and / or related in different ways.

From a phenomenographic perspective learning involves coming to experience a phenomenon in a more complex way. The increased complexity can be the result of the incorporation of new elements within the structure of awareness, or new relationships between elements, or between elements and awareness as a whole. Learning occurs through the experience of different perspectives on a phenomenon, perspectives that involve variation with regard to aspects of the phenomenon. In response to the different perspectives, there is a recognition by the learner, of either new dimensions of variation, or a new potential for variation in a discerned dimension of variation, or a changed or new relationship between discerned dimensions of variation (Marton & Booth 1997). The variation is integrated with the other, simultaneously focussed on, and related, dimensions of variation of the phenomenon,

leading to a change in the structure of awareness and hence, way of experiencing the phenomenon.

Phenomenography is premised on the principle of intentionality and is based on a non-dualistic world view, where object and subject are not separate. Experience is the internal relationship between human and world (Marton 1981). The subject's experience of the object is a relation between the two. The object does not have an existence independent of the way it is experienced or understood by somebody. There is one world (not a real objective world and a separate subjective world) which is the experience between subject and object. In this view, the world is both subjective and objective at the same time. Phenomenography aims to describe the variations in this experience by considering the different ways of experiencing a phenomenon and how these relate to each other.

Phenomenographic teaching and learning research

As a research approach phenomenography had its origins in the work of Marton and Saljo (1976) on the learning experiences of students. It was based in attempts to replace abstract and empirically unverifiable conceptual frameworks related to how people learn, with understandings drawn from accounts of what people are in fact doing in situated practice. The most significant characteristics of the approach are the interest in 'variation' and the aiming at categories of description of such variation, the open explorative form of data collection and the interpretative nature of the analysis of the data.

Phenomenography has contributed several insights about learning that are pertinent to the problem under investigation:

- In terms of the **outcomes of learning**: that a phenomenon can be experienced in a limited number of qualitatively different but related ways
- In terms of the **process of learning**: learning about a phenomenon can be approached in qualitatively different ways

- In terms of the **relationship between learning process and outcome**: approach to learning is logically and empirically related to complexity of way of experiencing a phenomenon
- In terms of the **outcomes of teaching**: that a phenomenon can be experienced in a limited number of qualitatively different but related ways
- In terms of the **process of teaching**: teaching about a phenomenon can be approached in qualitatively different ways and these are influential forces in shaping students' experience of the curriculum
- In terms of the **relationship between teaching process, learning process and learning outcome**: a number of researchers have attempted to bring these insights together but the relationship is complex and is yet to be demonstrated

(Prosser et al 2002)

Identifying the effect on student learning of teachers' conceptions of teaching and of what they are teaching, as well as how teaching relates to learning, has been the focus of much recent phenomenographic research in Australia. Such research has demonstrated the link between teachers' conceptions of teaching / learning and teachers' practice, as well as student learning processes and learning outcomes (Prosser & Trigwell 1999). In considering teachers' conceptions of generic attributes of graduates, this research focuses on a particular type of university learning outcome and in doing so, parallels and potentially contributes to, these and other phenomenographic studies. By locating the research in teachers' experiences of actual teaching practice, as these other studies have done, the research can also draw upon recent phenomenographic studies of teaching in interpreting the data gathered.

How might a phenomenographic approach be relevant in the context of the questions posed in this research?

Commonly phenomenographic research has as its focus an investigation of the process of learning, the process of teaching or a particular concept that is being taught or learned. A focus on understanding the variation in other aspects of teaching and learning is proving helpful in general curriculum reform and academic development in higher education (Prosser & Trigwell 1999). Certainly as an object of inquiry, the topic of graduate attributes as a particular set of outcomes of the process of university

teaching and learning has much in common with the objects of inquiry of other phenomenographic research. And as such situating any exploration of the teaching and learning of generic graduate attributes in a common methodology would be helpful in allowing the research to draw upon the outcomes of similar teaching and learning research in interpreting and applying the findings.

What is perhaps most apparent in the research to date on generic graduate attributes is that there is considerable *variation* in how universities have sought to describe such attributes, and a similar level of *variation* in how individual academics understand and embody such descriptions in university curriculum and teaching. In many ways *variation* is the defining feature of much of what is currently 'known' about graduate attributes, and as such cannot be ignored. While such variation has prompted calls for research addressing the basic conceptual basis of graduate attributes, this variation remains largely unexplored. The explicit focus on describing this sort of variation is a defining feature of the phenomenographic approach.

In approaching variation from a non-dualistic perspective, phenomenography does not seek to dispel the variation on the basis that there can only be one objective, right way to define or understand the phenomenon. Rather the variation is approached by recognising that there might be many different, more or less complex, ways of understanding any phenomenon. That is, the variation is recognised as being 'real', and approached from the perspective that focussing the inquiry on understanding the nature of this variation is often helpful. Marton and Booth (1997) describe phenomenography as a methodology designed to describe the qualitatively different ways in which a phenomenon is experienced, conceptualised, or understood, based on accounts of experiences as they are formed in descriptions. In essence, phenomenography concerns the description of things as they appear to us. As a research approach it seeks to make explicit the variation inherent in how individuals experience an aspect of the world, and to describe the main characteristics of this variation. As observed variation was the starting point for the inquiry into generic graduate attributes, a research approach that puts variation at centre stage has much to recommend it.

The broad topic of this research, proposed at the close of the previous chapter, was an exploration of what we, as academics, mean when we refer to generic graduate attributes. This question arose from the apparent variation in universities' generic graduate attributes curricula and the absence of any conceptual framework

underpinning these accounts of graduate attributes and curricula. This variation manifests in how universities describe such attributes, how the individual academics within universities talk about such attributes and variations in the way academics choose to teach, or not teach, such attributes as part of the courses and curricula they are responsible for. The focus of phenomenography is on exploring the meaning of the variation between different conceptions or understandings of a phenomenon, rather than attempting to formulate general principles about how things appear to people (as in phenomenology). From a phenomenographic perspective the proposed inquiry would seek to explore the nature of the observed variations in the way the phenomenon is experienced, as a means of furthering our understanding of the phenomenon being investigated.

Shared ideas, values and goals [are seen] as being fundamental components of the collective consciousness of an organisation. They may not be explicit; they are often taken for granted and different members of the organisation may have acquired them independently from each other, simply by being socialised into the same profession and discipline or same research community. We are emphasising more the differences and complementarities, and in order to profit from the differences and complementarities, they must be brought out into the open; they must become visible. (Bowden & Marton 1998 p 201)

The object of inquiry for this research is, in effect, a particular aspect of the university curriculum, the teaching and learning of generic graduate attributes. Booth (1997) claims that in considering a curriculum, (the teaching and learning process), from a phenomenographic perspective, it is essential that a teacher decides exactly what way of experiencing a phenomenon is desirable for students, and how such a way of experiencing a phenomenon might be brought about in the learner. In essence this is about the teacher's conceptions of the outcome and the teacher's conceptions of learning. These two aspects of curriculum provide a focus for this research: (1) teachers' conceptions of generic graduate attributes as an outcome of university education and (2) teachers' conceptions of the teaching/learning process by which students might develop such attributes. Together these two aspects of the phenomenon make up the object of study, which is variation in academics' conceptions of the phenomenon of generic graduate attributes.

How will the exploration of the variation in understandings of generic graduate attributes be approached?

Phenomenography is not a system of generally defined methods and the approach to describing conceptions is closely related to the researcher's view of the research objects. Given that the intention is to describe the nature of the variation in the phenomenon of generic graduate attributes, how might such variation best be observed? And once observed, how would it be analysed?

Phenomenographic research aims to describe qualitative variations in the way a group of individuals experience a phenomenon (Marton 1986). The data for phenomenographic analysis must be such that it provides a rich description of the phenomenon. Moreover it must be focussed on the phenomena under consideration (Bowden 2000). Data collection is typically through in-depth, semi-structured interviews, although it may consider other artefacts such as pre-existing texts or transcripts collected for purposes other than the research. The strategy of using data collected for other purposes as the basis for phenomenographic analysis has been criticised on the grounds that it does not maintain an adequate focus on the research object (Bowden 2000). The various descriptions of generic attributes apparent in university policy statements, while suggesting the presence of variation and underlining the need for further investigation, do not provide a rich enough source of data for phenomenographic analysis. The lists of generic attributes are abstract statements and offer little in the way of an account or description situated in actual practice. Such abstract statements do not reveal the understandings of either the writers of the policies or of the people such policy statements are intended to guide (teachers and students), in a way consistent with the aims or methodology of this research. Moreover, as a source of data for phenomenographic analysis, the lists of generic attributes do not provide the multiple perspectives on the phenomena required (Marton 1986). The analysis in this study was therefore based on data collected through focused, in depth interviews which aimed to ensure that the respondents provided a rich multi-faceted account of their experience of the phenomenon under investigation. Moreover, by situating the research in accounts of actual practice the disjunction between the rhetoric of policy statements and the reality of practice is minimised.

Phenomenography is concerned with the different ways in which people experience phenomena. This statement is more complex than it may at first appear. What is a phenomenon? A *phenomenon* is an entity that while transcending the situation, ties it

to other situations and lends meaning to it (Marton & Booth 1997 p 83). A *situation* is experienced with a context, a time, and a place, whereas a *phenomenon* is experienced as abstracted from or transcending such a spatiotemporal location (Marton & Booth 1997). While different, situation and phenomenon are intertwined. The situation is understood in terms the phenomenon and the phenomenon is understood from the perspective of the situation. What then is meant by *the way people experience* a phenomenon? Marton and Booth (1997) offer the following explanation:

A way of experiencing something as something, involves experiencing a meaning that is dialectically intertwined with a structure, it is a way of discerning something from, and relating it to, a context. The meaning of something for someone at a particular point in time corresponds to the pattern of the parts or aspects that are discerned and simultaneously objects of focal awareness. (Marton & Booth 1997 p 112)

In the present inquiry, the context of contemporary university teaching against the backdrop of an institutional policy specifying the development of generic graduate attributes provides a commonality of experience that is described by different participants in different situations in a variety of ways. Emerging from the variations and similarities in participants' understandings of the phenomenon is a set of categories of description: the outcome space. While each individual has an individual understanding of the phenomenon, the analysis is based on the observed variation in the group. Each individuals' experience is seen against the backdrop of others' experience. The intent is to discern the variation in the group (categories of description) and to then understand each individual's experience (conception) in light of the observed variation.

THE SITUATION

Phenomenography draws on accounts of situated practice. The selection of the situations in which to base these accounts is an important consideration. Phenomenographic research should be planned and implemented with a consistent focus on the purpose of the study (Bowden 2000 p 6). The selection of the subjects to be interviewed, the context in which the interview questions are situated, the nature of the interview questions and follow up probes, and what occurs during the interview

process itself, are all important methodological issues. Phenomenographic research has been described as having either a 'pure' phenomenographic interest or a 'developmental' interest (Bowden 2000 p 3). While both approaches share the same philosophical underpinning and underlying methodological considerations, developmental phenomenography is characterised by a particular context, one in which the aim is to use the understandings of a particular phenomenon which emerge from the analysis to allow people to change the way their world operates. The focus is on the application of the results rather than just the results themselves. The aim of this research was to characterise the variation in what academics mean when they talk about generic attributes of graduates, in order to allow academics and other members of the university community to better understand their intentions and actions in seeking to promote and develop such attributes. The intended applications of the outcomes of the research were clearly in focus at the time of developing the methodology and, in addition to the general requirements of phenomenological research, influenced the choice of subjects and contexts and the type of interview data that was collected. As such this study is situated within the developmental stream of phenomenographic research with the intention that the explicit identification of different ways of understanding graduate attributes would:

Enrich collective consciousness, in terms of the extent members of a certain group or a certain organisation are conscious of the ways in which a phenomena of common concern appear to other members of the group or organisation. (Bowden & Marton 1998 p 201)

Phenomenography draws on accounts of individuals' actual experience of the phenomenon under investigation. The selection of subjects, and hence the experiences of the phenomenon drawn upon, should be made with a focus on the purpose and intent of the research. The focus of this research was on undergraduate university teachers' conceptions of generic attributes of graduates, rather than on, for instance, policy makers' conceptions, and the nature of the actual teaching experience was an initial methodological consideration in selecting the interview subjects. In particular, the research sought to situate itself in contemporary teaching practice of Australian universities as this was identified as being a context of particular relevance to the phenomenon under investigation. Moreover, contemporary (and future) university teaching practice was the intended context for the potential application of the findings. Let us now consider the context in which this exploration of academics' understandings of generic graduate attributes is situated.

Contemporary university teachers

Situating the research in accounts of contemporary practice is a relevant aim however it raises the question of what are contemporary teaching contexts in Australia, and in the context of the phenomenographic interviews, who are the 'contemporary teachers' whose understandings we might wish to explore?

In light of the intention to situate the proposed research in the context of a contemporary university education, it is pertinent to identify the teaching and learning practices that might characterise such an education. One of the most significant features of present-day university teaching practices is the emerging use of information technology. Over the past decade, universities have been at the forefront of those institutions within society, which have appropriated the new information technologies for the purposes of research and teaching. The speed of such appropriation has left many academics still vainly decrying the possibility of the rise of the virtual university, well after the fact of its existence is indisputable.

The use of communication and information technology for teaching and learning is considered by many authors to be a hallmark of contemporary university teaching (Laurillard 1993). However not all curricula incorporating the use of learning technologies might be considered contemporary in terms of pedagogy or content. By the same token, not all contemporary curricula utilise learning technologies and a curriculum might be considered innovative on the basis of the content covered or the teaching and learning approach taken. Evidence of curriculum development, review and innovation might also be considered to be an indication of a contemporary curriculum. However, what is innovative or contemporary in one discipline or setting may be considered 'traditional' in another.

The selection of subjects for the study sought to situate the study in accounts of contemporary teaching and learning by identifying 'contemporary teachers' as interviewees on the basis that they:

1. Had been supported in undertaking a curriculum innovation by the academic development unit of the university.
2. Had been identified as using communication and information technology in their teaching.

3. Were considered by their academic colleagues to exemplify contemporary teaching practice in their discipline.

Of these three criteria the use of information technology for teaching is perhaps worth considering in greater detail at this point. Over recent years universities have engaged in unprecedented levels of curriculum review and development associated with opportunities and perceived benefits of the use of new technologies in teaching. Perhaps this is because technology has been seen to offer a strategy by which universities can meet some of the demands currently facing them, or perhaps this is because of the attraction of technology in its own right. Whatever the reasons, this flurry of curriculum development associated with technological teaching innovations has brought to light many of the implicit assumptions held by academics, not only about curriculum design and underpinning this the nature of student learning and teaching, but fundamental assumptions as to the very purpose and nature of a university education. The context afforded by such curriculum development and review highlights many of the issues pertinent to contemporary teaching practice in Australian universities.

New information technologies present a new medium for teaching in higher education. Moreover, the use of information technology is seen by many institutions to represent the context for teaching and learning in the universities of the future. The advent of the virtual university has generated a context for teaching and learning which implicitly and explicitly challenges many previously held conceptions of teaching and the role of universities. On an individual level, as university academics move towards using the new technologies for education, many of their previously held assumptions and beliefs about teaching and learning and the fundamental purposes of a university education are thrown into stark relief.

While universities may have played a central role in the initial development of the very technologies they are now appropriating for teaching, it is unfortunate that the commercialisation and social implications of the use of these same technologies, have not received similar academic attention. The wholesale adoption of information technologies for teaching with little in the way of critical questioning as to the consequences and ramifications of such a move, is perhaps a reflection of some of the factors driving the process.

It is interesting that in the eyes of some government and business sectors, universities are seen as being technologically 'unsophisticated'. In terms of organisational infrastructure, levels of use and systemic uptake this may indeed be the case. As universities strive to 'compete', some would argue 'catch-up', with businesses and other post compulsory education providers, they are struggling to meet these 'competitors' on their own turf. Universities have yet to realise that they hold a privileged position, if not a monopoly, on the academic skills and opportunities available to critique and inform the use and social implications of such technology. Nowhere is this failing to capitalise on existing strengths more apparent than in the universities' own 'blind' use of information technologies for teaching.

Regardless of the merits or otherwise of such uncritical appropriation, given the market-driven, corporate management ethos of today's universities, it is likely that information technology will increasingly become a significant component of the contemporary university teaching landscape. With the emergence of the 'consumer' perspective on higher education, many institutions have seized upon the new technologies as a strategy for increasing their potential 'market'. Information technologies have been seen as a way of overcoming resource constraints and the physical limitations of geographical location or classroom size. In many cases the adoption of new technologies for teaching has been based on perceived cost savings and efficiency issues. Rarely has the technology been employed in a novel way with the intention of carrying out teaching to better effect, to achieve a qualitatively different outcome from the education process (Alexander, McKenzie & Geissinger 1998).

The adoption of information technologies by universities has been accompanied by much (empty?) rhetoric regarding the potential of such technology to 'revolutionise' education (Collis 1996). In light of the unfulfilled promises of similar rhetoric regarding calculators, personal computers and similar examples of early technologies, such claims are rightly treated with a degree of scepticism by many authors (Alexander, McKenzie & Geissinger 1998). While there has been considerable debate as to the impact of new technologies on classroom teaching, the consequences of the adoption of information technologies by universities have not been considered in terms of questions relating to the fundamental purpose of a university education. Proponents of the use of new technologies in education claim various benefits in terms of better, more efficient, cheaper or more accessible learning, however these benefits remain largely unproven. Results of numerous evaluation reports have failed to demonstrate any significant benefits in terms of improved quality of learning outcomes. Laurillard (1993)

extended the discussion to consider the nature of the student learning experience and the benefits that derive from teaching and learning practices employing information technology, with similar conclusions. Other authors (Bates 1997) are predominantly concerned with the organisational and strategic barriers to implementation of technology based education in universities. Regardless of the merits of universities' current uses of learning technologies, most authors agree that new technologies will play an increasing role in contemporary university teaching, if for no other reason, than the inescapable fact that these information and communication technologies are playing an increasing part in most aspects of the world of students, graduates and teachers.

Currently the new technologies of greatest impact are those of the internet. To date, the use of the world wide web as a teaching and learning resource has met with mixed success (Laurillard 1993). A recent evaluation of the impact of new technologies on learning outcomes (Alexander, McKenzie & Geissinger 1998) has noted the limited success of efforts that could be characterised as the transfer of traditional approaches to a new modality. Such efforts are exemplified by the transfer of a traditional didactic lecture to an electronic format, the 'lecture notes on web' phenomenon. Many proponents of information technology have proclaimed the potential of the new medium to achieve outcomes congruent with the needs of modern day university education. However the apparent potential to misuse the medium to perpetuate incongruent views of teaching and learning processes, and outcomes, is a sad reality.

Clearly not all information technology based teaching approaches involve the repackaging of traditional teaching approaches and processes in a new technological guise. For some academics, the process of engaging in teaching innovation and curriculum development using new technology has also involved a consideration of the pedagogical issues. The increasing focus on technology-mediated university teaching, has prompted increasing numbers of academics to reconsider the purposes and role of a university education in the context of their own courses and teaching. This reconsideration might well encompass a consideration of the question of graduate attributes as a supposedly 'central outcome' of university education in the context of these contemporary teaching practices. Indeed the idea of familiarity with information technology as a component of information literacy is an aspect of most Australian universities' statements of graduate attributes (Council of Australian Librarians 2001).

As such, the context of information technology based teaching innovation, as a dimension of contemporary teaching practice, provides a potentially profitable opportunity to explore academics' understandings of such 'graduate attributes'. Moreover, given the widespread (though largely unproven) belief that information technology will provide the solution to many of the challenges facing higher education in Australia, it would seem relevant to recognise that the use of learning technologies is increasingly likely to be an aspect of contemporary teaching practice in the near future. If graduate attributes are to have a 'reality' in higher education in Australia today and in the future, then it will need to be in this context as well as more traditional teaching and learning contexts. In seeking to situate the proposed inquiry in the context of contemporary teaching practices the use of information technology for teaching provides one indicator of contemporary of teaching practice.

In selecting the individuals on whose accounts of practice this research would draw in exploring the nature of graduate attributes, this research focussed primarily on identifying academics teaching a contemporary curriculum. The inclusion of individuals with past experiences of the use of information technology in teaching the sample incorporates the possibility of a consideration of the role of information technology as an increasingly central feature of teachers' and students' experiences of contemporary university teaching and learning. However in phenomenographic interviews the respondents should wherever possible be able to choose which aspects or elements of their experience they prioritise in the context of the interview questions. While the use of information technology in teaching was a feature of the past experiences of the potential interviewees it might not be the particular example (or account of situated practice) the respondent chose to foreground in the interview.

By acknowledging the role of communication technologies in contemporary teaching contexts the findings of this research might also contribute something new to the learning technologies debate. In particular the findings may have relevance to a consideration of the way the fundamental purposes and 'central outcomes' of tertiary educational experiences might be realised in such information technology based teaching contexts. There would appear to be a pressing need to revisit the rhetoric of institutional claims of 'graduate qualities' and similar graduate outcome statements, in the context of universities' rush to adopt information technology based teaching and learning strategies. If universities are to continue down the technology path, then it would seem sensible to be sure that the teaching and learning strategies they are developing, suit the intended purposes and outcomes. If the intended outcomes are

not served by such educational technologies then either the nature of such outcomes or the choice and use of teaching and learning strategies, needs to be reconsidered.

However, as noted at the outset of this discussion, technology based teaching is not the only indicator of contemporary teaching practice and there are many examples of new courses and contemporary curriculum innovations reported in the literature which do not incorporate technology. This was recognised in the other criteria for the selection of the sample of academics for the present study.

As the research question arose from an interest in the possible variation in how different academics understood or conceptualised generic attributes of graduates, the interview sample was selected with the aim of maximising the potential to observe such variation. In particular, the sample was selected to ensure the interviewees represented a range of different disciplines and knowledge interest domains. Some authors have suggested that disciplinary context influences which particular attributes are perceived to be relevant and also influences the choice of curriculum models employed to teach such attributes (Bennett et al 1999). Other researchers have emphasised the importance of differentiating generic attributes by contextualising them in the disciplines (Bowden et al 2000). While this research addresses the topic at a more fundamental level than these examples, the question of how differences in disciplinary background might relate to different understandings of the concept of graduate attributes was clearly relevant to consider.

So while ensuring the range of interviewees represented a diverse range of disciplinary backgrounds in order to maximise the potential to observe variation, the sample also sought to select disciplinary backgrounds that might permit some comparisons between like or broadly similar disciplinary backgrounds.

Courses within most Australian universities remain organised on a disciplinary basis and the organisational structure of the university was also considered in identifying the groupings of cognate disciplines. Five broad disciplinary groupings were identified for the study. These included: the Basic Sciences (e.g. Chemistry), the Humanities (e.g. History), Professional disciplines (e.g. Engineering), Professional Medical disciplines (e.g. Nursing) and the Social Sciences, (e.g. Sociology).

Phenomenographic interviews

Data collection involved the use of individual semi-structured interviews. The interview questions and interview process used in a phenomenographic interview are as open ended as possible in order to allow the respondents to choose the aspects of the phenomena that are important to them in their frame of reference. The aspects that the interviewee chooses to foreground in their description are themselves a source of data for analysis. The questions in a phenomenographic interview focus on disclosing aspects of the interviewee's understanding of the phenomenon under investigation. For this reason, the questions used are non-leading and where possible, follow-up prompts use the words and leads of the interviewee rather than the ideas and 'expert' understandings of the interviewer. The purpose and focus of all interviews is consistent and all interviews start with a set of questions, however, different interviews are likely to follow different courses. The intention of the interview is for the respondent to reveal, through their discussion, their conceptions of the phenomenon under investigation. As such the interviewee is encouraged to elaborate on explanations and understandings to the fullest extent possible. Follow-up questions are generally requests for elaboration or clarification rather than following a predetermined path of sub-questions. The intention of the follow-up questions is to direct respondents to provide fuller richer accounts of their view or understanding rather than to introduce new ideas. Because phenomenography deals with peoples' understandings in a situated context, it is important to establish the context and personal frame of reference of the interviewee at the outset. As the purpose of this study was to explore teachers' conceptions of generic attributes in the context of their own courses and teaching, the interview schedule included questions focusing on the nature of this context. The respondents for this study were selected primarily on the basis that they represented contemporary university teaching practice in their particular discipline. At the outset of the interview, each academic was asked to identify and describe a course or unit they were responsible for teaching, that she or he felt represented contemporary teaching in their discipline, to establish this context as the basis for their discussion of their understandings of generic attributes of graduates.

Purposive sampling was employed to ensure that interviewees represented contemporary teaching contexts in a spread of academic disciplines across five disciplinary domains of a major Australian university. The interviewees were selected from a pool of academics who had completed a curriculum development project, and who had been involved in using communication or information technology for teaching,

in units of study in undergraduate degrees. Using these first two selection criteria, potential interviewees were identified on the basis of existing reports of curriculum development projects funded or developed within the University over a two-year period.

Initial contact was by means of a letter outlining the purpose of the study and inviting the nominated academic to participate in the research. The invitation explained that the study was investigating academics' conceptions of generic attributes of graduates. A copy of the university's list of generic graduate attributes was sent with the invitation to clarify the context for the study. Invitations were sent initially to three academics in disciplines in each of the five disciplinary domains. The five disciplinary domains represented were: the Basic Sciences (e.g. Chemistry), the Humanities (e.g. History), Professional disciplines (e.g. Engineering), Professional Medical disciplines (e.g. Nursing) and, the Social Sciences, (e.g. Sociology). Additional invitations were sent until fifteen responses agreeing to participate were received. Following confirmation of informed consent to participate in the study, a colleague teaching in each of the potential interviewees' discipline areas was also contacted and asked to confirm the impression formed on the basis of the first two criteria, that the potential interviewee represented an example of a contemporary teacher in her/his discipline. All fifteen potential interviewees were confirmed as individuals involved in contemporary university teaching practice on the basis of this (third) selection criteria.

All interviews were conducted in the interviewee's work setting and each interview lasted between 45 and 70 minutes. The interviews were tape recorded and transcribed verbatim for subsequent analysis.

Prior to commencing the interviews a set of questions and a range of predetermined follow-up probes were designed in accordance with the phenomenographic considerations discussed in the previous section. The questions were trialed with two academic colleagues and the questions refined on the basis of this trial. While each interview included a set of key questions, the process of the different interviews varied somewhat depending on the issues raised by the interviewee. This is typical of the phenomenographic interview process. In particular, the follow up probes were adjusted to use the words and terms the respondents offered in their discussion of their understanding of the term generic attributes of graduates.

Interview questions

A schedule of questions was used in each interview. While the key questions in each section were always asked of each interviewee, the use of the follow up probes depended on the nature of the response each interviewee offered to the key topic questions.

- Introduction:

Thank you for agreeing to talk to me about your teaching. This research is investigating what academics understand by the term 'generic attributes of graduates'. As we discussed when we set up this interview I am going to be recording our discussion for analysis later. Is that still OK?

I am interested in your personal views and ideas on the topic so I would rather save any discussion arising out of the interview until the end. Is that all right with you?

- Part I:

Stem:

Which of the units of study you teach at the moment do you think best represents contemporary teaching and curriculum in your discipline? Can you give me a short description of that unit of study?

Possible probes:

Can you explain a bit more about why that unit is an example of a contemporary curriculum?

Can you tell me a bit more about that unit?

*Can you explain a bit more about how the technology is used for teaching? **

(*Added as a probe in response to the selection by the interviewees of units incorporating elements of learning technologies)

The questions in Part I of the interview were designed to establish the context or frame of reference for the remainder of the interview. The intent was to focus the attention of the interviewee on their own context rather than on more abstract policy contexts or the broader degree contexts. Phenomenographic interviews aim to explore situated

practice and the respondents' actual experience of the phenomenon under investigation. This question also served to confirm the identification of the respondent as an individual whose understandings might be considered to reflect contemporary understandings of university teaching and curriculum. Where relevant the probes also clarified the use of communication and information technologies in the curriculum or teaching. While respondents were selected on the basis of curriculum innovations over the past two years they were free to select from the various units of study they taught in, the unit that they perceived to best represent contemporary teaching practice. Interestingly, all the academics interviewed identified a unit involving some use of communication and information technology, although in some cases this was minimal. As this particular context was an aspect that the interviewees chose to foreground it provides an important source of data. Some of the probe questions served to clarify the manner in which the technology was used in teaching if this was not clear from the initial response.

• PART II:

Stem:

Thinking about the unit and teaching you have just described: Can you explain to me what you understand by the term "generic attributes of graduates"?

Possible probes:

Can you explain that a bit more?

Can you tell me a bit more about what you mean by that / 'X'?

So what sorts of things / outcomes are they?

So what sorts of things are those skills/attributes examples of?

Can you explain that in the context of your own course?

Can you explain a bit more about how generic graduate attributes fit into your own course?

How are those sorts of things part of your course?

Can you tell me why you think that?

The questions in this section of the interview were designed to encourage academics to explain their understandings of the concept of generic graduate attributes. Various probes were used to further explore this question depending on how the interviewee responded to the initial question. Phenomenography aims to explore the different understandings or structure of awareness, which people constitute from the world of

their experience. Individuals understand complex and more abstract ideas in idiosyncratic ways. In explaining meanings we often start with an example to exemplify the meaning and then, drawing on other descriptions build a more complete definition or explanation of our understanding. Understandings or meanings of more abstract concepts may not be stored as definitions in memory. Rather the meaning resides within the interconnections of remembered instances and has to be reconstituted in providing an explanation of our understanding (Marton 2000).

The trial of the item suggested that most academics would not have thought explicitly about the meaning of the term generic attributes before, and there would be a tendency for respondents to simply list commonly occurring attributes (e.g. communication skills). The item and probes were designed to elicit responses that elaborated on such 'listing' or 'definition by example'. The probes were also intended to encourage respondents to provide a description of their personal understanding rather than simply reciting the university's list of intended attributes. The probes were intended to encourage respondents to draw upon their own experiences of teaching and curriculum in their courses. Previous work in the university had indicated that most academics were likely to be aware of the university list of generic attributes but to be unfamiliar with the details of the list. A copy of the policy document listing the generic attributes of graduates of the university (Figure 3.1) had been sent to all respondents at the time of inviting them to participate in the study.

Figure 3.1: Policy specifying attributes of graduates of the university

Policy Name: Generic Attributes of Graduates of the University

Approving Authority: Academic Board

Approval Date: June 1993

Date Last Amendment: May 1997

Date Last Reviewed: May 1997

Contact Officer: Chair, Academic Board

As a result of completing any undergraduate degree course at the University, graduates will be more employable, more able to cope with change and more developed as people. In specific terms, graduates of any faculty, board of studies or college of the University should have:

1. Knowledge skills

Graduates should

- (a) have a body of knowledge in the field(s) studied;
- (b) be able to apply theory to practice in familiar and unfamiliar situations;
- (c) be able to identify, access, organise and communicate knowledge in both written and oral English;
- (d) have an appreciation of the requirements and characteristics of scholarship and research; and
- (e) have the ability to use appropriate technologies in furthering all of the above

2. Thinking skills

Graduates should

- (a) be able to exercise critical judgement;
- (b) be capable of rigorous and independent thinking;
- (c) be able to account for their decisions;
- (d) be realistic self evaluators;
- (e) adopt a problem solving approach; and
- (f) be creative and imaginative thinkers.

3. Personal skills

Graduates should have

- (a) the capacity for and a commitment to life-long learning;
- (b) the ability to plan and achieve goals in both the personal and the professional sphere; and
- (c) the ability to work with others.

4. Personal attributes

Graduates should

- (a) strive for tolerance and integrity; and
- (b) acknowledge their personal responsibility for
 - (i) their own value judgements; and
 - (ii) their ethical behaviour towards others.

5. Practical skills

Graduates should

(a) be able to use information technology for professional and personal development;

and, where appropriate, be able to:

(b) collect, correlate, display, analyse and report observations;

(c) apply experimentally-obtained results to new situations;

(d) test hypotheses experimentally; and

(e) apply technical skills appropriate to their discipline.

(Academic Board The University of Sydney 1993)

The university's list of generic attributes was also available at the interview as a prompt in case any respondent was completely unfamiliar with the term, which did not turn out to be the case, or if academics wished to refer to this in the course of their response.

The questions in the third segment of the interview were designed to encourage academics to focus on a different aspect of the research object, the teaching and learning of generic graduate attributes. Once again the stem question was deliberately open to allow the respondent to choose the aspects of the phenomena that were perceived to be important. Follow-up probes were based on the interviewee's initial response. The probes were used to obtain a richer fuller response and to refocus the interview on the academic's own teaching and learning experience if required.

• PART III:

Stem:

How do you think university students acquire generic attributes in your course?

Possible Probes:

How do students learn the sorts of things you've described as generic attributes?

Can you tell me how students learn / develop those sorts of things / such attributes?

So how does your university course teach / develop those sorts of things?

Can you explain how students develop those sorts of things in your course?

Can you tell me more about how your course helps students develop generic attributes?

While the interview was arbitrarily divided into three sections, as with most interviews responses in one section often led to or related to the focus of other sections. The interviews followed the interviewee's lead wherever practical. In addition, relevant responses were flagged by the interviewer and returned to in subsequent parts of the interview.

The structure of the sections of the interview (stem questions II and III) related to two inter-related aspects of the phenomenon of graduate attributes, that is: what graduate attributes are, and how these are developed. It was considered that academics' understandings of 'what' generic attributes of graduates are, were likely to be related to their conceptions of 'how' these were developed. As such it was expected that responses in one section of the interview might also be relevant to the focus of other sections of the interview. As was expected, the respondents' explanations of how generic attributes were developed provided data for the analysis of conceptions of generic attributes, as well as providing data for an analysis of the second aspect of the phenomenon; how such attributes might be developed. To a certain extent the interviewer therefore probed both facets of the interviewee's understanding of the phenomenon throughout the interview.

Phenomenographic data analysis

Phenomenography does not seek to impose a model of description determined in advance. Instead it hopes to describe the phenomenon under consideration by exploring the nature of the variation that emerges in accounts of individuals' experiences of the phenomenon. The importance and centrality of description is a key feature of the methodology. The importance of description reflects an understanding of knowledge as a matter of meaning and of similarities and differences of such meaning across contexts. Through a consideration in analysis to the complex of motives, skills and preferences that lead people to talk the way they do, the researcher is able to connect cognition to social practice and thus shed light on the joint constitution of human experience and discursive practices (Brew 2001). The analysis characterises the variation in conceptions implicit in the descriptions offered by individuals as their account of the phenomenon, (Marton 1981). In this research, the phenomenographic analysis sought to analyse the variations in academics' descriptions and accounts of their understandings of generic graduate attributes.

In analysing the transcripts of the interviews, the borders between individuals were initially abandoned and the transcripts were treated as a whole, although the pool of statements were coded to identify the individual transcript each statement originated from. The first stage of the analysis was to identify which statements were relevant to the phenomenon under investigation. That is, relevant utterances were identified on the basis that they expressed a way of experiencing the phenomenon that was the focus of the research. In considering the transcripts different aspects of the phenomenon were apparent, often this was in response to the different lead topics in the interview, for example the questions focusing the discussion of what graduate attributes were or the how these were developed. The different topics were initially dealt with separately and the analysis was carried out for each of these. There was considerable overlap between topics. Such overlap is to be expected, particularly given the dialectical interrelationship between structural and referential aspects of phenomena and internal and external horizons.

The second stage in each analysis was to identify the first draft categories of different ways of experiencing the phenomenon. This literally involved the sorting of statements from the transcripts by identifying and grouping the expressed ways of experiencing the phenomenon. The sorting was achieved by focussing on similarities and differences in the meanings expressed. Statements expressing similar meanings were grouped. Expressions may be different at the linguistic level but express a similar meaning. In addition, contrasting meanings were identified and thematised (Marton 1994). In sorting the data, the relevant statements were treated as a group and the focus was on identifying similarities and differences in meanings relevant to other statements within the pool of meanings. However, comparison of an individual's statements relating to a particular topic with other statements from the same individual relating to different topics also helped in identifying similarities in meanings, i.e. what the same person said about different things.

As the sorting of the statements occurred there was a concurrent shift in the focus of attention from the separate statements to the emerging groupings of statements. Attention began to be paid to the relationships between the provisional groupings of statements. This process assisted in identifying the groupings and focused the analysis on identifying the key characteristics of the categories into which the statements were being grouped. The focus was on identifying the critical features that differentiated the groups, and the features that were common to different groups. The distinguishing features of the categories were examined and refined as the first attempt

at identifying the logical relationships between the categories of description. The process of reading and sorting the statements was repeated several times with intervening critiquing of, and reflection on, the robustness of the emerging categories by the researcher, often in conjunction with other researchers.

Phenomenographic analysis of accounts of experience represent a second order perspective. The researcher's focus is on the object of the research as presented in the accounts of the experience of others, rather than on the object itself. For the results to be reliable and valid, the researcher must demonstrate that the analysis has maintained maximum fidelity to the individual accounts of experience and that the researcher's own experience has been 'bracketed' out (Marton & Booth 1997). The opening up of the analysis process to other researchers was a central strategy to support the researcher in bracketing out his/her experience during the analysis. There is no 'set' or 'recommended' number of iterations, and the process continued until the categories stabilised and the researcher was satisfied the categories were reliable and valid. With repeated iterations the boundaries between categories and the features distinguishing the categories changed. As the categories stabilised the features of the different categories were refined to describe the characteristic variation in ways of experiencing the phenomenon. After sufficient iterations of this categorisation and testing of the robustness of the descriptions, a stable set of categories emerged and the logical relationships between the final categories of description were identified. The relationships between the categories were mapped as the outcome space. The stages of analysis were intimately inter-related and the analysis proceeded with many revisions and iterations of earlier stages. Because of the extent of inter-relatedness of the stages and the iterative nature of the process, the analysis progressed on various levels at once rather than as a series of discrete steps.

Phenomenographic reliability and validity

Research using phenomenography must consider whether or not the categories of description produced through the phenomenographic approach are reliable and valid. In most research methodologies, for the outcomes of research to be judged reliable, they must demonstrate that they are replicable. To be replicable at least two independent researchers should achieve similar results to the original research when studying the same data (Kerlinger 1973 in Sandberg 1997). Phenomenographic researchers have argued that such a measure of reliability is wholly or partially

inappropriate for phenomenographic research. Marton identifies two questions in terms of replicability; 'Would other researchers reach the same categories of description as the original researcher' and 'Would other researchers recognise the conceptions identified by the original researcher, through the latter's categories of description' (Marton 1986 in Sandberg 1997). Based on the philosophical assumptions underpinning the research approach, Marton (1986) and Saljo (1988) have argued that because phenomenography is a process of discovery, there is not the same requirement to demonstrate that findings are replicable in this manner as there is for other research methodologies.

This type of work (phenomenography) takes place in what Reibach (1938) refers to as the *context of discovery*, where the critical issue is one of providing concepts in terms of which the phenomenon observed can be accounted for. It is thus not possible to prove that the categories are the best possible ones. The categories are the constructions of the researcher and there is always the possibility that another researcher would have arrived at a different way of categorisation. In fact, to be logical it follows from a constructivist conception of reality that the possibility of interpreting reality differently applies to the activity of describing conceptions of reality itself. (Saljo 1988 p 45)

As a qualitative and interpretive research approach, phenomenography is predicated on the notion that human knowledge is intentionally constituted through subjects' conceptions of their reality (Svensson 1997, Marton 1986). This is very different to the objectivist epistemology of positivist qualitative research traditions where knowledge exists within reality itself. Measures of reliability such as replicability and inter-judge agreement are an attempt to guard against subjectivity in a supposedly objective, research process and only make sense within such an objectivistic epistemology. Moreover, employing such measures of reliability in phenomenographic research overlooks the researcher's intentional relation to the individuals' conceptions of reality. In the analysis leading to the categories of description, the researcher interprets the data obtained from individuals. As such the results of phenomenographic analysis are themselves, intentionally constituted through the researcher's interpretation. Measures of replicability and inter-judge reliability can only demonstrate the extent to which research results correspond to an objective reality under investigation, not the extent to which intentionally constituted results are reliable.

Despite the inconsistency with the underlying philosophical assumptions of phenomenography, much phenomenographic research to date has attempted to demonstrate reliability in terms of some form of inter-judge agreement borrowed from positivistic research approaches. Typically this is a measure of the communicability of the findings in terms of the ability of other researchers to recognise the conceptions identified by the original researcher's categories of description (Sandberg 1997). It is achieved by having other researchers read and classify the original data with reference to the researcher's categories of description and is reported as the percentage agreement with the original researcher's classifications. In addition to the theoretical inconsistencies inherent in such measures, inter-judge reliability measures have also been criticised as being a poor measure of reliability as the process does not in fact directly address the question of how faithful the categories of description are to the individuals' conceptions of reality.

As an alternative, Sandberg (1994) proposes that the question of reliability of phenomenographic research should be approached from the perspective of 'interpretative awareness' rather than reliability as 'replicability'. Interpretative awareness is an attempt to demonstrate reliability using criteria that are consistent with the underlying philosophical assumptions of phenomenography, in particular that human knowledge is intentionally constituted through individuals' experience of reality. Interpretative awareness as a measure of reliability seeks to demonstrate how the researcher has dealt with his/her intentional relation to the individuals' conceptions being investigated, and in doing so, to show that the results of the analysis are as faithful as possible to the individuals' conceptions of reality. The researcher must demonstrate how s/he has controlled and checked her/his interpretations throughout the research process and in doing so to acknowledge and explicitly deal with subjectivity rather than overlooking it (Sandberg 1997).

In phenomenography, the 'bracketing of the researcher's experience' is an important consideration in demonstrating interpretative awareness and hence establishing the 'validity' of the research findings. In bracketing his/her experience, the researcher should strive to hold back his/her known theories and prejudices in order to be fully and freshly present to the individuals' conceptions under investigation. Some phenomenographers (Sandberg 1994) have adapted interpretive guidelines for phenomenological reduction (Ihde 1977, Giorgi 1985) as a framework for controlling and using themselves as interpreters in the research process. These guidelines stipulate:

- That the researcher is oriented to the phenomenon *as* and *how* it appears throughout the research process
- That the researcher is oriented towards *describing* what constitutes the experience under investigation
- That all aspects of the experience under investigation are treated as equally important (horizontalization)
- That the researcher focuses on a search for the basic meaning structure (structural features) of the experience under investigation
- That the researcher uses intentionality as a correlational rule to assist in explicating the variation in conceptions identified. Firstly by identifying *what* the individuals conceive as their reality, secondly by identifying *how* the individuals conceive reality, and thirdly by *relating* the individuals' *ways of conceiving*, to *what they conceive* as their reality (Sandberg 1997).

These guidelines were adopted in the methodology of this study and the research method supported interpretative awareness at all stages in the research process. Previous phenomenographic studies have reported various strategies which have been employed to support the bracketing of the researcher's own experience in undertaking phenomenographic research. The majority of these strategies relate to the stage of the research process concerned with the analysis of the data. However, bracketing of the researcher's experience is important at all stages in the research process and in this study the strategies were applied to all processes including the formulation of the research questions, the selection of individuals to investigate and the data collection procedures.

Experience and training in phenomenographic analysis through observation and participation in other phenomenographic analysis tasks is considered by many researchers as crucial in establishing validity (Walsh 2000). In addition to training and experience in undertaking phenomenographic analysis, the use of a group of researchers as critical friends underpins many of the strategies to support interpretative awareness. The main strategy reported in phenomenographic studies involves critical iterations with other researchers during the formulation of the research questions and methods and particularly during the analysis stage, of the categories of description and conceptions (Bowden 2000, Prosser 2000). The process of subjecting the researcher's initial categories to critique and review confirms the validity of the analysis (Patrick 2000). The aim of the analysis is to discover the categories that exist within the data

rather than to impose the researcher's predetermined categories on the data. In the present study, challenging the draft categories through examination by, and discussion with, other researchers, guarded against the imposition on the data of the researcher's own views of the phenomenon under investigation and supports interpretive awareness. Unlike inter-judge reliability strategies, this process does not require that all the scripts be read and classified by another researcher. Rather the categories of description and the justification for the categories, including supporting evidence drawn from the transcripts, were presented for critical discussion with colleagues skilled in phenomenographic research. The researcher reflected upon this discussion and re-evaluated the categories and the allocation of the data to the categories, based on this critique.

Experience as the unit of analysis

We will now consider the process of analysis itself in more detail. In phenomenography a phenomenon is understood in terms of the experience of two related aspects – the *what* and the *how*. The phenomenographic perspective on learning (Booth 1997, Marton & Booth 1997, Marton & Trigwell 2000), positions learning as an experience consisting of related *what* and *how* aspects. The *what* aspect concerns the nature of the outcome of learning or the experience of *what is to be learned* (the direct object of learning). The *how* aspect relates to the way the learner goes about learning the *what* - or the act of learning. The act of learning introduces another aspect of the experience of *how* – what the act is aimed at – the indirect object of the experience of the phenomenon.

A learning experience can be analysed and described in terms of the separate *what* and *how* aspects, and is constituted in the relationship between the *what* and *how* aspects of the experience. Marton and Booth (1997) borrow from Gurwitsch (1964) to explain the *what* and *how* aspects of the experience in terms of a structure of awareness. Both the *what* and *how* aspects of a learning experience, as well as the relationship between them, can be described in terms of the structure of awareness that characterises the aspect.

Phenomenography is based on the idea that a particular phenomenon can be experienced in a limited number of qualitatively different ways. A way of experiencing a phenomenon is a particular structure of awareness. Dialectically entwined with this

structural aspect is the meaning aspect of the experience. 'A way of experiencing something as something, involves experiencing a meaning that is dialectically intertwined with a structure' (Marton & Booth 1997 p 112). The meaning aspect is called the referential aspect. A particular structure of awareness is made up of a number of aspects of a phenomenon, simultaneously present and related in a particular way. A different way of experiencing a phenomenon involves more or less aspects of the phenomenon simultaneously present in awareness and or related in different ways.

The structure of awareness is described in terms of what constitutes the elements of the structure of awareness, and the way these elements relate to each other. Phenomenographers use different approaches to describe the structural aspect of experience.

In some studies researchers describe the structural aspect of experience in terms of the theme, thematic field and margin. The theme is what is focal, or in the foreground of awareness. The thematic field is made up of aspects of the experienced world that are related to the theme and in which it is embedded. The same theme can sit against different backdrops or thematic fields. The thematic field extends to include aspects of the world that are increasingly less and less related to what is in the theme. There are also co-existent aspects of experience that are not related to the theme yet sit alongside it – these are the margin.

Other researchers, including Marton and Booth (1997), describe the structure of awareness in terms of the discernment of the whole from the context (the external horizon) and the discernment of the parts and their relationship within the whole (internal horizon). The external horizon consists of the thematic field and the margin. These are the aspects of experiences that are part of awareness at a particular instant but which are not thematic or in the foreground. The external horizon provides the context for the theme. The boundary between the external and internal horizons delimits the theme from its context. The internal horizon consists of the aspects of the phenomenon simultaneously present in the theme of awareness, and the relationships between these aspects and between the aspects and the phenomenon as a whole.

Different ways of experiencing a phenomenon are different structures of awareness. These can be more or less complex and there is a logical and hierarchical relationship between increasingly complex structures of awareness in terms of the structural and referential aspects of each qualitatively different way of experiencing the phenomenon.

While all elements of the experience of the different aspects of a phenomenon (for instance learning) are always present, different phenomenographic researchers have typically chosen to focus explicitly on only some of these in their analysis and accounts of the experience. For instance a researcher might focus primarily on an account of the referential aspects of the how aspect of learning without discussing structural aspects of the how aspect of learning. An example of this discussed in Marton and Booth is the research of Biggs into how students in Hong Kong experienced learning (Marton & Booth 1997). The Hong Kong study reports on different ways students' experience the two aspects of the 'how' of learning. These two aspects, the act and the indirect object, are described in terms of their referential aspects, such as 'committing to memory' or 'relating'. The structural aspects are not discussed – although as Marton and Booth (1997) point out these are implicit.

So different researchers focus on different aspects of experience and use different strategies in analysing and communicating their description of those aspects of experience.

Phenomenography is not a method of itself. Although there are methodological elements associated with it... Phenomenography is rather a way of – an approach to – identifying, formulating, and tackling certain sorts of research questions, a specialisation that is particularly aimed at questions of relevance to learning and understanding in an educational setting. (Marton & Booth 1997 p 111)

The research reported in this paper focuses on describing the *what* (the direct object or 'intended outcome') and the *how* (the 'act') of the experience of the teaching and learning of generic graduate attributes (the phenomenon). Both the *what* and the *how* components of experience are analysed in terms of the structural aspects and the intertwined referential aspects, or meaning, that accompanies and constitutes that particular structure of awareness. The structural aspect is described in terms of the internal and external horizons with reference to the theme, thematic field and margin.

For each of the components of experience, (the 'what' and the 'how'), each individual's experience is seen against the backdrop of others' experience. The intent is to discern the variation in the group (categories of description) and to then understand each individual's experience (conception) in light of the observed variation. The results are

presented as an outcome space for each of the components of the experience. The logical relationship between the categories of description that make up each outcome space is described in terms of the structural and referential aspects of the structure of awareness.

Reflection

This chapter started with the topic of inquiry identified in the preceding discussion of the literature on generic graduate attributes. What do academics 'mean' when they talk about 'generic attributes of graduates'. The contributions of phenomenography as an approach to answering such a question were explored.

Phenomenography has been described as a research approach which 'seeks to explore the qualitatively different ways in which people experience and conceptualise various phenomena in, and aspects of, the world around us' (Marton 2000 p 103). In considering the nature of the research object in this study, the generic attributes of graduates, there is considerable variation apparent in how academics and researchers write about and describe generic attributes of graduates. This variation can be considered to reflect variations in how academics understand and conceptualise generic attributes of graduates. The presence of this variation would suggest that there is not one shared understanding or conception of generic attributes of graduates but that there is variation in how people understand or experience the phenomenon. This is consistent with the qualitative approach to understanding the world that underpins phenomenography.

As noted, the literature discussing generic attributes of graduates deals mainly with accounts of courses designed to develop a particular attribute or skill, for example writing skills or critical thinking skills. It does not provide an adequate account of the conceptual basis for such attributes. In the literature reporting on generic attributes courses, as well as in the lists of generic attributes and policy documents relating to generic attributes, there is an assumption of a shared understanding about what is being discussed. The present research aimed to explore the ways academics conceived of and understood generic attributes of graduates, by exploring the qualitative differences inherent in descriptions of experience. As the focus of the research was on exploring the nature of the variation in how academics understand generic attributes of graduates, a methodology which sought to characterise the

variation in understandings, or conceptions as phenomenography refers to them, was appropriate. Despite its suitability for such research, phenomenography is not a research methodology that has been utilised in research to date on this topic.

Phenomenography is well suited to the aim of the proposed research as it facilitates the description of the different understandings of graduate attributes held by individual academics. The phenomenographic approach is particularly appropriate to the study given the centrality of situated practice in phenomenography and the nature of the research object under investigation. All participants in the research were offering their understanding of the phenomenon of 'generic graduate attributes, and their expectations of teaching and learning as a version of reality. Phenomenographic approaches accommodate such views of multiple realities.

The use of phenomenographic methodologies to collect and analyse data for similar investigations is well established in the higher education research literature (for example Entwistle 1997a, Trigwell & Prosser 1997, Rovio-Johansen 1999). While the recognition of phenomenography as a research tradition is comparatively recent, it has much in common with other qualitative methodologies of naturalistic inquiry (Guba & Lincoln 1982, Hasselgren & Beach 1997) and grounded theory (Strauss & Corbin 1990). The use of qualitative approaches is appropriate given that the research involves the discovery of the parameters of conceptions from the data rather than the proving of a priori theories of these conceptions (Strauss & Corbin 1990). The methodology selected allows the identification of conceptions (understandings of the teaching and learning of graduate attributes) in context and re-contextualising these with broadly similar conceptions (Prosser, Trigwell & Taylor 1994).

The method of the study was described in terms of the context of the interviewees and the interview schedule. The study sought to situate the findings in the context of contemporary teaching at an Australian university, as this was the context of intended application of the findings. Purposive sampling was employed to select fifteen subjects who were considered to represent contemporary teachers working in a range of disciplines. The process used in collecting and analysing the transcripts was described. This process embodied Sandberg's (1997) guidelines for interpretive awareness as a means of addressing issues of reliability and validity in a phenomenographic study.

The theoretical approach taken in analysing the data obtained from the transcripts was then considered. The focus of the analysis in this study is on identifying variations in how the group of individuals experience the related 'what' and 'how' aspects of 'generic graduate attributes' (the phenomenon). This variation in the group is described in terms of categories of description and presented as two outcome spaces. Each individual's experience (conception) can then be understood in terms of these sets of categories. The different categories of description are delineated, and the logical relationship between categories defined, in terms of the structural and referential aspects of each category using 'experience' as the unit of analysis.

As noted at the outset, methodological considerations are inextricably tied to ontological considerations (Marton 2000) and the results presented in the following chapters should be interpreted in light of the methodology that was used to obtain them. Phenomenography has proven a helpful approach in other recent investigations of teaching and learning, and it is well placed to do the same for graduate attributes.

The following chapter presents the results of the analysis, initially as discrete outcome spaces relating to the 'what' and 'how' aspects of the phenomenon. The two outcome spaces describe the different ways the group of academics conceptualised generic graduate attributes and how such attributes are taught and learnt.

Chapter Four: CATEGORIES OF DESCRIPTION

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CATEGORIES OF DESCRIPTION

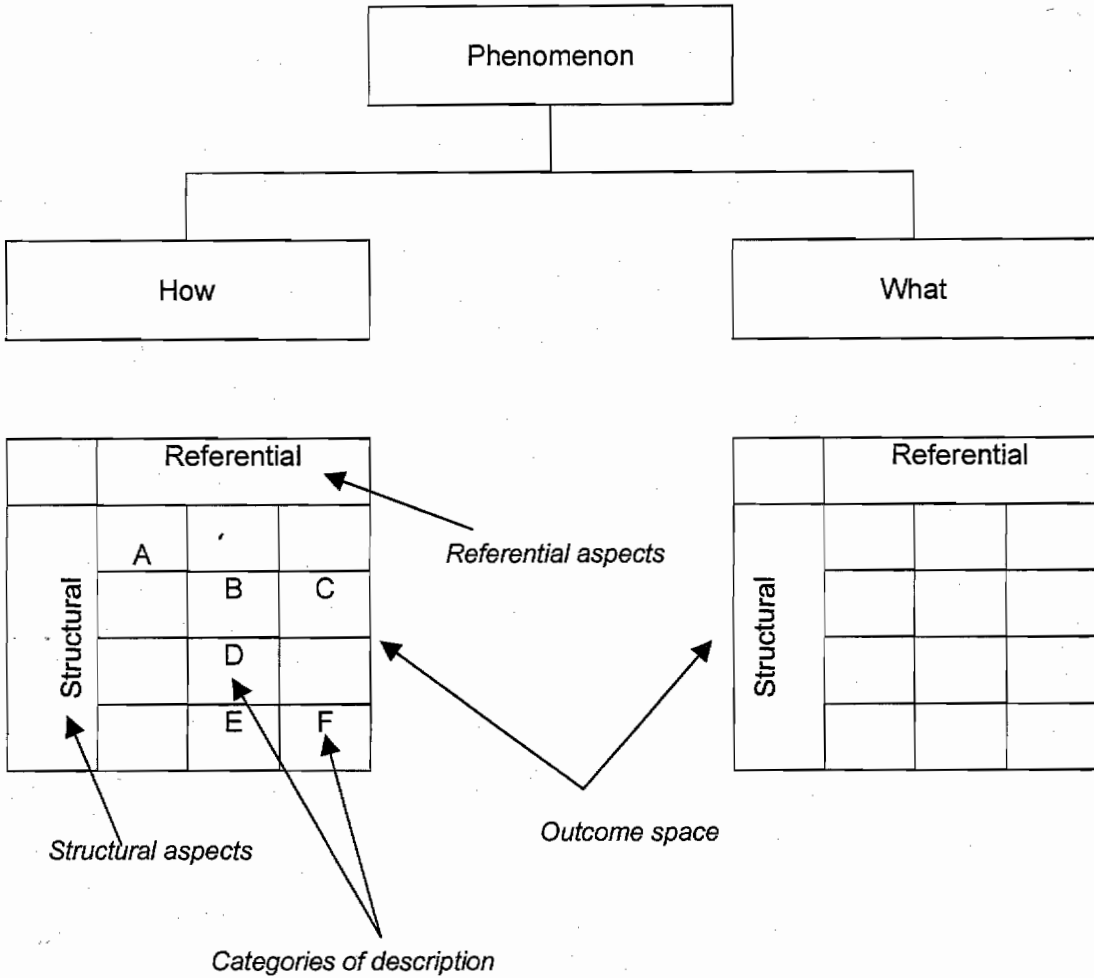
Overview

In this chapter the results of the phenomenographic analyses are presented as a set of categories of description for each of the outcome spaces. The outcome spaces represent the categories of description that emerged from the pooled interview data. The outcome spaces describe the observed variation in the group of academics' understanding of two aspects of the phenomenon of generic graduate attributes.

- **First Outcome Space:** Understandings of what generic graduate attributes of graduates are
- **Second Outcome Space:** Understandings of how students develop generic graduate attributes

Each set of categories of description is described in terms of the structural and referential aspects of the qualitatively different understandings of the phenomenon. The structural and referential aspects determine the logical relationship between the categories of description in each outcome space and are used to explain the nature of the variation between the different understandings represented by the categories of description. Each category of description is illustrated by quotes drawn from the transcripts of the interviews.

Figure 4.1: Schematic representation of presentation of phenomenographic findings



The categories of description identify the key features of the variation in the different ways the phenomenon is understood. Each category depicts a qualitatively different way of understanding the phenomenon. The categories are constituted from the collective variation observed in the group. As such they do not correspond to individuals rather the categories of description identify the main variations in understandings of the phenomenon expressed in various individual accounts.

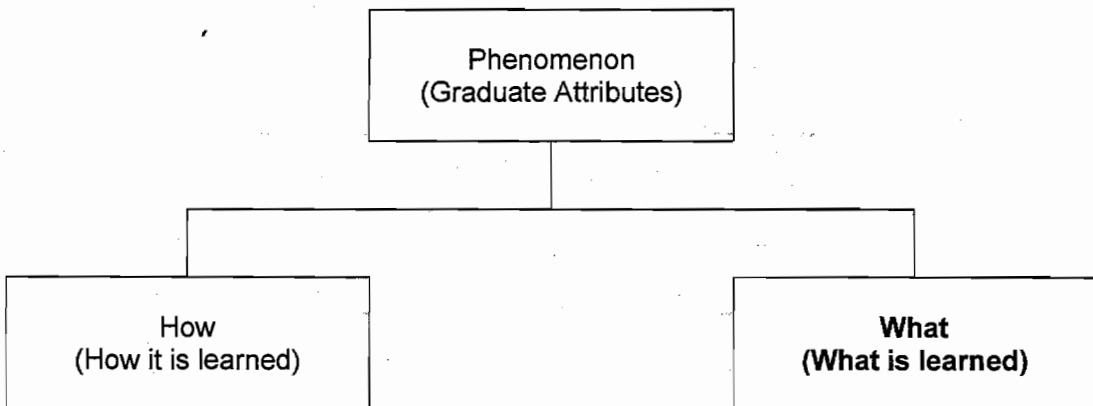
The relationships between the categories of description in each outcome space are described in terms of the structural and referential aspects of the categories and these are used to establish the hierarchical nature of each outcome space. The relationship between the categories of description, as well as the relationship between the two outcome spaces which are introduced in this chapter, are discussed further in the chapter titled 'Conceptions' following the presentation of the results. In the

Conceptions chapter we will return to the individual as the unit of analysis and use the categories of description identified in the present chapter to classify the individual transcripts and explore how this variation is constituted in individuals accounts of the phenomenon.

Academics' understandings of 'what' generic graduate attributes are:

First outcome space

The first outcome space represents the understandings held by the group of academics of the concept of generic graduate attributes (GGA) as outcomes of a university education.



Four qualitatively different understandings emerged from the analysis of the transcripts. These have been described as

1. **Precursor Conceptions (A)**
2. **Complement Conceptions (B)**
3. **Translation Conceptions (C)**
4. **Enabling Conceptions (D)**

The following table depicts the relationship between the four categories of description in the first outcome space. Each of the qualitatively different understandings is defined in terms of its structural and referential aspects. The structural aspects, what is in the foreground or thematised, and how what is in the foreground relates to the rest of the field of awareness, are noted on the vertical axis of each table, and the referential aspects, or the meaning ascribed to the particular structure of awareness, is described on the horizontal axis.

Figure 4.2: Academics' understandings of generic graduate attributes
(First phenomenographic outcome space)

| | | Referential (what is meant) | | |
|--|---------------------|--|---|---|
| Structural (internal and external horizon) | | | Additive: | Transformative: |
| | | | GGA are discrete from other university learning outcomes | GGA interact with other university learning outcomes |
| | Irrelevant: | No aspect of GGA is 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 | 1: Necessary basic PRECURSOR skills but irrelevant as they are a prerequisite for university entry (A) | |
| | Unrelated: | What are in the foreground are functional atomistic personal skills that are not related to discipline knowledge | 2: Useful skills that COMPLEMENT or round out disciplinary learning (B) | |
| | Application: | What are in the foreground are clusters of linked abilities and skills of application. These abilities are relevant to discipline knowledge | | 3: These are the abilities that let students TRANSLATE , make use of, or apply disciplinary knowledge in the world (C) |
| | Integral substrate: | What are in the foreground are networks of inter-woven abilities and aptitudes for learning. These aptitudes shape disciplinary and other knowledge | | 4: They are the scholarly abilities that infuse and ENABLE university learning and knowledge (D) |

Each of the four conceptions of generic graduate attributes in the hierarchical outcome space is now considered in terms of the structural and referential aspects of the structure of awareness and illustrated by quotes from the transcripts.

1: Precursor conceptions (A)

Some academics expressed an understanding of generic attributes as necessary precursor skills and abilities. However, the expectation is that students will already possess these and that any inclusion of such skills in a university education would be for remedial purposes 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.

I suppose generic skills are the basic skills students need in order to cope with any course at university. The sorts of things that are covered in a high school, like basic English and maths and scientific principles.

Things like library skills and basic computer skills - these days I expect that students will be able to use the library computers and that they can handle email and basic word processing packages before they start.

I suppose they are things like basic literacy and communication skills. Some of our students certainly don't have adequate language skills - but they still seem to get into the course.

I expect students to be able to work independently and manage their time themselves, students need to realise that university and the workplace aren't like school, nobody is going to organise their time - but I don't think it is my job to teach them time management skills, they know how to do this they just need to do it.

In effect no aspect of generic graduate attributes is in the foreground in this conception, they are understood as largely irrelevant in the context of university learning and are essentially ignored in the context of thinking about learning at a university level.

I haven't really thought about it.....I know the university has a policy about team work and communication skills and things like that but they're a bit of a wish list really – we certainly don't have time to do such remedial teaching.....I really don't think anybody takes the policy very seriously.

Instead, disciplinary knowledge is in the foreground in this conception and generic attributes are relegated to the margin of the field of awareness as precursory abilities only. They are not thematised in the context of university learning. The only relationship to other university learning outcomes is as low level skills that permit acquisition of discipline content.

Basic generic skills aren't part of my course. ...Well students graduating from this degree have to have some pretty specific knowledge. I suppose generic skills are more important in general humanities degrees, but courses in science disciplines like this really focus on content

Generic skills are foundation skills – but they aren't part of my syllabus. Most students are fine by the time they get to third year – though some of my students still have trouble and I recommend they go to the student learning assistance centre for help.

Generic attributes are what we expect from the secondary school system I suppose, they need to have a general intellectual grounding and basic communication skills before they start this topic.....we have a high cut-off so our students have these skills before they get into university.

The three R's – reading writing and arithmetic – and some basic technology and library skills – the sorts of things we'd reasonably expect any student who had completed high school to have.

The referential aspect, or the meaning ascribed to this conception of generic graduate attributes, is as a discrete set of learning outcomes that should pre-exist in university students. These pre-existing skills would be present in a graduate's repertoire of abilities *in addition to* the disciplinary learning outcomes acquired in the course of a university education.

2: Complement conceptions (B)

Some academics expressed a conception of generic attributes as useful additional skills that complement or round out discipline knowledge. 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.

Generic attributes are the sorts of all-round skills that any graduate should have..... they are useful additions to the disciplinary knowledge and expertise.

These are important skills for the students to develop and we have included them in most of the first year units in the faculty. Students need to develop other skills as well as the content knowledge if they are going to be successful in the workplace.

They are professional skills like negotiation and team work as well as verbal presentation skills not the actual subject material of the degree.

What are in the foreground of this structure of awareness are functional atomistic technical and personal skills that are quite discrete from other university learning outcomes. As such they are present and can be thematised in academics' general understandings of university learning outcomes. This is a key difference between the first level Precursory and second level Complementary conceptions.

As well as teaching them the subject we need to teach more professional life skills these days – things like information literacy, teamwork and communication skills.....I try to fit in what I can but after I've covered the content there isn't much time.

The referential aspect of this conception is similar to that of the first category described, in that graduate attributes are understood to be learning outcomes that may exist *in addition to* other university learning outcomes. The defining feature of this *additive* referential aspect is that generic graduate attributes do not alter or interact with disciplinary knowledge in any way. Rather they are understood to sit alongside and

separate to, other learning outcomes. So, while present in the foreground of the structure of awareness of this conception, generic graduate attributes continue to be understood as being discrete abilities or skills which exist in graduates in *addition* to discipline knowledge, thus the referential aspect is similar to the first level Precursor conception.

It helps if they can write up their own research results and we have writing assignments in most of our courses.

Generic attributes for students in my courses are things like basic scientific writing and presentation skills – things like that – and we include them in the common first year courses - they are the same for any basic science degree I suppose.

In addition to the theory units we have modules on communication and presentation skills, one on professional writing and a new one on plagiarism I think.

In this conception, while generic attributes are still seen as additional learning outcomes independent of disciplinary learning outcomes, the structural aspect of this conception is different to that of the previous category of description. Generic attributes are conceived of as valuable learning outcomes in their own right, which can complement other, albeit more important, university learning outcomes. Unlike the previous conception they are foregrounded in the structure of awareness and seen as relevant in the context of university learning.

They are general skills like independence and autonomy in decision making..... teamwork and the ability to lead and contribute through interactions with other people – the things that we used to take for granted in students but I try to include these in all my courses now.

In this conception, the personal skills and functional abilities that are foregrounded in the structure of awareness are undifferentiated by the discipline knowledge. They are independent of, and neither change, nor are changed by, the discipline content. However, while undifferentiated, different skills are understood to be more or less relevant to the discipline knowledge. As such, in this conception there are particular attributes that complement the content of particular disciplines.

I suppose the people work skills and communication skills are the really important ones for our students.

3: Translation conceptions (C)

Another understanding of generic attributes expressed by the academics was as abilities that would 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. In this understanding graduate attributes are closely connected with, and parallel, discipline learning outcomes.

Well they are the sorts of skills that change abstract knowledge into a form that is useful in the world of work or inquiry. If a student can't exercise abilities like ethical judgement and creativity, and balance these against scientific method in their research then they aren't a professional scientist.

Students need these sorts of abilities before they can do anything with the things we teach them in university. The ability to repeat what is in the lecture or recite a list of facts is useless if the graduate can't apply this knowledge in solving the problem at hand.

It is no good just knowing the biology – they need to learn about the research process that generated the knowledge and then communicated it as well – which means a whole set of communication skills in addition to the scientific research skills we have always taught in labs in science.

In this structure of awareness, what are in the foreground are clusters of linked personal attributes, cognitive abilities and skills of application. These clustered abilities are particularly relevant to discipline knowledge and in this structure of awareness there are strong connections between the generic attributes and the content knowledge of the discipline. This is a key difference between the structure of awareness in the complementary and translation conceptions. In the complementary conception the personal and functional skills that were in the foreground were seen to be separate to, and independent of, the discipline knowledge that made up the rest of the field of awareness. In this third category of description, while still separate to disciplinary

learning outcomes, there is a mutual relationship between the thematised generic attributes and other disciplinary learning outcomes present in the field of awareness. The nature of the theme-field relationship is that the attributes are essential in allowing the translation and application of discipline knowledge in the real world. Without generic attributes, abstract or context specific discipline knowledge cannot be applied or used. In this conception the application of disciplinary learning to real tasks beyond the classroom is dependent on the generic attributes.

They are sets of abilities that make the discipline knowledge relevant. It is no use if my students just know the content, they need the ability to apply it in a meaningful way before it is useful or has any relevance. So skills like problem solving, communication, empathy, and personal responsibility are important aspects of this degree, and are learnt along with the technical skills and theory.

For instance the principles and values of sustainability are just as important as technical building and engineering knowledge in understanding the consequences of their decisions and the application of what they learn during the design process - for themselves and for others and society.

In this structure of awareness the theme-field relationship can be described as mutual. As well as allowing application of abstract knowledge, the attributes themselves are differentiated dependent on the nature of the discipline or field of knowledge. In this conception the generic attributes ultimately developed by graduates are discipline specific by virtue of their close connection to, and mutual relationship with, disciplinary knowledge. In this conception generic graduate attribute learning outcomes are not generic at all. Rather they are a specialised and differentiated form of underlying generic abilities acquired or developed to meet the needs of a specific discipline or field of knowledge context.

Well communication skills are as central to this course as the theory.....I've seen students who know exactly what is contributing to the problem and how to address it, but unless they can communicate this understanding and the management to a distraught client then they will never make an effective vet...it is the same set of professional communication abilities students need across all our subjects..... a sort of specialised set of communication skills. Without these all the diagnostic skills and knowledge are of limited use.

This is another key feature differentiating the structures of awareness in the second and third levels of the hierarchy. In the second level, the complementary conception, the relationship between the thematised generic attributes and discipline knowledge is one of separate yet related learning outcomes. Dependent on the nature of the discipline or field of knowledge, different generic attributes were more, or less, relevant, in the context of university learning in that particular field. However while different attributes may have been more or less important, the attributes themselves remained essentially 'generic'. Different 'sets' of the same attributes complemented different disciplines and fields of learning. This is not the case in the third level of conceptions.

As well as the theoretical concepts I also try to help my students develop their own professional values and an ethical framework - really a legal way of looking at situations and issues that will allow them to use the ideas and principles they learn. Without these abilities they wouldn't be able to apply their knowledge to the uniqueness and complexity of legal practice.

In the third category of description the relationship between the thematised generic graduate attributes and other university learning outcomes is more intimate and the two types of learning outcomes are interconnected rather than separate. Generic attributes are 'tailored' to mesh with the learning outcomes of different fields of study and the contexts of different disciplines. In this third level of the hierarchy of conceptions, generic graduate attributes are adapted to the specific discipline or field of inquiry and application. The structure of awareness is such that it encompasses disciplinary differentiation rather than generality, in generic graduate attributes.

The ability to responsibly apply knowledge is just as important as the knowledge and technical competence. We can teach the principles of design but unless students develop the ability to think creatively then they can't apply these. I don't think you can separate the two - the creativity becomes part of the design skills and the design skills develop the creativity.

In the Translation conception, generic graduate attributes are perceived to be an important outcome of university learning – on a par with the discipline content knowledge. They are understood as integral and essential inclusions amongst the learning outcomes of the university curriculum since they allow the application of abstract disciplinary knowledge to actual contexts and the translation of disciplinary knowledge to new contexts or situations.

They are the sorts of abilities that allow our graduates to work in so many different arenas; the skills of academic writing, critical appraisal of information and ideas and logical reasoning are part of the content of their studies. These abilities are an integral part of the discipline.

There is more to generic skills than just being able to use a computer, having basic literacy and numeracy skills or knowing how to communicate effectively – graduates need to be able to adapt the knowledge they take from their studies in order to function in the new millennium. Issues like globalisation, environmental sustainability and the way new technologies are changing how we live and communicate will change how students use the knowledge they acquire during their studies.

Unlike the previous two conceptions where the referential aspect was *additive*, in the Translation conception, graduate attributes are understood to be abilities which allow learners to change or *transform* discipline learning outcomes. Rather than being useful skills that sit alongside and independent of disciplinary knowledge, graduate attributes in this conception are connected to, and interact with, disciplinary knowledge. The understanding of generic graduate attributes as *transformative* rather than additive marks a significant difference between this third category of description and the previous two.

These are the sorts of skills that let students interact with knowledge in a constructive way. They are skills like communication it is way students can transform their teacher's knowledge into their own ... communication is like a playground for trying out different ideas and concepts. Students use generic skills like communication, in discussing, arguing, writing, to build up their own understanding, so it is important that we develop these skills as well as teaching discipline knowledge.

4: Enabling conceptions.(D)

Some academics expressed a conception of generic attributes, not as separate learning outcomes, but rather as abilities 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.

They are the sorts of abilities that are about intellectual and personal development. Which means they are more than just the tools of knowledge – like communication and literacy – they are part of knowledge - the way we interact and communicate about texts is part of what we know about texts. Using such specialised communication and critical reading skills to learn and interact with knowledge in an academic way is part of the product and process of academic thought.

These intellectual abilities are at the heart of all knowledge and learning, regardless of the discipline.

They are the sorts of life long learning abilities that are part and parcel of learning at university – the intellectual and interpersonal skills that allow people to learn new ideas and concepts - they are the tools of learning really.

Graduate attributes are really the sort of intellectual skills that are the framework of university learning. They are the structure of academic inquiry and learning and they make the disciplinary knowledge more than just a collection of facts.

All graduates need what I call the generic skill of adaptation. To develop the sort of intellect that will allow them to adapt their knowledge to changing technologies and new work roles – I tell my students that they are going to have to revise and rebuild whatever they learn at uni every few years after they graduate. And that even the way they do this will probably be different every time they do it.

What are in the foreground in the structure of awareness characterising this conception are inter-woven abilities and aptitudes for learning. The relationship between the thematised graduate attributes and other knowledge and learning outcomes that constitute the remainder of the field of awareness is intimate. Graduate attributes are not seen as discrete learning outcomes, instead they infuse and are part of all such learning. In this conception, graduate attributes are an integral substrate of discipline knowledge and are the core of all scholarly knowledge and learning.

Critical thinking and intellectual curiosity and agility – they are what makes knowledge come alive and I think these abilities are at the heart of the difference between learning by rote the ideas of others and learning in a way that allows students to be critical and operate at a higher intellectual level. They are part of knowledge and intellectual thought and therefore part of everything I teach.

I suppose they are also capabilities like critical reasoning and intellectual flexibility – the abilities that allow students to see parallels and contradictions between different concepts and ideas – they really are a part of learning and knowledge – not something different.

Unlike the previously described level three Translation conception, in the Enabling conception, the attributes are not simply connected with other learning outcomes of the discipline or field of study, they are integral to such learning and knowledge. In this structure of awareness, generic attributes are the core or 'skeleton' that provides both form and function to enable disciplinary knowledge and the learning of that knowledge. In this structure of awareness, the embedded attributes provide the building blocks for discipline knowledge and are more long lasting and important than the discipline knowledge they enable. Once developed, graduate attributes are perceived to provide a reusable framework that enables students/graduates to acquire and shape new knowledge as required – even in the context of other disciplines. In the Enabling conception, generic attributes are seen as transcending disciplinary boundaries even though they are developed within disciplinary contexts.

Graduate attributes are the sorts of higher level cognitive and interpersonal abilities that are the difference between training and education. Anybody can learn facts but the ability to take on board those facts and integrate them with other ideas and your own understandings and even to discover a new way of looking at the world or a new way of using that knowledge – all require different abilities.

The foregrounded abilities in this fourth structure of awareness are not atomistic (level 2) or clustered (level 3) skills and abilities, rather they are present as an interwoven and holistic world view and aptitude for learning. The relationship to other disciplinary knowledge and university learning is also different. Unlike the previous category, the

foregrounded aptitudes do more than translate disciplinary or other knowledge, they are part of this knowledge. In this conception graduate attributes provide a framework for the development of knowledge which shapes both learning outcomes and learning processes in university and other contexts. In the structural aspect of this conception, the relationship between the foregrounded aptitudes and the rest of the field of awareness also encompasses more than just a relationship to the disciplinary knowledge acquired in the course of a formal university education. The relationship goes beyond that of the previous categories and takes in a broader range of learning outcomes than those of the discipline or field of study. Rather than being relegated to the margin, learning outcomes related to more general life and world experiences are present in the field of awareness in this conception. This is not a feature of the structural aspects of the previous three categories of description.

Students need to develop the intellectual ability and mental attitude to cope with today's exploding knowledge economy. If all we gave them was today's knowledge – which we can't - they would be out of date and on the scrap heap before they even graduated. They need to develop technical abilities and understand the theory underpinning these abilities but even more importantly they need to learn these things in a way that will keep them open to change. That sort of generic intellectual ability is what they need to take what they already know and change it in a way that keeps it current.

Everything I teach is about equipping them with the ability to cope with this sort of transformation in their world otherwise they are not going to be able to adapt what they have learnt to meet the challenges of either their working or social lives.

The referential aspect of this conception is again transformative. In this conception graduate attributes are also understood to shape and transform knowledge to meet new challenges and contexts.

It is the same with value systems and attitudes – these are like a lens that transforms knowledge and understanding – but they are really a part of the knowledge not separate you know – so not a lens really... I don't have the right metaphor...

The variation in the structural aspects of this conception means that this understanding extends beyond merely translating, applying or adapting abstract or theoretical knowledge learnt at university to solve real world problems. It encompasses reshaping of existing knowledge and the construction of new knowledge in contexts far removed to that of the original discipline in which the university studies were based. The transformative potential extends to other domains of knowledge and fields of study. In this conception, generic attributes are understood as abilities that are the keys to scholarly inquiry and learning in many aspects of life, not just formal study.

Generic attributes are about ways of learning – like the ability to critically reflect on the body of knowledge not just to accept it as unchanging. Students need to learn knowledge in a way that allows it to be adapted to different contexts, because the world is always changing and they need to change with it - as people and in terms of what they know. So as part of learning about the ideas and truths that make up the discipline they need to learn about how these things relate to themselves and to others, and to other ideas and the world they live in.

Overview of the hierarchy of categories of description in first outcome space

Four increasingly complex, qualitatively distinct, categories of description were identified. Some academics express an understanding of generic graduate attributes as basic *precursory* abilities students bring to university and which provide a minimum base to which can be added the discipline knowledge of a university education. Other academics express an understanding of graduate attributes that goes beyond this to encompass additional general functional abilities and personal skills that can usefully *complement* the discipline specific learning outcomes of a university education. Other academics understand generic attributes to be more than useful additional general skills, rather they are specialised variants of such general skills that are essential in the application of discipline knowledge and the *translation* of university learning to unfamiliar settings thus usefully transforming the products of university learning. Some academics express a still more complex understanding of generic attributes as *enabling* abilities and aptitudes that lie at the heart of all scholarly learning and knowledge, with the potential to transform the knowledge they are part of and to support the creation of new knowledge and transform the individual.

The outcome space is hierarchical and each increasingly complex conception subsumes and extends upon the preceding lower level understandings. The logical hierarchical relationship between the four categories of description is defined by the variation in the structural and referential aspects of each category. The hierarchy is multidimensional in that categories of description vary on several dimensions, for instance the type of skills (atomistic personal skills to integrated and holistic capabilities) and the relationship to disciplinary knowledge and the way this relationship is understood (the additive or transformative dimension). A higher level, or more complex conception, can also incorporate elements of lower level conceptions of generic graduate attributes. For instance level one and two understandings can be subsumed in a level three understanding as in the following simplistic example of the learning outcome of 'communication skills' for graduates of a biology degree:

- Level Three - Translation: Specific technical laboratory report writing skills to communicate scientific findings to a specialist audience
- Level Two – Complementary: General essay writing skills to construct a integrated argument – which may provide the basis for developing specific technical writing skills
- Level One - Precursor: Basic written English language literacy skills as a precursor to a formal writing task.

However a lower level conception does not encompass higher level understandings. To provide another oversimplified exemplar, consider computer literacy skills.

- Level One - Precursor: Basic computer literacy skills as a precursor to using computers
- Does not include an understanding of computer literacy as required to conduct an internet search (Level Two - Complementary)
- Nor does it include the level of computer literacy required to search a specialised database of research publications (Level Three – Translation)

- Nor does it encompass an understanding of computer literacy as including the ability to refine an online search to obtain relevant information from a range of sources and to evaluate the merit of the information obtained from different online sources using the internet (Level Four – Enabling)

We will return to the hierarchical nature of categories when we consider how these understandings are constituted in the individual transcripts in chapter 6 'Conceptions'.

Overview of the structural aspects of the first outcome space

The structural aspects of the conceptions vary both in terms of what is thematised or in the foreground of the particular structure of awareness, and how this relates to what is in the rest of the field of awareness and the margin.

First let us consider how the structure of awareness changes in respect to what is present in the theme.

In the Precursor conception, no aspect of graduate attributes is present in the theme, what is in the foreground is the acquisition of discipline knowledge as an outcome of a university education. Rather than being thematised, graduate attributes are instead present as basic skills in the margin of the field of awareness, that are relevant only in that they facilitate the acquisition of discipline content.

In the Complement conception, what are present in the foreground are atomistic undifferentiated personal and functional skills. These are more advanced higher level skills than those relegated to the margin in the previous conception however they are discrete skills and abilities independent of other learning outcomes and capabilities. While undifferentiated, different particular attributes or skills are more or less important in the context of different disciplines.

In the Translation conception, what are in the foreground are clusters of differentiated or specialised skills and abilities. The differentiation is a consequence of the disciplinary context. Rather than simply a different selection of skills being relevant to different disciplinary context, the skills themselves are differentiated and specialised in different disciplinary contexts.

In the Enabling conception what are in the foreground are higher level interconnected abilities lying at the heart of scholarly knowledge. Disciplinary knowledge is not separated from the graduate attributes as part of the thematic field as it is in other conceptions.

Now let us consider the relationship between the theme and the rest of the structure of awareness. In addition to the differences in what is thematised there are differences in how what is thematised relates to the rest of the field of awareness. Some of these differences are inherent in the variation in what is thematised as noted in the preceding discussion.

In the Precursor conception the relation is minimal as the generic attributes are in effect not thematised in this conception, being present in the margin in this structure of awareness as basic skills and seen only to relate to the ability to acquire the disciplinary content. They do not interact with the resultant disciplinary learning outcomes in any way.

In the Complementary conception, the relationship between the thematised generic skills and other university learning outcomes is as secondary learning outcomes independent of the disciplinary learning outcomes that comprise the main outcomes of a university education. While the thematised generic attributes are seen as a useful learning outcomes they do not interact with or relate to other learning outcomes.

In the third Translation conception the relation is different again – and somewhat more intimate. The thematised generic graduate attributes in this conception are closely related to disciplinary learning outcomes and are shaped by this relationship. Rather than simply being an accompanying though independent set of outcomes the generic attributes are linked to disciplinary learning outcomes, providing the means by which such knowledge and abilities are applied or translated into practice.

In the fourth Enabling conception the relationship between the theme and the rest of the field is different again. In this conception the relationship of the thematised graduate attributes is as an integral part of university learning outcomes rather than a related (or unrelated) set of learning outcomes. Rather than being shaped by disciplinary knowledge, as in the translation conception, in this structure of awareness, the graduate attributes shape and give form to disciplinary and other learning outcomes of a university education.

Overview of the referential aspects of the first outcome space

We can now overview the dialectically entwined *referential aspects* of the four qualitatively different structures of awareness.

In the first and second categories of description the referential aspect has been characterised as *additive*. The way that graduate attributes are understood is as additional learning outcomes, of varying importance in the context of a university education. They are understood as outcomes that a graduate may possess in addition to the outcomes of disciplinary learning. In the first level, Precursor conception, they are understood as outcomes that are already present in students prior to embarking on their university studies. In the second level, Complementary conception, they are understood as outcomes that are developed in the course of a university education. However in both cases they simply add to the complement of discipline knowledge that is the main business of a university education.

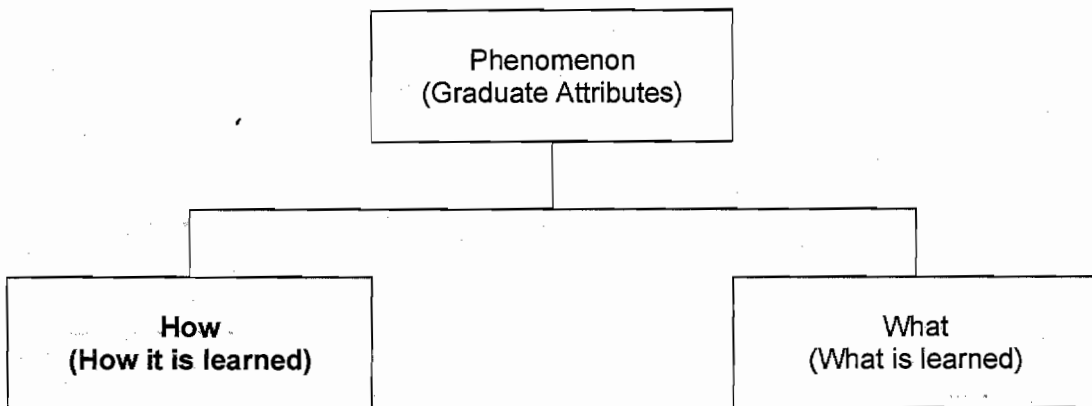
The referential aspect of the third and fourth level conceptions is quite different. In these conceptions graduate attributes are understood to be *transformative* rather than additive in relation to other university learning outcomes and knowledge. Rather than adding to other university learning outcomes, they transform the outcomes of university learning. In the Translation conception this transformation is in the application of knowledge acquired as part of a university education. This can be in the context of applying abstract or theoretical knowledge to the solution of real world problems or in the context of translating previously learnt knowledge to meet the demands of new contexts. In the fourth level, Enabling conception, the transformation is in the scholarly shaping of other outcomes of a university education, not simply the application of such knowledge. In this conception graduate attributes shape the knowledge that is learnt at university, and the way is learned, in a way that is essential in making such knowledge useful and renewable. The transformation is understood to encompass the revision of existing knowledge and the construction of new knowledge beyond the scope of a formal university education. Thus the transformative aspects of the enabling conception extend to other learning during the university years and to the full range of learning contexts after leaving university.

The variation in the structural and referential aspects constitutes four hierarchically related categories of description representing the variation in the understandings held by the group of academics in relation to the phenomenon of generic graduate

attributes. We will now consider the variation observed in the group's understandings of the second aspect of the phenomenon.

Academics' understandings of how students develop generic graduate attributes: Second outcome space

The second outcome space represents the understandings expressed by the group of academics of the way university learners develop generic graduate attributes.



Six qualitatively different understandings emerged from the analysis of the transcripts. These have been described as

1. Remedial
2. Associated
3. Teaching Content
4. Teaching Process
5. Learning Process
6. Participatory

The following table (Figure 4.3) depicts the six categories of description. Each of the qualitatively different understandings is defined in terms of its structural and referential aspects. The structural aspects, what is in the foreground or thematised, and how what is in the foreground relates to the rest of the field of awareness, are noted on the vertical axis of each table, and the referential aspects, or the meaning ascribed to the structure, is described on the horizontal axis.

Figure 4.3: Academics' understandings of how generic attributes are developed
(Second phenomenographic outcome space)

| <i>How generic attributes are developed</i> | | Referential (what is meant by the structure) | | |
|---|--------------------------------------|--|--|---|
| | | Supplementary | Integrated | |
| Structural (internal and external horizon) | Focus on Teacher and Teaching | Not part of the curriculum | 1. REMEDIAL: Not usually part of university teaching | |
| | | A secondary curriculum | 2. ASSOCIATED: Generic attributes are taught as a discrete subset of the teaching in university courses | |
| | | Disciplinary Curriculum content | | 3. TEACHING CONTENT: Generic attributes are taught in the context of teaching the disciplinary knowledge |
| | | Disciplinary Curriculum process | | 4. TEACHING PROCESS: Generic attributes are taught through the way the course disciplinary knowledge is taught |
| | Focus on Learner and Learning | Course experience | | 5. ENGAGEMENT: Generic attributes are learnt through the way students engage with the course's learning experiences |
| | | University experience | | 6. PARTICIPATORY: Generic attributes are learnt by the way students participate and engage with all the experiences of university life |

Each of the six conceptions of the development of generic graduate attributes in the hierarchical outcome space is now considered in terms of the structural and referential aspects of the structure of awareness and illustrated by quotes from the transcripts.

Level 1: Remedial conceptions

Not usually part of university teaching

Some academics expressed an understanding that the development of generic attributes was not part of university teaching. The development of such attributes in graduates was not usually within the purview of university education or the responsibility of university teachers. The teaching of generic skills was only relevant in a remedial context at the university level.

Students in any university course should have basic literacy skills before they begin study – I don't see that I can be expected to teach them these things as well as covering all the content they need for the degree.

These days we get students from all over the world, and often they have come to university through non-traditional schooling systems and without some of the necessary skills – but I can't teach them to read and write English as well – we suggest these students do one of the bridging courses or get help from the LAC.

The department runs a special workshop program for first year students if they are having trouble in their first assignments because of poor writing skills.

The teaching of such attributes was considered to be the product of previous (education or otherwise) experiences. However, students who had not developed such attributes were considered to require remedial teaching in order to develop generic skills and attributes.

Well it's a becomes a bit of a problem really – students now need much more support in these areas - partly this is one of the consequences of financial decisions to increase intake numbers and take full fee payers I suppose. The university needs to consider how it is going to offer the extra courses in basic academic skills these students need if it is going to continue to take them.

In this conception, the development of generic skills was a function of **teaching** and the role of the teacher was in the foreground in this structure of awareness. However, the teacher was not typically the academic responsible for the curriculum of the discipline or even necessarily a university teacher or academic. The remedial teaching required to develop these attributes in those students who did not possess such abilities was external to the usual university curriculum and the responsibility of other departments or individuals. In this particular structure of awareness the teaching of generic attributes was seen to be essentially unrelated to the teaching of disciplinary content which made up the rest of the thematic field. It was as an adjunct to the university curriculum for those students that needed it.

Those students that need it get help from the tutors on basic skills but there is only a certain amount they can do and still get through everything. Certainly it isn't something I can do much about. I give those students that need it feedback on areas of weakness in generic skills that show up in their written work and if they are having troubles in the tutorial groups then we would suggest they contacted the student services support people.

We recommend they enrol in one of the special study skills programs.

There are centres in the university where students can go to get help if they are having problems in those areas – the learning assistance centre and the maths centre.

The meaning ascribed to this structure of awareness was one of a process of development of generic attributes, which was distinctly **supplementary** to other university teaching and learning.

Level 2: Associated conceptions

Generic attributes are taught as a discrete subset of the teaching in a university course

Some academics expressed an understanding of the development of generic graduate attributes as involving the teaching of these skills and attributes as an isolated subset of the teaching of their discipline or course. This generic attributes curriculum was included as an addition to the usual curriculum. Unlike the previous conception, the

teaching of such attributes was seen as important and ideally was included in the curriculum for all students. However, the teaching of such skills remained secondary to, and less important than, disciplinary teaching.

Students need to be taught the generic skills too – I have a module on interviewing and communication.

Once again there was a strong teacher focus present in this structure of awareness with the role of the teacher and teaching in the foreground. The teaching may or may not have been the province of the disciplinary teacher.

I get all my students to go to the library sessions on using the library databases. So they learn about using the internet to search and find information there.

This structure of awareness differs from the previous one primarily in terms of the inclusivity of the teaching of such attributes. This teaching is a (small) part of the curriculum for all students in this conception as opposed to the remedial teaching approach that characterised the first category of description.

I talk about what makes a verbal presentation effective in class and I give them guidelines on clear communication so they are well prepared for their case presentation.

There are general handouts and guidelines on scientific writing and I give them examples of good and bad writing.

The meaning ascribed to this structure of awareness is still one of the process of development of generic attributes being separate from other elements of the curriculum. Even though the teaching of generic attributes is understood to be a component of a university course it is a discrete component and unrelated to the teaching of discipline content. It is included in the curriculum for all students as an additional element. As such the referential aspect of this conception is characterised as **supplementary** as it was in the previous category.

It might be included as an extra session in the course or it might be included as a parallel module or workshop for students run by either the teacher or a generic skills 'expert'.

Students have two classes on information literacy before they do their first assignment.

I have a separate marking guide for essays that sets out what I expect in any university standard essay. The students also get some written guidelines on what makes a good essay and the sorts of things I am looking for in written communication skills. I include this guide as part of their feedback on their writing all their assignments.

It might be through the addition of a separate learning task or teaching process.

I have added an extra piece of assessment to address generic skills -as well as the two essays I have a class presentation so students develop both oral and written communication skills.

I also introduced discussion group exercises in the tutorials after I went to that workshop on small group teaching - because I want my students to develop group skills.

In these last two extracts, while the choice of teaching process is perceived to be related to the intended generic skills outcomes, the choice of teaching strategy appears to have little to do with the content of the course or the nature of the disciplinary learning outcomes. It appears instead that the teaching strategy is included as an additional strategy with only the generic skills target in mind. The teaching process itself appears to be understood as being quite secondary and unrelated to the usual university curriculum. While the teaching process is within the confines of the normal curriculum it is seen as an independent strand within the curriculum, unrelated to the achievement of the disciplinary learning outcomes.

In much the same way that the development of graduate attributes themselves are seen as a curriculum with separate secondary learning aims in this category of description the choice of teaching process can also be perceived as providing a secondary curriculum for the development of such attributes unrelated to the teaching of the disciplinary curriculum. This is quite different to the level four Teaching Process conceptions we will consider later.

The supplementary characteristic of the referential aspect of this category highlights the understanding of the development of graduate attributes as requiring the provision of an additional curriculum.

Level 3: Teaching Content conceptions

Generic attributes are taught in the context of teaching the disciplinary knowledge

Some academics considered that generic graduate attributes were taught by teachers in the context of teaching disciplinary knowledge. Conceptions in this category involved the teaching generic attributes by discipline teachers, sometimes in collaboration with non-discipline teachers. The teaching of the generic attributes was integrated with the teaching of discipline content. The focus remains on teaching rather than learning.

Well really the sorts of things students learn in the social sciences and humanities are part and parcel of the content – critical thinking, communication, verbal reasoning – they are what our content is all about. So they are taught as part of the content of the course.

The role of the **teacher** is again at the forefront of this structure of awareness. As in the previous conceptions, generic attributes are understood as something that is taught rather than something that is learned.

I teach them about principles of effective communication as part of teaching them about design.

Unlike the previous conception the teaching of generic attributes is related to the teaching of discipline content. And in this conception the teacher of the discipline content perceives the teaching of generic attributes to be part of their normal teaching role, not something extra or separate to this.

Students are taught about technical and scientific writing in the laboratory classes. They get feedback on their written communication skills as well as the content of their prac write-up.

While in this conception the responsibility for teaching generic attributes is the discipline teacher's, such teaching might be facilitated by collaboration with non-disciplinary teachers. The teaching of generic graduate attributes is linked closely with other university teaching present in the thematic field. In this conception, the teaching of generic attributes is seen to be part of the teaching of discipline knowledge. 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. This marks a significant difference between this structure of awareness and the previous one.

We teach generic skills like communication and problem solving as part of our subject.

The meaning given to the structure of awareness in this conception differs from the supplementary meaning of the earlier conceptions. In this conception generic attributes are understood to be an **integrated** component of the course curriculum rather than being a supplementary curriculum. The referential aspects of this structure of awareness are of an integrated process of development of generic attributes rather than a supplementary or 'bolt-on' addition to the usual course teaching and learning processes.

Each of the theory courses I teach also covers relevant generic attributes.....rather than just teaching the theory behind a diagnosis I teach them the diagnostic and clinical problem solving strategies too.

Level 4: Teaching Process conceptions

Generic attributes are taught through the way the course disciplinary knowledge is taught

Some academics expressed an understanding of 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 be taught 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 development of the attributes. The process of teaching was the focus of this conception.

Students develop IT literacy skills because so much of the course is taught online.....students get taught how to use the internet at first and then they hone these skills through their continued use of it as a learning tool in the course.

The students are taught skills like problem solving and critical thinking when we teach them about legal arguments using the case presentations for each topic.

As in the previous structures of awareness, 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. Central to the theme of this conception is the idea that generic attributes are developed by students through the learning opportunities provided by particular teaching processes. This is the first structure of awareness that explicitly includes an active learner, although the focus remains on the teacher.

A lot of these skills are developed in the way the students are supervised on their professional placements.

A lot of the feedback I give them on their drafts and the final essay is about critical thinking and verbal reasoning skills.

I teach the students about social value systems so they develop their own ethical positions in the context of the tasks and exercises we use in this course. The cases we use all have a social dimension and are based on topical issues that will encourage individual development as well as learning of the course material.

In this structure the teaching process is in the foreground. The foregrounded teaching process is a part of the repertoire of teaching strategies used in teaching discipline content. The thematic field of this structure includes both curriculum content and the way this content is taught. This is a departure from the way the thematic field is structured in the previous category of description where curriculum was perceived in terms of content.

Because I teach using a case based approach students get to see some of the ways expert problem solvers have applied the principles and theories as well as learning about the theories themselves.

The meaning ascribed to this particular structure is again one of an **integrated** curriculum. The integration is not in terms of content as it was in the preceding conception, rather it is in terms of the teaching process. It is not a separate or different teaching process as we saw in some of the extracts in the Level 2 Associated category of description. It is the teaching process that is employed in the teaching of disciplinary content that provides opportunities for students to develop graduate attributes.

Generic attributes are part of most things I teach – a lot of it is through modelling and demonstration. So when I'm teaching a particular intervention I'll talk them through my own problem solving using that principle. So I am showing them how to solve a problem as well as teaching them about a particular management strategy.

Level 5: Engagement conceptions

Generic attributes are learnt through the way students engage with the course's learning experiences

This category is similar in many ways to the preceding category however the focus is no longer on the teacher or teaching. In this conception the development of generic attributes is as something that is learnt not something that is taught with the learner rather than the teacher being in the foreground. This shift in focus from teaching to **learning** is a fundamental difference between this category of description and the previous four.

Students develop generic attributes through most of the things they do as learners in my course.

Because they work as an online syndicate in the PBL task they have to function as a team in order to learn the content. The challenges of learning in this way develop those sorts of generic skills we were talking about before – like team skills, communication skills, verbal reasoning, logical argument and because

they do a lot of it online - how to use communication and information technology – the whole gamut.

They learn about the communication rules of the internet and how to communicate their ideas through participating in the online team discussions.

The students' use of critical writing in their essays and reflective journals develops generic skills like written communication, logical argument and critical and analytical thinking skills.

Rather than being understood to be a function of the way the teacher taught (e.g. the content they covered, the tasks they set or the feedback they gave), 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 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.

Some of the best learning experiences are when things I try in teaching don't work perfectly – like a team project when the students have to negotiate with a team member who isn't contributing or finding ways to overcome a resource shortfall – (be)cause the server has crashed again – or a technical problem - these sorts of experiences provide students with a wealth of opportunities for learning generic attributes through the way they handle them. I don't teach these attributes, my role is more about encouraging and supporting students in making the most of these opportunities.

At the start I often need to point out how they have learned something valuable because of the way they handled the problem. You know - showing them that what they did as learners was productive even if it didn't get the answer they were after! But by the end of the semester they're independently identifying things they've learnt that they consider as valuable.

The challenges and learning tasks I set them give them the chance to develop a lot of these skills. They have to balance a lot of conflicting ideas and

positions in the online discussions and electronic tutorials and what they learn from that experience is more about what they put into it than anything I teach.

The relation between the foregrounded learner and the rest of the thematic field is also characterised by this shift from a teacher focus to a learner focus. Rather than the thematic field being made up of the discipline content of the curriculum or the teaching processes of the curriculum, the field is made up of the learners' perceptions of these aspects of the curriculum. Thus rather than the teacher's stated intended disciplinary learning outcomes, the learners' understandings of these outcomes are present.

I think the way students develop these things is by having space to think about them and the support and encouragement to explore their own intellectual abilities. As a teacher I can make a space for them in the context of my teaching and show them that I think developing these skills is important by the way I teach and the tasks I set. I can modify the course's learning environment to support this but it is still up to the student to take up these opportunities. Sometimes they don't seem interested or see the value no matter how I try.

The meaning given to this structure of awareness is clearly not as a supplementary curriculum as in the first two categories of description. Rather the meaning given is one of an **integrated** curriculum as in the level three and four conceptions. However in this conception the integration is in terms of the way the learner engages with the curriculum rather than in terms of the teacher's integration of the curriculum in terms of content or teaching method. The characterisation of this conception as integrated reflects the understanding that the development of generic attributes is not a separate process of learning, rather it is a product of the way the learner engages with the usual course curriculum.

Students learn about critical thinking and reflection by having to use it in the context of the tasks and exercises they do in studying this course. Because they don't just get given the right answer – well nothing is that black and white in this subject – they have to weigh up different perspectives and think about the merits of different approaches before they come to their own conclusion about which approach is most suitable to use in the context of their own response to the problem they have been set. So they each learn something different, they develop their own perspective and they need to justify their own

decision making in this process, both to the other team members and me in their final assignment report.

Level 6: Participatory conceptions

Generic attributes are learnt through the way students participate in the experiences of university life

As with the preceding category, the **learner** is the focus of this conception rather than the teacher, and students are perceived to have a high degree of control in the development of graduate attributes. As in the previous conception, what is foregrounded is the way the learner engages in learning. 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 what is foregrounded in this conception 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 through the students' 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.

Well I guess students are developing these sorts of things all the time – just in coping with university life as well as through the learning in this course and partially it's also about how students get involved with other aspects of university life – like the clubs and societies.

It's through their interactions with the ideas and thinking of staff and other students, both in and out of class that our students develop the ways of thinking that are the hallmark of a graduate. You know it's really the interactions that go on around learning – the debates and discussions between students as well as with teachers and researchers. Often these aren't just in class but during discussions over a coffee and in the departmental seminars.

The focus on the learner was present in all aspects of the structure of awareness of this conception. It was not simply the opportunities afforded by the university environment, but the way the student chose to engage with and participate in these opportunities that made up the thematic field. The nature of this participation linked the foregrounded experiences of belonging to a scholarly community and being engaged in

learning on a course with other university and life experiences. In this way the other aspects of the university experience – such as social activities, extracurricular study, and out of class learning are present within the thematic field of this structure of awareness.

I think that the whole intellectual and social climate of university life contributes to students developing such attributes. I really try to encourage students to feel part of the intellectual community of the department and we try to get them involved in our research and community work.

So it's the way students participate in the professional and academic university community.

The meaning ascribed to the structural aspects of this conception is again one of **integration**. The development of graduate attributes is integrated within the 'curriculum' of the overall university experience.

If the environment they are interacting with is one that values and models these sorts of attributes students will be encouraged to develop such abilities. Academics and graduate students need to model these sorts of skills in all their dealings with undergraduates – and we need to be sure this interaction happens – that students don't start seeing university as a degree factory with no time to actually think.

Overview of the hierarchy of categories of description in second outcome space

Six increasingly complex, qualitatively distinct, categories of description were identified from the pooled transcripts.

1. Remedial
2. Associated
3. Teaching Content
4. Teaching Process
5. Engagement
6. Participatory

Some conceptions do not involve an understanding of the teaching of graduate attributes as being part of usual university teaching at all. Instead the development of graduate attributes is understood to be the responsibility of earlier education experiences. The only role of for the university in teaching graduate attributes is in terms of **remedial** teaching for those students who have not already developed these skills. Other understandings of the development of graduate attributes are as part of the university's usual teaching role. For some academics this role is understood to be fulfilled through the provision of an additional separate curriculum in **association** with the usual university curriculum. This is not a remedial curriculum rather it is a curriculum for all students. In other understandings graduate attributes are developed as part of the taught content of usual university courses. In these understandings, rather than an additional curriculum the graduate attributes curriculum is included as an integral part of the **teaching content** of the discipline. Another understanding of the development of graduate attributes is not in terms of the content of the usual university course but through the **teaching process** of the usual university courses. Another perspective expressed was of the development of graduate attributes not as a part of what is taught, or the way it is taught, but rather in terms of the way the student **engages** in and learns in usual university courses. Yet another understanding was apparent in the transcripts. In this understanding, rather than perceiving the development of graduate attributes to be through the way a student learns in a course it is through the way the student **participates** in the broader learning experiences of university life.

The relationship between the understandings represented by the six categories of description is logical and hierarchical and is defined by the variation in the structural and referential aspects of each category.

Each increasingly complex category of description subsumes elements of the preceding lower level understandings. Thus conceptions in the fifth category of description can also include elements of level one and two understandings of how generic graduate attributes are developed. Let us return to the example used to illustrate the hierarchical nature of the first outcome space: teaching a Biology student communication skills:

- Level Three - Teaching content: Specific technical laboratory report writing conventions and formats are taught in the first laboratory session. Students are provided with a biology practical report template and given anonymous examples of good and bad reports from previous students to illustrate desired features of laboratory reports in the subject Plant Genetics.
- Level Two – Associated: All first year science students attend a workshop run by the student learning support unit. This workshop covers general scientific writing skills which includes the basics of structuring writing to communicate clearly, scientific referencing conventions which may provide the basis for developing specific technical writing skills
- Level One - Remedial: All first year science students sit a diagnostic writing test designed by the Student Learning Support Centre. The test is marked by graduate students in the Faculty of Education, as part of their course in Teaching English as a Second Language. All first year students who 'fail' the test are sent a letter by the faculty advising them to access the Academic English Support Courses offered by the Learning Support Centre.

However a lower level conception does not encompass higher level understandings. To provide another oversimplified exemplar, consider understandings of how computer literacy skills are taught.

- Level One Remedial: In the unit outline there is a statement that students are expected to be able to use computers to search for references in the library and to log onto the lecture notes posted on the department's web site. Students who are

unfamiliar with computers are advised to attend one of the 'Introduction to Computers' sessions offered by the university computing centre.

Such an approach does not encompass other higher level strategies such as:

- Scheduling a session by the computing centre staff for the whole class to introduce students to the use of the university intranet and to familiarise students with use of the browsers and software packages available to students through the university server. (Level Two - Associated)
- Nor does it include teaching computer literacy skills by providing a handout of internet 'screen grabs' showing a worked example of how to search a specialised database of biology research publications relating to the topic of this week's lecture on Plant Genetics. (Level Three – Teaching Content)
- Nor does it encompass an understanding of teaching computer literacy by changing the usual essay on 'genetic modification of food crops' to include a preliminary lab exercise where students work through an exercise to research the topic and are taught how to undertake an online search to obtain relevant information from a range of online sources (Level Four –Teaching Process)

We will return to the hierarchical nature of these categories in chapter 6 'Conceptions'. In that discussion we will also consider how these different understandings of the way graduate attributes are developed are related to the understandings of the nature of the attributes. As might be apparent in the example above, deciding how best to teach a particular attribute might be logically thought to have something to do with the sort of things one is trying to teach.

The logical relationship between the six categories in the second outcome space is more complex and multidimensional than was seen in the first outcome space. We will explore this further when we consider how these understandings are constituted in the individual transcripts in chapter 6, however these relationships will be introduced in the next section which considers the overview of the structural and referential aspects of this outcome space.

Overview of the structural aspects of the second outcome space

Each structure of awareness in the second outcome space represents a qualitatively different way of understanding the development of graduate attributes. In describing their understandings, what academics presented were in effect aspects of their understandings of the 'curriculum' for developing such attributes. The structural aspects of the conceptions vary both in terms of what is thematised – what is in focus or in the foreground of the particular structure of awareness, and how this relates to what is in the rest of the field of awareness and the margin.

First let us consider what is present in the theme of each structure of awareness.

In this outcome space, each of the structures of awareness is characterised by a focus on either the teacher or the learner as the key to the development of graduate attributes. In the first four conceptions, Remedial, Associated, Teaching Content, and Teaching Process, it is the teacher who is perceived to be the agent for development of the graduate attributes. This focus is consistent throughout these four conceptions even though different aspects of the 'curriculum' characterise each of the four conceptions. In the remaining two categories, the Engagement and Participatory conceptions, it is the learner who is perceived to be the key figure in the development of graduate attributes.

The first four teacher centred conceptions vary in terms of how the teacher's role in the process of development is understood. In the first category, the Remedial conception, the development of graduate attributes is perceived in terms of a remedial curriculum only. The teacher's role that is thematised in this structure of awareness is limited to the identification of that subset of students who lack these attributes and require remedial teaching and the delegation of the responsibility for third remedial teaching to others. The actual teaching process by which such attributes are developed is not perceived to be the responsibility of the academic him/herself. Rather, such teaching is perceived to be unrelated to the teaching of the university curriculum and is provided by teachers other than the discipline or content experts.

In the Associated conception the teacher's role is thematised as one of a content expert either collaborating with other 'graduate attributes experts' to teach such skills or taking on such teaching as a supplementary responsibility to the discipline teaching

role. Rather than excluding the teaching of graduate attributes from the usual curriculum (as in the remedial conception), the teaching is inclusive. It takes place within the boundaries of the usual course curriculum and the graduate attributes are taught to all students. However, the teaching is perceived to be 'something extra' that the academic takes on or more usually is not something that is undertaken by the academic alone. Rather the additional 'generic skills' curriculum present in the theme may one that is be developed in consultation with 'generic skills teachers' or even taught as a 'specialist' module or seminar using external teachers.

In the third teacher-focussed conception, the teaching of graduate attributes is present in the theme as part of the usual teaching role of the academics responsible for the course. The teaching of graduate attributes is thematised as just another part of the curriculum of the course. As such it is not perceived to be the responsibility of anybody else, rather the skills and attributes are taught by teachers along with the rest of the course content.

In the last teacher-focussed conception, Teaching Process, the thematised role of the teacher is much the same as in the preceding conception. Once again it is the academic teaching the course who is responsible for teaching graduate attributes. However the aspect of the teacher's role that is thematised changes. In this conception the teacher's role is no longer perceived in terms of disciplinary course content. Rather the process used in teaching the disciplinary course content is perceived to be what is important, and it is the way the teacher teaches that is in the foreground as the focus of this particular structure of awareness. In this conception the role of the teacher is to teach the subject matter in a way that provides students with the opportunity to develop graduate attributes. This is the first of the structures of awareness to implicitly include a role for the learner. Inherent in this structure is an assumed role for students as active learners in the development of graduate attributes. While present, this learner activity is still secondary to the teaching that provides the opportunity for such activity and the theme of this conception is still teacher-focussed rather than learner-focussed.

The remaining two categories are learner-focussed. Rather than being perceived as a function of the teacher or teaching, the development of graduate attributes is perceived to be a function of student learning. In the fifth category, instead of being the result of what is taught or how it is taught, the development of graduate attributes is perceived as an outcome of the way the student engages with what is taught and how it is taught

i.e. the learning becomes thematised rather than the teaching. The focus of the structure of awareness shifts from the role of the teacher in the curriculum to the role of the learner. This focus on the role of the learner is also present in the theme in the sixth category, although the learners role takes in more than their engagement in the course, it expands to include their participation in the broader context of university life.

Now let us consider the relationship between the theme and the rest of the structure of awareness.

In overviewing the structural aspects of the categories of description it is apparent that in addition to the focus of the theme shifting from teacher to learner as the key agent in the process, there is variation in how what is present in the theme relates to the teaching and learning processes, or curriculum, that makes up the field and margin of the remainder of the structure of awareness.

In the first level Remedial conception, the development of graduate attributes is perceived as something that is not a part of the usual university curriculum. The foregrounded remedial curriculum is not linked or related to course curriculum except in the identification of students with a deficit in generic skills. In the second category the development of graduate attributes is perceived as a secondary curriculum to mainstream university study. The foregrounded secondary curriculum parallels the usual curriculum but does not impinge upon it except in so far as requiring space in the curriculum to accommodate such teaching. In the third category the foregrounded graduate attribute content is related to the usual disciplinary content of the curriculum and the development of graduate attributes is taught as part of the course curriculum. In the fourth conception there is again a close relationship between graduate attributes curriculum and course curriculum, though the relationship is not one of a component of the content of the curriculum, rather the relationship is in terms of the teaching strategies of the curriculum. The foregrounded teaching processes of this conception are part of the repertoire of teaching strategies used in teaching the course. The remainder of the thematic field, rather than comprising the disciplinary course content as it does in the preceding conceptions is made up of the content and associated teaching strategies. Elements of these strategies are foreground as the theme. The inclusion of teaching strategies significantly increases the complexity of this structure of awareness. In the fifth structure of awareness the theme and thematic field again increase in complexity with the addition of a learner-centred perspective overlaying these elements. Rather than comprising the disciplinary content and teaching

strategies, the learner's perceptions and responses to these aspects of the curriculum are added to the thematic field and foregrounded as the theme. In the final conception the complexity increases yet again with the broadening of the thematic field to include not only the learner's responses and engagement with the course curriculum, but the learner's engagement with the extra curricular learning experiences of university life. The field of this structure of awareness now expands to include the broader context of university life, which has previously been relegated to the margin.

The hierarchy of the structural aspects reflects different understandings of the teaching and learning process. This is a fundamental issue and we will return to this aspect in chapter 6 and consider the hierarchical relationship of these categories of description in terms of a model of the teaching and learning process.

Overview of the referential aspects of the second outcome space

We can now overview the entwined and dialectically constituted *referential aspects* of the six qualitatively different structures of awareness that make up the second outcome space.

While each conception represents a qualitatively distinct understanding of the development of graduate attributes, the increasing complexity of the six structures of awareness described is associated with two significant basic meanings ascribed to the different structures of awareness. The referential aspect of the first two categories of description, or what is meant by these structures of awareness, is that the development of graduate attributes is **supplementary** to the rest of the teaching and learning process of university education. The development of such attributes in students is understood to be in some way extraneous to other university learning and takes place as an addition to the usual curriculum. The meaning given to the remaining four conceptions is quite different. Each of these structures of awareness embodies an understanding of a process of development, which is **integrated**, in various ways and to different extents, with the other teaching and learning processes of a university education. The teaching and learning of graduate attributes does not involve an additional curriculum in any way, rather it is achieved, in different ways in each category of description, through the usual curriculum. In each category of description the 'usual' curriculum in which the development is integrated is understood differently,

ranging from curricula which are understood in terms of course content, to curricula which are understood to encompass more than formal classroom learning opportunities. However in each case the development of graduate attributes is understood as being integrated within these university teaching and learning processes.

As in the first outcome space, the various understandings of development of graduate attributes are hierarchical with increasingly complex conceptions subsuming and accommodating lower level conceptions. Each level adds to the complexity of the preceding level either through the inclusion of additional elements in the thematic field or through the introduction of new ways of perceiving elements and the relationship between elements of the thematic field.

The variation in the structural and referential aspects constitutes six hierarchically related categories of description representing the variation in the understandings held by the group of academics in relation to the development of generic graduate attributes.

Reflection

This chapter has presented the results of the phenomenographic analysis of the interview data relating to two aspects of the object of the inquiry.

1. The first outcome space summarises the key variations in the way the group of academics interviewed understood the concept of generic graduate attributes as outcomes of a university education.
2. The second outcome space summarises the variations in the interviewed academics' understandings of the way students develop such attributes.

In constituting each outcome space the categories of description which emerged from the transcripts were analysed using the framework of a structure of awareness.

For each of the categories of description in the two outcome spaces, the structural and referential aspects were identified. The internal and external horizons of each structure of awareness were described in terms of the theme or what is foregrounded and how

the elements of what is foregrounded relate to each other and to other perceived elements in the thematic field and (where relevant), the margin. The dialectically constituted referential aspect of each distinct structure of awareness was also described.

For each outcome space an overview of the key features of the variation in the structural and referential dimensions was then provided.

We can now turn our attention to an exploration of the way the variation observed in the group of academics is constituted in the individual academics' accounts of his or her understanding of the phenomenon.

In doing so we will re-establish the boundaries of the individual interviews abandoned in the identification of the categories of description. As part of the process of reconstituting the individual interviews, we will first return briefly to a consideration of the broader contexts in which these individual accounts are based.

We will then be ready to turn to an examination of the ways the individual interviews expressed different conceptions from the various categories of description in the subsequent chapter. In doing so the hierarchical nature of the categories of description will be explored further and the interactions between the two outcome spaces considered.

Chapter Five: CONTEXT

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The question of context

Before we turn to a consideration of the way the different understandings of graduate attributes were realised in the context of the individuals' accounts of their courses and teaching, we will first briefly revisit the context of these individuals as a way of grounding the categories of description presented in the previous chapter.

In phenomenography individuals are seen as bearers of fragments of different ways of experiencing a phenomenon. The description offered by the categories of description is a description of variation at the collective level and in that sense the individual voices of the respondents are not heard. Moreover it is, in Marton and Booth's view, 'a stripped description in which the structure and essential meaning of the different ways of experiencing a the phenomenon are retained while the specific flavours, the scents and the colours of the worlds of the individuals have been abandoned' (Marton & Booth 1997 p 113). Phenomenographic research is sometimes criticised for this perceived abandonment of the rich and unique qualities of the individual and context in the search for abstracted categories of description. However Marton & Booth's (1997) view of the 'abandonment of the flavours of the individuals' does not seem to be a necessary correlate of adopting the phenomenographic approach. In some ways it could equally be argued that the distillation of the essential meaning of the variation in ways of experiencing carries with it much of the essence of the individual worlds from which the descriptions are derived. Phenomenographic analysis is based in rich individual accounts of experience and the process of identification of key features of variation in the pooled descriptions can indeed preserve the richness and contextual nature of the data through maintaining an awareness of the context from which the descriptions were derived throughout the process of bringing to the surface the nature of the observed variation.

The context in which the present study is based is the experience of fifteen academics teaching at a major research intensive Australian university. The academics interviewed in the study were identified with the intention that they represented contemporary teachers working in a range of disciplines, with the aim of maximising the potential variation observed in the collective descriptions they offered of graduate attributes.

Thus far we have considered the variation in the group's understanding of the phenomenon and identified the categories of description. Before considering the variation in how the categories of description are constituted in the individual accounts (conceptions) offered during the interviews, and the implications and applications of such variation, we will first consider two aspects of the variation in the contemporary teaching contexts from which the accounts were drawn.

1. The incorporation of aspects of learning technology in curriculum and teaching
2. The disciplinary backgrounds of the teachers

Contemporary university teachers

The academics interviewed in this study were selected with the intent of interviewing individuals who were engaged in contemporary teaching practice. As an indicator of contemporary teaching practice the sample was drawn from a pool of individuals who had recently been engaged in curriculum development, and had previously used communication and information technologies as a particular indicator of contemporary teaching practice. Colleagues in the various faculties of the university were then contacted and asked to confirm if, in their opinion the selected individual represented an example of contemporary teaching in their discipline.

In selecting these individuals the initial focus was on the person rather than the particular course or unit of study that had been the object of the previous curriculum development. Once identified these individuals were asked to select from the range of units of study they were currently teaching, a unit of study that they perceived represented contemporary teaching practice, in the context of an interview focussing on their individual understandings of generic graduate attributes.

Faced with this choice all fifteen academics chose to focus the interview on a unit of study that involved some use of information technology, however none of the units of study selected were entirely technology based and in some cases the use of information technology was minimal. At the outset of the interview each academic was asked to provide a description of the unit of study selected for the discussion. The units of study selected included both core and elective units, and class sizes ranged from 30 to over 200 students. The extent to which the units of study utilised learning technologies varied, as did the type of learning technology employed and the role these technologies played in teaching. The technologies used included the internet, in the form of web pages with lecture materials and or teaching and learning activities, CD ROM or computer programs with lecture materials and/ or teaching and learning activities and electronic communication technologies such as email and discussion forums. In some cases the learning technology provided only a minor supplementary component of the curriculum or teaching strategy.

While engagement with technology was only one feature of the sample selection process it was none the less pertinent that from the range of units they taught, the academics interviewed selected units of study that incorporated some use of learning technologies as exemplifying contemporary teaching. However, it should be

remembered that it was not the intent of the study to only investigate the teaching and learning of graduate attributes in technology mediated teaching. Rather it was hoped that these individuals' engagement with new technologies would serve as an indicator that they were contemporary teachers, thus helping make the findings potentially relevant to contemporary teaching practice. In light of the sample selection process and the choice of units the academics made, and mindful of the increasing role of learning technologies in university teaching currently foreshadowed by many authors in the field, this feature of the context in which the study is based is worthy of consideration before turning to the understandings of graduate attributes which were the focus of the interviews.

Learning technologies

In addition to the data gathered in relation to university teachers' understandings of generic graduate attributes and the various ways students acquire and develop such attributes, the interviews yielded a secondary unintended though informative data set.

The data for phenomenographic analysis is typically based in accounts of actual experience. In the case of the present research the experience drawn upon was the experience of teaching a contemporary course as part of an undergraduate university degree. In establishing this context at the outset of the interview, the academic was asked to identify and describe a course that he or she was currently teaching that represented a contemporary curriculum. In establishing this context it was not the intention of the interviews to gather phenomenographic data relating to academics' general approach to teaching in these courses or their approach to teaching those parts of their course that involved the use of communication and information technology. However, this section of the interview transcript yielded a secondary data set, which proved interesting in light of the emerging role of learning technologies in contemporary university curricula and teaching. In describing these examples of contemporary teaching practice the academics described how they used information technology for teaching.

These opening stages of the interview did not focus explicitly on graduate attributes and were intended primarily to establish the context and set the scene for the rest of the interview. Interestingly none of the descriptions of how technology was used in teaching mentioned generic graduate attributes or explicitly described teaching

approaches and strategies intended to target such attributes, even though the individuals offering their descriptions of the unit were doing so in the knowledge that the interview focussed on such attributes. In contrast, the descriptions of other aspects of the units did on occasion explicitly identify the role of graduate attributes in non learning technology aspects of the unit.

In reviewing the individual transcripts as part of the initial phenomenographic analysis process discussed in the previous chapter, it was apparent that these opening sections of the transcripts contained data, which provided an interesting contrast to the results of the phenomenographic analysis of conceptions of graduate attributes. In particular, they provided a potential comparison between teacher's approaches to teaching using communication and information technologies and these same teachers' conceptions of the teaching of generic graduate attributes.

A considerable body of the phenomenographic research into teaching and learning in Australia has explored teachers' conceptions of and approaches to teaching. In particular, the work of Prosser and co researchers (Prosser & Trigwell 1997, 1999; Prosser, Ramsden, Martin & Trigwell 2002) has described university teachers' understandings of their teaching in terms of the strategies they adopt in their teaching and the intentions underlying these strategies.

Prosser and Trigwell (1999) identified five approaches to teaching in their research:

Approach A: A teacher-focussed strategy with the intention of transmitting information to students.

Approach B: A teacher-focussed strategy with the intention that students acquire the concepts of the discipline.

Approach C: A teacher/student interaction strategy with the intention that the students acquire the concepts of the discipline

Approach D: A student-focussed strategy aimed at students developing conceptions

Approach E: A student-focussed strategy aimed at students changing their conceptions.

The data from the academics' descriptions of their courses included descriptions of the way information technology was used in their courses and teaching. The section of each transcript describing how information technology was used for teaching was re-read with a view to categorising the transcript in terms of Prosser and Trigwell's (1999) five approaches to teaching.

The analysis was conducted with reference to the approaches to teaching previously identified by Prosser and Trigwell (1999). This is not the same process as the phenomenographic analysis described in the previous chapter and employed in seeking to identify the categories of description in relation to generic graduate attributes. Rather the process was one of using the categories already developed in previous research and applying these to the transcript data describing how the academics used learning technologies for teaching in their courses.

Prosser and Trigwell's (1999) findings were based on phenomenographic analysis of data drawn from discussions of teaching in non-technology contexts. In seeking to facilitate the use these findings in the context of the present research, Prosser and Trigwell's (1999) descriptions of teachers' approaches to teaching were re-worded to reflect the focus on information technology contexts. The modifications to the original categories reflected the use of technology as a particular teaching strategy. For example, Prosser and Trigwell's (1999) original: Approach A: a teacher-focussed strategy with the intention of transmitting information to students' was modified to read: Approach A: a teacher-focussed use of the technology to transmit information to students.

Approach A: Teacher-focussed use of the technology to disseminate information

Approach B: Teacher-focussed use of the technology in order that students acquire the concepts of the syllabus

Approach C: Teacher-focussed/learner activity use of the technology in order that students acquire the concepts of the syllabus

Approach D: Learner-focussed use of the technology in order that students develop their existing conceptions

Approach E: Learner-focussed use of the technology in order that students construct new conceptions

These approaches are represented as a phenomenographic outcome space in Figure 5.1.

Approaches to the use of technology for teaching

Each transcript was read and categorised according to the highest level of approach to teaching evidenced in the description. The information technology based approaches to teaching identified in the present study replicated those identified by Prosser and Trigwell (1999). There were no additional approaches identified and all transcripts were subsequently classified using the modified version of Prosser and Trigwell's (1999) categories.

A. Teacher-focussed use of the technology to disseminate information

(Transcripts: 4, 6, 7, 10, 13 & 15)

This approach involves the use of the technology to transmit or disseminate information to students with no focus on how the students will learn. The act of disseminating the information is seen as sufficient for learning. The attention is on the teaching side of the

Figure 5.1: Approaches to the use of technology for teaching

| | | Intention | | | |
|-----------------|---|---|--|---|--|
| | | Disseminate information | Acquire syllabus concepts | Develop existing conceptions | Construct new conceptions |
| Strategy | Teacher focus | A : Teacher-focussed use of the technology to disseminate information | B: Teacher-focussed use of the technology so that students acquire the concepts of the syllabus | | |
| | Teacher focus & learner activity | | C: Teacher-focussed / learner activity use of the technology so that students acquire the concepts of the syllabus | | |
| | Learner focus | | | D: Learner-focussed use of the technology so that students develop their existing conceptions | E: Learner-focussed use of the technology so that students construct new conceptions |

Adapted from Prosser and Trigwell (1999)

interface between teacher and learner. The information that the technology is used to disseminate includes discipline content such as lecture notes and administrative information such as course outlines and assessment requirements and results.

The web site is up now – it has all the information about the unit on it. Here, I'll give you the address.....well it has the basic unit outline information, you know, the usual unit objectives and class schedule, tutorial topics and assessment information. I use it mainly to post the lecture notes each week, but not until after the class or they wouldn't come! I also put up references and readings for each of the tutorial topics and there's another section I use for announcements and to post messages to the class.

Each of the sets of lecture notes and readings are available off the front screen of the site and I use these as the set text now..... I post all my lecture notes on the web at the start of semester, which frees up class time for discussion – all the assignments come in electronically too now.

B. Teacher-focussed use of the technology in order that students acquire the concepts of the syllabus (Transcripts: 1, 3, 5, 8, & 12)

The second approach to the use of technology went beyond simply transmitting information to include a focus on the use of the technology in order that students acquired the concepts of the syllabus. In these conceptions the focus remained on the teaching aspect of the interface however the intent was that students would receive the concepts of the syllabus rather than just the information that contributed to these concepts.

The virtual lab program lets me show them the experiment the way it should work. Each experiment has a summary of the key theoretical concepts it illustrates. Each student can go through it as many times as they like without needing a demonstrator or lab time.

I use web tutorials to revise each of the key topics – there is a short summary of the key points from that week's lecture and links to worked examples that illustrate these in more detail.

The main points dealt with in each lecture are summarised on the web pages – a bit like a concept map for the course material.

The online resources are cases to illustrate the key concepts.....

There are five case studies for each lecture topic which are examples of the main ideas I am trying to get them to understand.....

C. Teacher-focussed/learner activity use of the technology in order that students acquire the concepts of the syllabus. (Transcript: 11)

This approach differs from the preceding approach in that attention is paid to the learning side of the interface as well as the teaching. Conceptions in this category still focus on students acquiring the concepts of the discipline rather than just receiving the content information and the approach is still a teacher-focussed use of the technology. However there is a recognition that students need to participate in the activity of learning the concepts that are being taught.

At the end of each module the students work through a set of multiple choice questions based on the lecture notes. These are designed to check if they have understood the material covered in each lecture – not just remembered the notes.

The problems are similar to the worked examples the students are supposed to have read in the notes, they work through the problem on paper and select their answer from the multiple choice options. Each question has an automatic feedback response for each answer so they can usually see where they have gone wrong. If they can't there's also an online discussion forum where the students can post any questions they'd like the tutor to clarify in the tutorial.

D. Learner-focussed use of the technology in order that students develop their existing conceptions (Transcript: 14)

This approach includes uses of technology which focus on the students' learning rather than the teacher's teaching. The technology is used by the learners to develop or extend their understanding of the syllabus concepts. This use of the technology

involves learners as active agents in learning and includes the notion that the syllabus concepts are not simply acquired but are developed by the students on the basis of their existing understanding.

Each set of practice problems is meant to help students really understand the idea we are working on – they can work through the exercises until they get the hang of it.the problems get more and more complicated and include simulations which show them different examples of the application of the principle –again from simple to more complex - the questions are designed to get students to start with simple ideas and build up to more complex problems as they understand more and more about the topic.

The CDROM allows students to experience different applications of the ideas so they can build up an understanding of how the theories might be used and what they might mean..... the students use the simulations to manipulate the parameters and apply what are pretty abstract ideas to solving real world problems.....They get to experiment with the ideas themselves and make sense of them by using them.....by solving the different problems they learn different algorithms and build up their own understanding of the concepts.

E. Learner-focussed use of the technology in order that students change their conceptions (Transcript: 9)

One academic described her approach to the use of technology for teaching in terms of the learner using the technology to actively construct new concepts or understandings rather than to develop or extend existing concepts. The focus again is on the learner rather than the teacher and the technology is used to allow students to interact with each other and with resources, in order to experiment with and reflect on, their own understandings and develop alternative understandings if appropriate.

There is an online component too. Each group of students gets a different reading from the set of readings for each topic. I post a question or statement on the discussion list and before the next class each group posts their response based on their particular reading. They get to read the other groups' responses and can see how the different perspectives presented in the readings might influence the response to the question. It's great – they get multiple perspectives on the topic and it really gets them thinking about

their own perspective. Often they are already questioning their own understanding of the concept when they get to the lecture the next week. You know afterwards some of the students even go back to the discussion threads and articulate and explore their own understanding of the material with each other.

Figure 5.2: Academics' expressed approaches to the use of learning technologies

| Individual | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
|------------|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|
| Approach | B | B | B | A | B | A | A | B | E | A | C | B | A | D | A |

| | Approaches to the use of technology for teaching | | | | |
|------------------------------|--|------------|------------|-----------------------------|------------|
| | Approach A | Approach B | Approach C | Approach D | Approach E |
| Number of cases / approach | 6 | 6 | 1 | 1 | 1 |
| | Teacher-focussed approaches | | | Learner-focussed approaches | |
| Number in collapsed approach | 13 | | | 2 | |

Categories A, B and C are teacher-focussed approaches to the uses of technology (Figure 5.2). Thirteen of the fifteen academics interviewed described an approach to the use of technology that was teacher-focussed. Two academics described learner-focussed approaches (categories D and E) to the use of technology.

As in the original study, the majority of approaches to teaching identified were teacher centred approaches. Approaches A, B and C are classified by Prosser and Trigwell as teacher centred approaches. Category C is included in the teacher centred

classification by these authors even though it has, to some extent, a shared teacher/learner focus. The link between student-centred approaches to teaching and higher quality student learning outcomes, has been convincingly argued for by various authors (Trigwell & Prosser 1996, Ramsden 1992). The teacher-centred approaches to teaching described by the 13 academics in the present study would be unlikely to be optimal in terms of the resultant quality of student learning. The relative rarity of more sophisticated, student-centred approaches to teaching (and associated conceptions of teaching and learning) is a typical finding of research reporting teachers' approaches to teaching.

Despite the possibilities for innovative pedagogy afforded by new technologies (Alexander et al 1998) most of the teachers in this study are using technology in a teacher centred way. The paucity of approaches to the use of communication and information technology reflecting learner-focussed conceptual change and development approaches is of concern given the rapidly expanding use of communication and information technology mediated teaching strategies. It is also of concern given the potential of the opportunities afforded by such technological teaching innovations, for the introduction of equally innovative pedagogy.

Teachers are unlikely to adopt approaches to teaching which reach beyond the sophistication of their conceptions. If staff reject the higher level approaches to teaching because of a lack of congruence with their conceptions of teaching and learning, then hopes for improvements in the quality of student learning are unlikely to occur. (Trigwell & Prosser 1996 p 283)

Technology in context

While the descriptions of the use of technology were only brief they did provide sufficient information to allow a tentative classification of each academic's approach (in the context of these interviews) to teaching using technology. In many ways the data raises more questions that it can hope to answer, for example: Do these academics approach face to face teaching in the same way and with the same intentions? Or does the learning technology medium shape the approach adopted in some way? There are also questions as to the affordances offered in terms of teaching approaches and intentions by different technologies. Questions unfortunately beyond the scope of this study.

However the data does potentially provide some initial insights into how the academics' approaches to the use of technology relate to their approaches to the teaching of graduate attributes in the courses that provided the context for this study. The categorisation of how the individuals approached the use of technology for teaching can be contrasted with the results of the phenomenographic analysis of these individuals' approaches to teaching graduate attributes. This will allow us to consider if the approach to the use of technology for teaching is consistent with the approach to the teaching of graduate attributes. The implications of the variation in approaches to the use of learning technologies for the findings of the present study will be returned to in a subsequent chapter by way of a discussion of the possible role of learning technologies in the development of graduate attributes. But first let us return to our consideration of some of the issues raised by the context of these accounts of practice.

By choosing to situate the research in the context of technology-mediated teaching a context of contemporary relevance has been selected. While this might prove helpful in applying the findings of the study to contemporary and future teaching and learning contexts which are likely to increasingly involve the use of learning technologies, it also poses a possible limitation in the generalisation of the findings. The conceptions identified are based on accounts of academics' experience of teaching and curricula, which incorporate, to varying extents, the use of learning technologies. In all cases the units of study, upon which the accounts of experience were based, were examples of 'mixed' modality teaching. That is, they involved both 'face to face' and learning technology mediated teaching strategies. However, despite involving both 'face to face' teaching and technology mediated teaching, the particular examples of curriculum and teaching strategies presented by the academics when offering their understandings of graduate attributes in the interviews were drawn almost exclusively from the non learning technology elements of their courses and teaching.

So while it is possible that some, or even all of the conceptions identified are particular to teaching contexts which include an element of technology based teaching, it seems more likely in light of the transcripts, that the understandings would relate to face to face teaching in contemporary curricula. And as such are likely to hold true for face to face teaching in courses which do not include a learning technology component. However, while both reasonable and likely, this assumption is one that deserves testing through further research using different purposeful sampling strategies to investigate

the conceptions of teachers teaching in more traditional classroom settings as well as in exclusively learning technology based contexts.

Predictions of the increasingly central role of technology based teaching in contemporary higher education are widespread and provide a sound rationale for explicitly basing the present study in contexts which reflect an engagement with such learning technologies. However, it is pertinent to note that the continued role of classroom teaching in contemporary university curricula is also underlined by the nature of the descriptions of contemporary curricula offered in the interviews. In each of the fifteen interviews the contemporary curriculum described was characterised as mainly face to face with some accompanying use of teaching and learning technologies.

One of the things that makes this course contemporary is that it draws on technology in a way that I think reflects the role of such technology in contemporary society. The internet hasn't replaced face to face interactions for most students in other aspects of their life, so why should it be any different for university?The course is mostly face to face - the online component is really quite small it's important but not the main thrust of my teaching.

In two of the interviews the actual use of learning technologies in the unit described was minimal:

Well apart from the web pages that have the unit outline and reading lists the actual teaching is all face to face. It's a contemporary course because of the content.

Because many of my students work as much as I do I find that a lot of my consultation and office time is by email now.

None of the academics interviewed selected units of study that were fully online. This was the case even for two individuals who noted they were also teaching other fully 'on-line' units.

In explaining why she had selected the mixed modality unit as an example of a contemporary curriculum one of the academics noted:

I think this unit is a better reflection of where we are moving to in how we use technology as only one strategy in our teaching and learning. I teach another graduate course that is fully web based, but now that the initial love affair with the technology has worn off I've started to think that that the students aren't really getting a particularly good deal. I know for them its more pragmatic - because its flexible and they can do it in their own time from wherever they want - but it's a bit like the old distance education course I taught in the UK. Everybody who took the course loved it. For two reasons, it was popular mainly because the people that took it wanted a degree and didn't have any other options apart from distance education if they were going to get one. They were people who couldn't be, or maybe didn't want to be, part of the physical university. So they were really motivated to get the qualification and I think they were grateful for the opportunity distance ed provided - and adjusted their expectations accordingly. The other reason is that it made the teaching and learning much more cut and dried. It was preplanned and the students could see exactly where it was going and what they had to do. I know that the new discussion tools and interactive aspects of the web mean you can make courses much more of an exploration and make the students take a different role - but somehow it seems to be a poor substitute for the real thing. I think that if people can be physically present then the participation and reflexivity of teaching and learning is more natural and richer - and it is so much easier to achieve the sort of three dimensional exchanges that you have to work so hard to get happening on line.

The curriculum contexts drawn upon by the academics in this study ranged from peripheral uses of technology to contexts where technology had been used to replace face to face strategies related to what might be perceived as more 'core' aspects of teaching and learning in the form of online 'lectures' or lecture materials, computer-based instruction and learning activities, and online discussion or tutorials. From the pragmatic viewpoint of both students' and teachers' increasing use of email to communicate, (both with their fellows and with each other), and in light of the pervasive role technology plays as a portal to information and resources, (either in terms of the internet or in the form of electronic library catalogues and publications); it could be argued that very few contemporary university teaching and learning experiences are completely technology free. However, such uses of technology are possibly perceived

by many academics to be peripheral to their curriculum in terms of their 'teaching' or students' 'learning'.

While the exact role of learning technologies in the university of the future is still uncertain, it does seem certain that communication and information technologies will play some part in the learning experiences of future university students. Certainly such technologies are already part of what might be thought of as the 'peripheral' university experiences of staff and students. What remains to be seen is the extent to which such technologies will play a part in more 'core' teaching and learning experiences.

Graduate attributes were defined by the HEC (1992) as representing the 'core achievements of higher education'. The present study is focussed on understanding what it is academics actually mean when they talk about 'graduate attributes', and on how academics approach the development of such attributes in contemporary curricula. If the curricula of the future are to be radically different – maybe even based entirely in learning technologies - it seems reasonable to ask if this will influence what the 'core outcomes' of higher education will be. The present study is based in the experiences of individuals who have engaged in both face to face and learning technology mediated teaching and curriculum development. As such, the understandings of graduate attributes it identifies might offer some preliminary insights into how these different teaching and curriculum strategies might contribute to shaping such core outcomes of university education - if indeed this is what graduate attributes are.

Contemplating using the understandings of graduate attributes identified in the preceding chapter as way of approaching questions such as - what will teaching be like in the virtual university or what might the graduates of such a virtual education be like - is beyond the scope of this study. However, as the accounts of curriculum and teaching in which this study is based did incorporate varying aspects of learning technologies we might be reasonably confident that these understandings will hold true in the context of mixed mode teaching and learning experiences (teaching and learning that draws upon learning technologies as well as face to face teaching). Such mixed modes are already a feature of contemporary teaching at universities in the form of electronic communication between teachers and students, and between teachers and teachers and students and students; computer and internet based teaching and learning resources and activities and the pervasive role of technology as an information literacy tool in academic study.

We will return to the question of the role of information technology in the development of graduate attributes in Chapter 6 when we compare how academics' understandings of the way students develop graduate attributes relate to their understandings of the way information technology is used in their teaching. However before we turn to an examination of the way the different understandings of graduate attributes were constituted in the individual transcripts let us consider the other key aspect of contextual variation represented in the individuals interviewed in the study.

Disciplinary variation

The focus of this phenomenographic study was to identify the variation in understandings of the phenomenon of graduate attributes. In seeking to understand the nature of any observed variation it was considered important to be able to have an insight into the question of whether such variation reflected discipline boundaries and different forms of knowledge. By ensuring a range of disciplines was represented in the collective descriptions, the study primarily sought to maximise the potential to observe any variation in academics' understandings of generic graduate attributes. However, on another level it was also hoped that by gathering data from a range of disciplinary contexts the research might approach the question raised in much of the literature as to the possible discipline specific nature of graduate attributes.

Phenomenography recognises the richness and uniqueness of individual experience and actively seeks to maximise the possible variation in the selection of subjects to be interviewed. As a method it seeks to avoid the selection of a homogenous sample instead seeking out potential variation within the limits of any parameters imposed by the context of intended application. In the present study the intended context for initial use of the findings was seen to be contemporary teaching and curriculum development in Australian universities. As such the sample sought to draw upon the accounts of contemporary teaching in an Australian university. In seeking to maximise the potential variation the sample was drawn from a range of disciplinary contexts within the university. In addition to maximising the potential variation in understandings, the selection of academics to be interviewed was such that it would allow the findings to provide some insight into the possible discipline specific nature of graduate attributes. As such, the sample was drawn from both within and across disciplinary boundaries

and with the intention of permitting preliminary comparisons and contrasting of understandings within cognate discipline groups.

The in depth nature of the phenomenographic interview and data analysis process means only a limited sample size was feasible within the scope of the present study. However within this limited sample size, the intent was to gather data in a way that while addressing the primary purpose of identifying and describing any variation in understandings of graduate attributes, would also suggest avenues for future exploration of the nature of any observed patterns of variation. Subsequent work might address such patterns of variation through purposeful sampling to explore and validate any apparent influence of factors such as discipline differences, knowledge type differences, teacher experience or background, or institutional context. These issues will be returned to in the discussion of the findings and the identification of further pathways for inquiry arising from this study.

The fifteen individuals interviewed in the study clearly do not represent the full range of possible disciplines however they do represent a diverse spread of fields of study and a range of professional, basic and applied sciences, humanities and liberal arts backgrounds. In considering the disciplinary backgrounds of potential interviewees the focus was on maximising the possible variation in understandings of the phenomenon rather than on sampling according to any particular framework or classification of disciplinary knowledge types.

With the dual purpose of maximising variation and permitting comparisons across and within groups of cognate disciplines the following sample was selected:

Thirteen of the fifteen interviews were with academics from different disciplinary backgrounds. The other two individuals came from the same discipline. While the fourteen disciplines represented in the interviews were deliberately diverse in order to maximise the potential to observe variation in understandings of the phenomenon of graduate attributes, some disciplines are more alike and some less. Clearly the most alike are the backgrounds of the two individuals from the same discipline, however the discipline backgrounds of some other individuals are also broadly similar and allow comparisons between individuals within these groups and between the groups.

Six of the individuals taught in disciplines that might be broadly classified as professional. The courses these academics taught in aimed to graduate students with a

particular professional qualification: as Nurses, Vets, Physiotherapists, Architects and Engineers. While these degrees had a strong professional focus not all graduates work in their vocational area and entry to other related employment contexts is also possible. Two academics in the professional disciplines taught in the same discipline: Engineering. Of these professional degrees, three disciplines are more alike in that they share a medical or health science focus: Nursing, Physiotherapy and Veterinary Science. These disciplines were considered as a sub group of the professional disciplines. Two of the academics represented the basic sciences; Chemistry and Biology and three taught in the humanities: History, English and Asian Studies. The remaining three academics taught in the social sciences; Sociology, Psychology and Economics (Figure 5.3).

By selecting two subjects from the same discipline and by being able to compare and contrast broadly similar cognate disciplinary groups, while still ensuring a diverse range of disciplines are represented, it was hoped to identify any possible variation and also facilitate a preliminary consideration of any disciplinary basis to such variation.

In the following chapter we will consider how the categories of description are constituted in the individual transcripts. In doing so we will consider if the pattern of representations of different conceptions of graduate attributes reflects the broad disciplinary pattern of these groupings.

Figure 5.3: Disciplinary variation in interview sample

| Academic | Discipline | Cognate group |
|-----------------|-------------------|------------------------|
| 12 | Biology | Basic Science |
| 1 | Chemistry | Basic Science |
| 15 | Asian Studies | Humanities |
| 13 | English | Humanities |
| 7 | History | Humanities |
| 3 | Architecture | Professional |
| 4 | Engineering | Professional |
| 14 | Engineering | Professional |
| 8 | Law | Professional |
| 10 | Nursing | Professional (medical) |
| 5 | Physiotherapy | Professional (medical) |
| 2 | Vet | Professional (medical) |
| 6 | Economics | Social science |
| 11 | Psychology | Social Science |
| 9 | Sociology | Social Science |

Reflection: A frame of reference for returning to the transcripts

The preceding consideration of two aspects of context provides an important frame of reference for approaching the results in the following chapters. In the process of phenomenographic analysis the boundaries between individuals are initially dissolved and the transcripts pooled. The unique and personal nature of the individual interview is initially not the focus of attention in seeking to discern the important features in the variation in understandings of the phenomenon. However, the data is based in the context and experiences of the individuals who were interviewed. The unique qualities of these contexts are carried in the utterances that are read and analysed in the process of identifying the categories of description. As such, contextual features are recognised as important aspect of the data. The boundaries of context are re-established in the subsequent chapter when we consider how the various categories of description are constituted as individual conceptions in each of the interview transcripts.

In re-reading the interview transcripts with the intention of next categorising the individual transcripts in terms of the academics' expressed conceptions of graduate attributes, it was helpful to do so, not from the perspective of disembodied utterances, but rather with the contexts of these individuals in mind. Hence this chapter is included as a bridge between the categories of description presented in chapter 4 and the conceptions considered in chapter 6.

In seeking to approach the reconstituted transcripts with an awareness of the contexts from which the data was drawn, two aspects of the individuals' experience and background have been foregrounded. Firstly the commonality of experience of the interviewees as contemporary university teachers as reflected in part by their engagement with communication and information technologies in their teaching or curriculum development and secondly the variation in the disciplinary background of the individuals.

The categories of description of graduate attributes presented in the previous chapter were based in the context of the course each academic selected as best representing contemporary teaching practice. These various courses incorporated a variety of curriculum designs and approaches but all included the use of technology in teaching. However the accounts of understandings of graduate attributes are based in the context of the course as a whole - not only in one particular element of the curriculum

or teaching of the selected course. As such, it should be remembered the accounts of graduate attributes were not based only in the information technology based teaching strategies or those parts of the curriculum that used such technologies.

While in many cases the role of information technology was as a peripheral component of the curriculum, and in some cases minimal, it did provide an additional insight into contemporary teaching practice. The approaches these teachers described to their use of such technologies are presented here in order that they may provide a possible contrast to the approaches these same individuals describe in their teaching of graduate attributes. In describing the approaches to using technology for teaching this study has borrowed from other phenomenographic research on Australian teachers' approaches to teaching. The categories identified by Prosser and Trigwell (1999) were adapted to suit the technology context and the fifteen individuals categorised in terms of their use of learning technologies. We will return to these teachers' approaches to the use of technology and examine how they relate to these same individuals' understandings of how students develop graduate attributes in the same course context. In doing so we will consider the possible role of learning technologies in developing graduate attributes.

The disciplinary contexts of the fifteen individuals are described in terms of the individual discipline backgrounds and broadly similar cognate disciplinary groupings. While the selection of the individuals was made with the primary intention of maximising the likelihood of observing and variation the sample also permits and initial consideration of the influence of disciplinary background on understandings of graduate attributes. The question of how 'generic' generic graduate attributes are is one that has been raised in the literature. It has been observed that:

The notion of generic capabilities has little meaning until it is elaborated in the context of a discipline. (Bowden et al 2000).

At a pragmatic level it certainly it seems reasonable to expect that the communication skills of a musician might be somewhat different to the communication skills of a lawyer. This study is not concerned with descriptions of individual skills in different disciplines, rather it is focussed on the nature of the underlying concept of such skills. However, in exploring whether there are differences in understandings of this concept we might well ask if such differences simply reflect the different disciplinary backgrounds and epistemological basis of these individuals. We will consider this

question in the next chapter by comparing the conceptions expressed by individuals in the same discipline and same cognate disciplines.

A phenomenographic sample of only fifteen individuals does not allow any firm predictions to be made as to the nature of any influence of disciplinary background on an individual's conception of graduate attributes. However the findings will identify if a conception simply reflects the disciplinary background of the individual. It is hoped that the comparison of conceptions across cognate discipline groups will also suggest directions for further research in relation to this issue.

The context from which any data is drawn creates its own set of limitations and affordances in the interpretation and potential application of any findings. It is hoped that the contexts of the fifteen individuals in this study will facilitate, rather more than they limit, the possible applications of the findings.

With these contexts in mind we will now return to the individual interview transcripts and consider the way the observed variation within the group (categories of description) is realised in individual academic's accounts of their understanding of generic graduate attributes in the particular context of the interviews.

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CONCEPTIONS

Overview

This chapter continues the reporting of the results of the analysis of the data gathered in the study. This section will consider the way the observed variation within the group (categories of description) is realised in individual academic's accounts of their understanding of generic graduate attributes. In chapter four the interview data from the fifteen academics was pooled and treated as a whole. The categories of description that emerged from the pooled data set represented the variation observed in the group. In such a phenomenographic analysis, the identity of the individual respondents is not considered and the authorship of the quotes used as data for the analysis is ignored. In the following section, the individual is the focus of analysis and we will turn our attention to a consideration of the conceptions held by the individuals interviewed.

For the purpose of this second level of analysis each transcript was reconstituted and read in its entirety. That is, rather than working with the relevant discrete utterances extracted from the pooled interview data as in the initial analysis, each interview transcript is considered individually. Each transcript was read and then classified using the categories of description previously presented. The outcome spaces presented in the previous chapter are hierarchical and an individual can express conceptions representing more than one category of description. Each interview was classified according to the highest level conception consistently expressed in the transcript.

In this chapter, the two sets of categories of description are first dealt with separately and then the interaction between the two outcome spaces is considered.

The first part of the chapter identifies the individual conceptions of what graduate attributes are and the individual conceptions of how these are developed as expressed in the context of the interview. In doing so we will consider the hierarchical nature of the conceptions as revealed in the individual transcripts in more detail. In particular the Structure of Observed Learning Outcomes (SOLO) taxonomy (Biggs & Collis 1982) will be used to illustrate one aspect of the hierarchical nature of the first outcome space. For the second outcome space, a model of teaching and learning will be used to depict the hierarchy of conceptions of the teaching and learning of graduate attributes in

terms of an increasingly complex and complete understanding of teaching and learning.

Having considered the individuals' conceptions of graduate attributes we will then overview the conceptions by exploring the issues of context highlighted in the previous chapter. We will examine the results for any indications of a possible disciplinary basis for the variation in understandings expressed by individuals. This will be done by comparing the conceptions expressed by individuals in the same discipline and in the broadly similar cognate discipline groups identified previously. We will also consider how each academic's expressed approach to teaching with technology in his/her course relates to the individuals' approach to the development of graduate attributes in the same course.

We will then return to exploring the 'what' and 'how' of the phenomenon further by considering the interactions between the expressed conceptions in the two outcome spaces. We will consider how the academics' understandings of what graduate attributes are, relate to their understandings of how graduate attributes are developed. The relationships between the expressed conceptions in the two outcome spaces will be examined to determine if these relationships are logical and internally consistent. The presence of such logical and internally consistent relationships provides further evidence of the rigor of the categories of description developed in the analysis.

The chapter concludes with a synthesis of the seven logical and internally consistent relationships identified between corresponding categories of description in the two outcome spaces. In doing so the interactions between individuals' understandings of generic attributes and his /her understandings of the teaching of such attributes are summarised in terms of three broad approaches which might prove helpful in the context of interpreting and applying the findings of the study in curriculum reform and development in Australian universities. This synthesis is achieved by considering the key features of the structural and referential dimensions of each outcome space.

This chapter is the final chapter in the three chapters discussing the results of the study. The following chapter will consider the implications of the findings for academic development in Australian universities and identify some future directions for research.

Expressed conceptions of what generic graduate attributes are

For the first outcome space, 'conceptions of what generic graduate attributes are' a reading of the transcripts typically revealed a dominant highest level conception for each individual with occasional statements that indicated the presence of elements of lower level conceptions in most instances. For each of the academics interviewed the conceptions represented in the transcripts across the four categories of description are summarised in figure 6.1. The figures in brackets indicate the elements of lower level conceptions expressed in the transcript.

| Transcript | Conception of WHAT generic graduate attributes are |
|-------------|--|
| Academic 1 | Complement 2 (1) |
| Academic 2 | Translation 3 (2, 1) |
| Academic 3 | Translation 3 (2) |
| Academic 4 | Precursor 1 |
| Academic 5 | Complement 2 |
| Academic 6 | Precursor 1 |
| Academic 7 | Enabling 4 (3,1) |
| Academic 8 | Translation 3 (1) |
| Academic 9 | Translation 3 (1) |
| Academic 10 | Complement 2 |
| Academic 11 | Translation 3 |
| Academic 12 | Translation 3 |
| Academic 13 | Complement 2 |
| Academic 14 | Enabling 4 (1) |
| Academic 15 | Complement 2 |

Figure 6.1: First outcome space; Conceptions expressed in each transcript

If each transcript is considered only in terms of the highest level of conception apparent, (figure 6.2) the spread of different conceptions expressed by the fifteen individuals in the context of the interview is as follows:

Figure 6.2: Number of academics expressing conceptions in each category in the first outcome space

| | Conceptions of WHAT generic graduate attributes are | | | |
|---------------------|--|------------------------|-------------------------|----------------------|
| | Level 1: Precursor | Level 2: Complement | Level 3: Translation | Level 4: Enabling |
| Number of academics | 2 | 5 | 6 | 2 |

It was apparent that different academics held different understandings of the concept of what graduate attributes are in the context of the discussion of their course and teaching.

Two academics expressed **Level 1: Precursor** conceptions of generic graduate attributes as basic prerequisite skills.

I think that it is cynical of the university to say that it teaches students such skills when we clearly don't. For many of these generic skills we expect students to already have them before they come to university - of course often they don't these days and those students that need to should be able to access extra help however I think it is unrealistic to expect academics to try to do that. (Level 1)

I find that a lot of my students are lacking in the generic skills - particularly communication skills and basic English, but that isn't something I am qualified to teach. I suggest that students see one of the people in the study skills unit or get a friend to help them with proof reading their essays. (Level 1)

Five academics expressed a **Level 2: Complement** conception of generic attributes as general abilities that round out university graduates' discipline learning outcomes.

I think these sorts of skills are important - you know teamwork, using IT, written communication skills and the like. I give my students the website address for the policy so they know about the skills they are supposed to develop. I spend time talking about team skills and I have another session on writing skills, but students focus on the course material - you know 'is this in

the exam?' and it is hard to get them to take developing these extra skills seriously - I've even had a student complain when she failed an assignment because of the way it was written. They aren't really part of the discipline, but they are still important - mostly for work but also more generally for life. I think they should be included for all students in the faculty but they aren't yet. (Level 2)

These are the sorts of general skills that any educated person should have, problem- solving, communication, self-management. (Level 2)

I have a session on using the computers in the language lab. These days students need to learn how to use computers and I think we have to be able to say our students are computer literate don't we. (Level 2)

In the case of one individual the transcripts of the interview also indicated the presence of aspects of level one conceptions.

Well, for example, I would expect any graduate of my course to be able to write a well-structured essay (Level 2). Unfortunately this is something that is increasingly rare in students coming onto the degree. These days we have so many students for whom English is a second language, they have the marks but don't have the language skills. Where it is a language issue there isn't much I can do apart from suggest the student makes use of the Learning Assistance Centre (Level 1). I also suggest those students get somebody to check their written assignments before they are submitted. However even the local students usually lack the essay writing skills I expect them to develop through the assignments. (Level 2)

Interestingly in one case an academic who expressed a conception of generic skills as general skills (level two) went on to identify what might commonly be labelled as particular generic skills (on the basis of the vocabulary used), as part of the discipline matter and therefore excluded these skills from her conception of generic graduate attributes.

Well my students don't generally need extra tuition in some skills - they are all excellent communicators and they are engaged in critical discussions as part of every class. They probably wouldn't enrol in this course if they weren't.

(Prompt: so in addition to the introductory modules they develop those generic attributes in your course?)

Yes they do develop those abilities in my course, but they aren't generic attributes they are part of the discipline - I wouldn't expect students in a science degree to be able to engage in literary analysis so they aren't generic. The basic reading, writing and thinking skills are generic - not these specialised abilities.

Six academics understood the concept of generic graduate attributes as **Level 3: Translation** abilities that were important in allowing students to make use of or apply knowledge. Again, some of these academics also expressed aspects of lower level conceptions during the interview.

There's different levels to generic skills I suppose. All students need things like effective communication skills and problem solving abilities, (Level 2) but in this course we focus we on developing those into the professional skills our graduates will need in the workplace. So we cover interviewing and case history taking, clinical reasoning and diagnosis. (Level 3)

Only two academics perceived generic attributes in terms of the **Level 4: Enabling** conception, as abilities that infuse and enable learning and knowledge.

I think they (generic graduate attributes) are really about ways of thinking like a scholar – an attitude of inquiry and the intellectual ability to critically evaluate their own knowledge and ideas as well as other people's. It's really what university learning is all about – no matter what the content is – those qualities underlie and inform it. So they really aren't something extra they are part of the knowledge I try to share with students.

The most common conceptions were level two and three conceptions with eleven of the fifteen individuals holding conceptions in these categories. Two of the remaining four academics demonstrated a level one conception in the interview with the other two transcripts indicating the individuals held level four conceptions. The observed variation did not appear to reflect disciplinary differences since academics in the same discipline and in broadly related disciplines were observed to hold qualitatively different

understandings of the phenomenon. We will return to a consideration of this issue of context later in the chapter after we have considered both outcome spaces.

The hierarchy of conceptions: A model of increasing complexity of outcomes

In presenting the categories of description in chapter four the hierarchical nature of the outcome space was described in terms of the increasing complexity of the categories of description and a simplified example was provided of how the higher level categories of description might also accommodate lower level understandings. The hierarchy of conceptions was apparent in reading the reconstituted individual transcripts, however in all instances a dominant conception was clearly discernable.

Each category of description represents a qualitatively different way of understanding the phenomenon. However the presence of conceptions representing different categories in the same transcript seems to suggest that an individual can hold multiple conceptions. The key to this is in the nature of the increasingly complex understandings of the phenomenon represented in the progressive categories of description. While each new level is distinct, it encompasses and builds upon the understandings represented in the preceding categories. Higher level conceptions can accommodate aspects of lower level conceptions but are not limited to the understandings represented in these lower level conceptions. To clarify the constitution of the hierarchy in an individual we will consider one aspect (the theme) of the hierarchy of categories of description explained in chapter 4 as an example of this.

If we recall the aspects of the structure of awareness which delineated the categories in the first outcome space (see chapter 4), we noted that one way in which the categories differed from each other was in terms of what was thematised in each conception. While the categories of description also differed in terms of the relationship between the graduate skills or abilities and disciplinary knowledge (the relationship between the theme and the rest of the structure of awareness) and how graduate attribute outcomes were understood to relate to other university learning outcomes (the referential aspect), the nature of what was thematised might provide some insight into the presence of a hierarchy of conceptions in the interviews.

What was present in the theme of each of the four categories of description in the first outcome space varied from;

Precursor: Rudimentary entry level skills in the precursor conception

Complement: Atomistic and undifferentiated personal and functional skills

Translation: Linked clusters of specialised skills and abilities

Enable: Interwoven network of higher level learning abilities and aptitudes

What is present in each 'theme' as we progress through the categories represents increasingly complex or advanced abilities.

The variety of levels of understanding through which higher education students are expected to progress or at which they are eventually expected to demonstrate mastery of their subject, has been captured in numerous models of learning. One model in which we find many similarities with this aspect of the hierarchy of outcomes is the Structure of Observed Learning Outcomes (SOLO) taxonomy. Biggs and Collis (1982) proposed this as a taxonomy of increasing complexity of learning outcomes. This taxonomy was based on studies of students' answers to examination questions. However the taxonomy is intended to be applicable to any discipline content and there are aspects of the classifications that are relevant to the nature of the theme of each of the four conceptions of graduate attributes. There are five levels of outcome identified in the SOLO taxonomy:

- Prestructural
- Unistructural
- Multistructural
- Relational
- Extended Abstract

The relationship between these levels and the thematic focus of each conception of graduate attributes is summarised in the following table (figure 6.3)

| | | |
|-------------------|---|---|
| SOLO level | | Conceptions of graduate attributes: Hierarchical dimension reflecting level of outcome |
| Prestructural | The task is not attacked appropriately ; the students hasn't understood the point or relevance | Precursor: |
| Unistructural | One or a few aspects of the task are picked up and used (understanding as nominal) | Rudimentary entry level skills |
| Multistructural | Several aspects of the task are learned but are treated separately (understanding as knowing about) | Complement: Atomistic and undifferentiated personal and functional skills |
| Relational | The components are integrated into a coherent whole, with each part contributing to the overall meaning (understanding as appreciating relationships) | Translation: Linked clusters of specialised skills and abilities |
| Extended Abstract | The integrated whole at the relational level is reconceptualised at a higher level of abstraction, which enables generalisation to a new topic or area, or is turned reflexively on oneself (understanding as far transfer and as involving metacognition) | Enable: Interwoven network of higher level learning abilities and aptitudes |

Figure 6.3: Correspondence between SOLO levels and conceptions of graduate attributes

The SOLO taxonomy represents a way of categorising increasingly complex or better understandings of learning outcomes as seen for example in students' answers to an assessment question. For example a higher level 'relational' learning outcome is better than a 'multistructural' outcome. While different (and better), the relational outcome subsumes the multistructural outcome by integrating the different aspects of the task. In doing so a relational level of understanding goes beyond the multistructural level (by incorporating the separate elements), but is not limited to that level of understanding. The lower level of understanding is subsumed within the higher level outcome.

If we consider just the theme, the hierarchy of conceptions of graduate attributes represents understandings of such attributes as increasingly more complex learning outcomes. In much the same way as the different levels of the SOLO taxonomy represent increasingly 'better' outcomes of learning the same thing, what is present in the theme of the categories of description of graduate attributes represent increasingly complex levels of achievement of the same thing. What is thematised as graduate abilities in the higher level conceptions builds and extends on what is present as these abilities in the theme of preceding lower level conceptions. For example, the development of a network of higher level abilities might presuppose capabilities in the discrete skills that make up this network and these in turn might be based upon basic competence in rudimentary skills.

This feature of the hierarchy of conceptions can be seen in the extract quoted earlier:

There are different levels to generic skills I suppose. All students need things like effective communication skills and problem solving abilities, (Level 2) but in this course we focus on developing those into the professional skills our graduates will need in the workplace. So we cover interviewing and case history taking, clinical reasoning and diagnosis. (Level 3)

Consider the following extract from the transcript of an individual predominantly expressing a Level four Enabling conception, which also incorporates level three, and level one conceptions:

Well when I talk about teamwork in the context of my course it is about them learning about themselves and how they relate to others and how others see the world, and how they relate to accounts of society. It's actually at the heart of developing an appreciation for what it is like to be in society. All learning is

ultimately about learning about oneself, in this case it's realising we are all interdependent - and that knowledge has a social context in history - that's what being human and being in society is - none of us can live or learn independently of that. (Level 4)

They have to develop some specific skills on the way to learning that - how to cooperate and how to initiate in the team, how to deal with other personalities, how to deal with hierarchies and control, how to communicate their perspectives and hear others' perspectives. (Level 3)

Well I suggest that the weaker students use their peers first - often I try to set up the collaborations so they can get extra support to develop the skills and confidence to participate. Sometimes it is about really basic skills like time management or academic writing and then I suggest that these skills are the problem and unless they can fix it themselves they should contact the study skills people. (Level 1)

This extract suggests that the high level conception of graduate attributes held by this individual presupposes the capabilities present in the theme of the lower level conceptions. As such this aspect of the categories of description has a cumulative dimension. Indeed it is hard to conceive of academic literacy without basic writing skills, or skills of critical debate and argument without basic communicative competence.

Of course this notion of increasing or cumulative ability level is not the only aspect of what is thematised, nor is the theme the only feature that differentiates the four structures of awareness in the first outcome space. Otherwise the four different conceptions identified would simply represent better standards of performance of the skill in question. Rather, the conceptions of graduate attributes differ in terms of the relationship between the graduate skills or abilities and disciplinary knowledge, the relationship between different attributes, as well as the specialised or generic nature of the attributes and how such graduate attribute outcomes are understood to relate to other university learning outcomes. In considering the theme alone we have focussed on only one aspect of the categories of description. However the clearly hierarchical nature of this notion of skill level is readily apparent in the hierarchy of conceptions seen in the individual transcripts and serves to illustrate how an individual expressing a higher level conception can also incorporate aspects of lower level conceptions.

Holding a lower level conception is somewhat more limiting in that conceptions at one level do not incorporate aspects of higher level conceptions. While a lower level conception does not encompass higher level conceptions it may provide the basis for the development of the sort of graduate outcomes described by these higher level conceptions. While only one aspect of the variation between categories, the notion of level of skills implicit in the conceptions might prove particularly useful in identifying levels or standards of skills at different stages in a degree program. The hierarchical nature of the outcome space might assist in identifying how the different courses that make up a program of study might progressively target increasing levels of ability in respect to graduate attributes. Given the expectation that students will progress through different degrees of mastery of skills and knowledge in their subject specific learning it could be argued that it is reasonable to assume that there is also a developmental continuum to the acquisition of such graduate attributes. The alternative position would assume that the attributes exist on an 'all or nothing' basis.

Questions relating to levels of learning outcome and the stages in the acquisition of generic attributes lead naturally to questions of how teaching supports such development. This exemplifies the way in which the outcome of learning (what is learnt) is intimately connected to the process of learning (how it is learnt). How then did the individual academics express their understanding of the process of development of graduate attributes in the interviews?

Expressed conceptions of 'how' generic graduate attributes are developed

The transcripts were then re-read focussing on the second aspect of the phenomenon; **how** graduate attributes are developed.

The academics interviewed did not all hold the same understanding of how graduate attributes are developed in the course of a university education. The six categories of description of how generic graduate attributes are developed, which were identified and described in Chapter 4 are:

1. **Remedial**
2. **Associated**
3. **Teaching Content**
4. **Teaching Process**
5. **Engagement**
6. **Participatory**

Many of the transcripts included a spread of conceptions across different categories in the second outcome space '*conceptions of how generic attributes are developed*'. This again reflects the hierarchical nature of the outcome space, where an individual holding a higher order conception can also express an understanding which encapsulates lower level conceptions of how graduate attributes are developed.

Where conceptions representing multiple categories were present in the transcript the transcript was again classified on the basis of the most complex conception consistently present. The additional categories present in the transcript are again noted in brackets for the individual concerned in the following table (figure 6.4).

Figure 6.4: Second outcome space: Conceptions expressed in each transcript

| Transcript | Conception of HOW generic attributes are developed |
|-------------------|---|
| Academic 1 | Associated 2,(1) |
| Academic 2 | Teaching Content 3,(2,1) |
| Academic 3 | Engagement 5,(4,3) |
| Academic 4 | Remedial 1 |
| Academic 5 | Associated 2,(1) |
| Academic 6 | Remedial 1 |
| Academic 7 | Engagement 5,(4) |
| Academic 8 | Teaching Process 4 |
| Academic 9 | Engagement 5,(4) |
| Academic 10 | Associated 2 (1) |
| Academic 11 | Teaching Process 4,(3) |
| Academic 12 | Teaching Content 3 |
| Academic 13 | Associated 2 |
| Academic 14 | Participatory 6,(5,4) |
| Academic 15 | Associated 2 |

In the context of the interviews the fifteen individuals expressed conceptions of how graduate attributes are developed ranging across the six categories of description (figure 6.5). However, there was only one individual who expressed a level 6 *Enabling* conception and the most common conception expressed was of the development of these attributes in an *Associated* way.

Figure 6.5: Number of academics expressing conceptions in each category in the second outcome space

| Conception of HOW generic attributes are developed | | | | | |
|--|-----------------------------|---|---------------------------------------|---|--|
| Level 1: Remedial | Level 2: Associated | Level 3: Teaching Content | Level 4: Teaching Process | Level 5: Engagement | Level 6: Participatory |
| Not part of usual curriculum | Taught as a discrete subset | Taught in context of discipline content | Taught by choice of teaching strategy | Learnt through student engagement with course | Learnt through student participation in university |
| 2 | 5 | 2 | 2 | 3 | 1 |

Some academics interviewed clearly expressed conceptions that were limited to the lower level categories of description and the transcripts only contained references to conceptions at levels 1 and 2.

Well I find that first year students are usually unaware of what is expected in a piece of university level writing. Before the first assignment is due I spend some time with the class going through what I expect in an essay. I show them some examples of good and not so good writing to explain the essay marking guide I use with each assignment. Even though it takes a lot of time I think it is important to give the students feedback on their essay writing skills – how else are they going to improve? (Level 2: Associated) Of course there are some students where the problem isn't that they lack essay writing skills it is an underlying language problem. I certainly don't think I can be expected to teach English as well as History. All I can do for those students is explain that they need to seek help with their English if they expect to continue in the course. (Level 1: Remedial)

Other academics expressed qualitatively different understandings of how graduate attributes were developed.

I think that the whole intellectual and social climate of university life contributes to students developing such attributes. I really try to encourage

students to feel part of the intellectual community of the department and we try to get them involved in our research and community work.

Well I guess students are developing these sorts of things all the time – just in coping with university life as well as through the learning in this course and partially it's also about how students get involved with the other aspects of university life – like the clubs and societies. (Level 6: Participatory)

Those transcripts that included higher level conceptions usually also included a spread of lower level conceptions. The higher level conceptions are more complex ways of understanding the phenomenon. The additional complexity is the result of the inclusion of additional elements in the structure of awareness of these conceptions and the perception of different relationships between the elements present. It is therefore possible for individuals holding higher level conceptions to also accommodate less complex understandings, as the elements and relationships between elements in these less complex understandings are incorporated in the more complex structure. Academics holding more complex conceptions of the development of graduate attributes can therefore simultaneously appreciate and apply less complex conceptions if and when this is perceived to be appropriate.

The difference is that these individuals' understandings of the development of graduate attributes are not limited to the lower level conceptions. Because the relationship between the categories of description is one of a hierarchy of increasingly complex understandings the reverse is not true. Individuals holding a lower level conception do not also perceive the more complex structure of awareness of higher level conceptions. Because the additional elements, or because the different relationships between elements of the more complex structure of awareness are not perceived and the intertwined different meaning understood, these individuals do not express understandings of the development of graduate attributes that reflect these more complex conceptions. The process by which an individual might come to perceive these more complex structures of awareness is clearly an important consideration in terms of increasing the repertoire of approaches to the development of graduate attributes and is one that will be returned to in a later chapter. For now, let us consider the hierarchical nature of this outcome space further in terms of how the transcripts of the individual interviews reflected the nested, hierarchy of increasingly complex understandings of the development of graduate attributes.

As noted earlier, the transcripts that incorporated the higher level conceptions also included statements reflecting lower level conceptions. The higher level conceptions added to the lower level conceptions rather than replacing them.

Consider the following two excerpts from one of the interview transcripts that suggest that individuals can hold more than a single level conception. The first excerpt expresses a Level 3: Teaching Content conception and the second expresses features of a Level 4: Teaching Process conception.

For example - I teach two classes which incorporate generic skills – one on report writing and professional communication and one on ethics and discrimination for health care workers. These cover an introduction to a couple of models of communication and some case studies showing how important communication is and the second one covers professional ethics and the anti-discrimination legislation. (Level 3: Teaching Content)

Well I use small group work in lots of my classes and one of the assignments is a group project where each group presents as a seminar to the rest of the class. There are marks for verbal presentation, handouts and use of overheads. They also hand in a written report so their writing skills are assessed there too. And each student anonymously assesses one other persons contribution to the project team, so group work skills. (Level 4: Teaching Process)

The presence of lower level conceptions was a common feature of many of the transcripts expressing higher level conceptions of the development of graduate attributes.

Consider the following four excerpts from the interview transcripts of an academic holding a learner-focussed – Level 5: Engagement conception.

Well really it's a function of the way students decide to learn. You can't really tell somebody how to think critically can you? You can make your own critical processes explicit, model them I suppose, and encourage students to ask questions of things they read and things they hear in class, rather than just accept things as facts. I know that in the process of learning this way they'll develop these critical thinking skills – and of course I reward the effort - but

they have to do the learning – you can't force them to learn in this way, they have to choose to.

I think my role is to encourage students to approach the course in a way that means they learn these sorts of generic skills in the process. It's the things we try to get them to do as learners in class and in their studies –but its also about convincing them that it's worthwhile and important to learn in that way because it's often easier not to. I think in many cases that despite all our efforts students just take the easy route and miss out on this sort of learning.

For example I encourage students to critically question things I say in class and to ask questions about the material we discuss but most of them are still content to passively sit there and take notes. The ones that take on board that the course is really about developing these sorts of critical faculties and do choose to engage in the course and take a few risks are the ones that develop the skills. The others just don't think those things are important and rely on getting by on the content, which is what they think the degree is all about.

I explain to the students that the only way to develop skills like communication and team work is through actually practising these. They have a group project based on a case. They can choose to just split up the work and do a cut and paste before they hand in the assignment - or they can take what is often the harder route and really spend some time and effort in developing a working a team and learn some really valuable skills in the process. Which is what I encourage them to do, but while I can provide them with opportunities, it is up to them how they use the opportunities.

In this transcript, the mechanism for development of graduate attributes is perceived in terms of the way students choose to engage with the learning opportunities of the course. This transcript also demonstrates how a higher level conception (Level 5: Engagement) can incorporate and subsume a lower level conception, in this case a Level 4: Teaching Process conception. The selection of appropriate teaching strategies; modelling critical questioning, encouraging students to ask questions of information presented and the use of project work based on a case - is clearly seen as important in the development of graduate attributes, however it is more than this. The teaching strategy alone is insufficient. This individual perceived that it was the way

students responded – or not – to the strategy that was the mechanism for the development of the attributes – not the strategy itself. In this way the level five, learner-focussed conception incorporates elements of the lower level teacher-focussed conceptions (level 4) and extends upon the understandings of the role of teaching process in the development of graduate attributes by incorporating the added complexity of the students' responses to such teaching.

A similar incorporation of lower level conceptions was also apparent in the transcript of another academic who also held a learner focused – Level 5: Engagement conception of the development of graduate attributes.

The syllabus for my course includes a focus on developing the professional attributes as well as the usual theory components – and I have lecture slots set aside for these topics. But even though it is explicitly part of the curriculum I think it is ultimately up to the student. It doesn't matter if I say these are important aspects of their learning in the degree, unless students think they are too then they don't spend time and effort developing these skills. The attendance at the lectures dealing with generic skills topics is often pretty poor.

Some of the students get involved and we have some great discussions about social responsibility and professional ethics in the cases I use. But other students just tune out once we have covered the theory – they either don't think it's important or they think they have it all already.

Once again this transcript reveals a focus on the learner which sets it apart from the teacher-focussed lower level conceptions. However it does include elements of these lower level conceptions. The transcript incorporates an understanding that such attributes are taught as part of the content of the discipline curriculum (Level 3) and that the use of discussion and student questions as a teaching strategy is also relevant in the context of students' development of graduate attributes (Level 4).

The hierarchical nature of conceptions of the teaching and learning of graduate attributes appears more complex than that of the first outcome space. In considering the first outcome space we focused on the notion of increasing skill level inherent in the thematic variation to illustrate and overview the hierarchy of conceptions. In trying to make sense of how the nested hierarchy of conceptions of the second outcome space

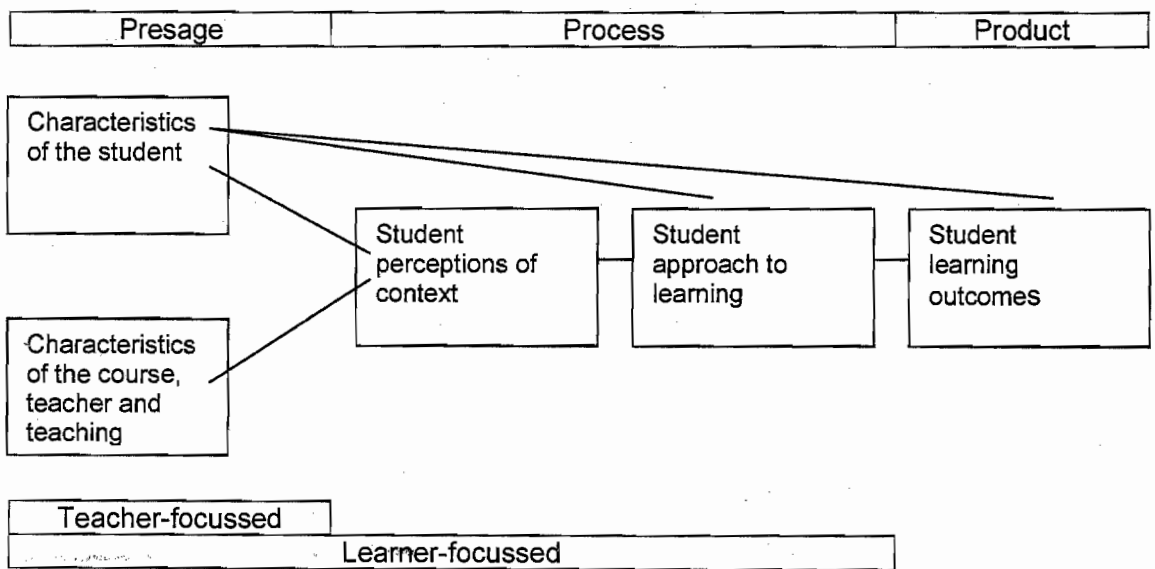
is represented in individual academics' interview transcripts, the use a model of learning proposed by Prosser and Trigwell (1999) may be helpful.

The hierarchy of conceptions: A model of increasing complexity of process

How does the hierarchy of conceptions of how graduate attributes are developed relate to a model of teaching and learning?

The Presage, Process, Product (3P) model of student learning (Prosser & Trigwell 1999) is a conceptual framework that reflects many of our current understandings of teaching and learning (figure 6.6). This is a 'meta-model' in that it does not focus on the detail of a teaching-learning event, instead it attempts to characterise the elements of the learning process or experience. Prosser and Trigwell's (1999) model is adapted from that of Biggs (1999) and also draws on the phenomenographic perspective of Marton and Saljo (1976).

Figure 6.6: The 3P model of learning



Adapted from Prosser & Trigwell (1999)

While the 3P model was not intended for the purpose, the elements of the model provide a useful framework and perspective from which to consider an increasingly complex understanding of student learning. In particular the shift from a teacher-focussed perspective to a student-focussed one.

In the original model the two boxes on the left of the diagram, represent 'inputs'. The 'characteristics of the student', being the qualities and abilities, prior knowledge and attitudes which the student brings to the learning experience. The 'characteristics of the course' include elements such as the curriculum content, the teaching strategies and methods, the teacher's beliefs, values and knowledge. In a teacher centred model of student learning, these are the factors that are perceived to determine the quality and quantity of student learning outcomes, the 'output' box on the far right of the model. Attempts to improve the quality of student learning from this perspective have focussed on selection of better students and better preparation of incoming students (student characteristics) or improving teaching methods and course curriculum – if teachers teach in the right way students will learn better. In between these inputs and outputs is the process of 'learning'.

However, even a cursory glance at the educational literature seeking to demonstrate the benefits of particular teaching processes or curriculum innovations from such a teacher centred perspective will reveal that the findings of such research are often inconsistent and inconclusive. To many researchers it appeared that there were clearly other factors involved in determining the quality of student learning 'outputs'. Much of the phenomenographic research over the past 20 years has attempted, with considerable success, to explore and unpack this process of learning. This research has led to the inclusion of the additional 'learner-focussed' elements in the 3P model.

Marton & Saljo's (1976) work and subsequent research on student learning processes, led to the understanding that students adopt different approaches to different learning tasks and that the students' learning approach modified the system "inputs" and changed the nature of the "outputs". Flowing from the research on students' approaches to learning was the realisation that students' approaches to learning were mediated by students' perceptions of the teaching/learning experience. Students were recognised as autonomous individuals who made personal choices about how they tackled a learning task, based upon their experience of the situation or context. In effect this understanding empowered students with the ability to choose the most efficient learning strategy or approach based on their reading of the requirements and

demands of the context. It wasn't only what teachers said and did that was important, it was about how students heard or interpreted what was said or done, and how they chose to respond to the experience.

It is now widely accepted by the educational research community that students adopt different approaches to learning in different contexts and that different approaches to learning result in qualitatively different learning outcomes (Ramsden 1992). For example, students can adopt a deep approach to learning and approach a learning experience with the intention of understanding the subject, or, they can adopt a surface approach in their learning and aim to simply remember the information presented. The research indicates that these approaches are not fixed, rather that particular approaches are adopted by students based on their perceptions of the demands and requirements of the learning context and their perception as to which approach will best suit their individual needs and situation.

This additional consideration of the role of the learner in the teaching and learning process, in particular the recognition that the learner's perceptions of the course characteristics influence the approach to learning and hence the quality of the outcomes, is the foundation for student-centred approaches to teaching that are now popular. Rather than focussing only on the teaching strategies, course content, or the prior knowledge that a student brings to the classroom, teachers are increasingly considering how students respond to their courses and teaching and are now aiming to provide an educational experience which facilitates for instance, the adoption of a deep approach to learning.

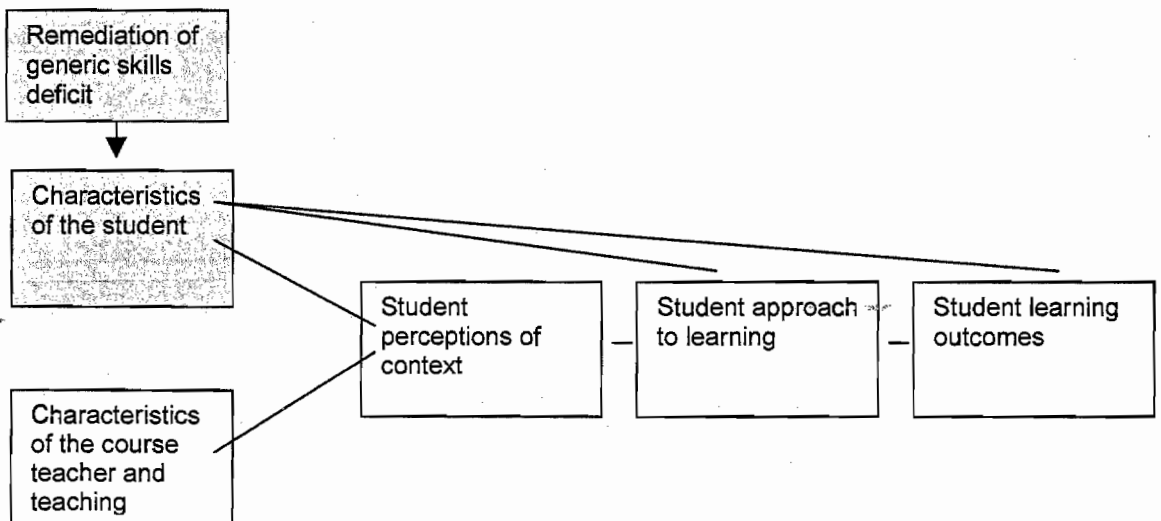
If the model is an accurate representation of the teaching and learning process, then all elements of the 3P model are always present. However, they are clearly not always perceived by researchers or teachers. From a teacher centred perspective, the learning process components of the model are ignored. Presumably they still occur however a teacher (or researcher) with a teacher centred perspective on teaching and learning is unaware of them or they are simply not considered. This perception of increasing elements and more complex relationships between elements is also a feature of the hierarchy of conceptions of the development of graduate attributes and provides a complementary perspective from which these conceptions may be viewed.

Let us now examine the hierarchy of increasingly complex conceptions of the development of graduate attributes identified in the individuals interviewed in the

present study from this perspective. The presence of multiple conceptions in different categories of description in the individual transcripts can, in part, be understood in terms of the awareness of different elements, and different aspects of elements, of the 3P model. The use of the 3P model provides a simplified framework from which to consider the various combinations of conceptions noted in the individual transcripts. In the following discussion, the incorporation of additional elements of the 3P model is presented as another way of understand the hierarchy of increasingly complex conceptions held by different individuals.

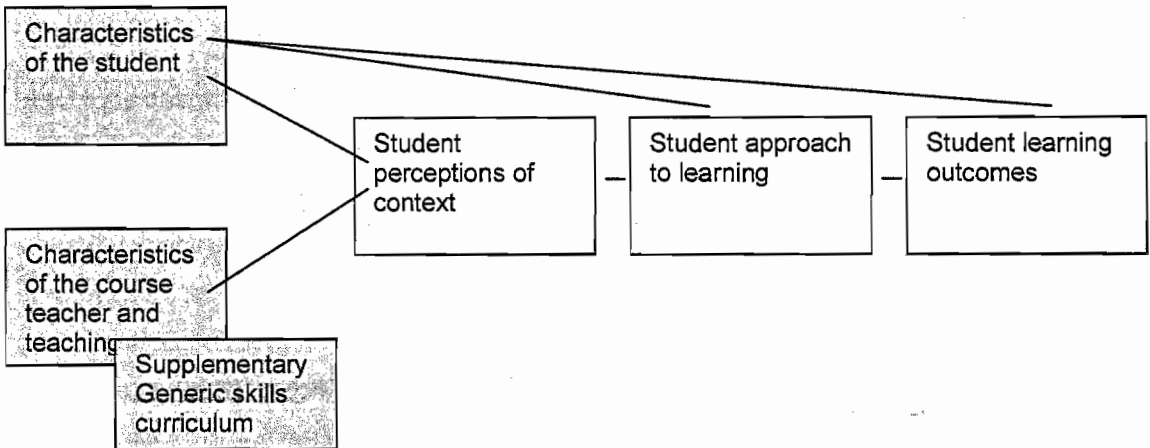
Level 1 Conceptions: First let us consider the Level 1: Remedial category of description. Individuals holding conceptions in this category characterised the development of graduate attributes as something that was not part of usual university teaching. For these individuals, the only context in which the development of graduate attributes was perceived to be relevant was in the special case of weaker students who were poorly equipped to learn at university and hence needed to be taught these skills in order to learn. In this conception, such remedial teaching was undertaken by expert generic skills, not the teacher himself. From the perspective of the 3P Model, this conception only focuses on the teacher centred elements of the model, in particular on the first element – the student characteristics (figure 6.7). This conception of the development of graduate attributes is effectively focussed on improving the ‘input’ characteristics of incoming students, and not in the context of the teachers usual courses and teaching.

Figure 6.7: Elements of the 3P model perceived in Level 1 conceptions



Level 2 Conceptions: If we now consider the second level conception – where the development of graduate attributes is understood in terms of the teaching of such skills to all students as a discrete component of the course, an additional element of the 3P model is present, the course characteristics (figure 6.8).

Figure 6.8: Elements of the 3P model perceived in Level 2 conceptions



The development of graduate attributes is perceived in terms of the characteristics of the course elements of the 3P model, through the provision of a special generic skills curriculum, alongside the usual curriculum of the course. Once again this is a teacher centred perspective without any real consideration of the role of the learner. The explicit teaching of the attributes is what achieves the intended result of students learning these – the learning outcome. The relevance of student characteristics can still be perceived and where appropriate a level one conception can be applied in the development of graduate attributes. As an example of how both level one and level two conceptions might manifest in a single individual's account of the development of graduate attributes, let us return to an earlier example:

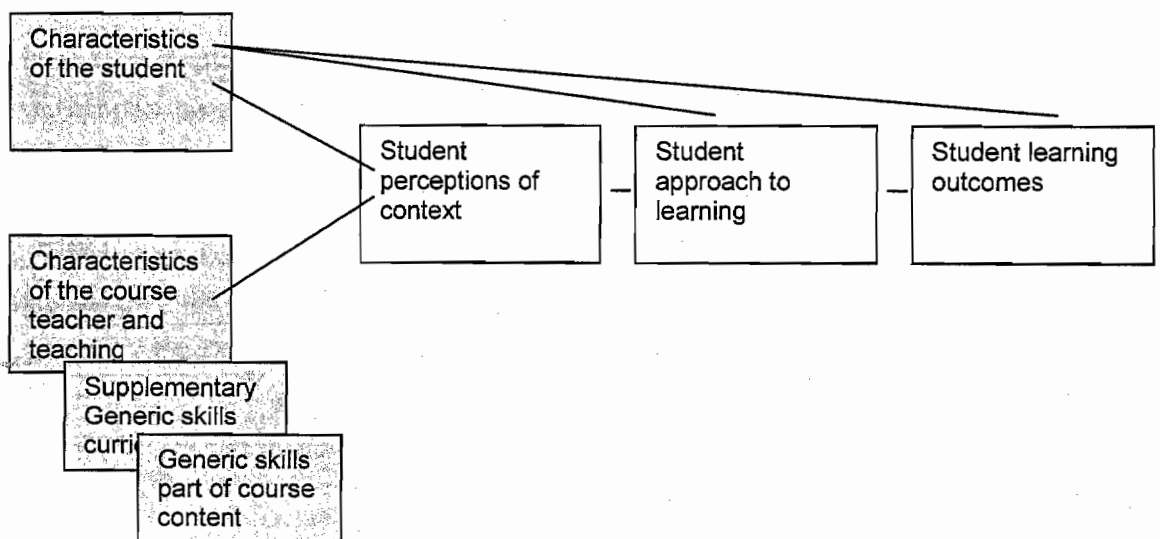
Well I find that first year students are usually unaware of what is expected in a piece of university level writing. Before the first assignment is due I spend some time with the class going through what I expect in an essay. I show them some examples of good and not so good writing to explain the essay marking guide I use with each assignment. Even though it takes a lot of time I think it is important to give the students feedback on their essay writing skills – how else are they going to improve? (Level 2) Of course there are some students where the problem isn't that they lack essay writing skills it is an underlying language problem. I certainly don't think I can be expected

to teach English as well as History. All I can do for those students is explain that they need to seek help with their English if they expect to continue in the course. (Level 1)

While this individual perceives the development of graduate attributes to be something achieved through the inclusion of such topics as a discrete component of the curriculum, this individual can also perceive that in some contexts the remedial teaching conception might be appropriate. Both the student characteristics and teaching context boxes on the 3P model are perceived while the students' perceptions and approaches remain ignored.

Level 3 Conceptions: At the third level (Level 3: Teaching Content) the development of graduate attributes is perceived to be accomplished through the integration of generic attributes topics with the other discipline topics in the curriculum. The same elements of the 3P model are present and the main focus remains on the characteristics of the course (figure 6.9), however these course characteristics are somewhat different. Rather than an additional generic skills module or session as a discrete component of the course characteristics, the generic skills content is included with the other course content as part of the usual course characteristics. Once again the focus is on the course characteristics and this is a teacher-focussed perspective, as the inclusion on the curriculum is what is perceived to achieve the desired learning outcome.

Figure 6.9: Elements of the 3P model perceived in Level 3 conceptions



Individuals holding a level 3 conception also expressed understandings in the interviews that were clearly level 1 and 2 conceptions. Once again the same elements of the 3P model can be considered to be present, with the level 3 conception representing an additional layer of complexity in the course characteristics component.

For instance consider the following the example based on the common graduate attribute of IT literacy.

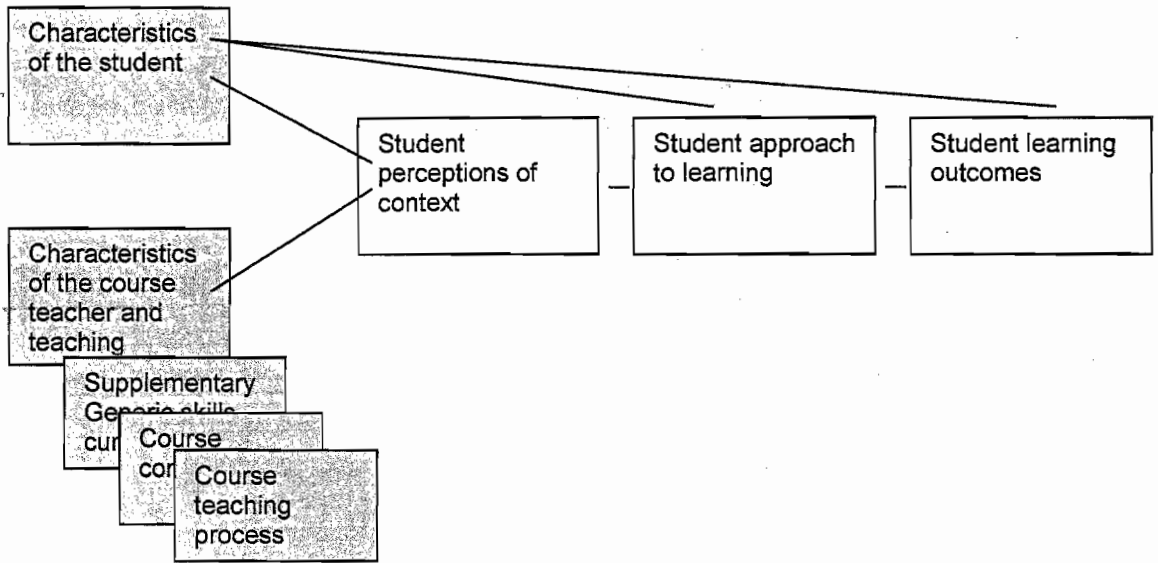
There are some general software packages I expect them to be proficient with – you know just the usual things like Word - but some of our mature age students have never even used a computer before. At the start of the course, if they are complete neophytes we recommend they think about doing a short course at TAFE or one of the library courses, or just find a friend who can show them the basics so most of them a competent before they start my unit in third year. (Level 1)

Before they start their first assignment I arrange for the class to have a session on using some referencing software called Endnote. This is optional but most of them come along. Usually I get one of my PhD students to teach this as they are always asking for teaching experience. (Level 2)

This is a research based unit so there are lots of sessions and assignments that involve statistics and the course includes teaching the students how to use specialist software like SPSS. (Level 3)

Level 4 Conceptions: A level four conception, (Level 4: Teaching Process), incorporates the same elements of the 3P model as the preceding level does, however the focus on course characteristics is made more complex again with the inclusion of an additional feature (figure 6.10). In level four conceptions the aspect of the course characteristics that is seen as relevant is the selection of teaching method and teaching process rather than the curriculum content as it was in the preceding category. While the teaching methods referred to in the interviews typically involved student activity there is no real consideration of the way the learner reacts to the teaching process as influencing the outcome. So once again this is a teacher centred perspective.

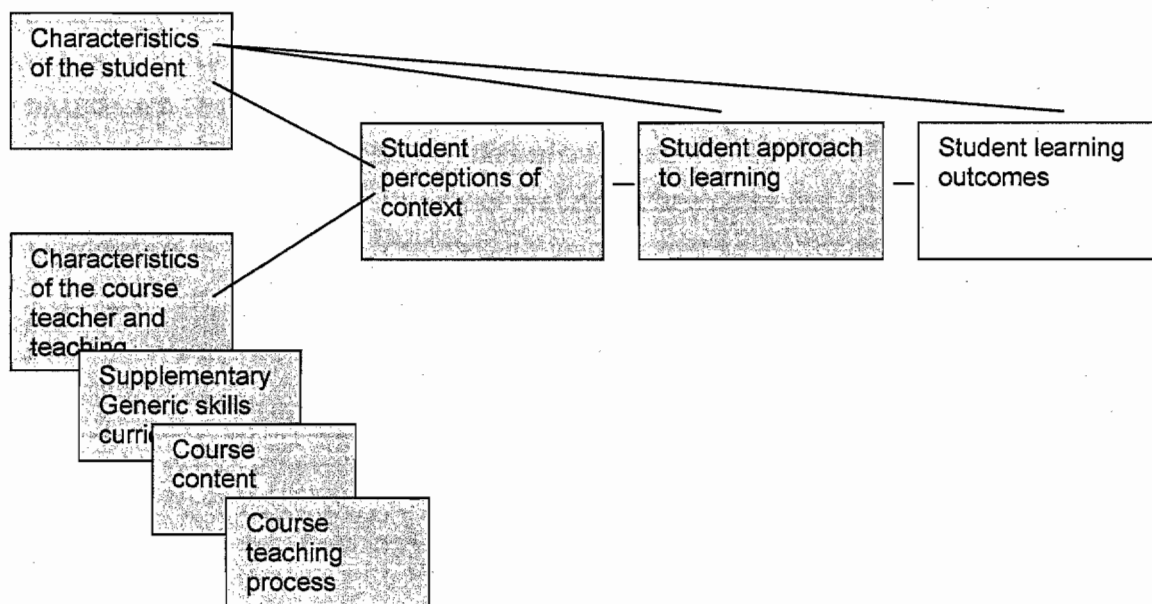
Figure 6.10: Elements of the 3P model perceived in Level 4 conceptions



Once again an individual's account of the development of graduate attributes can be viewed in terms of an appreciation of only the teacher-focussed elements of the 3P model. The focus on teaching process simply adds another possible layer of complexity to the course characteristics element of the model that is perceived as relevant.

Level 5 Conceptions: The next category of description, Level 5: Engagement, where the focus is on the learner's engagement with the course can be understood as reflecting the inclusion of the learner-centred elements of the 3P model (figure 6.11). Conceptions in this category were characterised by the perception that it was the way students responded to the course characteristics that influenced the development of graduate attributes. This can be understood in terms of the addition of the remaining components of the 3P model, the students' approaches to learning and the students' perceptions of the context which influence the choice of approach.

Figure 6.11: Elements of the 3P model perceived in Level 5 conceptions



This category includes the first learner-centred conceptions of the development of graduate attributes, however the transcripts of individuals which expressed conceptions at this level also typically included lower level conceptions, that is teacher centred conceptions. At first this might be thought to suggest that these individuals were both teacher centred and learner-centred in their approach to the development of graduate attributes. However if this category is considered from the perspective of the inclusion of additional elements to the 3P model then this is clearly not the case. A learner-centred perspective still includes the elements of the 3P model present in the earlier categories. The characteristics of the student and the characteristics of the course, i.e. the curriculum, the teacher and the teaching process are still all relevant. However on their own they are perceived to be insufficient to explain the teaching and learning of graduate attributes. Rather, a level 5 understanding of the development of graduate attributes also includes an awareness of the role of the learner's perceptions as influencing the achievement of the generic graduate attribute learning outcomes. In the 3P model the learner's role is recognised through the inclusion of the students' perceptions of the context and the learning approach subsequently adopted based on these perceptions. The students' perceptions of the context include amongst other things, their perception of the course's intended learning outcomes, the curriculum, the teaching and the teacher as well as their own situation. In a level five conception the role of the students' perceptions of the context and the approach to learning they adopt are recognised as crucial, however the other elements of the 3P model are still perceived as relevant. The 'presage' factors are what the students' perceptions of the

context are based on and therefore contribute to shaping the approaches adopted and the outcomes achieved. An individual expressing a level 5 conception will also be likely to express lower level conceptions in much the same way that the 'Process' components of the 3P model are dependent upon the preceding 'Presage' components. Thus the inclusion of the additional elements of the 3P model in a level 5 conception increases the complexity of the understanding of the process of development perceived in the preceding levels rather than making these earlier processes redundant. Let us consider how this increased complexity is realised in one individual's account of the development of graduate attributes in her course:

The following excerpts are from a transcript that included learner focused Level 5: Engagement conceptions as well as aspects of Level 2: Associated, Level 3: Teaching Content and Level 4: Teaching Process conceptions

The learning outcomes for my course include the ability to effectively communicate the results of investigations to clients and colleagues. –Something they need to do in all workplaces. (Level 3: Teaching Content)

I use actual case reports for each of the case studies I use in the lectures (Level 4: Teaching Process) and I spend a whole lecture on clinical report writing skills, so they get a lot of input on this skill. (Level 3 Teaching Content)

As an introduction I schedule a session from the Learning Centre staff in week two which covers the basics of academic writing, plagiarism and referencing. (Level 2: Associated)

Unfortunately most of the students don't bother to hand in much of a draft (report), and even fewer go to the meeting about report writing skills. It's a minority that can see the value of developing good scholarly writing skills in this sort of degree. I get some of the borderline students who complain that they have failed because I've marked them down on their assignments because of poor grammar - they just don't think it should be part of the course. Because I can only give a small percentage of the marks for writing and unless they are failing because of it, it isn't something most of our students see is relevant to the profession - so they don't put any effort into developing these skills. I suspect many of our students graduate without anything like university level writing skills let alone competent professional report writing skills.

Even though I put aside a session from the lectures on academic writing (level 2) and I give detailed feedback and assess writing in the assignments (level 4), that doesn't mean students learn much about writing. I suspect that they just don't perceive it's important- and it's what they think is important - either in the work place or in the course assessment which determines what they choose to learn – it's the same for generic skills as for anything. Of course there are other students who have a bigger picture about what they are learning and they are interested in developing their writing as well as learning about sociology.

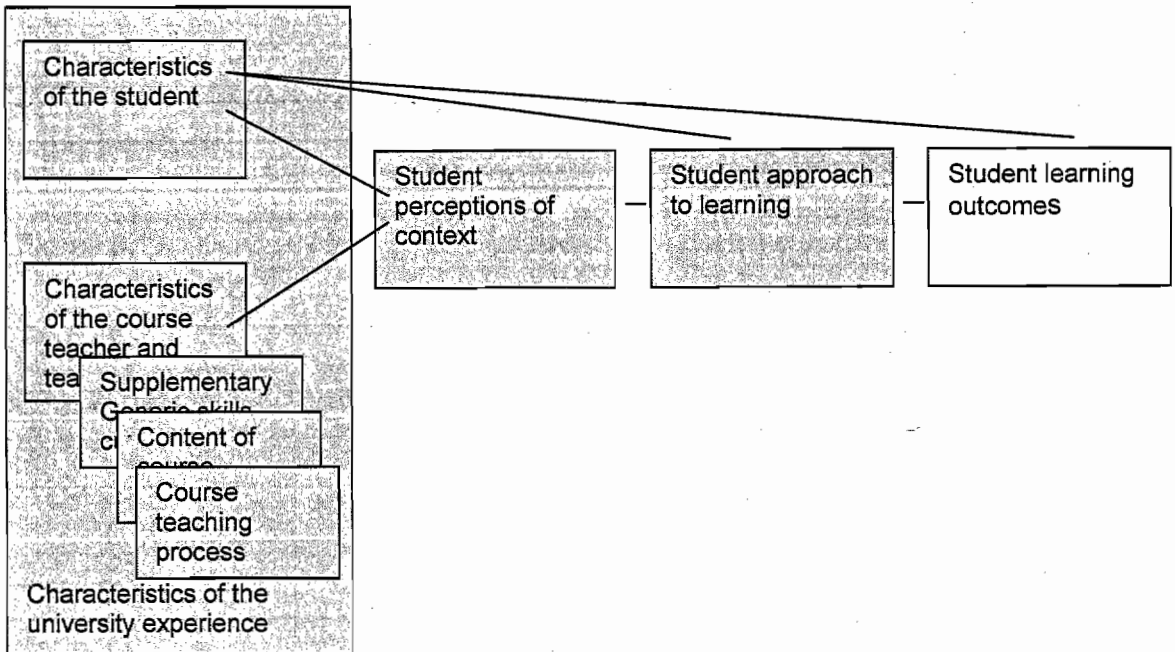
(Level 5: Engagement)

Level 6 Conceptions: There was one individual who expressed a still more complex understanding of the development of graduate attributes, a level 6 Enabling conception. This individual's understanding of the process of development included all elements of the preceding conceptions but added an additional component. The Level 6 conception represented an understanding of the development of graduate attributes as occurring not simply through the students' engagement with the experiences of the course but through their engagement and participation in the intellectual and social life of the university community. This clearly included their experiences of the course, and hence, in terms of the 3P model, course characteristics were relevant, but the learning experience was not limited to those of the course. This individual perceived that out of class interactions with academics and other students – in both social and more scholarly contexts, the participation in social activities and clubs, and the pursuit of extra curricular learning interests through the opportunities provided by being an active member the university community were also relevant in the development of graduate attributes.

Once again this conception included the learner focus of the preceding level five conceptions. It was not simply the learning opportunities provided by the existence of the university community that developed generic graduate attributes; rather it was a student's engagement and participation in this community. The nature of this participation was perceived to be a function of a student's characteristics, and the student's perceptions of the context – the opportunities, risks and benefits arising from the individual's participation. In much the same way as the different learning approaches were understood to influence the quality of the learning outcomes, the nature of the participation influences the quality of the attributes developed in the process.

This understanding can once again be framed in terms of the 3P model of learning (figure 6.12). In this understanding the course characteristics are only a small, formalised part of a larger informal course or curriculum of the university community or experience. This might be represented in the 3P schematic in the following way:

Figure 6.12: Elements of the 3P model perceived in Level 6 conceptions



In considering the different conceptions of the development of graduate attributes expressed by the academics in the individual interviews it is apparent that in the hierarchy of increasing complex conceptions, more complex conceptions build on and extend lower level conceptions. An individual holding a more complex conception also holds lower level conceptions, but is not limited to these. The nature of the higher level conceptions modifies lower level conceptions; for instance a level five or six conception which is student-centred modifies lower level teacher centred conceptions through the inclusion of additional elements and perspectives. The 3P model provides a useful framework from which to view the increasingly complex understandings expressed in conceptions at different levels. The hierarchy of conceptions can be seen as representing an increasingly complete awareness of the elements of the teaching and learning process described by this model. For individuals holding only lower level conceptions of the development of graduate attributes, it is not that the facets of learning and development incorporated in higher level conceptions do not exist, rather they are not perceived or present in the structure of awareness.

Overview of the variation in relation to discipline context and the use of technology for teaching

The following table (figure 6.13) summarises the conceptions identified in the transcript of each interview. Each individual is identified in terms of the highest level category of description consistently demonstrated in the transcript.

The fifteen individuals interviewed in the present study held disparate understandings of both the concept of graduate attributes and of how such attributes are developed by university students.

Figure 6.13: Overview of the conceptions across the outcome spaces

| Academic | Category of description What | Category of description How | Discipline | Cognate group | Approach to teaching with technology |
|-----------------|---|--|-------------------|------------------------|---|
| 1 | 2 | 2 | Chemistry | Basic Science | B |
| 2 | 3 | 3 | Vet | Professional (medical) | B |
| 3 | 3 | 5 | Architecture | Professional | B |
| 4 | 1 | 1 | Engineering | Professional | A |
| 5 | 2 | 2 | Physiotherapy | Professional (medical) | B |
| 6 | 1 | 1 | Economics | Social science | A |
| 7 | 4 | 5 | History | Humanities | A |
| 8 | 3 | 4 | Law | Professional | B |
| 9 | 3 | 5 | Sociology | Social Science | E |
| 10 | 2 | 2 | Nursing | Professional (medical) | A |
| 11 | 3 | 4 | Psychology | Social Science | C |
| 12 | 3 | 3 | Biology | Basic Science | B |
| 13 | 2 | 2 | English | Humanities | A |
| 14 | 4 | 6 | Engineering | Professional | D |
| 15 | 2 | 2 | Asian Studies | Humanities | A |

These understandings represent qualitatively different understandings of the phenomenon of graduate attributes. Why do these individuals have different understandings? From the phenomenographic perspective individuals come to experience the world in these qualitatively different ways, in part as a result of the previous experiences they bring to any situation.

One doesn't see with one's eyes, one sees with the whole fruit of one's previous experience. (Aron Klugg 1992 Nobel Laureate in Chemistry - quoted in Marton Booth 1997 p83)

Discipline Variation

One aspect of the previous experiences of the individuals who participated in this study, which might have a bearing on their experience of the phenomenon of graduate attributes, is the disciplinary background these individuals brought to the situation. While it was not the focus of the study to explore disciplinary variation; might the different discipline backgrounds of the individuals contribute to the variation observed between the individuals' understandings of graduate attributes? That is - might the qualitatively different understandings of graduate attributes simply reflect different underlying disciplinary knowledge bases or dominant ways of knowing, and if so - is this an area for further investigation?

| Academic | Discipline | Cognate group | Category of description of What | Category of description of How |
|----------|---------------|------------------------|---------------------------------|--------------------------------|
| 12 | Biology | Basic Science | 3 | 3 |
| 1 | Chemistry | Basic Science | 2 | 2 |
| 15 | Asian Studies | Humanities | 2 | 2 |
| 13 | English | Humanities | 2 | 2 |
| 7 | History | Humanities | 4 | 5 |
| 3 | Architecture | Professional | 3 | 5 |
| 4 | Engineering | Professional | 1 | 1 |
| 14 | Engineering | Professional | 4 | 6 |
| 8 | Law | Professional | 3 | 4 |
| 10 | Nursing | Professional (medical) | 2 | 2 |
| 5 | Physiotherapy | Professional (medical) | 2 | 2 |
| 2 | Vet | Professional (medical) | 3 | 3 |
| 6 | Economics | Social science | 1 | 1 |
| 11 | Psychology | Social Science | 3 | 4 |
| 9 | Sociology | Social Science | 3 | 5 |

Figure 6.14: Disciplinary variation in conceptions

Clearly discipline differences alone cannot explain the variations in understandings (Figure 6.14). Interestingly the two academics who shared the same discipline background expressed qualitatively different conceptions of both what graduate attributes are, and how students develop such attributes (figure 6.15). These understandings were quite distinct, representing different poles of the variation in understandings observed in the group.

| Academic | Discipline | Cognate group | Conception of What | Conception of How |
|----------|-------------|---------------|--------------------|-------------------|
| 4 | Engineering | Professional | 1 (Precursor) | 1 (Remedial) |
| 14 | Engineering | Professional | 4 (Enable) | 6 (Participatory) |

Figure 6.15: Conceptions expressed by academics with the same discipline background

While this was the only pairing of common discipline backgrounds in the sample, similar variations are seen if the conceptions expressed by individuals are compared within the cognate groups (see Figure 6.16). Consider for example the humanities disciplines. Individuals in this cluster expressed conceptions of graduate attributes as outcomes that ranged from general skills which were unrelated to discipline knowledge (level 2) to abilities that were the core of discipline knowledge and learning (level 4).

| Academic | Discipline | Cognate group | Conception of What | Conception of How |
|----------|---------------|---------------|--------------------|-------------------|
| 15 | Asian Studies | Humanities | 2 | 2 |
| 13 | English | Humanities | 2 | 2 |
| 7 | History | Humanities | 4 | 5 |

Figure 6.16: Example of diverse conceptions in first outcome space expressed within a cognate disciplinary group

Likewise, the understandings of the teaching and learning of graduate attributes expressed by the three academics from the social science disciplines were quite diverse (figure 6.17). These ranged from being an integral part of students' engagement in learning in university courses (level 5) to a process of remedial skill tutoring for a handful of weaker students (level 1).

| Academic | Discipline | Cognate group | Conception of What | Conception of How |
|----------|------------|----------------|--------------------|-------------------|
| 6 | Economics | Social Science | 1 | 1 |
| 11 | Psychology | Social Science | 3 | 4 |
| 9 | Sociology | Social Science | 3 | 5 |

Figure 6.17: Example of diverse conceptions in second outcome space expressed within a cognate disciplinary group

Individuals from very different discipline backgrounds could also hold quite similar understandings of graduate attributes: For example an individual from History understood graduate attributes in much the same way as an individual from Engineering.

| Academic | Discipline | Cognate group | Conception of What | Conception of How |
|----------|-------------|---------------|--------------------|-------------------|
| 7 | History | Humanities | 4 (Enable) | 5 (Engagement) |
| 14 | Engineering | Professional | 4 (Enable) | 6 (Participatory) |

Figure 6.18: Example of similar conceptions expressed in different disciplines

While a sample size of fifteen is too few to identify any pattern to the relationship between disciplinary background and different conceptions of graduate attributes it is sufficient to suggest that discipline background alone does not account for the observed variation. This is however an area for future research. Our understandings of phenomena are based in our prior experience of the phenomena and other relevant

experiences. Understandings of graduate attributes are not unrelated to other understandings of university education and it seems likely that disciplinary differences in understandings of, for example, the nature of knowledge are likely to be relevant, as are broader understandings about the nature of learning, to our conceptions of graduate attributes. However, the interplay between such disciplinary conceptions and conceptions of graduate attributes is not likely to be causal rather it might be thought of as relational.

Teaching with technology and teaching graduate attributes

In addition to information on academics' conceptions of the teaching and learning of generic attributes the phenomenographic interviews also yielded data on teachers' approaches to the use of technology for teaching. These approaches were discussed in chapter five. We can now consider how the academics' conceptions of the teaching and learning of generic attributes in a course relate to their approaches to the use of information technology for teaching in that course (figure 6.19).

| Academic | Discipline | Cognate group | Category of description <i>How</i> | Approach to teaching with technology |
|----------|---------------|------------------------|---------------------------------------|--------------------------------------|
| 4 | Engineering | Professional | 1 | A |
| 6 | Economics | Social science | 1 | A |
| 1 | Chemistry | Basic Science | 2 | B |
| 5 | Physiotherapy | Professional (medical) | 2 | B |
| 10 | Nursing | Professional (medical) | 2 | A |
| 13 | English | Humanities | 2 | A |
| 15 | Asian Studies | Humanities | 2 | A |
| 2 | Vet | Professional (medical) | 3 | B |
| 12 | Biology | Basic Science | 3 | B |
| 8 | Law | Professional | 4 | B |
| 11 | Psychology | Social Science | 4 | C |
| 3 | Architecture | Professional | 5 | B |
| 7 | History | Humanities | 5 | A |
| 9 | Sociology | Social Science | 5 | E |
| 14 | Engineering | Professional | 6 | D |

Figure 6.19: Variation between approach to teaching with technology and approach to teaching graduate attributes

As noted in the earlier discussion, one aspect of the variation in the academics' conceptions of teaching and learning of generic attributes, was in terms of teacher / learner focus. This was also a feature of the categories of description identified by Prosser and Trigwell and used in the present research to classify the variation in the academics' approaches to teaching with technology.

It might be expected that, being based in the same situated accounts of experience, there would be a congruence between conceptions of how students develop generic

attributes, and these teachers' approaches to teaching using technology in terms of the underlying teacher or learner focus inherent in both sets of categories of description. That is, there would be a consistency between the use of teacher or learner-focussed approach to teaching regardless of what was being taught (graduate attributes) or the means used to teach (information technology).

Figure 6.20 plots the approach to teaching with technology (categories A-E) and the conception of the development of generic attributes (categories 1-6) for each individual (1-15). While Prosser and Trigwell's five categories of description do not directly correspond to the six categories of description of the development of graduate attributes they do share a common dimension in terms of the underlying focus on the teacher or learner. The common teacher focus or learner focus is identified in the third column of the table. Categories 1, 2 and 3 in the graduate attributes outcome space and categories A and B in the approaches to teaching with technology outcome space are similarly teacher-focussed. Category C in Prosser and Trigwell's hierarchy is considered to be teacher-focussed however there is some recognition of the role of the learner denoted by 'learner activity'. Hence it is described by Prosser & Trigwell as 'teacher focus & learner activity' to differentiate it from the fully teacher focused conceptions in categories A and B. This category is similar to category 4 of the graduate attributes hierarchy which is similarly teacher-focussed however with an implicit role for active learners. Categories 5 and 6 in the graduate attributes hierarchy are learner-focussed and correspond to the learner focus in categories D and E of the hierarchy of approaches to teaching with technology. In considering the correspondence between the individuals' understandings of how graduate attributes are taught and learnt, and how technology is used for teaching and learning, we will only consider the correspondence in terms of the shared teacher or learner focus of these categories.

In twelve of the fifteen cases there was a clear correspondence between the academic's approach to using technology for teaching and his or her conception of how graduate attributes were developed by students. This correspondence reflects the shared teacher focused / learner-focussed factor common to both sets of categories of description.

| Approach to teaching graduate attributes (X) | Approach to teaching with technology (O) | Teacher / learner focus | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
|--|---|-----------------------------------|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|
| 1: Remedial | A: Teacher- focussed use of technology to transmit information to students | Teacher focus | | | | X | | | | | | | | | | | |
| 2: Associated | B: Teacher- focussed use of technology so that students acquire concepts | | X | | ○ | | X | | ○ | | | X | | | | | X |
| 3: Teaching content | | Teacher focus learner activity | | X | | | | | | | | | | | | | |
| 4: Teaching process | C: Teacher- focussed/learner activity use of technology so students acquire concepts | | | | | ○ | | | | ○ | | | | X | | | |
| 5: Engagement | D: Learner- focussed use of technology so students develop existing conceptions | Learner focus | | | | | | | | X | | | | | | | |
| 6: Participatory | E: Learner- focussed use of technology so students construct new conceptions | | | | | | | | | | | X | | | | | X |

Figure 6.20: Relationship between expressed approach to teaching with technology and approach to teaching graduate attributes

Teacher focused conceptions: For academics 1, 2, 4, 5, 6,10, 12, 13 and 15 a teacher-focused conception of the development of generic attributes is matched with a teacher-focussed approach to the use of technology for teaching.

Teacher-focussed / learner activity conceptions: For academic 11 a teacher focus/learner activity dimension to the approach to using technology for teaching is mirrored in a teacher-focussed learner / activity conception of how students develop generic attributes. The conception that generic attributes are taught and learnt through the way the discipline content is taught, emphasises teaching processes. While the teacher-centred focus is dominant, the attention to teaching process incorporates some consideration of how students will learn from the teaching process. This provides the teacher focus with learner activity characteristic in common with Prosser and Trigwell's Approach C.

Learner-focussed conceptions: In cases 9 and 14, a learner- focussed conception of the development of generic attributes is matched with a learner-focused approach to the use of technology for teaching. A conception of the development of generic attributes that focuses on the way learners engage with the learning experience is consistent with an approach to the use of learning technology which emphasises the role of the learner.

The correspondence between these two aspects of teaching practice is to be expected. The strongly teacher-centred focus of the information transfer approach to teaching with technology (Approach A) and the teacher centred approach of teaching discipline concepts (Approach B), is congruent with the teacher-centred view that generic attributes are taught, either as a remedial exercise (Category 1), as an isolated part of the curriculum (Category 2), or along with the teaching of other discipline content (Category 3). Likewise the common learner-focussed approach which underpins categories five and six of the approaches to teaching graduate attributes and approaches D and E to the use of technology for teaching is reflected in the logical correspondence between these approaches in academics 9 and 14.

These twelve cases show a congruence or consistency between the academics' approach to the use of technology for teaching, and his/her conception of teaching/learning of generic attributes. These academics were using technology for teaching in a way that was consistent with their understanding of how students achieve generic attributes as learning outcomes in terms of the underlying teacher-focussed or

learner-focussed approach to teaching. The other three cases do not show this expected congruence.

The academics in transcripts 3, 7 and 8 all expressed a conception of the teaching and learning of generic attributes which is more sophisticated than the individuals' approach to teaching with technology (shaded cells in figure 6.20). While case 8 is a teacher focused / learner activity conception, cases 3 and 7 are learner-focussed conceptions of the development of generic attributes, yet the approach to teaching with technology is, in all cases, a strongly teacher-focussed approach.

Setting aside case 8 which does at least share an element of a teacher-focussed approach, while academics 3 and 7 expressed a *learner-centred* conception of the teaching of graduate attributes, they are adopting a *teacher-centred* approach in their use of technology for teaching and learning. This seems illogical in that the way these teachers are teaching with technology is not congruent with their understanding of how students learn graduate attributes. Such apparent contradictions have also been observed in other studies.

Student learning research also suggests that environmental conditions may lead teachers conceiving of teaching as conceptual change to adopt information transmission approaches. The research shows that a number of teachers with more sophisticated conceptions of learning adopt lower level approaches to teaching. (Trigwell and Prosser 1996 p 281)

In the present study the three academics are using information technology for teaching in a way that is less sophisticated than their respective understandings of teaching and learning (at least their understandings of the teaching of graduate attributes) would suggest. The environmental conditions which could contribute to teachers using technology in a teacher-centred way, even though they have an understanding of teaching/learning as being learner-centred, are of particular relevance given the rapidly expanding use of technology for teaching in Australian universities.

One explanation for this mismatch might be that the particular technology used in these cases is imposing a form and function to online teaching that limits the approach to teaching. That is, the mismatch might stem from the limited scope of the chosen technology to fulfil the academic's full range of conceptions of teaching/learning. For instance, a technology strategy or teaching tool that was non-interactive and enabled

only static presentation of information with no scope for two-way communication would probably not have the capacity to be used in a learner-centred way for teaching. In the three cases under discussion, the technology used was a web based teaching and learning environment. The same web-based technology had been used by other academics in the sample in learner-centred ways. If the technology itself was the limiting factor determining the approach to teaching, then no examples of the use of the technology to implement learner-centred approaches to teaching would have been observed. This was not the case. While some technologies may inherently limit the teaching strategy or approach this was not so in these examples.

An alternative explanation is that these three academics might not be using the full scope or potential of the technology to achieve their teaching intentions. This would manifest in the observed inconsistencies between approaches and understandings of how students develop generic attributes. Such a limitation could stem from a lack of familiarity with the technology resulting in only simple adaptations of the technology.

Many communication and information technology based teaching strategies are a team design and development effort. The academic often does not have full control over what is developed, and in some cases may participate only as a provider of content rather than pedagogical design. In such a scenario, the educational purposes of the teaching strategy may be determined primarily by an information technology specialist, rather than being informed by the teacher's conceptions of, and approaches to, teaching. Examples of technology based teaching strategies being driven by the technology rather than educational principles are widely reported in discussions on the use of communication and information technology for teaching. In such a scenario the observed mismatch could reflect the influence of someone else's teaching and learning intentions/approaches in the design of such teaching strategies.

The collaborative team approach of developing information technology based teaching and learning environments is becoming more common. Such teams typically combine the educational and discipline expertise of the academic with the technical expertise of a programmer. In such cases the contribution and role of the academic should incorporate the educational design of the teaching and learning strategy process, in a way that ensures that their conceptions of teaching and learning are realised in the technology based teaching environment.

As one academic noted in the course of her interview:

After we'd finished the package I realised that it wasn't really what I or the students needed. At the time I was so excited about using the web for teaching but I was so technologically illiterate and we had so many technical problems, that I just went with what the programmer suggested. I didn't really stop to think about how the students would actually learn from it.

Ensuring the product of collaborative design and development processes embodies the participating academics' conceptions of teaching and learning requires that academics are aware of, and able to communicate such understandings.

Many of the academics interviewed in this study struggled initially to articulate their conception of the teaching and learning of generic attributes in the context of their own teaching. In several cases respondents spent a considerable time talking through their ideas before being able to articulate their understandings.

I: So how do you think your students learn these generic attributes?

R: Well, I suppose students learn them in the same way they learn about the other things I teach. (pause)

I: Can you explain that a bit more for me?

R: Well I'm not sure I can articulate it very well – you know - do it justice – I know what I mean but I don't know the educational jargon you folks use.

I: Just explain it in your own words.

R: UmmmI think they have to do more than just listen or read to learn... don't they. Like ummm ... when I use the web to teach I do more than just tell them things, and they do more than just read what I've put up there. (Pause)

I: So you do more than tell them things when you teach?

R: Uh huh ...you know – I get them to do things that help them learn. My teaching is really about the sorts of activities I get them to do.....I set up the

ideas and then it's up to them to grapple with those ideas – yeah, I suppose they learn when they get to grips with the ideas and concepts I teach – you know this is hard! I've never had to put this into words before!

I: Go on - I'm getting the picture, so it's about more than just telling them things?

R: They really need to take things in – you know to understand the ideas in what I'm saying....and I guess it's only when they've internalised those ideas – you know taken them on board and made them their own, that they've learnt them. So when I teach I try to make the concepts and ideas stand as a thread through the different topics – they are what ties all the learning together. By teaching in a way that helps students to grasp what's behind what I'm talking about. I show them different ways that the idea can surface in their work, and then I get them to try using that concept in some way – you know to push them to use it so they have to understand it. I suppose that it's only by using it that really they learn it...

[Two pages later in the transcript]

R: (cont.)...so I guess the way they learn generic attributes is also by getting to grips with my teaching...you know I set up tasks that mean they have to develop the idea by using it themselves...but it's the way they get involved in those tasks that helps them develop those overarching conceptual frameworks.

Wow...you know I've been teaching for nearly fifteen years and I've never had to explain this before.

While understandings of teaching and learning may be implicit in the way academics choose to teach in familiar contexts, they are rarely called upon to make such understandings explicit or to communicate these understandings to somebody else. It seems likely that academics would find it even more difficult to communicate their understandings of, and approaches to, teaching and learning, in the relatively unfamiliar context of designing an online learning environment.

In the context of a team approach to the development of a curriculum incorporating learning technologies, different team members are likely to hold different teaching and

learning conceptions, all of which could influence the approach to teaching embodied in the final product. A clear understanding, by all team members, of the underlying conceptions of, and approaches to, teaching and learning, would help ensure that the design of the teaching resource embodied the most appropriate teaching and learning conceptions. In light of the observed inconsistencies between conceptions of teaching and learning of generic attributes, and approaches to teaching with technology, the broader question of the processes by which technology based learning environments are developed merits further study.

Academics' prior experiences and expectations of a particular technology are also likely to influence how they use that technology for teaching. If they are unaware of potentially more sophisticated uses of a particular technology then their use of the technology may be less sophisticated than their conception of teaching and learning would otherwise dictate. For instance, an academic whose knowledge of the world-wide-web was limited to experiences of reading static text-based web pages, may not realise the potential of the technology to deliver learner-driven, interactive learning experiences. In such a situation, previous experience with the technology is likely to be a determining factor in how these innovators use the technology for teaching.

Alongside these possible reasons for teachers with more sophisticated conceptions of learning adopting lower level approaches to teaching in a particular environment is the mixed mode of teaching that characterised the courses in which the discussion of graduate attributes was based. The learning technology context which may have imposed a limiting factor on the sophistication of the approach to teaching, was only one of the teaching contexts of the course.

The variation in teaching contexts within a single course makes such incongruities more likely. The conditions of the technology environment, which might have contributed to these academics adopting a less sophisticated approach to teaching, may not have been present in the more familiar environment of face to face teaching.

Moreover, given the range of environments offered by such mixed modality teaching an academic may select the modality most suited to a particular teaching intention. This was apparent in the transcripts:

I don't focus on teaching generic attributes in the online sessions. There is a seminar and workshop program as part of the course, and these deal with topics like communication and teamwork.

The web-based lecture course is supported by tutorial group meetings and practical work. The tutor's job is to really focus on developing the ability to present a coherent argument and model critical evaluation skills.

In these extracts, the academics did not use the context of technology based teaching to foster generic attributes. Instead this task was managed through face to face tutorials and other learning activities that did not employ learning technologies.

In this context while the academics' approach to the development of generic attributes may have been sufficiently sophisticated to suggest a higher level approach to the use of technology for teaching, they were not using technology in this way. Moreover they appeared to have chosen not to use the context of technology based teaching to facilitate the development of generic attributes.

This might suggest that the development of learner-focussed graduate attribute curriculum and teaching strategies in an information technology based context might be particularly challenging. However while being a challenge, the technology environment shows some potential affordances as a context for the development of such curricula as indicated by the two academics (9 & 14) who expressed learner-focussed approaches to both the use of technology and the development of graduate attributes. However given the opportunities provided by mixed mode (face to face and technology based) teaching, it is noteworthy that only one of the individuals indicated that she had chosen to use learning technologies in the context of developing graduate attributes.

Technology based teaching and learning is seen by many authors (see for example Laurillard 1993) to hold considerable potential for innovative university teaching. However, in the present study, such promise appears to remain largely unfulfilled in light of the preponderance of teacher-focussed information transmission approaches to the use of technology identified. In the context of contemporary curricula incorporating the development of graduate attributes, any strategy seeking to better employ communication and information technology based teaching in the development of generic attributes should consider possible factors which may contribute to the

adoption of less sophisticated approaches to teaching, even in the presence of more advanced conceptions of the development of such attributes.

However, as noted previously, the context of learning technologies is only one (particularly relevant) aspect of contemporary teaching practice. Let us return to the focus of this investigation - conceptions of graduate attributes.

So far we have considered how the individuals expressed their understandings of the 'What' and 'How' aspects of the phenomenon of graduate attributes separately. We will now turn our attention to the nature of the relationship between an individual's understanding of what graduate attributes are and his or her understandings of how graduate attributes are developed. In doing so we will consider the combinations of these aspects expressed in the transcripts of each interview.

Interactions between conceptions: How do the academics' understandings of *what* generic graduate attributes are, relate to their understandings of *how* these are developed?

As noted earlier, from a phenomenographic perspective, the phenomenon of learning comprises the experience of two related aspects – the 'what' and the 'how'. The experience of learning can be understood in terms of what is to be learned – (the direct object of learning) and how it is to be learned – the act of learning. The act of learning also introduces another aspect of the phenomenon on the part of the learner – what the act of learning is aimed at – the indirect object of learning – which may or may not be the same as the direct object of learning. This study has not considered the indirect object of learning.

It is logical to expect that an individual's experience of the 'what' aspect will be related to his or her experience of the 'how' aspect of the phenomenon. In considering generic graduate attributes from this perspective, it is logical to expect that an academic's understandings of what it is that is to be taught or learnt will also be related to his understanding of how these things are to be taught or learnt. One would expect that an individual's understanding of what generic graduate attributes are, would be logically related to her or his understandings of how those same graduate attributes are developed.

Earlier in this chapter we considered how the two outcome spaces are separately constituted in the transcripts of the individual academics interviewed. After considering each of the individual transcripts in terms of both the conceptions of graduate attributes (what is to be learned) and the conceptions of how such attributes are developed (how it is to be learned), it is possible to explore the relationship between these two aspects of an individual's understanding of this particular learning phenomenon.

As noted in the preceding discussion, the hierarchical nature of the nested categories of description, frequently results in individuals who hold higher-level conceptions also expressing conceptions reflecting lower level categories of description. For the purpose of the following analysis each transcript is again considered only in terms of the highest level conception identified.

Figure 6.21 plots the associations between the highest level conception of what graduate attributes are, and the highest level conception of how graduate attributes are developed, for each individual.

| Figure 6.21: | | | | | | |
|--|--------------------|--------------------------|----------------------------|----------------------------|----------------------|-------------------------|
| Relationship between understandings of what generic attributes are and how such attributes are developed | 1. Remedial | 2. Associated | 3. Teaching Content | 4. Teaching Process | 5. Engagement | 6. Participatory |
| A. Precursor Necessary basic skills but irrelevant as they are a prerequisite for entry | 4 | 6 | | | | |
| B. Complement Useful skills that complement or round out disciplinary learning | | 1 10 15 5 13 | | | | |
| C. Translation: These are the abilities that let students make use of or apply disciplinary knowledge | | | 2 12 | 8 11 | 3 9 | |
| D. Enable: They are the scholarly abilities that infuse and enable personal & disciplinary learning and knowledge | | | | | 7 | 14 |

Particular understandings of what generic graduate attributes are, were related to particular understandings of the way such attributes are developed.

For some conceptions the correspondence between the two aspects of the phenomenon was one-to-one and clearly logical. In other cases a particular conception of what graduate attributes are, was associated with a range of conceptions of how such an attribute might be developed.

The question to be answered is this: Are the *what* and *how* aspects of the phenomenon related in a logical and internally consistent way?

In some cases the relationship demonstrated in the correlations between the conceptions of the two aspects of the phenomenon was clearly logical. For example, holding a conception of graduate attributes as being irrelevant in terms of the outcomes of a university education (1: Precursor) could be logically expected to be related to a view of the teaching and learning of such attributes as not being part of university teaching or curriculum (1: Remedial), and this was indeed the case for the two individuals holding a Precursor conception. To avoid confusion between the shorthand descriptions for the levels of conceptions in the two outcome spaces, the letters A-D will be used to refer to the four levels in the first outcome space from this point on. Hence the combination of a Precursor and Remedial conception will be designated as A:1 rather than 1:1 (figure 6.22)

| Numeric coding of Conception of <i>What</i> | Alpha coding of Conception of <i>What</i> | Numeric coding of Conception of <i>How</i> |
|--|--|---|
| Level 1: Precursor | Level A: Precursor | Level 1: Remedial |
| Level 2: Complement | Level B: Complement | Level 2: Associated |
| Level 3: Translation | Level C: Translation | Level 3: Teaching Content |
| Level 4: Enabling | Level D: Enabling | Level 4: Teaching Process |
| | | Level 5: Engagement |
| | | Level 6: Participatory |

Figure 6.22: Re-coding of conceptions in first outcome space

What understandings of the development of graduate attributes were associated with each of the four understandings of graduate attribute outcomes?

A: Precursor

| | |
|--|---|
| | Level 1: Remedial |
| | Not part of usual university teaching or learning |
| Level A: Precursor Necessary basic skills but irrelevant as they are a prerequisite for entry | Academics 4 & 6 |

Level A understandings of graduate attribute outcomes were consistently associated with level one understandings of the development process.

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

Indeed it would be quite illogical for such a Precursor conception to be associated with higher level conceptions, for example an understanding that graduate attributes are taught by teachers as an integral part of the course content.

Let us consider the other correlations that are observed in the data and explore the logic of these associations.

B: Complement

| | |
|---|---|
| | Level 2: Associated |
| | Generic attributes are taught as a separate, discrete subset of the teaching in university courses. |
| Level B: Complement Useful skills that complement or round out disciplinary learning | Academics 1, 10, 15, 5, 13 |

B: 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.

Holding a conception of graduate attributes as 'useful additional non-specific skills that complement or round out disciplinary learning' (B: Complement) was consistently associated with level two conceptions (2:Associated) of the development of such attributes. The five individuals holding an understanding of graduate attributes as Complementary outcomes perceived that graduate attributes are taught as a separate, discrete subset of the teaching in university courses. For three of the individuals this was in the context of a separate generic skills module or curriculum which was taught as an addition to the usual university curriculum. For the other two individuals this was in the context of the use of an additional teaching behaviour. The selection of this teaching strategy was unrelated to the teaching of the rest of the curriculum. This association also appears to be quite logical. The Complement conception is characterised by a structure of awareness that foregrounds atomistic skills that are unrelated to the discipline knowledge and where graduate attributes are understood as learning outcomes that are discrete from disciplinary learning outcomes. This is congruent with an understanding of the process of development of such attributes as being through a curriculum or teaching event that is similarly separate to the discipline curriculum and secondary to the usual teaching and learning process.

For these same reasons, it would not be expected that a level B: Complement conception would be associated with any of the conceptions of the development of graduate attributes that were characterised as integrated (Categories 3-6).

C: Translation

Unlike the first two categories of description of graduate attributes, level C conceptions of what graduate attributes are - the translation conception - were associated with three different conceptions of the development of such attributes.

Six academics expressed a conception of generic graduate attributes in this, the third, category of description (C: Translation). These academics understood graduate attributes in terms of abilities that let students make use of, or apply disciplinary knowledge. Conceptions in the third category of description were associated with three

different teaching and learning conceptions (levels three, four and five conceptions). Upon consideration, all three associations are logical and internally consistent.

In the Translation conception, graduate attributes are integrated with discipline knowledge. Such an integrated understanding would be inconsistent with a non-integrated approach to the teaching and learning of such abilities. The interview transcripts bore this out, as this conception was not associated with teaching and learning conceptions in either the first category (not taught in the course) or the second category (taught separately as an isolated addition to the curriculum). Instead Translation conceptions were associated with teaching and learning conceptions in categories three, four and five.

| | Level 3: Teaching content | Level 4: Teaching process | Level 5 Learning process |
|---|---|--|--|
| | Generic attributes are taught in the context of teaching the disciplinary knowledge | Generic attributes are taught/learnt through the way the course disciplinary knowledge is taught | Generic attributes are learnt through the way students engage with the course's learning experiences |
| C: Translation. These are the abilities that let students make use of or apply disciplinary knowledge | Academic 2 Academic 12 | Academic 8 Academic 11 | Academic 3 Academic 9 |

While this is not a one-to-one correspondence as in the preceding conceptions (A and B), these teaching and learning conceptions all share a similar focus on the integration of the graduate attribute teaching and learning process with the teaching and learning process of the discipline knowledge. In this way they are all logically consistent with the conception of generic attributes as connected or integrated in some way with discipline knowledge and abilities.

While all three teaching and learning categories share this feature of integration, they differ in terms of the teaching focus. Categories three and four are teacher-focussed views of the process of development of graduate attributes. In category three the focus is on the content that is taught while in category four the focus is on the way this content is taught. Category five is a learner-focussed view of the teaching and learning process. While all the academics in this group hold a conception of generic attributes as integrated and important abilities, relevant to discipline knowledge and learning, it may be that their underlying conception of teaching and learning differs in terms of the nature of the teacher/learner focus. This underlying conception of teaching and learning appears to result in three qualitatively different understandings of how such attributes might be developed. The different understandings of the teaching and learning of generic attributes, held by each individual academic, are however, entirely consistent with the characteristics of the conception of what is being taught or learnt.

As discussed in chapter five, other research on teachers' general approaches to teaching (Prosser & Trigwell 1999) has revealed qualitative differences in the way teachers approach teaching. These differences mirror one aspect of the variation between these three conceptions of the development of graduate attributes. Prosser and Trigwell (1999) have identified approaches that are teacher-focussed, teacher-focussed with learner activity and learner-focussed. These three approaches have much in common with the categories of description identified in this study: Level three conceptions of the development of graduate attributes as a taught component of the curriculum are clearly teacher-focussed. Level four conceptions where the focus is on way the curriculum is taught echo the teacher-focussed / learner activity approach identified by Prosser and Trigwell (1999), where the learner's activity, as determined by the teacher's teaching, is also part of the approach. The level 5 conception of the development of graduate attributes being achieved by the way the learner engages in the course, is clearly learner-focussed.

In the level C Translation conception, the teaching and learning of generic graduate attributes is integrated with the processes and outcomes of discipline teaching and learning. In this conception, variations in the individual's underlying general conception of teaching and learning (from teacher-focussed, to teacher-focussed with learner activity, to learner-focussed) would be likely to be associated with his or her conception of the teaching and learning of generic attributes. This would be a strong argument for addressing the basic underlying conception of teaching and learning in any strategic attempt to influence how these staff approach the teaching and learning of generic

attributes. In summary, there are three logical and internally consistent understandings associated with the Translation conception:

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

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

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

The three understandings vary in terms of the underlying approach to teaching and learning.

D: Enabling

In level D, the Enabling conception, graduate attributes are conceived of as abilities that infuse and enable discipline learning. In this category, generic graduate attributes are understood as abilities that are at the heart of discipline learning outcomes and processes. Generic graduate attributes are seen as important outcomes of a university education, particularly in so far as they provide the capability for future learning. Conceptions of graduate attributes in category D have a strong focus on learning.

| | Level 5: Engagement | Level 6: Participatory |
|---|---|--|
| | Generic attributes are learnt through the way students engage with the course’s learning experiences | Generic attributes are learnt through the way students engage with the all the experiences of university life |
| D: Enable. They are the abilities that infuse and enable disciplinary learning and knowledge | Academic 7 | Academic 14 |

This understanding of the concept of generic attributes was associated with two different understandings of the process by which such attributes are developed. The two individuals with Enabling conceptions held level five and six understandings of the teaching and learning processes which foster the development of such attributes.

These two categories of teaching and learning process are the two learner-focussed conceptions of the development of generic attributes. Such a learner-focussed perspective on the development of generic attributes, would be logically consistent with an understanding of the concept of generic attributes which was similarly focussed on enabling learning, both in the context of learning discipline knowledge in the course of a university education, and as the basis for future learning. The difference between these two conceptions of the development of graduate attributes is in the breadth and scope of the learning experiences that students might engage in, while developing generic attributes. In a level 5 conception it is the way students engage in learning in the course. In a level six conception, it is the way students engage in the learning experiences of university life, including, but not restricted to, the course learning experiences.

Once again the association of the Enabling conception with both level four and five conceptions of how such attributes are developed appears logical. This association might be summarised as:

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

D: 6 Generic attributes are complex abilities that infuse learning and knowledge and are learnt through the way students engage with university

These two understandings vary in terms of the scope of the learning experiences that are seen as relevant to the development of graduate attributes.

The logical and internally consistent relationships

In summary, the seven logically consistent combinations of understandings of the concept of generic attributes, and understandings of the teaching and learning of such attributes, (as shown in the shaded cells in figure 6.21) can be described as follows:

1. Graduate attributes are basic prerequisite skills which students should already possess, they are only taught in remedial classes at university
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.
3. Generic graduate attributes make disciplinary knowledge relevant and are taught as part of discipline content.
4. Generic graduate attributes make disciplinary knowledge relevant and are learnt through the process of teaching discipline content.
5. Generic graduate attributes make disciplinary knowledge relevant and are learnt through the way students engage with the course's learning experiences
6. Generic attributes are complex abilities that infuse learning and knowledge and are learnt through the way students engage with the course
7. Generic attributes are complex abilities that infuse learning and knowledge and are learnt through the way students engage with university

So far we have considered the way the understandings of the two key aspects - the what and the how - of the phenomenon of graduate attributes are realised in the transcripts of the individuals interviewed. Let us now step back from the individual conceptions and attempt to discern the overall structure of the phenomenon. In doing so we will once again consider the way the understandings of the two related aspects of the phenomenon vary in relation to each other. However this time we will consider the associations between the 'what' and the 'how' in terms of the key characteristic of the structural and referential aspects of the variation in each outcome space.

Synthesis: A model for approaching the phenomenon

In presenting the outcome spaces in chapter four, some key aspects of the variation in understandings were noted in terms of the structural and referential aspects of these categories. In the **first outcome space** the **referential** dimension of the categories of description varied in terms of graduate attributes being understood in terms of **additive** abilities or **transformative** abilities. Seven academics expressed conceptions of graduate attributes as additive outcomes and eight academics expressed understandings of graduate attributes as transformative outcomes (figure 6.23).

Figure 6.23: First outcome space: Conceptions expressed by individual academics with categories of description collapsed across the key referential aspects

| Conception of what generic graduate attributes are | Category A Necessary precursor skills but irrelevant as they are a prerequisite for university entry | Category B Useful skills that complement or round out disciplinary learning | Category C The abilities that let students translate, make use of or apply disciplinarily knowledge | Category D Abilities that infuse and enable university learning and knowledge |
|--|---|--|--|--|
| Number of academics in category | 2 | 5 | 6 | 2 |
| Key Referential aspect | Additive Conceptions | | Transformative Conceptions | |
| Number of academics in category | 7 | | 8 | |

The **referential** aspect of the **second outcome space** varied in terms of the development of graduate attributes being approached in a **supplementary** or **integrated** way (figure 6.24). Seven of the academics interviewed expressed an understanding of the development of graduate attributes as being purely supplementary to the rest of the university curriculum. The remaining eight academics interviewed perceived the development of graduate attributes to be something that was an integral part of usual university teaching and learning processes. Although notions

of a supplementary curriculum were subsumed within higher level conceptions in some cases reflecting the hierarchical nature of the categories of description.

Figure 6.24: Second outcome space: Conceptions expressed by individual academics with categories of description collapsed across the key referential aspects

| How graduate attributes are developed | Category 1 | Category 2 | Category 3 | Category 4 | Category 5 | Category 6 |
|---------------------------------------|---------------------------------|-----------------------------|--------------------------------|--------------------------------------|--------------------------------|-------------------------------------|
| | Not part of university teaching | Taught as a discrete subset | Taught with discipline content | Taught in way of teaching discipline | Student engagement with course | Student participation in university |
| Number of academics in each category | 2 | 5 | 2 | 2 | 3 | 1 |
| Key referential aspect | Supplementary Conceptions | | Integrated Conceptions | | | |
| Number of academics in category | 7 | | 8 | | | |

If we consider these key features of the meaning given to the different structures of awareness (the referential dimension) what emerges is a simplified picture of how academics perceive the phenomenon. This is represented in figure 6.25.

This analysis effectively divides figure 6.21 into four quadrants with all the individuals interviewed falling into one of two quadrants. The other two quadrants are empty, with the interviews containing no examples of these combinations of the meanings given to the various structures of awareness that make up an individual's understandings of the phenomenon. Considering these key features, the combinations observed in the data are again logical and internally consistent.

Figure 6.25:

| | 1. Remedial | 2. Associated | 3. Teaching Content | 4. Teaching Process | 5. Engagement | 6. Participatory |
|---|---|---|---|---|---|---|
| <p>Synthesis focussing on referential aspects</p> | Not part of usual university teaching or learning | Generic attributes are taught as a separate, discrete subset of the teaching in university courses. | Generic attributes are taught in the context of teaching the disciplinary content knowledge | Generic attributes are taught/learned through the way the course disciplinary knowledge is taught | Generic attributes are learnt through the way students engage with the course's learning experiences | Generic attributes are learnt through the way students engage with all the experiences of university life |
| <p>A. Precursor Necessary basic skills but irrelevant as they are a prerequisite for entry</p> | 4 | <div style="border: 1px solid black; padding: 5px; display: inline-block;"> Quadrant 1 </div> | | | <div style="border: 1px solid black; padding: 5px; display: inline-block;"> Quadrant 2 </div> | |
| <p>B. Complement Useful skills that complement or round out disciplinary learning</p> | | 1 10 15 5 13 | <div style="border: 1px solid black; padding: 5px; display: inline-block;"> Integrated </div> | | | |
| | | <div style="border: 1px solid black; padding: 5px; display: inline-block;"> Additive </div> | | | | |
| <p>C. Translation: These are the abilities that let students make use of or apply disciplinary knowledge</p> | | <div style="border: 1px solid black; padding: 5px; display: inline-block;"> Transformative </div> | 2 12 | 8 11 | 3 9 | |
| <p>D. Enable: They are the scholarly abilities that infuse and enable personal & disciplinary learning and knowledge</p> | | <div style="border: 1px solid black; padding: 5px; display: inline-block;"> Quadrant 3 </div> | | | <div style="border: 1px solid black; padding: 5px; display: inline-block;"> Quadrant 4 </div> | 7 14 |

In the first quadrant (figure 6.25) are individuals for whom the meaning given to the interaction between the various structures of awareness can be summarised as:

Quadrant 1: Additive/Supplementary: Graduate attributes are unrelated and relatively unimportant outcomes that graduates might possess in addition to the usual learning outcomes of a university education, as such they do not form part of the usual university curriculum I teach. If they are taught, it is in a separate supplementary curriculum.

The other interaction supported by the data was the fourth quadrant, where the meaning given to the different structures of awareness of the two aspects of the phenomenon might be summarised as:

Quadrant 4: Transformative/Integrated: Graduate attributes are important outcomes that interact with and transform the other learning outcomes of a university education, as such they are an integral part of the usual university curriculum.

A consideration of the possible understandings that might be represented by the 'empty' quadrants (Quadrants labelled 2 and 3 in Figure 6.25) reveals that such understandings would be illogical and internally inconsistent, hence there were no examples of these particular understandings in the transcripts:

Quadrant 2: Graduate attributes are unrelated unimportant outcomes that graduates might possess in addition to the usual learning outcomes of a university education, as such they are an integral part of the usual university curriculum.

Clearly in what is usually held to be an already crowded curriculum, academics are unlikely to include additional elements that are perceived to be unrelated to disciplinary learning and relatively unimportant in the context of a university education.

The understanding represented by the third quadrant is similarly illogical and again, no examples of such an understanding were apparent in the interviews.

Quadrant 3: Graduate attributes are outcomes that interact with and transform the other learning outcomes of a university education, as such they do not form part of the usual university curriculum I teach.

In identifying these four quadrants we have so far focussed on the interaction between the two outcome spaces in terms of the **referential aspects** of each outcome space.

In presenting the second outcome space in the previous section a key dimension of the variation in the **structural aspects** was also considered. This was the variation between teacher-focussed and learner-focussed conceptions. The shift from teacher focus to learner focus can be argued to be one of the defining features of the pedagogy of higher education in the past twenty years. This teacher focus - learner focus is also a central feature of the 'Presage' and 'Process' stages of the 3P model proposed by Prosser and Trigwell (1999), which was used earlier in this chapter to present the nested hierarchy of conceptions with reference to the individuals' attention to different aspects of the teaching and learning process.

If the categories of description are again 'collapsed' in terms of this key feature of the structural aspect (figure 6.26) an important feature of the different understandings in the four quadrants emerges.

Figure 6.26: Second outcome space: Conceptions expressed by individual academics with categories of description collapsed across the key structural aspect

| | Conception of how generic graduate attributes are developed | | | | | |
|---|---|-----------------------------|---|---|--------------------------------|-------------------------------------|
| | Category 1 | Category 2 | Category 3 | Category 4 | Category 5 | Category 6 |
| | Not part of university teaching | Taught as a discrete subset | Taught in context of discipline content | Taught through way of teaching discipline | Student engagement with course | Student participation in university |
| Number of academics in each category | 2 | 5 | 2 | 2 | 3 | 1 |
| Key Structural aspect | Teacher-focussed conceptions | | | Learner-focussed conceptions | | |
| Number of academics in collapsed category | 11 | | | 4 | | |

In terms of this key feature of the structural variation in the categories of description of the development of graduate attributes, the majority of the academics interviewed, eleven of the fifteen, held understandings of the development of graduate attributes that were teacher centred. Only four of the academics held learner-focussed conceptions of the development of graduate attributes.

From the perspective of the 3P model of teaching and learning it would appear that eleven of the fifteen academics interviewed expressed conceptions of the development of graduate attributes which were limited in terms of their awareness of key elements of current understandings of the teaching and learning process.

We can now add this important structural aspect of the variation to our consideration of how understandings of what graduate attributes are relate to understandings of how such attributes are developed, in terms of the two key referential aspects (figure 6.27).

Figure 6.27:

Synthesis focussing on referential and structural aspects

| | 1. Remedial | 2. Associated | 3. Teaching Content | 4. Teaching Process | 5. Engagement | 6. Participatory |
|---|--|--|---|-------------------------------------|--|------------------|
| <p>A. Precursor Necessary basic skills but irrelevant as they are a prerequisite for entry</p> | <p>Not part of usual university teaching or learning</p> | <p>Generic attributes are taught as a separate, discrete subset of the teaching in university courses.</p> | | | | |
| <p>B. Complement Useful skills that complement or round out disciplinary learning</p> | <p>I: Additive outcomes taught in a teacher-focussed way in a supplementary curriculum</p> | <p>Supplementary</p> <p>Quadrant 1 1 10 15 5 13</p> | <p>Integrated</p> <p>Quadrant 2 2</p> | | | |
| <p>C. Translation: These are the abilities that let students make use of or apply disciplinary knowledge</p> | <p>Transformative</p> <p>Quadrant 3 3</p> | <p>2 12</p> <p>Quadrant 4(a) 4(a)</p> | <p>8 11</p> <p>II: Transformative outcomes taught in a teacher-focussed way integrated within a curriculum</p> <p>Teacher focus</p> | <p>3 9</p> <p>Learner focus</p> | <p>14</p> <p>Quadrant 4(b) 4(b)</p> <p>III: Transformative outcomes taught in a learner-focussed way in an integrated curriculum</p> | |
| <p>D. Enable: They are the scholarly abilities that infuse and enable personal & disciplinary learning and knowledge</p> | | | | | | |

This adds an important extra dimension to the fourth quadrant identified in the preceding discussion. This is designated with the labels 4(a) and 4(b) in figure 6.27. This dimension is important for several reasons:

Teacher and learner-focussed approaches are associated with the adoption by students of different learning approaches, which result in qualitatively different learning outcomes. Much of the innovative and successful academic development work currently taking place in universities is based on the research that has explored the link between approaches to teaching and the quality of students' learning outcomes. These issues will be returned to more depth in the following chapter in which the implications and applications of the findings are considered.

By overlaying the teacher focus/learner focus dimension of the structural aspect of the categories in the first outcome space an additional layer of complexity is added to our understanding of how academics conceive of graduate attributes. This more complex understanding is one that may prove particularly helpful in the application of the findings to academic development and curriculum and teaching reform strategies.

The addition of the teacher/learner focus distinction yields three distinct quadrants, labelled 1, 4(a) and 4(b) on figure 6.27, populated with cases representing three broad approaches to the teaching and learning of generic graduate attributes.

A consideration of the teacher/learner focus dimension adds more complexity to the existing summaries used to describe approaches in each quadrant:

Quadrant 1: Graduate attributes are unrelated and relatively unimportant outcomes that graduates might possess in addition to the usual learning outcomes of a university education. As such they do not form part of the usual university curriculum I teach. If they are taught, it is in a teacher-focussed way in separate supplementary curriculum.

Or in short:

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

The addition of the teacher/learner focus subdivides those cases in quadrant four into two sub groups: Quadrant 4(a) and Quadrant 4(b):

Quadrant 4(a): Graduate attributes are important outcomes that interact with and transform the other learning outcomes of a university education, as such they are taught in a teacher-focussed way as an integral part of the usual university curriculum.

Or in short:

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

Quadrant 4(b): Graduate attributes are important outcomes that interact with and transform the other learning outcomes of a university education, as such they are taught in a learner-focussed way as an integral part of the usual university curriculum.

Or in short:

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

These three broad approaches are a way of grouping (Figure 6.28) the seven distinct combinations of understandings of *what* and *how*.

Approach 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)

Approach 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 taught through the process of teaching discipline content. (C:4)

Approach 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)

Figure 6.28: Broad approaches to teaching graduate attributes

Such a grouping of distinct understandings identifies the key aspects of variation between the different categories and provides a starting point for considering how an academic might come to learn about, or develop different conceptions of, graduate attributes. In phenomenography, learning is about coming to a more complex (and because of the hierarchical nature of the conception - inclusive) understanding of the phenomenon. Such learning must address the critical aspects of the variation between the different understandings identified in these categories.

The shift from an understanding of graduate attributes as **additive** to an understanding of these as **transformative** is fundamental. Such a shift, if coupled with the adoption of a **student-focussed** approach to the teaching of such attributes would have the 'learning' effect of moving all the academics who were adopting approaches I and II, into approach III, representing the most complex understandings of the phenomenon. This would potentially give these academics access to a full range of curriculum strategies for teaching all levels of graduate attributes outcomes.

The critical features of the variation between the three categories will be explored in the next chapter when we consider the implications of the findings and how the results of this research might be useful for 'learning' in the context of academic development related to graduate attributes curriculum reform in Australian universities.

Reflection

This chapter has continued the reporting of the analysis of the data gathered in the study by considering how the observed variation within the group (the categories of description) is constituted in individual academic's accounts of their understanding of generic graduate attributes.

The first section of this chapter considered how the individual academics understood what generic graduate attributes are. In doing so the nested, hierarchical nature of the four different categories of description was foregrounded. In this hierarchical structure, higher level conceptions subsume and modify lower level conceptions. As such individuals holding higher level conceptions can also understand the phenomenon in terms of lower level conceptions, however they are not limited to these lower level understandings.

The second section explored how the individual academics understood the development of generic graduate attributes. Once again the hierarchical nature of the categories of description was apparent in the individual's accounts of the development of graduate attributes. The hierarchical nature of the six different categories of description was considered from the perspective of a contemporary model of student learning proposed by Prosser and Trigwell (1999). This model is also grounded in the phenomenographic approach and will be considered again in the following chapter. The model was used to provide an additional insight into the hierarchical nature of this outcome space by presenting the hierarchy as an increasingly complex and increasingly comprehensive understanding of the teaching and learning process.

We then considered the role of two aspects of context in the observed patterns of variation. We first considered how the academics' discipline background might relate to the variations in conceptions of graduate attributes as outcomes and the variations in conception of the teaching and learning of graduate attributes. The patterns of variation did not appear to reflect the cognate disciplinary groupings and the two individuals from the same discipline expressed very different conceptions of graduate attributes. We then considered the correspondence between academics' approaches to the use of technology and their approach to the teaching of graduate attributes. While for the most part these were congruent in terms of the common teacher/learner focus underpinning the categories

of description of these two aspects of teaching there were some anomalies. These suggested that the context of learning technologies might provide particular challenges for curricula approaches embodying more complex conceptions of the development of graduate attributes.

After considering each of the outcome spaces separately the third section of the chapter explored the interaction between the two outcome spaces in the individual transcripts. In doing so a series of seven logical and internally consistent relationships between the conceptions in each outcome space was identified. This logical relationship in the observed correlation between conceptions lends support to the categories of description identified in the initial analysis.

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)
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)
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)

In the final section of this chapter we stepped back from the seven individual combinations and examined the underlying structure of the interaction between the 'what' and 'how' aspects of the phenomenon represented in these relationships. This was achieved by considering the relationships in terms of the key features of the variation in the referential aspects and an important aspect of the structural variation across the two outcome spaces.

The observed interactions between the two outcome spaces were considered in terms of the:

- Additive / Transformative dimension of the referential aspect of the first outcome space;
- Supplementary / Integrated dimension of the referential aspect of the second outcome space; and the
- Teacher-focussed / learner-focussed dimension of the structural aspect of the second outcome space.

By doing so, the seven distinct relationships present in the interview transcripts were organised into three categories of understanding of the phenomenon.

- Approach I: Additive outcomes taught in a teacher-focussed way in a supplementary curriculum
- Approach II: Transformative outcomes taught in a teacher-focussed way in an integrated curriculum
- Approach III: Transformative outcomes taught in a learner-focussed way in an integrated curriculum

These three approaches, and the key structural and referential dimensions of the various understandings of graduate attributes that they represent, provide an insight into potential pathways for learning more about graduate attributes. In this case the potential learners

are academics - not the students whose learning of graduate attributes has been the subject of the interviews. So, what might it take for an academic to develop a more complex conception of graduate attributes in the context of the academic community's efforts to improve practice in this area?

The next chapter will consider this issue in terms of some of the implications of the research findings for teaching and curriculum reform in universities.

Chapter 7: LEARNING

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Overview

This chapter further considers the implications arising from the observed variation in academics' understandings of graduate attributes.

The implications of the variation are first examined in light of some of the key influences on higher education. These factors were introduced in the first chapter when we considered the role of various forces in shaping claims of graduate attributes in contemporary Australian universities.

Universities' claims of graduate attributes embody aspects of the university community's responses to such forces. While universities' graduate attributes policy and practice exist against the backdrop of the ongoing debate as to the purposes of a contemporary university education, these statements might also influence and contribute to this broader debate. This chapter suggests a way in which the findings of this research might be useful in the context of this debate. Bowden and Marton's (1998) notion of a collective consciousness is introduced and the possible contribution of making explicit the variation in understandings of graduate attributes is considered. The idea of 'collective consciousness' draws upon the phenomenographic perspective on learning discussed in Chapter 5 and the research approach used in this thesis to characterise the variation in understandings of the phenomenon.

Using this perspective the implications for curriculum reform arising from the variation in understandings of what graduate attributes are (the first outcome space) are then explored. In particular the implications of the place of graduate attributes outcomes amongst more traditional university learning outcomes are considered. This leads to a consideration of the variation in contextualisation of graduate attributes within disciplinary learning outcomes and variations in assessment approaches and an examination of the implications arising from the different conceptions for notions of transfer of generic attributes.

The chapter then turns to a consideration of the implications arising from the variation in the second outcome space - conceptions of how graduate attributes are developed. In

particular the implications arising from each conception for recent curriculum reform recommendations in the Australian higher education sector are discussed. We will then briefly touch on how the findings of the study might contribute some initial insights into the potential role of learning technologies in curriculum reform targeting the development of graduate attributes.

Having considered some of the challenges for teaching and learning reform that are associated with various conceptions of graduate attributes in each outcome space, we will then stand back from these particular challenges. In doing so we will consider one way in which the variations in understandings identified in this research might inform broader policy and practice. The approach proposed is one that makes sense of and builds on the variation and diversity in Australian universities' existing graduate attributes policies and teaching practices.

Following on from this discussion of broader policy and practice we will use the phenomenographic perspective on learning to consider the question of academic development (learning) related to graduate attributes. In doing so we will use the three broad approaches presented in the preceding chapter to suggest some critical aspects of the variation which might be strategic to address in academic development initiatives.

In closing the chapter we will consider the particular challenges for teaching and learning reform inherent in the highest level conception of graduate attributes as enabling outcomes that are developed not only through students' engagement in university courses but through their participation in the life of the university community.

The variation

This research started out asking the question 'What do academics mean when they talk about graduate attributes'. The phenomenographic analysis discussed in the preceding chapters has identified that academics clearly mean different things when they talk about graduate attributes. The vocabulary might be the same but the underlying conception of what graduate attributes are and how such attributes are developed in the context of a university education shows considerable variation.

The seven distinct understandings of the phenomenon identified in this research are:

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

1. Generic graduate attributes are basic prerequisite skills which students should already possess, they are only taught in remedial classes at university
2. Generic graduate 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.

Approach 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.
4. Generic graduate attributes make disciplinary knowledge relevant and are taught through the process of teaching discipline content.

Approach 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.
6. Generic attributes are complex abilities that infuse learning and knowledge and are learnt through the way students engage with the course.
7. Generic graduate attributes are complex abilities that infuse learning and knowledge and are learnt through the way students engage with university.

The assumption that the academic community has a shared understanding of graduate attributes, which is inherent in universities' policy statements of graduate attributes and in many of the reports of universities' graduate attributes curricula, appears unfounded. Rather than a shared understanding of graduate attributes, academics hold different conceptions of what graduate attributes are and related to these conceptions - different understandings of how graduate attributes are developed by students. What then are the implications of this finding for universities' espoused attempts to develop graduate attributes?

Contextualising the variation

In considering this question we will first return to some of the issues raised in the first chapter. We will briefly re-consider how issues of the higher education context have contributed to universities' present claims regarding graduate attributes and suggest how the insights into the variation in the understandings of graduate attributes arising from this research, might illuminate these claims. In the opening chapter the following factors were identified as having particularly contributed to the re-emergence of universities' claims of graduate attributes:

- The need for employable graduates
- Questions as to the foundations of the university
- Calls for universities to be accountable.

These three factors are inter-related. Clearly questions relating to the role of the university in preparing graduates for the world of work are part of questions as to the

purpose of the university. Likewise questions of accountability require a clear understanding of the purpose of the university; what is the university being asked to be accountable for achieving?

Statements of graduate attributes sit at a crucial intersection of these forces (figure 7.1) yet their conceptual basis is unclear and the results of this study suggest they are understood quite differently by individual academics. While sitting at the intersection of these factors statements of graduate attributes appear to be a conglomerate of different ideas and concepts and they are not aligned or congruent with these forces.

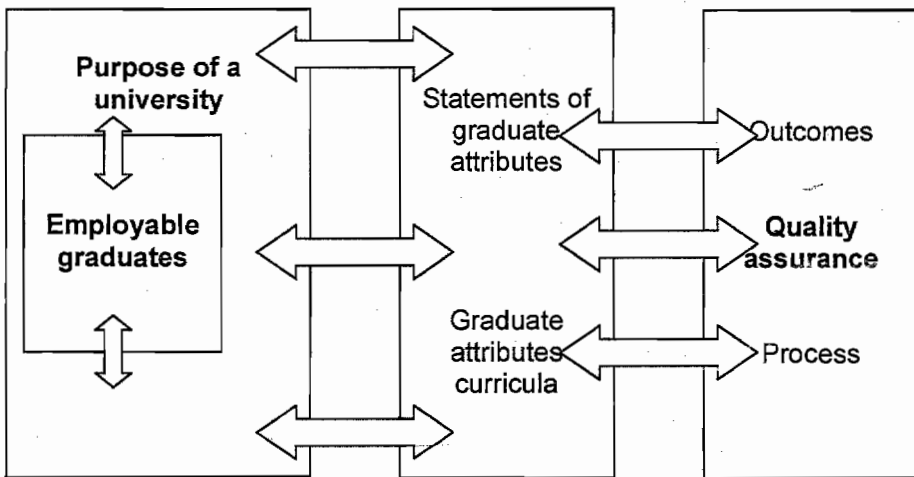


Figure 7.1: Relationship between statements of graduate attributes and three key higher education forces

Universities' policy statements advance graduate attributes as an articulation of the unique qualities of university graduates:

Graduate attributes are the qualities, skills and understandings a university community agrees its students should develop during their time with the institution. These attributes include but go beyond the disciplinary expertise or technical knowledge that has traditionally formed the core of most university courses. They are qualities that also prepare graduates as agents of social good in an unknown future. (Bowden et al 2000)

They articulate an aspect of the outcomes of a university education and, in doing so, how a university community understands what a university education might offer graduates in terms of preparation for the world of work and for graduates' broader role in society. In articulating elements of the purpose of universities, graduate attributes statements potentially provide a quality assurance benchmark against which to judge how well the university is achieving such purposes.

What then are the implications of the different conceptions of graduate attributes identified in this study, for calls for accountability, and questions as to the purpose of a university education and the role of the university in preparing graduates for employment?

Let us first consider each of the seven integrated conceptions of graduate attributes in turn.

1. Generic graduate attributes are basic prerequisite skills which students should already possess, they are only taught in remedial classes at university

For academics holding this conception the statements of graduate attributes offer little of importance to the question of the role of the university. Indeed such statements do not represent outcomes of a university education at all; rather they might articulate outcomes of earlier education. Rather than defining what a university education *is*, such statements might define what a university education *is not*. While the conceptions of graduate attributes identified in the present study shed little further light on these academics' beliefs as to the purpose of a university education, they do suggest that these individuals might construe the university's purpose primarily in terms of the traditional base of 'knowledge' (Barnett 2000). In relation to calls for more employable graduates, the statements of graduate attributes might represent the skills that employers want; however it is not the place of the university to provide them. Certainly in this conception graduate attributes are not understood as part of the core purpose of a university education and as such they are therefore largely irrelevant in the context of questions as to how well the university is achieving its purpose. Although in light of the remedial aspects of this conception they could conceivably play a part in demonstrating equity and access by providing evidence that the university is providing support for students entering the university with an 'impoverished' education base. What then of the other conceptions?

2. Generic graduate 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.

In the present climate of increasing work hours in Australian universities (McInnis 2000), academics holding this conception might perceive that statements of graduate attributes represent an additional task for university teachers to take on. In this conception graduate attributes might be extra outcomes, but certainly not the core outcomes, of a university education. Instead the core outcomes are again positioned predominantly in terms of Barnett's knowledge conception. As peripheral outcomes they might be understood to reflect unimportant aspects of the alternative conceptual bases advanced by Barnett (2000); Production, Democracy, Self-Critique and Emancipation. However, in this conception, graduate attributes are not an important or essential part of the curriculum, rather they something to be addressed only after the core business of teaching the discipline has been assured. As such, graduate attributes have little to offer to broader questions as to the purpose of a university education, except in so far as they might be a peripheral addition to the outcomes identified in a consideration of such questions. Moreover, they are not particularly relevant to demonstrating how well the university is achieving its core purpose and hence their utility for quality assurance exercises is limited in this conception.

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

This conception of graduate attributes puts a different complexion on these issues. Holding this conception has more to do with the positioning of the core outcomes of a university education as 'knowledge made relevant' or 'knowledge applied' through the graduate attributes. The context in which such knowledge is 'made relevant' often focuses on work, though it may also include personal and social spheres of life. However, in this conception graduate attributes are seen as particularly relevant to calls for 'more employable' graduates. This conception suggests a move beyond the university's traditional conceptual base of Knowledge to incorporate the alternative conceptual bases of Production, Democracy, Self-Critique and Emancipation as secondary players. In this

conception graduate attributes do play a role in the purposes of a university education, as an important partner to knowledge. Indeed they are required to make knowledge (and the role of knowledge as conceptual basis for universities) viable. As such they might validly be included *with* knowledge in the statements of the outcomes of a university education. As an important outcome they become relevant and important inclusions in courses and teaching and could therefore play a role in efforts to assure the quality of university education. The teaching of such attributes is seen as an integral part of university course content in this conception. As such it would be relevant to consider graduate attributes in quality assurance processes through, for example, evidence of the inclusion of graduate attributes in the specified content of the university's courses or amongst the assessed outcomes of these courses.

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

This conception shares with the previous conception, the 'translation' notion of graduate attributes in the first outcome space. From the perspective offered by this fourth conception questions as to the nature of a university education and the place of such an education in preparing graduates for work, would be positioned in much the same way as the previous conception. However there are different implications for the nature of the evidence provided in the context of quality assurance. Rather than evidence of inclusion of graduate attributes amongst the content of courses the evidence might lie in documentation of the use of relevant teaching processes and assessment strategies.

5. Generic graduate attributes make disciplinary knowledge relevant and are learnt through the way students engage with the course's learning experiences.

In common with the preceding two conceptions, this conception incorporates the Translation conception. As such, it is positioned in much the same way in relation to questions as to the purpose of the university and the role of education in providing capable and employable graduates. And once again, graduate attributes play a potential role in university quality assurance efforts, however the focus of the evidence required in assuring quality would be different. Rather than simply evidence of the inclusion of graduate attributes in the content of the course or the use of relevant teaching or assessment

processes, evidence would also derive from students' experiences of the course and teaching. This is a 'student-focussed learning perspective' on quality assurance (Prosser & Barrie 2003). The question to be asked would not be 'did the course outline state that graduate attributes would be covered', but 'did students perceive that their engagement with the course included an engagement in learning graduate attributes'.

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

This conception of graduate attributes reflects a different positioning of such attributes in relation to the purposes of university education. Rather than being a partner to knowledge-based learning outcomes as the core business of university education, such attributes are the core outcomes of a university education - around which different knowledge might be structured. This suggests a further step away from the positioning of knowledge as the conceptual basis for a university's purpose. However the role of knowledge as the conceptual underpinning of the university is not entirely abandoned in favour of an alternative conceptual base. Instead knowledge is relegated to a secondary role. Emerging to take a more central place are aspects of Barnett's (2000) constellations of Democracy, Self-Critique, Emancipation and even Fragility with its notions of uncertainty, unpredictability, challengeability and contestability. As statements of the core outcomes of a university education, graduate attributes, in this conception, might define the main capabilities that graduates bring to employment and contribute to society and accurately describe an aspect of the purpose of the university against which judgements of quality might be made. These attributes would be more important benchmarks for quality assurance than the ephemeral 'knowledge' in which they are cloaked. Once again, in this conception, the evidence upon which to base such decisions might be drawn from students' experiences of the course in relation to such attributes and from evidence of outcomes derived from student assessment results.

7. Generic attributes are complex abilities that infuse learning and knowledge and are learnt through the way students engage with university.

This conception shares with the previous conception the 'enabling' notion of graduate attributes in the first outcome space. It therefore positions graduate attributes in a similar

way in relation to a consideration of the purposes of university and the role of such attributes in quality assurance considerations. However in this conception the evidence upon which such decisions might be based becomes broader. It would include students' experiences of their entire university experience in relation to the development of these attributes, rather than just their experiences of the courses and teaching.

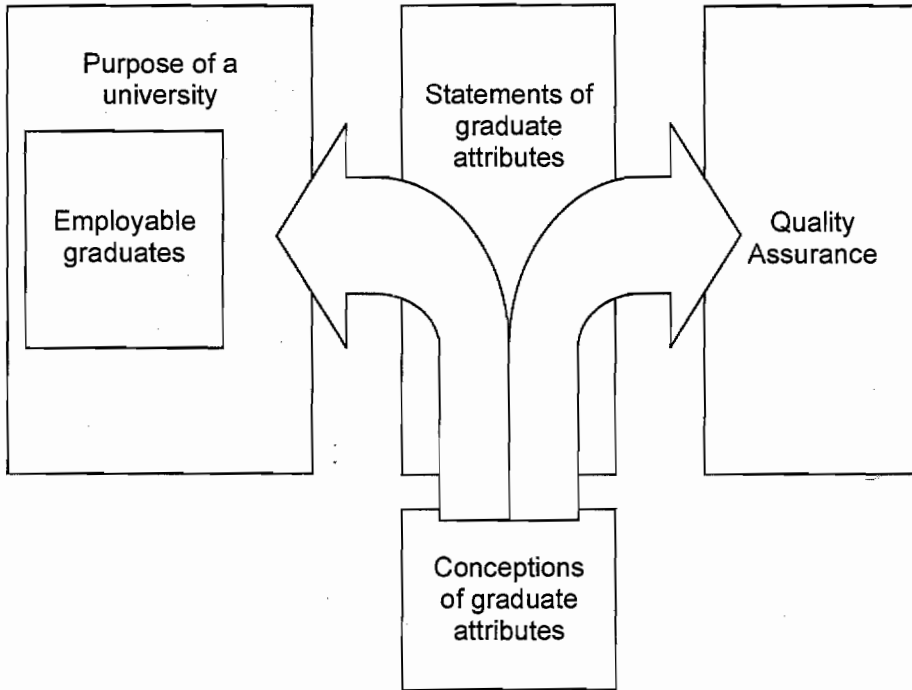
Each of the integrated conceptions of graduate attributes identified in this study has different implications for how members of the university community might approach questions as to the role of the university in preparing graduates for work, the nature of a university education and efforts to assure the quality of university processes to achieve such purposes. How then might the insights into such differences be useful in the context of today's universities?

Using the variation

In depicting the interaction between graduate attributes statements and curricula and considerations of the purposes of the university, calls for employable graduates and quality assurance initiatives, the interaction was depicted as being two-way (Figure 7.1).

Statements of graduate attributes cannot be formulated in the absence of a consideration of the purposes of a university education. However in attempting to articulate these purposes such statements might also contribute to this debate and discussion by highlighting some of the underlying beliefs and values held by the university community as to the outcomes of a university education. The university's purpose has often been debated in abstract terms and such discussions have not always been productive. Statements of graduate attributes might provide an additional forum for such discussion and a concrete context in which to base the debate. However for such statements to provide a helpful context for such discussions, the variation in understandings of such statements must be made apparent.

Figure 7.2: Using conceptions of graduate attributes to bring to the surface implicit assumptions inherent in the debate as to the purpose of the university and in quality assurance initiatives



Academics hold qualitatively different understandings, or conceptions, of graduate attributes. The variation observed in academics' conceptions of graduate attributes would suggest that the university community is not agreed as to the place of such attributes amongst the outcomes of higher education or as to the purposes of a university education, which underpin this. Likewise this variation provides different perspectives on quality assurance processes.

Agreement on 'the' purpose of a university education has long eluded the academic community, probably since the inception of universities and a plurality of views is likely to persist rather than being supplanted by a single common understanding. The plurality of views, or collective understandings, comprise what Bowden and Marton (1998) refer to as the collective consciousness of the organisation. This idea was introduced in chapter two to frame the diversity of practice apparent in reports of graduate attributes in the literature.

How might the insights arising from this research be helpful in the context of this lack of consensus and somewhat chaotic collective consciousness?

Shared ideas, values and goals [are seen] as being fundamental components of the collective consciousness of an organisation. They may not be explicit; they are often taken for granted and different members of the organisation may have acquired them independently from each other, simply by being socialised into the same profession and discipline or same research community. We are emphasising more the differences and complementarities, and in order to profit from the differences and complementarities, they must be brought out into the open; they must become visible. Only then will they enrich collective consciousness, in terms of the extent members of a certain group or a certain organisation are conscious of the ways in which a phenomena of common concern appear to other members of the group or organisation. (Bowden & Marton 1998 p 201)

The variation in conceptions identified in this study gives a structure to the collective understandings of graduate attributes held by the university community and provides a way of making visible the different understandings held by individuals.

The categories of description in each outcome space describe the key aspects of the variation in understandings of the phenomenon of graduate attributes. The seven logical and internally consistent combinations of these two aspects provide a framework which brings to the surface key aspects of the way these different understandings are constituted in university curricula and teaching. By highlighting the variation the erroneous assumption of a shared underlying meaning to the term is uncovered and brought into the open where it can be explored. Making the 'differences and complementarities' visible is a first step in opening up a discussion about the role of graduate attributes in contemporary university curricula and indeed the underlying purpose of such curricula and what might constitute evidence of quality in such curricula.

By making visible the nature of the variation between different understandings of graduate attributes, an individual is more able to see how her or his understanding

differs from, and is alike to, the understandings of others. In seeing these differences and similarities in understandings clearly, the way the different graduate attributes curricula (in which these understandings are constituted) might contribute to the collective university curriculum and statement of outcomes (which attempts to describe the collective university understanding of graduate attributes), also becomes clear.

The framework allows individuals to see how their understandings differ from the espoused collective consciousness, as constituted in university policy. Such policy purports to speak for the collective consciousness; it is what the university community, as an organisation, agrees. However in the case of graduate attributes the policy has often represented a combination of aspects of different understandings with no clear conceptual basis for how these different aspects of understandings relate to one and other. The structure of the variation identified in the present research provides a way of making sense of the conglomerate of ideas that have been articulated in universities' statements of graduate attributes. It provides a framework and structure within which an academic can see how his or her personal understandings differ from, and are part of, this organisational perspective. It also provides a way forward in restructuring these policies, something we will return to later.

As well as providing a framework to make sense of the collective consciousness, in identifying the key aspects of variation the groundwork is also laid for learning on the part of the members of the university community. The overall structure of the conceptions allows members of the university to become aware of the range of different understandings of the phenomenon, it 'opens-up' the variation in these understandings. In doing so it provides a means by which an individual can learn - or in phenomenographic terms - come to understand graduate attributes in a more complex way.

From a phenomenographic perspective learning involves coming to experience a phenomenon in a more complex way. The increased complexity can be the result of the incorporation of new elements within the structure of awareness, or new relationships between elements, or between elements and awareness as a whole. Learning occurs through the experience of different perspectives on a phenomenon, perspectives which involve variation with regard to aspects of the phenomenon. In response to the different

perspectives, there is a recognition by the learner, of either new dimensions of variation, or a new potential for variation in a discerned dimension of variation, or a changed or new relationship between discerned dimensions of variation (Marton & Booth 1997). The variation is integrated with the other, simultaneously focussed on, and related, dimensions of variation of the phenomenon, leading to a change in the structure of awareness and hence, way of experiencing the phenomenon.

By bringing to the surface the key aspects of the variation between different understandings of graduate attributes the findings of this research provide a means by which individuals can more easily become aware of the potential for changes in their existing understandings of graduate attributes. The perception of such variation is the precursor to the development of more complex perceptions of the phenomenon.

Such learning presupposes that there are benefits accruing from academics developing more complex ways of understanding the phenomenon. Are the less complex understandings of the phenomenon limiting or just different? Before we consider how the findings might facilitate such learning we will first explore some of the implications arising from the different conceptions of the two aspects of the phenomenon of graduate attributes for universities' claims of graduate attributes and current attempts to develop such attributes.

Implications arising from the observed variation in academics' understandings of the concept of graduate attributes

First let us consider the variation described by the first outcome space: Academics' understandings of what graduate attributes are.

Figure 7.3: Expressed conceptions in the first outcome space

| | Conceptions of WHAT generic graduate attributes are | | | |
|---------------------|--|------------------------|-------------------------|----------------------|
| | Level 1: Precursor | Level 2: Complement | Level 3: Translation | Level 4: Enabling |
| Number of academics | 2 academics | 5 academics | 6 academics | 2 academics |

As was hypothesised, the academics interviewed held different understandings of the concept of generic attributes (figure 7.3). The assumption implicit in the literature and debate on this topic, of a shared understanding of the concept of generic attributes was not supported by the research findings. The four categories of description that characterise the key features of the variation are:

1. **Precursor:** Some academics describe generic graduate attributes as largely irrelevant in the context of the courses they teach. They are conceived of as necessary *additional* skills and abilities but the expectation is that students will already possess these. As such any attention to the development of such skills at a university level is for remedial purposes only. In this category, generic attributes are conceived of as lower level, *precursor*, basic competencies not higher order intellectual capabilities or attitudes. There is no dynamic relationship between generic attributes and discipline knowledge.
2. **Complementary:** The second category of description reflects a similar understanding in terms of generic attributes as *necessary additional* general skills and abilities however these are seen as useful additional attributes that *complement* discipline knowledge. Unlike the first category, there is an expectation that such attributes are part of the university syllabus but that they are separate and secondary to the learning

of disciplinary knowledge. The complementary nature of generic attributes in this category also manifests in the understanding that within the set of general skills and abilities there are particular attributes that complement particular disciplines and therefore different disciplines might prioritise the development of different attributes.

3. **Translation:** The third category of description is similar to the second in that generic attributes are perceived as necessary skills and abilities for university students to develop as part of their studies and hence they are part of the university curriculum. However this category differs from the preceding category in that the attributes are perceived to be abilities that are relevant to disciplinary knowledge. They are an important part of the discipline curriculum as they allow the *translation* of disciplinary knowledge to new contexts or situations as well as the application of abstract disciplinary knowledge to actual contexts. In this conception, the generic attributes *transform* discipline knowledge to maintain and ensure its relevance and currency. In this way generic attributes facilitate new learning of disciplinary knowledge and skills in that the 'translation' potential of the attributes can also support the revision of existing knowledge in response to new contexts and challenges. This category differs from the preceding category in terms of the relationship between the generic attributes and the disciplinary knowledge. Unlike the preceding category where the relationship was complementary, but still separate, in this category generic attributes are much more closely connected to disciplinary knowledge. By virtue of this close connection to disciplinary knowledge, the generic attributes become modified or 'specialised', and in this conception generic attributes are more discipline specific.

4. **Enable:** Akin to the preceding category, the fourth category reflects an understanding of generic attributes as abilities that are important elements of university learning. However, unlike the preceding category, the attributes were not simply connected with learning in the discipline, they are *integral* to such learning and knowledge. Rather than sitting alongside disciplinary knowledge, the attributes are seen as being essential core aspects of all scholarly knowledge. In this category, generic attributes are the skeleton of disciplinary knowledge and abilities and they provide both the form and function which enables disciplinary knowledge and learning. These embedded attributes are also more long lasting and once developed provided a reusable framework that enables students/graduates to acquire new knowledge as required. In this conception,

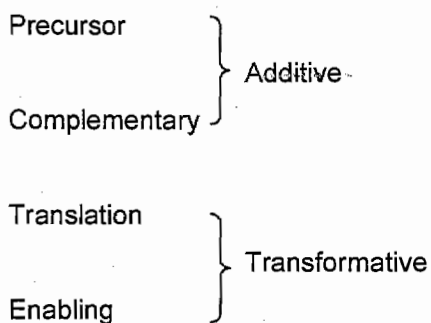
generic attributes are understood as transcending disciplinary boundaries even though they are developed within disciplinary contexts and knowledge. In common with the preceding category, generic attributes are perceived to have the potential to *transform* disciplinary knowledge rather than simply add to it. However in this conception, the attributes are seen to play a role in transforming the whole individual in terms of personal development above and beyond contemporary disciplinary learning.

The presence of the variation between these hierarchical categories of description, and the nature of the observed variation, has several implications for universities' attempts to implement policies of generic attributes of graduates. In particular the nature of the variation has implications for academics' perceptions of the relevance of including such attributes amongst more familiar university learning outcomes related to the acquisition of a body of disciplinary knowledge and skills. Even if seen as relevant, the nature of the variation has implications for the relationship between such graduate attribute outcomes and disciplinary learning outcomes and hence the way in which such attributes might be included. Let us first consider these two key implications before considering the notion of 'transferability' that is central element of many rationales for generic attributes.

(i) The inclusion of graduate attributes amongst university learning outcomes

Many of the issues discussed in the following pages relate to the questions of the nature of a university education raised in the initial section of this chapter. This further underlines the argument that statements of graduate attributes cannot be meaningfully promulgated in the absence of considerations of the purpose of a university education.

In describing the variation in academics' understandings of graduate attributes as outcomes of a university education, the referential aspect of the categories of description in the first outcome space characterised conceptions as either additive or transformative.



The first two categories of description are additive. The additive understanding conceptualises generic attributes as skills and abilities which are, to a greater or lesser extent, useful additions to the 'real business of a university', often seen as the learning of discipline knowledge. Some perspectives on the demands of employers for graduates with employable skills might be construed in terms of this additive quality; 'Employers demand that graduates of today's universities demonstrate generic skills as well as discipline knowledge'. Inherent in such additive conceptions is the notion that while generic attributes may add to discipline knowledge, they are separate from that knowledge. In additive conceptions, graduate attributes do not change either the discipline knowledge, or the individual, in any transformative way.

In level one conceptions, generic attributes are prerequisite skills, which can be reasonably expected, and selected for, in university applicants.

At a time of overproduction of graduates this favours selection from the most prestigious universities where students are presumed to have the appropriate transferable skills in their personality profile. Where these skills are explicitly taught in the newer universities, this is believed to be a consequence of the admission of inadequate students who require compensatory education. (Smith & Webster 1997 p 4)

Level two conceptions position generic attributes as skills and abilities that should be developed in addition to the 'other' learning at university. In both these conceptions of generic attributes, the attributes may be valued by employers and graduates *in addition to* the knowledge and abilities gained through a university education, however the attributes

do not change what is taught in terms of the discipline knowledge or how it is taught. In the additive conceptions, the generic attributes that are learnt in level two, or selected for in level one, do not change what has been learnt in terms of discipline knowledge.

The recent report on employer satisfaction with graduate skills commissioned by the Australian government (DETYA 2000) identifies generic attributes as being desirable *in addition to* 'academic achievement in a suitable discipline'. This report, based on employer surveys, would appear to construe generic attributes in an additive way. However, a similar employer survey of generic attributes in the UK (Harvey & Green 1993) analyses the reasons offered by employers for employing graduates in terms of a continuum of the benefits likely to accrue to the employer. These benefits are described in terms of a continuum of enhancement that ranges from 'adding to an organisation' to 'transforming an organisation'.

While the UK report has identified the importance to employers of graduates with transformative qualities, both the Precursor and Complementary understandings of such employable skills is as a set of useful additional skills rather than a qualitative difference in the type of disciplinary knowledge outcomes achieved.

In contrast to this 'additive' view of the role of generic attributes in a university education, is the notion of transformation. This is the characteristic of the referential aspect of the level three and four conceptions of generic attributes. In these conceptions, generic attributes are understood as abilities that are closely related to discipline knowledge, shaping such discipline knowledge and, in some conceptions, the individual. Conceptions of generic attributes that are transformative suggest a different understanding of the nature of the outcomes of a university education. In transformative conceptions, the generic attributes change the nature of the disciplinary learning outcomes rather than simply adding to them. In a level three conception this transformation is focussed on the application of discipline knowledge, in a level four conception the focus of this transformation is extended to the individual as a learner in all walks of life.

It (university) provides a transformative experience in peoples' lives when identities may be decisively shaped and lasting friendships and associations contracted (Pascarella & Terenzini 1991). Moreover that university experience

provides a basis for the cultivation of independence of thought which underpins a healthy democracy (cf. Barnett 1994). This entails the provision of tools and realms of knowledge which provoke thinking (Anderson 1993) which will better equip students to examine and evaluate the situations they will encounter later in life. The experience moreover enables the development of narratives of engagement with present and past circumstances, an essential element of a vibrant culture. (Smith & Webster 1997 p 8)

This transformative view of generic attributes is consistent with a view of the outcomes of university education that transcends the acquisition of a static body of disciplinary knowledge. The attributes provide mechanisms for the transformation and reinvention of discipline knowledge in a changing environment. This is consistent with notions of 'capability' (Stephenson 1996) and life long learning (Candy et al. 1994).

Barnett argued that learning in higher education was limited were it to be confined to the learning of general skills or to expertise in a domain. Drawing on critical theory in particular he contended that a goal should be the development of wisdom defined as a form of deep reflection, collective exchange and recognition and even a critique of inner values. Central to this is the idea that learners who have such wisdom will be able to transcend both disciplinary and skill based paradigms of higher education and, being initiated into life long learning, will be able to develop a sense of self that uses but is not bounded by the insights of these two approaches. (Harvey & Knight 1996 p 132)

Inherent in level four transformative understandings of generic attributes are notions of personal growth and of university learning as being concerned with the development of the whole person.

...much of what is learned at universities is neither to do with subjects nor with the (generic) skills. For many students the legacy of higher education is strongest in terms of personal identity: an identity that has been formed while studying but which is produced as much by being a student as by what is taught during it. In other words transformation takes place not so much through

the deliberate actions of the university but through the exigencies of the experience of taking on the student role. (Harvey & Knight 1996 p 133)

The variation in academics' understandings of generic attributes appear to reflect fundamental differences in understandings of what it means to be capable or competent in terms of a university education.

The specification of core skills implies an account, albeit an incomplete one of what it means to be capable. There is however no consensus on what would constitute an adequate account. (Harvey & Knight 1996).

Differences in opinions as to the nature of a university education are a recurring topic in the higher education literature (for example Coady 2000), and as noted in the opening sections of this chapter, the variation in academics' conceptions of generic attributes as 'the core outcomes of a university education' parallels this debate. Any discussion of the generic attributes of graduates, and strategies to achieve these, is likely to need to engage in a discussion of academics' and students' fundamental understandings as to the nature and purpose of a university education. Such a discussion seems timely given the present level of debate as to the role and place of universities in society.

Writing on the changing nature of universities Smith and Webster (1997) make the following observations:

The(se) changes are propelling a fresh round in an ancient and continuing debate about the role of the university, about what Cardinal Newman (1987) writing in 1853 highlighted as the 'Idea of a University'. For much of this century the 'Idea' of the university has been, or appeared to be, a straightforward, if not settled, matter. (Smith & Webster 1997 p2)

These authors go on to note that in the past:

When a graduate emerged from the process he (usually) evinced characteristics which distinguished the 'educated' person from the uneducated. (Smith & Webster 1997 p3)

However the last century has seen fundamental changes to universities:

There was a steady process of differentiation and splintering of zones of knowledge which rendered it increasingly hard to state the goals which were held in common by all areas of the academic community. (Smith & Webster 1997 p3)

Some would argue that a shared sense of the purpose of a university is inherently problematic in the postmodern world. However, any attempt to formulate and implement policies of generic attributes should at least recognise the plurality of views and understandings that exist in the postmodern university rather than ignore them and assume the existence of a shared understanding, as has been the case to date.

The problem of description goes deeper than a mere finding of the right words. It has become evident that the modern university has changed in purpose, perhaps beyond recognition in many cases. Today's universities are so diverse, so fractured and differentiated that it may have become absurd to seek to express any grand organising principle. (Smith & Webster 1997 p 3)

(ii) Disciplinary contextualisation of generic graduate attributes

Having explored some of the implications for broader questions as to the place of graduate attributes amongst university learning outcomes arising from the variation in the first outcome space, let us narrow the focus and consider a specific aspect of how this variation might be differently constituted in academics' responses at a course level.

We will explore the idea of disciplinarity of graduate attributes and consider in more detail how different conceptions of graduate attributes might be realised differently in the learning outcomes of university courses across different disciplines. A key feature of the recommendations contained in the recent Australian Technology Network (ATN) report on generic graduate attributes (Bowden et al 2000) is the presumption of differentiation of

generic attributes at a discipline level through their embedding in disciplinary learning outcomes.

The aims and objectives of the courses are elaborations of this set of (generic) capabilities as they are interpreted in discipline or professional areas. (Bowden et al 2000)

The present study has identified variations in academics' understandings of existing generic attributes policy statements in the context of their courses and teaching. At one level this finding would support the *Generic Capabilities of ATN University Graduates* report recommendation that such policies need to be elaborated and interpreted in context as these different understandings are not always apparent. However, the assumption that such an interpretation will be consistent within a discipline is unproven. In fact, this research has identified that academics in the same discipline and in broadly similar disciplines, conceptualise and incorporate graduate attributes in their courses and teaching in very different ways.

One of the important dimensions of variation in academics' understandings of the concept of generic attributes is in terms of the relationship between generic attributes and discipline knowledge. While the relationship between generic attributes and discipline knowledge varies between the different conceptions identified, it does not necessarily vary between disciplines. Academics in the same discipline area can hold different conceptions of what generic attributes are and how these are developed. As such, it is not sufficient to assume that different academics will integrate 'the development, practice and assessment of generic attributes...within the context of discipline knowledge' (Bowden et al 2000), in the same way.

The academics interviewed in this study held different understandings of how generic attributes related to their course's disciplinary learning outcomes and this variation was not dependent on discipline area. In contrast to the recommendations of the *Generic Capabilities of ATN University Graduates* report, this research has found that some academics have a conception of generic attributes that does not encapsulate any interaction between generic attributes and disciplinary knowledge or context (Precursor). Other academics interviewed expressed different understandings of the concept of generic

attributes. In these understandings discipline knowledge and generic attributes interact in various different ways (Complementary, Translation and Enabling conceptions). The differing relationship between generic attributes and discipline knowledge is one of the key features of the variation between categories. Any attempt to 'interpret generic capabilities in the context of discipline courses' must first consider the nature of the relationship between generic attributes and discipline knowledge assumed in such contextual embedding.

The observed variation in the relationship between generic attributes and disciplinary knowledge, and the variation in the role and relative importance of disciplinary context in developing such attributes, has implications for how academics might approach the task of interpreting and embedding generic attributes in the context of discipline learning outcomes and teaching. Moreover as we will discuss in the section following this one, these implications extend to the important activity of assessment.

In the Precursor conception graduate attributes are understood as general pre-requisites for university learning. Generic attributes do not interact with the discipline knowledge and the skills are undifferentiated in terms of the discipline or field of study. The lack of any relationship to discipline based knowledge which characterises this conception would suggest that teaching/learning of such attributes would not be part of the discipline curriculum. Moreover, the 'remedial' development of such attributes for the small subgroup of students needing this would not require a disciplinary context as such attributes are usually acquired prior to discipline study. From the perspective afforded by the Precursor conception, it would not be relevant for academics to interpret or embed the development of such attributes in the context of courses as they are not part of university learning let alone discipline learning.

The Complementary conception is an understanding of graduate attributes as being complementary to discipline knowledge. In this conception, while graduate attributes do not change discipline knowledge in any way, disciplinary context does influence generic attributes in one way. While generic attributes, as a complete set, may be generic in the Complementary conception, different skills/attributes may be considered particularly relevant by virtue of their complementary relationship with disciplinary contexts and work activities. There may be a differentiation between disciplines, in terms of which generic

attributes are prioritised in this regard. This conception of generic attributes as discrete abilities separate to disciplinary knowledge, suggests that such attributes, while present in the curriculum, would typically be a relatively isolated component of the curriculum of the discipline. The separation and isolation of attributes in this conception would be consistent with a perception of the development of such attributes as being the responsibility of particular modules or teachers within the curriculum and might not be consistent with moves to embed the development of graduate attributes in all courses and teaching.

This conception of generic attributes appears to be the one held by the authors of a recent report on Embedding Key Skills at the University of Nottingham:

It became clear very early in the project that the different disciplines participating in the project valued and embodied specific key skills to a different extent. Therefore, the decision was made that 'departments' would select those key skills that were naturally occurring within their academic discipline, vocational area and/or selected modules, rather than developing those that were of limited relevance. (Chapple & Tolley 2000)

The Translation conception encompasses an understanding of generic attributes as interacting with and changing discipline knowledge, particularly in terms of the application and revision of discipline knowledge. This understanding is an overtly discipline specific conception of generic attributes. In this conception generic attributes parallel and interact with discipline knowledge. The interaction of different disciplinary foci and generic attributes not only changes the disciplinary knowledge (through its application) but also involves the specialisation of the generic attributes to support the application and translation of discipline knowledge. In this conception generic attributes are only generic in abstract terms, they become contextualised and non-generic by virtue of the disciplinary focus and the interaction with disciplinary knowledge and learning. The disciplinary context is a key feature of this conception and the development of generic attributes is closely tied to discipline contexts. This leads to differentiation of the generic attributes between discipline areas. This conception of generic attributes has much in common with the recommendation of the *Generic Capabilities of ATN University Graduates* report that generic attributes be interpreted in the discipline or professional area.

The fourth category, the Enabling conception incorporates an understanding of generic attributes as integral substrates of discipline knowledge. In some ways this is the most discipline specific understanding, as the attributes are embedded or 'hidden' within disciplinary knowledge and abilities. However, the enabling conception is, in reality, a highly generic conception. This conception incorporates an understanding of generic attributes as potentially outlasting ephemeral disciplinary knowledge. In this conception, generic attributes are qualities of knowledge and abilities that are common to all university learning. As they sit at the core of disciplinary learning, once developed, they provide a framework for new knowledge and the abilities required to revise existing knowledge or to learn new knowledge. This learning potential extends beyond learning in the discipline or familiar workplace context, to encompass other realms of knowledge, unfamiliar work contexts and to other facets of personal development and growth. As such they transcend the specific disciplinary context in which they may have originally been acquired and are, in fact, highly generic.

(iii) Assessment

The powerful and pervasive influence of assessment on student learning outcomes has long been recognised (Boud 1988) and assessment of graduate attributes has been identified as a particular challenge facing universities (Hager et al 2002, Fallows & Steven 2000). What then are some of the implications for assessment arising from these different understandings of graduate attributes as outcomes? One of the features of effective assessment is that it is aligned with the rest of the curriculum (Biggs 1996), in particular that it supports and rewards the intended learning outcomes and processes. Assuming such alignment, the various realisations of different conceptions of graduate attributes in course learning outcomes of courses would logically be echoed in variations in assessment.

Assessment should be quite different for each of the different understandings of graduate attributes. In the Precursor conception, academics would not logically include graduate attributes as course learning outcomes, nor would they assess them at the end of the course. Assessment of graduate attributes in such a conception might be expected to be limited to a screening assessment to identify 'at risk' students. In the Complement

conception graduate attributes might be included as additional, discrete learning outcomes. An assessment strategy congruent with this conception might involve the inclusion of an additional assessment task or the allocation of additional marks or the inclusion of additional assessment criteria related to graduate attributes. Given the relative unimportance of assessing such outcomes in comparison with the need to assess discipline knowledge, such additional assessment may not even be included. Even if such assessment were included, the prioritisation of discipline content over generic skills would have implications for how staff approach decisions about what is essential to pass and what is optional. For example, it seems unlikely from the perspective offered by this conception that a student would fail the course because she failed on the presentation skills section of the assessment of the project.

It has been argued that in a Translation conception, graduate attribute learning outcomes are closely related to disciplinary learning outcomes in courses. Ideally, this close relationship would be mirrored in the assessment of such attributes in this conception. Rather than the inclusion of additional assessment tasks or elements of assessment processes that focus on generic attributes, different forms of assessment of disciplinary learning become appropriate in this conception. In this conception there is an interaction between discipline knowledge and graduate attributes and a focus on the role of graduate attributes in the application of knowledge in real world contexts. In light of this a congruent assessment strategy for this conception would be one that was both 'integrated' and 'authentic'. For instance, assessment might probe the application of knowledge to practice, which, in this conception, would require the integration of graduate attributes and discipline knowledge to achieve competent performance in an authentic task.

The task of implementing an assessment of graduate attributes that is congruent with the Enabling conception is more challenging within the existing university assessment paradigm. How might an academic approach the assessment of the interwoven capabilities and embedded attitudes and aptitudes for learning that characterise this conception of graduate attributes? The holistic and embedded nature of graduate attributes in this conception does suggest some directions which could be fruitfully explored in identifying congruent assessment approaches for Enabling conceptions. Holistic assessment which synthesises information drawn from a diverse range of contexts, student self-assessment which incorporates critical reflection on oneself as a

learner, and capability based approaches to assessment in which students are challenged to solve unfamiliar problems in unfamiliar settings (Stephenson 1996), all echo elements of the enabling conception of graduate attribute learning outcomes. However, these assessment strategies are not commonly found amongst the typically traditional assessment strategies of most university courses (Boud 1995).

(iv) Transferability of graduate attributes

Central to many of the rationales for developing generic attributes in higher education, particularly in the UK, is the notion of such attributes being transferable.

The issue of transferability is key to the concept of core skills... (Dunne 1999)

The different conceptions of graduate attributes suggest different implications for transferability. There is an explicit or implicit assumption in much of the literature on generic attributes that such attributes are learning outcomes that are fully transferable from one context to another, that is, they are not context dependent. In the UK literature some graduate attributes are actually referred to as transferable skills. The actual extent or nature of this transfer is a matter of some conjecture (Holmes 2000). However it seems unusual that while transferability is implicitly an element of all the conceptions identified in this research, it is not the major focus of any of the conceptions other than the Enable conception. While this makes it difficult to say too much in this regard, the question of the transferability of generic attributes can be related to the discussion of the discipline versus generic nature of such attributes.

The concept of contextual dependence, and indirectly transferability, is an element of all the conceptions identified in this study. However, level four conceptions are the only conception where the transferability of generic attributes once they have been learnt is the focus of the conception. So what does a consideration of the other categories of description in the first outcome space suggest in terms of transferability?

In the Precursor conception, the generic attributes are relatively undifferentiated and might logically be assumed to be fully transferable. Indeed, in this conception, generic attributes

are a common, base level set of foundation skills, required as precursor to university learning and applicable in a range of disciplines and potential learning contexts.

In the Complementary conception, while different disciplines might prioritise and develop particular attributes and therefore particular graduate attributes might be more developed than others, these appear to be understood to remain, to a large extent, generic. This conception makes no strong implicit claim to transferability of such skills. However, as in the level one conception, the attributes are not particularly differentiated or specialised, just developed to a different extent dependent on the discipline focus. So while there is no strong basis for transfer there is equally no strong contextual learning barrier to such transfer.

In the Translation conception, the generic attributes are differentiated in relation to different discipline knowledge. Implicit in the disciplinary specialisation of the attributes in this conception is the idea that such abilities may need to be re-contextualised for a new disciplinary context. Transfer would require re-specialisation. As such, the discipline-specific nature of generic attributes characteristic of this conception may pose a potential barrier to transferability. In this conception, as well as application, generic attributes also allow translation in the other direction, learning in new contexts. As well as facilitating the application of existing knowledge to new contexts, new contexts can lead to the revision of existing knowledge. Implicit in this feature of the Translation conception is the idea that the generic attributes are relevant across a range of related disciplinary contexts. However the potential of generic attributes to support application and learning in unrelated discipline or knowledge realms is not a focus of the conception.

Transferability is a key feature of the Enabling conception. In this conception while generic attributes are learnt in context as an integral substrate of discipline knowledge, they are also the vehicle and mechanism for transfer of this knowledge. Not only are generic attributes conceived to be transferable to new contexts and knowledge, they are the abilities that facilitate such transfer and enable the learning and application of knowledge in unfamiliar settings and new contexts far removed to that of the original discipline in which they were learnt.

The *Generic Capabilities of ATN University Graduates* report (Bowden et al 2000) does not explicitly address the issue of transferability of generic attributes. However this feature is implied in terms of the discussion of the importance of 'situational variation' in the learning and assessment of generic capabilities. Situational variation as described in the report would mean that a student's performance on any generic capability would be influenced by the complexity and familiarity of the context.

Competence is achieved only when students feel confident to demonstrate a capability across a wide variety of contexts... (Bowden et al 2000)

Students need to learn in ways that help them deal with a range of contexts, many, if not all, unique. (Bowden & Marton 1998 in Bowden et al 2000)

So, in summary the different understandings of the nature of graduate attributes identified in the categories of description in the first outcome space have implications for how the university community approaches the task of identifying the relevant attributes for graduates of the institution and for how these attributes might be incorporated in course learning outcomes. Biggs' (1996) notion of constructive alignment in curricula would suggest that the variations in the nature of the outcome would be mirrored in variations in course teaching and learning processes such as assessment and we have considered some of these. Let us now focus more specifically on the strategies employed to facilitate the development of such attributes in students. What are some of the implications arising from the related second aspect of graduate attributes considered in this study for how the university community approaches the development of graduate attributes?

Implications arising from the observed variation in academics' understandings of how graduate attributes are developed

Turning to the second outcome space, the analysis revealed that in addition to having qualitatively different understandings of the concept of generic attributes of graduates, the academics interviewed held different conceptions as to how students might develop such attributes. To recap, six categories of description were identified representing the different understandings of how students might develop generic attributes:

1. **REMEDIAL: Not usually part of university teaching.** Some academics perceive that the development of graduate attributes is not within the purview of university education. Rather, the development of such attributes is considered to be the responsibility of previous experiences, educational or otherwise. However, such attributes are still considered important graduate attributes and students who have not previously developed such attributes are considered to require remedial teaching to develop these, usually by non-university or non-disciplinary teachers. There is a strong teacher focus and students are seen as dependent on such teaching to develop the required attributes.
2. **ASSOCIATED: Generic attributes are taught as a discrete subset of the teaching in a university course.** Some academics understand the development of generic graduate attributes to involve the teaching of these general skills as an isolated subset of the teaching in usual university courses. While the teaching of such attributes is seen as important, it is secondary to, and less important than, disciplinary teaching. The teaching may or may not be the province of the disciplinary teacher. There is a strong teacher focus present in conceptions included this category.
3. **TEACHING CONTENT: Generic attributes are taught in the context of teaching the disciplinary knowledge.** Some academics consider that generic graduate attributes are taught as part of the usual university course content. Conceptions in this category involve the teaching by discipline teachers or non-discipline teachers in collaboration with discipline experts. The teaching of the generic attributes is integrated with, or parallels the teaching of discipline content. The focus remains on teaching rather than learning.

4. **TEACHING PROCESS: Generic attributes are taught through the way the course disciplinary knowledge is taught.** Some academics perceive the development of generic attributes as being a function of the way the disciplinary knowledge is taught. The process of teaching disciplinary knowledge teaches students generic graduate attributes. They are not necessarily taught as part of the content, however the way the content is taught facilitates the learning of the attributes. While there is a role for the learner in this conception the focus remains on the teacher and teaching.
5. **ENGAGEMENT: Generic attributes are learnt through the way students engage with the course's learning experiences.** This category introduces conceptions of the development of generic attributes that are learner-focussed. There is a focus on the learner rather than the teacher or teaching, and a high degree of student responsibility in the development of generic attributes. The development of the attributes is related to the way the students engage in the learning experiences of the course. The focus is not on the teaching of either the disciplinary content or generic attributes or the teaching process. Rather it is on the way the students engage as learners with the course content and the teaching/learning processes of the course.
6. **PARTICIPATORY: Generic attributes are learnt through the way students participate in the experiences of university life.** As with the preceding category, this category is also learner-focussed and students are perceived as having a high degree of autonomy in the development of generic attributes. However the teaching and learning experiences that are included are broader, in the sense that the development of generic attributes relates to the way students engage with the broader experiences of university life, not just their courses. Academics with conceptions in this category perceive that the way students engage with the learning experiences of belonging to a university community, and the way they participate in university life, including their courses, contribute to the development of generic attributes.

The presence of the variation between these hierarchical categories of description, and the nature of the observed variation, has several implications for universities' attempts to implement policies to foster the development of generic graduate attributes.

(i) Curriculum reform initiatives

Recently there have been moves in some Australian universities to go beyond policies that claim generic attributes as outcomes of a university education, and to develop implementation strategies to ensure such outcomes are achieved. The national report on the development of generic graduate attributes of the Australian Technology Network (ATN) universities (Bowden et al 2000) is the main example of these newly developed implementation policies (for example 'Strategies for the development of generic attributes of graduates of the University of South Australia'). Such initiatives focus on implementing teaching and learning strategies intended to achieve the graduate outcomes stated in earlier policies. The report recognises that achieving such outcomes is likely to involve significant curriculum reform in many cases.

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)

As noted in the previous discussion, the variation in how academics understand the concept of generic attributes has implications for how universities formulate such statements of outcomes, both at a university level and the level of individual courses. However the present research has also found that academics have different understandings of how students develop generic attributes. This variation in how academics understand generic attributes to be learnt has implications for the current attempts to develop and implement teaching and learning practices intended to achieve such generic graduate outcomes.

Bowden et al (2000) identify six principles that underpin the ATN universities' approach to the identification, development, practice and assessment of generic capabilities (as they are termed on this report).

Principle 1: Desirable attributes are most usefully formulated at both university and course level.

Principle 2: The development, practice and assessment of attributes is most effectively achieved within the context of discipline knowledge.

Principle 3: Exposure to, and reflection on, a variety of teaching approaches and learning experiences, fosters a focal awareness of capability development.

Principle 4: Assessment practices should align with course/subject goals and teaching/learning practices.

Principle 5: A package for assessing generic capabilities incorporates items designed for a range of purposes.

Principle 6: Students benefit from progressive feedback on the development of capabilities.

The report also advocates a particular approach to teaching and learning:

Generic capabilities are best developed when they are embedded in the process and content of learning. This requires a thoughtful review of the learning objectives, teaching approaches and assessment methods to ensure the development of authentic learning environments. Alexander and Murphy (1998) outline five essential dimensions of meaningful learning that they argue need to be evident in all educational programs if graduates are to become adept lifelong learners: 1) an existing knowledge base; 2) opportunities to reflect on and regulate learning; 3) personal motivation; 4) individual development; and 5) awareness of the social context of learning. These dimensions describe aspects of the learning environment that reflect a learning rather than teaching orientation. Authentic learning environments foster a personal responsibility for learning. They link experience, previous understandings and new knowledge in a way that is readily apparent to the learner. They also simulate situations in which students may ultimately be employed. The challenge for teachers is to design learning experiences that are powerful in terms of developing ways of seeing and understanding the world around them Bowden and Marton (1998). Such learning experiences are inherently more effective than teaching for information transfer alone. (Bowden et al 2000)

The *Generic Capabilities of ATN University Graduates* report marks a significant move towards systemic curriculum reform. However, the qualitatively different ways in which the academics in the present study understood students to develop generic attributes are, in the main, not consistent with the teaching and learning strategies advocated by the report. Let us consider the different conceptions in relation to the principles and approach proposed by Bowden et al (2000).

The academics interviewed in the present study held a range of qualitatively different conceptions of the teaching and learning of generic attributes. The number of academics expressing conceptions in each of the categories of description is summarised in the following table (figure 7.4).

| Conception of HOW generic attributes are developed | | | | | |
|--|--|--|--|--|--|
| Level 1: | Level 2: | Level 3: | Level 4: | Level 5: | Level 6: |
| Remedial Not part of usual curriculum | Associated Taught as a discrete subset | Teaching Content Taught in context of discipline content | Teaching Process Taught by choice of teaching strategy | Engagement Learnt through student engagement with course | Participatory Learnt through student participation in university |
| 2 academics | 5 academics | 2 academics | 2 academics | 3 academics | 1 academic |

Figure 7.4: Expressed conceptions in the second outcome space

Two of the academics interviewed expressed level one (Remedial) conceptions of the development of generic attributes. In this conception the only teaching of generic attributes at a university level is in a remedial context. Academics holding conceptions in this category are unlikely to consider it appropriate to address the development of generic attributes in the context of their own courses and teaching. Recommendations such as the second principle in the *Generic Capabilities of ATN University Graduates* report 'The development, practice and assessment of attributes is most effectively achieved within the context of discipline knowledge', are unlikely to be taken seriously by academics holding such a conception.

Level two (Associated) conceptions of development of generic attributes were the most commonly expressed conception by the academics interviewed in this study. In this category, generic attributes are perceived to be developed by teaching the attributes as an additional discrete component of the discipline syllabus. Academics holding a conception of the development of generic attributes as being developed through the provision of additional discrete curricula may not perceive it to be appropriate to significantly modify their own teaching to support the learning of generic attributes, beyond making space for these additional strategies in their course. Instead, academics holding such a conception would be more likely to believe that the development of generic attributes is better managed by the provision of additional separate, 'bolt-on' courses of study or discrete modules within existing syllabi, that students could take in parallel with their existing courses. Such courses would be an additional component of the curriculum and would be unlikely to result in any changes to either existing curriculum content or existing teaching methods. The possibility of such a response on the part of academics is recognised as a potential problem in the *Generic Capabilities of ATN University Graduates* report:

Generic capabilities might be 'built-on' to the curriculum without any alteration to the learning environment. (Bowden et al 2000)

However, such a response would be entirely consistent with the level two conception of the development of generic attributes expressed by many of the academics interviewed in the present study. Indeed, some universities and courses have adopted the approach of providing additional, stand-alone courses, of either a remedial or inclusive nature, as a major strategy to address generic attributes. A review of the effectiveness of a range of curriculum intervention strategies (Barrie & Jones, 1999) has concluded that even when implemented, such 'bolt-on' generic attributes curricula are not an effective approach, a view that is also held by the authors of the *Generic Capabilities of ATN University Graduates* report and elaborated in the University of South Australia contribution to this report. However, in light of the finding that five of the fifteen academics in this study conceived of the development of generic attributes in such a way, 'bolt-on' curricula responses may be a common response among members of the university community.

Holding a conception in either the first or second category is inconsistent with the approach set out in the ATN recommendations for strategies to address the development of generic attributes.

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

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

Based on the features of the observed variation in the categories of description, holding a conception of the development of generic attributes in either category three, four or five would be a precursor to implementing the teaching and learning recommendations of the *Generic Capabilities of ATN University Graduates* report.

A level three (Teaching Content) conception, conceives of the development of generic attributes as occurring within the context of teaching disciplinary content. Academics holding this conception would be more receptive to calls to modify their curriculum content to incorporate the teaching of generic attributes than academics holding a level one or two conception. However conceptions in this third category of description do not address other important teaching and learning issues noted in the *Generic Capabilities of ATN University Graduates* report.

The ATN report proposes that a '*learning*' rather than '*teaching*' orientation is required for the effective development of generic attributes. A learning orientation involves a student-centred approach to teaching. The focus is on how students learn from a teaching/learning experience as opposed to a teacher-centred approach, where the focus is on how and what the teacher teaches, without attention to how students might be learning from such teaching. Conceptions in the third category of description, while incorporating the integration of generic attributes with the teaching of discipline content, have a *teaching* rather than *learning* orientation. The focus is on the teaching of the attributes (and discipline content) rather than student learning. While academics holding conceptions in this category are more likely to modify their curriculum and teaching to incorporate generic attributes amongst the taught content, they are likely to modify their

teaching along traditional, teacher-centred, lines only. The 'challenge to teaching' outlined in the *Generic Capabilities of ATN University Graduates* report is for teachers to adopt more learner-centred approaches to teaching. A learner-centred approach is not a quality of conceptions in any of the first three categories of description.

The main feature differentiating level four (Teaching Process) conceptions from level three conceptions of the development of graduate attributes, is the emergence of a focus on the process of teaching. Academics holding conceptions in this category consider that generic attributes are taught through the way the course disciplinary knowledge is *taught*. While this focus may incorporate a role for students as active learners it is still firmly focussed on the teaching process rather than the learning process. This conception is the first level that approximates elements of the challenges to teaching recommended by the *ATN* report. However, this conception is still not learner-centred. Conceptions in this category focus on the process of teaching, rather than simply the content of teaching, as the important factor contributing to the development of generic attributes. There is however some implicit attention paid to the way students learn from such teaching. Academics holding conceptions in this category are more likely to pay attention to *how* they teach, raising the possibility of a concern for how students actually *learn* from such teaching. Academics holding such a conception would be in a position to 'engage in a thoughtful review of ...teaching approaches and assessment methods' as recommended by the *ATN* report (Alexander & Murphy 1998 in Bowden et al 2000). They may also be open to the incorporation of new teaching practices and techniques in their disciplinary teaching repertoire, however they do not express an understanding of the development of graduate attributes which is consistent with the learner-centred paradigm recommended by the *ATN* report.

A level four (Teaching Process) conception would appear to be the lowest level of conception required for academics' approaches to teaching graduate attributes to approximate the teaching and learning strategies espoused by the *ATN* report. However, it is only in the level five (Engagement) conceptions that all features of the teaching and learning approach recommended by the *ATN* report are apparent. The fifth category of description is characterised by conceptions of the development process that are truly learner-focussed. In this conception, the *main* determinant of the development of generic attributes shifts away from the teaching methods and content to the way students engage

with the methods and context and their actual experiences of learning. This conception is consistent with the importance the ATN recommendations place on the responsibilities of learners in the development of generic attributes as well as the use of authentic (personally relevant to students) learning environments (Bowden et al 2000). The report recommends the use of student-centred teaching and learning strategies such as 'reflective group exercises, problem solving situations, peer assessment and the development of personal portfolios'. Such strategies are characteristic of learner-centred approaches to teaching, a feature of the conceptions of development of generic attributes which is not fully present until level five.

Authentic learning environments foster a personal responsibility for learning. They link experiences, previous understandings and new knowledge in a way that is readily apparent to the learner. They also simulate situations in which students will ultimately be employed. The challenge for teachers is to design learning experiences that are powerful in terms of developing such ways of seeing and understanding the world around them. Such learning experiences are inherently more effective than teaching for information transfer alone.
(Bowden et al 2000)

In the level five Engagement conceptions, the focus is on this sort of student learning experience. Conceptions in this category incorporate a high degree of student responsibility. The development of the attributes is related to the way the students interact with the learning experiences of the course. The focus of this conception is not on the teaching process (level four) or the curriculum content (level three) rather it is on the way the students engage in learning and hence students' personal responsibility for learning is recognised and in the forefront in level five conceptions.

In level six (Participatory) conceptions the approach to the development of generic attributes is holistic, involving more than just the students' experiences of learning in the course. Conceptions in this category emphasise the role of the whole university experience. The development of generic attributes is not simply the result of the course curriculum, the teaching methods or even the students' experiences of these. Instead it is the result of the students' holistic experience of university. It encompasses all facets of university including the students' extra-curricular experiences. This conception has

implications beyond course design and teaching methods for how universities approach the development of generic attributes.

Teaching and learning strategies consistent with level six conceptions are not an overt feature of the recommendations of the *ATN* report or the various implementation strategies referred to in this report. However, while this aspect of the development of generic attributes is not directly addressed, it is a logical extension of some of the ideas included in the documents. The report promotes the value of holistic integrated capability:

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, which is critical to effective professional practice. (Bowden et al 2000)

The view of generic attributes as holistic capabilities and integrated personal qualities would imply that such abilities are not restricted to the classroom alone. As such it would seem reasonable that such abilities might also be developed in contexts outside of the traditional classroom learning setting. Level six conceptions have much in common with current developments in other aspects of Australian university teaching and learning which emphasise the importance of the holistic experience of university life for student learning outcomes. For example, research into the first year experience (McInnis 2001) has identified the contribution of social and non-classroom experiences to the quality of outcomes of first year university studies. The North American literature on student learning has long recognised the importance of 'out of class' learning experiences in contributing to the development of particular generic attributes (Terenzini et al 1995).

Changes in students' critical thinking abilities are shaped independently by what happens to them both in and out of the classroom..... Gains in critical thinking appear to be a consequence of a variety of student experiences, not just those that are part of the formal instructional program. Ways must be found to overcome the artificial, organisational bifurcation of our educational delivery systems. (Ternezini et al 1995)

A consideration of some of the case studies included in the *Generic Capabilities of ATN University Graduates* report also suggests a broader university experience approach to the development of generic attributes.

The second kind of learning experience is more holistic. It involves groups of students in reflective activities in which they discuss the nature of their own development in various subject contexts and plan future experiences aimed at improving their capabilities....The integrated approach being used by teaching staff provides students with opportunities to develop notions of themselves as holistic human beings who are simultaneously sociologists and social actors. It is an approach that will not only support the development of communication skills but will play a salient role in developing graduates who will know (or are able to reflect upon) in diverse situations and contexts, themselves, in their professional field and their audiences. (Bowden et al 2000)

The development of generic attributes, as described in this case study, transcends disciplinary contexts or the professional role, and encompasses personal development. This has much in common with the level six conceptions of the development of such abilities through extracurricular as well as curricular learning.

Such a conception of the development of generic attributes would involve an integrated response by the entire university community, not just teachers, to the challenge of the development of such abilities. Such an holistic approach would recognise that social, administrative and support services might provide valuable opportunities to foster the development of such graduate attributes. Implementing such a strategy would have significant implications particularly for the assessment and recording of such outcomes. Rather than assessment involving only the experiences of individual subjects and courses, conceptions in this category would imply the need for students to be able to draw on a range of contexts to demonstrate their capability. Profiling is an assessment strategy that has been successfully employed in some universities (Assiter & Shaw 1993) to record generic attribute outcomes across several courses in a student's degree curriculum. Profiling involves the students in collaboratively mapping their achievements through a process of reflection, recording achievements and identifying learning needs. Through the use of personal profiling rather than course profiling (Jenkins 2000), this approach has the

potential to be extended to include learning and assessment contexts beyond those of the classroom. We will return to some of the particular challenges for curriculum reform arising from the Participatory conception in the final section of this chapter.

The range of conceptions related to the teaching and learning of generic attributes, expressed by the academics in the present study, is considerably more diverse than the approach to teaching and learning outlined in the case studies and recommendations of the *ATN* report. The majority of the academics interviewed expressed conceptions of the development of graduate attributes that were not aligned or congruent with the principles and approach espoused in the report. The strategies identified by the *ATN* report are sound pedagogically, drawing as they do on recent research into student learning (Prosser & Trigwell 1999, Biggs 1996, 1999). However, the ability and willingness of academics to accept and implement such strategies must be questioned in light of the different understandings academics hold regarding the processes by which students develop generic attributes. Any initiative seeking to successfully implement strategies to foster the development of generic graduate attributes would benefit from first addressing the different conceptions held by academics in this regard.

The teaching team must make a commitment to reviewing learning objectives, learning experiences and assessment and feedback strategies to ensure they are linked in an explicit, coherent and meaningful way. This requires an engagement with the teaching process and an ongoing dialogue about the development and assessment of generic capabilities and a commitment to curriculum integrity. (Bowden et al 2000)

We will return to the question of how the findings of this study might be applied to support such dialogue and engagement later in this chapter. But first, let us briefly revisit an aspect of the particular experiences of courses in which this study was based - the context of learning technologies.

(ii) The role of learning technologies in teaching graduate attributes

A particular aspect of the contemporary teaching context that emerged in this study was the use of learning technologies. The world wide web and email are fast becoming commonplace experiences of university students. As such the potential of these experiences to contribute to the development of generic attributes seems an important issue to consider. Enrolling in a virtual university is already an option for students entering higher education in Australia. Students may be physically isolated yet in frequent communication with each other electronically. Such electronic communication is not limited to members of the enrolling university. With the removal of geographical boundaries that characterises the internet, and the ease of contact with other internet users in other universities and organisations, a different version of the university community is possible. In such virtual universities the experience of university learning is a web-based experience. Interaction with other students and with staff is electronic and the experience of the course and of university life, (as in conceptions five and six of the development of graduate attributes), would be a technology mediated experience.

Not only are the size and constitution of such a virtual university community changed in such an experience, but also the means of interaction, learning and communication within such a community are fundamentally different. Web based communication has sometimes been characterised as more egalitarian, in that participants are considered to have an (initial) appearance of equality in any discussion (Laurillard 1993). The anonymity of the computer interface is also cited as an encouragement to communication for some participants. The skills and (n)etiquette of communication that is in the written, rather than oral, form and conducted in a web based environment, are different to face to face communication. Although no less complex and potentially daunting to participants, the different nature of these experiences may have an effect on how students develop some generic attributes, for example communication skills, through such experiences.

Issues of how particular skills and attributes might manifest in a virtual world remain to be explored. However, the conceptions of graduate attributes identified in this research, arising as they do, from the technology enabled contexts in which the interviews were based, hopefully have some relevance to questions of the role of such experiences in

fostering the development of graduate attributes, at least in the partially virtual world of mixed modality teaching.

The potential role for information technology in teaching graduate attributes was not the focus of this research. However the findings of this study would indicate this is an arena of further investigation. In Chapter 5 the issue of the role of information technology in the context of contemporary teaching was considered and the fifteen academics' approaches to the use of technology for teaching were identified using a modified version of the classification of approaches developed by Prosser and Trigwell (1999) (Figure 7.5).

| | Approaches to the use of technology for teaching | | | | |
|---------------------------------|---|---------------|---------------|--------------------------------|---------------|
| | Approach A | Approach B | Approach C | Approach D | Approach E |
| Number of cases / approach | 6 | 6 | 1 | 1 | 1 |
| | Teacher-focussed approaches | | | Learner-focussed approaches | |
| Number in collapsed approach | 13 | | | 2 | |

Figure 7.5: Expressed approaches to the use of technology for teaching

The majority of the academics expressed a use of technology that was teacher-focussed, with only two academics describing a use of technology that could be considered learner-focussed. Moreover, one of the most common approaches to the use of technology in the mixed modality courses described in the interviews was for information transmission, with six of the fifteen individuals describing teacher-focussed uses of technology to transmit information. A further six individuals described a teacher-focussed use of the technology so that students acquire the concepts of the discipline.

While the approaches to the use of technology do not allow a direct comparison with the approaches to the development of graduate attributes, the two outcome spaces do share a common dimension in the form of the teacher / learner focus of the conceptions expressed in each. If we consider how the individuals' conceptions of the teaching of graduate

attributes and their approach to the use of technology relate in terms of this feature, it is apparent that for both experiences of teaching the majority of teachers are adopting teacher-focussed approaches. Thirteen of the transcripts suggest the adoption of a teacher-focussed approach to the use of technology. However two of these transcripts also revealed the adoption of a more complex learner-focussed approach in the context of teaching graduate attributes. These two individuals are interesting. In both cases the individuals described learner-focussed approaches to the development of graduate attributes (level five in one case and level six in the other). However the individual expressing a level five conception of the development of graduate attributes described the use of technology for teaching as level A - simply to transmit information to students. The individual describing a level six approach the development of graduate attributes expressed a level B, teacher-focused, use of technology so that students acquire the concepts of the syllabus. As discussed in chapter six, these approaches are incongruous and might possibly suggest that there are features of the use of learning technologies, which pose particular challenges for these teachers.

More generally however, the predominance of level A and B approaches to the use of technology does not bode well for the use of such technology in learner-focussed ways to foster the development of graduate attributes. As discussed previously, the development of such attributes is considered by the *ATN* report (Bowden et al 2000) to involve 'learner-focused approaches utilising authentic learning situations'. The majority of the approaches to the use of technology described by the academics in this study are not like this at all.

The emergence of communication and information technologies has created new environments, not just for teaching, but for social interaction and administrative functions of higher education and society. These environments may provide an important new context for the holistic learning experiences important in the level five and six conceptions of the development of generic graduate attributes. However, if the findings of this study are indicative of contemporary teachers' approaches to the use of learning technologies for teaching, then it seems probable that the potential of these learning environments is not being widely utilised for the development of graduate attributes. The majority of the academics interviewed described a use of technology that was teacher-focussed with the intention of transmission of information or concepts to students. Only two individuals described learner-focused use of technology for teaching and only one of these individuals

explicitly identified such a use of technology related to the development of graduate attributes.

The majority of the academics interviewed in this study used a combination of learning technology-based and face-to-face teaching in their courses. It was apparent from the interviews that some academics perceived that the development of generic attributes was best achieved through face-to-face teaching, with the extracts in the transcripts dealing with the development of generic attributes referring to non-technology based teaching and learning strategies. This might suggest that initially at least, curriculum reform to address the development of graduate attributes might be more easily achieved in non-technology based teaching contexts.

However, in light of forecasts of the increasing role of such learning technologies in university curricula the special challenges of using technology-based teaching to foster the development of graduate attributes must be considered in university implementation strategies. While further research focussing on this new context for learning is required, the categories of description developed in the present study may provide a helpful starting point in this regard. These categories may help members of the university to clarify and communicate to each other, their understandings of the teaching and learning of graduate attributes, in the context of designing technology based curricula intended to foster the development of such attributes.

Having considered some of the implications arising from the observed variation let us now consider the broader question of how these findings might be used to support change in graduate attributes teaching and learning practices in universities.

How the findings might be useful in supporting change in Australian universities

This research has identified and described the variation in a group of academics' understandings of the concept of generic graduate attributes. The nature of this variation has implications for how universities describe graduate attributes and for how universities approach the development of such attributes through students' experiences of a university education. Some of these implications and the barriers to curriculum reform arising from this variation have been discussed in the earlier sections of this chapter.

In addition to the implications for academics' responses to calls for curriculum reform suggested by the various understandings of graduate attributes, it was also clear from the interview transcripts that, while all the academics interviewed were aware of the university's generic attributes policy, not all staff perceived the policy to be a serious or practicable document.

This (the policy) is really nothing more than a lot of empty rhetoric and marketing statements, I don't think anybody takes it seriously.

I don't agree with some of the things included in the policy – like the one about striving for tolerance and integrity – how can we ensure that, and the one about written English – I'm not an English teacher!

There is no real commitment – certainly no money – for developing these sorts of things, we just have to fit them in if and when we can.

It is a bit of a wish list really – the reality is that with funding as it is now most of us don't have time to cover our own subject material in our courses – how can we be expected to teach all these other things as well!

Such opinions and comments stem from understandings of the nature of graduate attributes that are explicitly incompatible with the understandings of graduate attributes suggested in the recommendations of reports such as the ATN report and in many universities' current strategies and policies. Earlier in this chapter the idea of using the

categories of description to bring to the surface and make apparent the variation in understandings of graduate attributes was introduced.

Constituting, developing, and making use of, the collective consciousness requires things to be said and made visible; it takes interaction and communication that goes on and on across the place. (Bowden & Marton 1998 p 201)

What might such interaction and communication encompass in terms of universities current attempts to review statements of graduate attributes and institute curriculum reform and academic development to foster the achievement of such outcomes? In this section we will consider some of the contexts and discussions in which the descriptions of variation may be applied. In doing so a 'layered' strategy for policy revision and curriculum reform is proposed that makes sense of, and builds on the existing variation. The contexts for these discussions are represented in figure 7.6 and an example illustrating the layered approach to policy statements and curricula is described in figure 7.7.

In seeking to formulate statements of graduate attributes the university community needs first to engage in a consideration of what the different members of the community understand such statements of attributes to represent. Rather than assuming, as has often been the case in university policy, that all members of the university community share a level three or four conception of graduate attributes as a particular type of outcome of a university education, the underlying assumptions about what such statements of graduate attributes describe needs to be first brought to the surface.

The categories of description identified in this study might prove helpful in this process by facilitating the identification of these different understandings in the context of such a discussion.

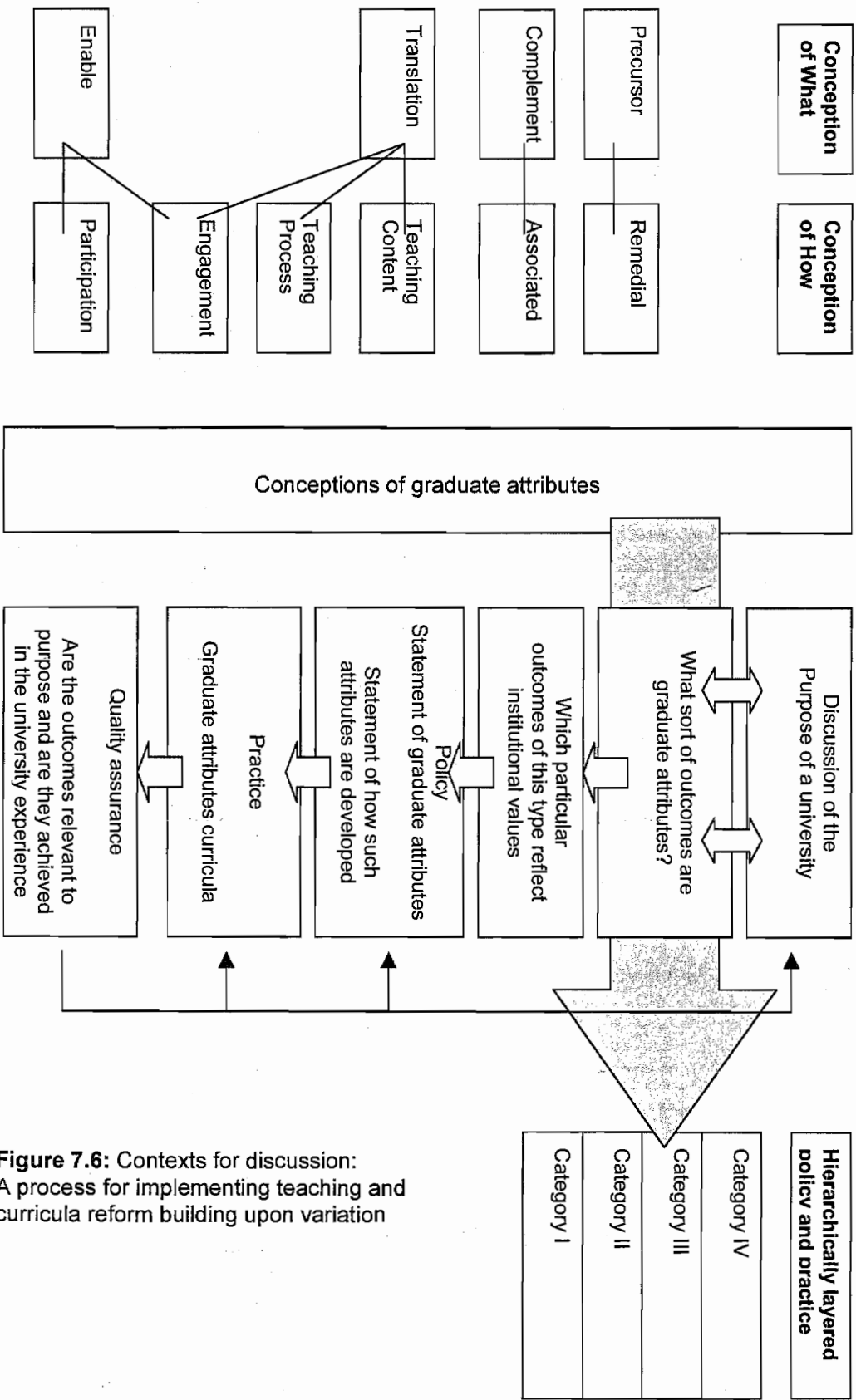


Figure 7.6: Contexts for discussion: A process for implementing teaching and curricula reform building upon variation

If the university community does intend that graduate attributes statements reflect outcomes understood as either Translating or Enabling conceptions, then efforts will be required to support some members of the university community in developing the more complex conceptions of graduate attributes that such statements represent.

The hierarchical nature of the different understandings reported in this research makes possible the inclusion of a variety of different understandings in a shared more complex (level three or four) understanding of what such outcomes of a university education represent. However while members of the community perceive graduate attributes in terms of the lower level conceptions then agreement that such outcomes represent the 'core outcomes of higher education as a process' (HEC 1992), will remain elusive.

Having identified what such statements purport to describe, the task of identifying the particular attributes that the institution seeks to foster remains to be achieved. Inherent in such an undertaking is the question of the extent to which the educational experiences and hence graduates, of different universities are alike. In identifying the attributes of graduates of a particular institution, there is scope for a consideration of the unique culture of that institution. Is it a research-intensive university where the attributes of graduates might reflect the experience of learning in a strong research culture? Is it a technology focussed institution where this might be a quality of the educational experience contributing to the abilities of graduates? Is it an institution with strong links to the world of work in which a vocational focus to graduate attributes might be more relevant? Regardless of the institutional context that the attributes might reflect, the identification of the actual attributes remains a formidable exercise. However it is one made less daunting by a shared understanding of the nature of the attributes themselves.

The hierarchical nature of the categories of description may prove helpful in this undertaking. Attempts to formulate lists of graduate attributes in the past have typically included the collation of diverse skills and abilities identified as being important or relevant in some way. No doubt many of these skills and attributes are desirable, however they have resulted in the conglomerate lists of attributes discussed in the opening chapters. The hierarchical nature of the categories of description in the first outcome space might prove helpful in structuring these lists. As discussed in chapter 6, the higher level conceptions can subsume conceptions of graduate attributes as lower level outcomes. The distinct skills and competencies of lower level conceptions of graduate attributes contribute to higher level capabilities described by level three and

four conceptions. For example, outcomes in terms of basic skills (such as level A familiarity with computers) can be extended in level B conceptions (ability to use generic software packages such as Word or Netscape) and built upon and linked with other skills in developing specialised abilities at level C (specialised internet searches), which might contribute, along with other abilities, to more holistic capabilities at level D (information literacy). The specification of higher level outcomes described by level D conceptions should also involve the specification of the sorts of lower level outcomes that might contribute to and support such outcomes. However these lower level competencies might not, of themselves, be the graduate attributes that are the aim of a university education.

Based on the hierarchical nature of conceptions of graduate attribute outcomes, policy statements listing graduate attributes might reflect a layered or staged development of such attributes. For instance, the specification of level C or D outcomes as a university's graduate attributes and the specification of the related processes by which these outcomes might be developed, could also incorporate the specification of level B type outcomes and the associated processes by which such outcomes may be developed, as steps towards the achievement of the endpoint attributes. Such a layered policy might even incorporate the specification of the additional support available for students without basic entry level skills (the precursor-remedial conception). In this way, it might be possible for the existing conglomerate lists of different level skills and development strategies to be re-organised, rather than redeveloped from scratch. An example of such a layered approach to the organisation of graduate attributes representing different conceptions is provided in figure 7.7. In this figure the nature of the outcome; as interwoven networks of abilities, clusters of specialised skills, atomistic undifferentiated personal and functional skills and low level atomistic skills is highlighted as a graphical representation of aspects of the structure of awareness of each conception. In the middle columns the relationship between the exemplar skills at each level is indicated by the lines linking the cells at each level of the table. This depicts the way in which lower level atomistic conceptions of the exemplar skills 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.

Figure 7.7

Layered policy and practice: Interaction across different levels of conceptions
 Key: ☆ = Discipline knowledge ○ □ ▲ = Graduate attributes

| | What graduate attributes are | GA can be symbolised as: | Mission statement: Graduates of the university will be scholarly citizens able to contribute to humanity through their work and participation in society. | | | | How learnt |
|---------------|---|--------------------------|---|--|---|---|-------------------------------------|
| D6 Conception | D: Interwoven networks of higher level learning abilities and aptitudes that provide a framework for discipline knowledge | | Scholarship | Global Citizenship | Information literacy | | 6: University experience |
| D5 | | | | | | | |
| C5 | C: Linked clusters of specialised skills and abilities related to discipline content | | Written communication capabilities as required for the preparation of journal articles in the discipline | Knowledge of and respect for ethics and ethical standards in relation to the discipline | Ability to analyse a problem and create or identify a process to solve it | Appreciation of the value of research and the propositional nature of knowledge | 5: Learnt through course experience |
| C4 | | | Understanding of the professional's social and civic responsibility | Specific technical laboratory report writing formats | Research methodologies relevant to discipline | The scientific method | 4: Teaching process |
| C3 | | | Oral communication skills relevant to participation in intellectual debate and discussion. | A discipline relevant knowledge of other cultures and times and an appreciation of diversity | Disciplinary Referencing conventions | Critical analysis skills to judge credibility of information from different sources | 3: Taught course content |
| B2 | B: Undifferentiated higher level personal and functional skills unrelated to content | | Creative thinking skills | General essay writing skills | Principles of referencing and plagiarism | How to use computers to search the internet & library | 2: Adjunct to course |
| A1 | A: Lower level atomistic skills unrelated to university | | English language skills | Basic computer familiarity | Problem solving skills | | 1: Remedial classes |

In figure 7.7 the level D, Enabling conceptions of attributes such as scholarship and global citizenship can be seen to subsume the discipline specific, level C, Translation conceptions of specific disciplinary writing conventions and research methodologies and ethics protocols. Such linked clusters of abilities are in turn supported by more generic, level B, Complementary conceptions of attributes such as essay writing skills and an understanding of the principles of academic honesty or plagiarism. Such a layered policy statement even provides scope for level A, Precursor conceptions of attributes as pre-entry skills 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. These processes are indicated in the right hand column of the table.

The benefits of such a layered approach to policy are many. Firstly it recognises that the development of such attributes is likely to be a process, rather than such attributes springing into being fully fledged. It also acknowledges the place of different strategies (for example remedial / associated) as introductory strategies, while still identifying integrated approaches as appropriate in the context of the intended end point level C or D type attributes. In this manner the hierarchy of conceptions provides a framework to identify how existing practice might contribute to the achievement of graduate attributes, while still highlighting the need for additional curriculum reform strategies associated with higher level conceptions.

The hierarchy of conceptions of outcomes might also have uses in structuring the staged development of such outcomes over the years of a student's university experience and provides a new dimension to consider in efforts to map the development of such attributes across a degree curriculum. Having identified the nature of the abilities to be specified as graduate attributes, and having then identified what the particular attributes of the institution will be, the task remains of ensuring that students' university experiences effectively contribute to the development of such attributes.

The range of understandings of how students develop graduate attributes, reflects and enriches the variation seen in conceptions of graduate attribute outcomes. Curriculum and teaching, while strongly influenced by the conception of the intended outcome - are also the result of teachers' understandings about how students learn and hence how teachers should teach. The diversity of approaches to the development of graduate

attributes described by the second outcome space poses a considerable challenge for universities seeking to effectively achieve such graduate outcomes. Efforts to address this challenge will be helped by a clearer understanding of the intended outcomes, and the hierarchy of outcomes might prove helpful to academics in planning how their teaching might contribute to the staged development of the intended graduate attributes. However the challenge of curriculum reform implies the development of more sophisticated pedagogies than was generally apparent in the interviews with many of the individuals in the present study.

In considering further how this research might prove helpful in the context of supporting curriculum reform and development we will return to the seven integrated conceptions of the two aspects of the phenomenon identified at the end of chapter 6. The understandings of graduate attributes curricula represented by the second outcome space are not independent of the understandings of the nature of the intended outcomes of such curricula represented in the first outcome space. The relationship between these two aspects (the 'what' and 'how' of the phenomenon) resulted in seven integrated understandings of graduate attributes representing three broad approaches:

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

1. (A:1) Generic graduate attributes are basic prerequisite skills which students should already possess, they are only taught in remedial classes at university
2. (B2) Generic graduate 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.

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

3. (C3) Generic graduate attributes make disciplinary knowledge relevant and are taught as part of discipline content.
4. (C4) Generic graduate attributes make disciplinary knowledge relevant and are taught through the process of teaching discipline content.

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

5. (C5) Generic graduate attributes make disciplinary knowledge relevant and are learnt through the way students engage with the course's learning experiences.
6. (D5) Generic graduate attributes are complex abilities that infuse learning and knowledge and are learnt through the way students engage with the course.
7. (D6) Generic graduate attributes are complex abilities that infuse learning and knowledge and are learnt through the way students engage with university.

The sort of discussion by the university community, (proposed in the previous pages), as to what is intended in terms of graduate attributes, is still to occur in most Australian universities. However based on existing university policy statements and recent discussion documents such as the *ATN* report (Bowden et al 2000) and the *BHERT* position paper (Hager et al 2002), it might be reasonably thought that the outcomes of such discussion would be an expressed intention consistent with type II or III approaches.

The type I approach finds little support in current policy statements, however this approach does represent the understandings of some members of the university community. Instituting curriculum reform to better fulfil the intentions of conceptions in type II or III approaches incorporates two central challenges.

- Supporting academics in the development of more complex conceptions of graduate attributes as outcomes of university education
- Supporting academics in the development of more complex understandings of how such attributes might be developed by students.

These two challenges are not unrelated, as indicated by the seven integrated conceptions described in chapter six. In seeking to address the task of curriculum reform, supporting academics in the development of more complex conceptions of graduate attributes as outcomes of university education, might also contribute to the development of more complex approaches to the development of such outcomes, and vice-versa.

Holding a conception of graduate attributes as **Transformative** outcomes is consistently associated with integrated approaches to the development of such attributes (Approaches II and III). Addressing the limitation of **Additive** conceptions of graduate attributes as outcomes, is a precursor to any expectation that academics will incorporate the development of graduate attributes in any way within their usual curriculum and teaching. That is that they will then be in a position to develop the **Integrated** conception of the development of graduate attributes associated with Transformational views of graduate attributes, replacing the **Supplementary** conception consistent with an Additive understanding. In a similar fashion, the **learner-focussed** approaches to teaching which were a key feature of higher level approaches to the development of graduate attributes, were consistently associated with the higher level (Enabling and Translation) conceptions of graduate attribute outcomes.

Such key features of the variation could be construed as critical aspects of the variation (Cope 2001), essential for learning (the development of more complex conceptions). As such these critical aspects provide potentially powerful levers for change. The defining features, identified in chapter six, as differentiating the three approaches represent the key variations in understandings required to develop more complex conceptions of the phenomenon. The arrows in figure 7.8 represent these critical aspects of the variation.

Figure 7.8:

Using the key referential and structural aspects for learning

| | 1. Remedial | 2. Associated | 3. Teaching Content | 4. Teaching Process | 5. Engagement | 6. Participatory |
|---|--|--|--|--|---|--|
| <p>A. Precursor Necessary basic skills but irrelevant as they are a prerequisite for entry</p> | <p>Not part of usual university teaching or learning</p> | <p>Generic attributes are taught as a separate, discrete subset of the teaching in university courses.</p> | <p>Generic attributes are taught in the context of teaching the disciplinary content knowledge</p> | <p>Generic attributes are taught/learned through the way the course disciplinary knowledge is taught</p> | <p>Generic attributes are learnt through the way students engage with the course's learning experiences</p> | <p>Generic attributes are learnt through the way students engage with the all the experiences of university life</p> |
| <p>B. Complement Useful skills that complement or round out disciplinary learning</p> | <p>I: Additive outcomes taught in a teacher focussed way in a supplementary curriculum</p> | <p>Supplementary</p> | <p>Integrated</p> | <p>Additive</p> | <p>Teacher focus</p> | <p>Learner focus</p> |
| <p>C. Translation: These are the abilities that let students make use of or apply disciplinary knowledge</p> | | <p>Transformative</p> | <p>Transformative</p> | <p>II: Transformative outcomes taught in a teacher focussed way integrated within a curriculum</p> | | <p>III: Transformative outcomes taught in a learner-focussed way in an integrated curriculum</p> |
| <p>D. Enable: They are the scholarly abilities that infuse and enable personal & disciplinary learning and knowledge</p> | | <p>Enable</p> | | | | |

Learning in phenomenography involves coming to understand something in a more complex way, that is, moving from a lower level conception to a more complex (higher level) conception. Such learning is facilitated by the identification of the critical aspects or dimensions of variation between different conceptions or in the case of the three broad approaches, groups of conceptions. While the variation between each conception is multidimensional, there are core features that delineate the three categories of conceptions. These features represent central and critical features to the variation between conceptions and hence critical aspects of variation to be considered in phenomenographic learning. Highlighting the variation in these core dimensions might provide a useful foundation for academic development and curriculum reform initiatives seeking to support academics in developing more complex understandings of graduate attributes.

The question that must be asked is what would be required for an academic (as was the case for nearly half of the academics interviewed in the present study) expressing a Type I approach to graduate attributes as either;

1. Generic graduate attributes are basic prerequisite skills which students should already possess, they are only taught in remedial classes at university
2. Generic graduate 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.

- to develop a Type II conception?

The key features differentiating Type I and Type II conceptions, are the Additive/Transformative dimension (outcome space one) and the Integrated / Supplementary conception (outcome space two). If academics holding a conception of graduate attributes as Additive were to come to an understanding of these as Transformative, they would be well on the way towards developing a more complex Type II conception. The Integrated conceptions in the second outcome space are consistently associated with Transformative rather than Additive conceptions and the inclusion of this transformative feature would contribute to a level II conception of graduate attributes as transformative outcomes taught in an integrated way. While both aspects of understanding of graduate attributes (the additive/transformative dimension of 'what' and the integrated/supplementary dimension of 'how') are required

for a Type II conception, these two aspects are dialectically constituted and change in one aspect is likely to be associated with change in the other.

While a Type I conception seems unlikely to be the intention of existing statements of graduate attributes, a Type II conception is also both limited and limiting, in comparison with Type III conceptions.

What then would be involved in developing a more complex understanding than the Type II approach which characterises graduate attributes as:

3. Generic graduate attributes make disciplinary knowledge relevant and are taught as part of discipline content.
4. Generic graduate attributes make disciplinary knowledge relevant and are taught through the process of teaching discipline content.

The limitation of conceptions in Type II approaches arises from the teacher-focussed quality of these conceptions. This approach is limiting for several reasons. Primarily the limitation is in terms of the quality of student learning outcomes that accrue from the teacher-focussed approach described by Type II conceptions. The link between learner-focussed approaches to teaching and higher quality student learning outcomes has been convincingly argued by several authors in the past twenty years (see Marton, Hounsell & Entwistle 1997). As a result, the fostering of more student-centred approaches to teaching and curriculum design has been the focus of much of the academic development work in Australian universities in recent years. The adoption of a learner-focussed approach is an integral aspect of the most complex and potentially most powerful, conceptions of the development of such attributes (Participatory conception) and of what such attributes represent in terms of outcomes of a university education (Enabling conception). Facilitating a shift from teacher-focussed approaches to learner-focussed approaches, paves the way for the development of Type III conceptions of graduate attributes as transformative outcomes taught in a learner-focussed way in an integrated curriculum. This is the espoused aim of the *ATN* report recommendations for curriculum reform.

Transformative outcomes: They are the qualities that also prepare graduates as agents for social good in an unknown future. (Bowden et al 2000)

Taught in a learner-focussed way: The development of a generic capabilities program requires commitment of from all members of the course team and this commitment involves the adoption of a student-centred approach rather than a content driven or teacher-focussed approach to the curriculum process. (Bowden et al 2000)

In an integrated curriculum: Generic capabilities are best achieved when they are embedded in the process and content of learning. (Bowden et al 2000)

In the incorporation of the Translation level of the first outcome space, Type II conceptions are the least complex or minimum level of understandings of graduate attributes required to implement current policy. However, Type III approaches might be thought of as representing the best practice in the implementation of such policies through the inclusion of a learner-focussed perspective.

Type III approaches includes the following understandings:

5. Generic graduate attributes make disciplinary knowledge relevant and are learnt through the way students engage with the course's learning experiences.
6. Generic graduate attributes are complex abilities that infuse learning and knowledge and are learnt through the way students engage with the course.
7. Generic graduate attributes are complex abilities that infuse learning and knowledge and are learnt through the way students engage with university.

The adoption of a learner-focussed approach is fundamental to Type III conceptions. The first conception (C5) in this category appears to represent the goal of many current graduate attributes curriculum reform initiatives, including those of the ATN report.

However it does not necessarily represent the most complex conceptions of graduate attributes found in this study. Type III approaches also introduce a different

understanding of the nature of graduate attributes - the Enabling conception, and an additional understanding related to the development of such attributes - the Participatory conception. Both these advances in complexity are expressed in the final conception (D6):

Generic graduate attributes are complex abilities that infuse learning and knowledge and are learnt through the way students engage with university.

In closing this chapter we will consider the implications of this most complex conception for graduate attributes reform in Australian universities.

A challenge: Enabling Participation

The most complex conception of graduate attributes identified in the present study was of *Enabling* outcomes learnt through *Participation* in the broader experiences of university life (D6).

In the Enabling conception graduate attributes, are not separate learning outcomes to disciplinary knowledge, rather they are abilities that infuse and enable all scholarly learning and knowledge. These abilities are seen as integral to disciplinary knowledge rather than being learning outcomes that are separate, (either as independent or linked outcomes) to discipline knowledge, as in the other conceptions. The abilities are perceived as inter-woven abilities and aptitudes for learning and are an integral substrate of discipline knowledge. They are at the heart of scholarly knowledge and learning. The embedded attributes provide the building blocks for discipline knowledge and discipline knowledge provides a vehicle and context for learning graduate attributes. The attributes are more long lasting and important than the discipline knowledge they can support. In this conception, once developed graduate attributes are perceived to provide a reusable framework that enables students/graduates to acquire and shape new knowledge as required – even in the context of other disciplines. In this conception, generic attributes are seen as transcending disciplinary boundaries even though they are developed within disciplinary contexts.

The foregrounded abilities in this structure of awareness are not atomistic (level B) or clustered (level C) skills and abilities, rather they are present as an interwoven and holistic worldview and a relational (Biggs & Collis 1982, Biggs 1999) aptitude for

learning. The relationship to other disciplinary knowledge and university learning is also different. Unlike the previous conceptions, the foregrounded aptitudes do more than translate disciplinary or other knowledge, they are part of this knowledge. In this conception graduate attributes provide a framework for the development of knowledge which shapes both learning outcomes and learning processes in university and other contexts. The relationship between the graduate attributes and other learning and knowledge encompasses more than just a relationship to the disciplinary knowledge acquired in the course of a formal university education. The relationship goes beyond formal learning to take in a broader range of learning outcomes related to more general life and world experiences.

The referential aspect of this conception is transformative in that graduate attributes are also understood to shape and transform knowledge to meet new challenges and contexts. However, the variation in the structural aspects of this conception means that this understanding extends beyond merely translating, applying or adapting abstract or theoretical knowledge learnt at university to solve real world problems. It encompasses reshaping of existing knowledge and the construction of new knowledge in contexts far removed to that of the original discipline in which a graduate's university studies were based. This has echoes in the highest category of learning outcomes, the extended abstract, described in Biggs & Collis' (1982) SOLO taxonomy (see chapter six). The transformative potential extends to other domains of knowledge and fields of study. In this conception, generic attributes are understood as abilities that are the keys to scholarly inquiry and learning in many aspects of life, not just formal study. This conception has echoes in many current philosophical perspectives on learning and the role of universities:

Transformation need not be seen as cognitive change alone; indeed we argue that the most extensive transformation will have involved disciplinary and general accommodation but that these are stunted without a changed sense of self. A commitment to life long learning, to critical reflection and to riding the continuous flow of change are all characteristics of our view of transformation. There is an acceptance of the idea that learning is provisional and never ending; that today's certainties will be tomorrow's myths and that this is the path of personal and professional growth, the dialectic between here and now on one hand and here and then on the other. (Harvey & Knight 1996 p 132)

Such a conception of graduate attributes positions university learning as a powerful and transformative experience for the individual on many fronts. These are qualities of a university education that have been advanced in North American discussions of the purposes of the university for many years.

College attendance has a unique impact on students' aesthetic, cultural and intellectual attitudes, values and interests. (Pascarella & Terenzini 1991 p 284)

From the perspective offered by such philosophical considerations, the Enabling/Participatory conception might be thought to perhaps best appeal to academics as a reflection of such beliefs and values regarding the purpose of the university in society. However these purposes were not borne out in the discussions of graduate attributes advanced by many of the individuals interviewed in this study. When such abstract philosophical notions are brought to the level of concrete acts of teaching and decisions about curriculum, these more concrete activities appear to become dis-articulated from such abstract beliefs and values. Or maybe such inherently appealing notions of the university are no longer tenable and the real acts of teaching are the truth exposing the abstract statements of such beliefs as empty rhetoric, out of place in the harsh reality of modern day academia.

The fact that some individuals in the present study did describe contemporary teaching and courses that aimed to achieve such intentions is heartening and would suggest that such a vision for the university can still be realised. However there are considerable barriers to the achievement of such a vision. The defining of academic roles and purposes solely in terms of discipline knowledge is in many ways inconsistent with such a view and such a conception of the generic outcomes of a university education requires the redefinition of the university's purpose in terms other than purely knowledge. However the redefinition implicit in this conception of graduate attributes does not relegate knowledge to the postmodern scrap heap along with other grand narratives. Rather such an understanding makes a new place for knowledge within a broader conception of the purpose of a university education. It does not advocate the replacement of the knowledge content of traditional curricula with a new graduate 'abilities' content. Instead such a conception of graduate attributes would suggest that the content of such a curriculum be seen for what it is - ephemeral. And that the true value of such content be seen not as a lasting collection of facts but as a means of developing the abilities to acquire and create new knowledge as required. A

reshaping of curricula along the lines of the Enabling/Participatory conception is far more fundamental than any suggested by Australian universities' current attempts to implement graduate attributes reform, but might provide a vision for the path ahead.

The second aspect of the D6 conception is that such attributes are developed through students' participation in the diverse learning experiences of university life. This conception shares the learner-centred qualities that characterise the level C Engagement conception. However the learning experiences are not restricted to the way the learner engages in the formal teaching and learning experiences of the course. Rather this conception recognises the potential for learning arising from a student's participation in the broader experience of university life. Academics who expressed a Participatory conception perceived that graduate attributes were developed through a 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. However, it was not simply the opportunities afforded by the university environment, but the way the student chose to engage with and participate in these opportunities that contributed to the development of graduate attributes. The nature of this participation linked the experiences of belonging to a scholarly community and being engaged in learning on a course with other university and life experiences.

In the Participatory conception other aspects of the university experience – such as social activities, extracurricular study, and out of class learning become available as valuable opportunities for the development of graduate attributes. The learning experiences of engaging in formal courses are integrated with the learning experiences of belonging to an intellectually rich and diverse community of scholars - a community made up of both academics and other students.

This understanding, while presenting potentially exciting opportunities for universities to redefine their role as multifaceted learning communities rather than 'degree factories', brings considerable challenges. Inherent in such a notion is the belief that universities do function as communities, with academics and students participating in various aspects of the life of departments and the university as a whole. In a time of perceived increasing workload and diminishing resources, and of valuing outputs and academic productivity (Coady 2000), academics and students may not perceive that opportunities exist to participate in such a fashion. Moreover disciplinary specialisation and the divergence of multiple knowledges makes interaction between academic factions

difficult and poses a fundamental challenge to the possibility of such an academic community:

The boundaries that mark out the inner life of the university have to be eroded. The natural inwardness of academics has to be addressed. This will not be easy. The forging not just of multidisciplinary learning communities and of a culture of collective self-scrutiny has to be worked at continuously. Accordingly university leaders will need to inject more effort not just in engaging with staff but also in enabling, exhorting and even requiring them to engage with each other. Different ways will have to be found to encourage staff of a university to learn and work together so as to transcend the boundaries of academic life and academic identities. (Barnett 2000 p 137)

As well as the notions of scholarly interaction outside of the classroom, this conception positions other aspects of university life as potentially contributing to the development of graduates' abilities. The harnessing of aspects of the university experience such as participation in clubs and societies, political activism and social critique, requires that learners recognise and value participation in such experiences in the context of the development of graduate attributes. For students, the most powerful voice in universities, one that identifies not only what should be learned, but the way it should be learned, is assessment. Beyond the challenge of integrating these broader university experiences in students' learning experiences of graduate attributes, lies the challenge of assessment. How will the university recognise and reward, and in doing so encourage, the learning of graduate attributes in non-classroom experiences through its assessment? This challenge is one to which recent initiatives in the area of personal profiling and records of achievement (Somervell 1996) may have much to contribute.

The curriculum reform challenges inherent in this conception of the development of graduate attributes are many. They involve curriculum reform not only at the level of subject curricula to address graduate attributes in course learning experiences, but the integration of these learning experiences within a coherent degree structure to achieve the intended graduate attribute outcomes. Beyond this they also involve the integration of these course experiences with the experiences of students in other courses and the integration of these experiences in the broader social experiences of belonging to a (possibly non-existent) university community.

While these challenges are formidable they are perhaps unavoidable if universities are to fulfil their promise of graduating individuals equipped to deal with what Bowden and Marton (1998) characterise as an 'uncertain' future. Such uncertainty may not be something that is only in the future, rather for universities it seems to part of the present.

Two forms of uncertainty press upon the postmodern university; epistemological uncertainty and ontological uncertainty. The university has lost any sense of what it is to be a university. (Barnett 2000 p 99)

In many ways the current approach of Australian universities to graduate attributes reflects this deep-seated uncertainty. Though outwardly confident and certain in their claims of graduate attributes it would seem that universities have been uncertain about what such attributes might represent and uncertain as to how they might be developed. Like many aspects of universities and learning the uncertainty derives from the complexity and inter-relatedness of the idea of graduate attributes. Graduate attributes cannot be approached in the absence of a consideration of fundamental questions as to the purpose of a university education and more general questions as to the role of teaching and learning and the holistic university experience in such an education. The formulation of statements of graduate attributes and the development of pedagogical strategies to effectively achieve these through a university education represent a distillation and crystallisation of many of these issues.

While the diversity of understandings and ideas may have long been apparent in these distillations, it is hoped that in systematically describing the variations inherent in this diversity, the findings of this research may prove helpful to the university community in better understanding what statements of graduate attributes represent.

The way forward

This thesis opened with some personal reflections on the author's experience of universities' endeavours to foster the development of generic attributes of graduate. It was in the hope of informing and supporting such endeavours that this inquiry had its origins. Universities' current efforts were noted to be characterised by a plurality of view-points and approaches and, while sitting at the junction of some of the fundamental forces shaping higher education in Australia today, appeared to be lacking the support of any conceptual framework or theoretical underpinning. A consideration of the observed variation in graduate attributes policy and practice, from the perspective offered by the available literature, underlined the need for further research to clarify the concept of generic attributes of graduates.

The investigation that was undertaken approached the characterisation and description of this variation from the perspective afforded by phenomenography. In doing so it addressed questions concerning the conceptual basis for notions of graduate attributes from a perspective which placed the observed variation at centre stage. Such an empirical investigation of academics' understandings, drawing on the theoretical frame of phenomenography, has not been reported elsewhere.

Having completed the study and considered how the findings of this research might be applied to address some of the challenges facing universities in relation to graduate attributes, it is time to consider the question of 'where to from here in terms of further research?'

In framing the way forward we will first take a final backward glance at the main findings of this study. This study has described the nature of the variation in a group of academics' understandings of the concept of graduate attributes. In doing so it has provided one way of making sense of the diversity of policy and practice which characterises the field. The identification of the qualitatively distinct ways of understanding the teaching and learning of graduate attributes provides a framework that can support discussions around the formulation of statements of such claims. The findings also provide a way of systematically organising and integrating the existing diverse efforts and initiatives of the university community to foster such outcomes. Moreover, they point the way to some possibly unrealised additional opportunities to foster such learning.

While the nature of the variation in policy and practice may have been implicitly apparent to many observers, this research contributes an empirically derived, research-informed framework within which this diversity may be understood. As such it contributes something new and hopefully useful to the field, both in terms of research and academic development. However, clearly the research described in this thesis represents only one strand in the web of inquiry. It is not intended to supplant models or frameworks proposed by other authors on the basis of their experience, nor does it claim to provide the only lens through which such diversity may be viewed. Rather it is hoped that the findings will support and enrich other work by offering a different methodological consideration of an issue, which is without doubt under investigation on many fronts. In closing it is perhaps helpful to consider how the findings of this research might be built upon in moving forward in this field of inquiry.

In doing so I will further consider some of the limitations of the present study and suggest avenues to address these limitations through further research.

Phenomenographic research of the type described in this thesis draws on rich detailed qualitative data and involves detailed, time consuming iterative data analysis procedures. It is the sort of experimental design that necessitates a small sample size, something typical of phenomenographic research that uses interview data. This sort of research design makes it difficult to extrapolate and draw conclusions about the nature of the conceptions of graduate attributes held by academics who were not interviewed. While the sample was selected using purposive sampling with the intention of maximising the variation in conceptions expressed, it cannot claim to be a representative sample of the population of university academics. Moreover the observed variation is based on a particular context, in this case a particular instance of discussing a particular course. Conceptions are not fixed mental representations, rather they are constituted in a particular context and an individual may constitute different conceptions in a different context. Connected to this issue is the question of the relationship between aspects of academics' prior experiences and the nature of the conceptions expressed. For instance, disciplinary backgrounds, years of experience, level of expertise and mastery of the body of knowledge of the discipline. As noted earlier, from the phenomenographic perspective we see with the fruits of all our prior experiences. How then do aspects of academics' prior and current experiences relate to the nature of the conceptions they express? As an example let us consider just one aspect of these prior experiences, discipline background. The sample allowed us to conclude that the same conception can be expressed by academics in very different

disciplines. It also revealed that academics who share the same discipline background can express very different conceptions. However there are too few academics represented in the various disciplinary domains to provide an indication if some conceptions are perhaps more prevalent amongst particular knowledge domains and disciplines. While this sort of investigation was not the intent of the present study it is an area that merits further exploration. How might this sort of exploration be approached?

Answering these sorts of questions requires a larger sample, which in turn necessitates a different methodology. Clearly gathering data using in-depth phenomenographic interviews is impractical for larger samples. Collecting data on the perceptions of larger groups of individuals might instead be usefully approached using a quantitative survey tool. The development of such a survey tool would be a useful extension of the present qualitative research.

Such a survey would seek to use closed response items to gather data on respondents' perceptions of graduate attributes in the context of their courses. The development and subsequent validation of the items used in such a survey could be based on the findings of the qualitative research reported in this paper. In fact work on the development of such a survey has already been commenced. Using such a survey tool data could be efficiently gathered from a larger sample of academics or students and in doing so allow a range of additional questions to be addressed.

The present study was based on a sample of academics in a single university. As such it does not provide much insight into the impact of different institutional cultures on the nature of the conceptions held. Do particular types of university culture tend to support particular types of understandings of either the nature of graduate attribute outcomes or the way in which such attributes are developed? While it might be reasonable to expect that different types of university culture might promote different attributes, might these also differ in terms of the underlying nature of such espoused attributes? For example might a non-campus based university culture still see a role for the broader university experience in the fostering of such attributes? Extending the present study to take in academics working in different types of university would shed light on the impact of institutional culture.

The research described in this thesis draws upon a phenomenographic perspective on learning. This perspective is one that puts participants' experiences of teaching and

learning at the heart of the research, in this case, teacher's experiences. But what of the other participants in the teaching and learning of graduate attributes - namely the students? Phenomenographic research has consistently identified the centrality of students' perceptions in any consideration of learning or teaching. For instance, rather than teachers' understandings of what is to be learnt, it is students' understanding of what it is to be learnt that ultimately drives student learning behaviour. In phenomenographic terms this is the indirect object of learning. From this perspective, even if academics clarify in their own minds (and then in their courses and teaching), the intended graduate attribute learning outcomes and processes, students may not perceive these in the way that the teacher intends. That is, the indirect object of learning and consequently the students' approach to learning might be different to what the teacher perceives / intends. Given this, it would be important to supplement the findings of this research with a subsequent investigation of students' perceptions of graduate attributes. In light of what we now know about what the teacher intends in terms of graduate attribute learning outcomes in a course - what is the variation in students' understandings? How do students understand what it is we are exhorting them to learn, and how do they perceive that they might learn such things? Are these understandings the same as their teachers?

While the findings of the present study identify a hierarchy of increasingly complex conceptions of graduate attributes as outcomes, the question of the different levels or standards of attainment of these different types of outcomes remains to be investigated. It has been suggested in this thesis that graduate attribute outcomes are unlikely to exist on an all or nothing basis and that outcomes at the level of less complex conceptions might support and contribute to outcomes of the type envisaged in the more complex conceptions. A similar hierarchy of capability no doubt exists *within* the levels of outcome described by each conception in the first outcome space. That is, there are likely to be qualitatively different levels of attainment that should be discernable for Enabling outcomes, just as there would be for Translation outcomes. Research focussing on identifying standards and criteria to describe different levels of attainment would be a key element of any university assessment strategy. Although it should be remembered that assessment might be quite different for each of the different understandings of graduate attributes. For example an additional assessment task in the Complement conception, an integrated competence based, authentic assessment in the Transformative conception and an even broader capability based, capstone, self-assessment in the Enabling conception. In this regard the assessment approach proposed by Bowden et al (2000) provides an excellent starting point

drawing as it does on models of assessment of integrated competence and capability. An investigation of the applicability of the dimensions of assessment proposed in that report, to the different conceptions of graduate attribute outcomes identified in the present research, would be illuminating. In framing such a study it may be appropriate to initially establish such assessment standards (grade descriptors) for level D: Enabling Outcomes, given the integrated and holistic nature of conceptions of graduate attributes at this level. These 'grade descriptors' could then be contextualised and applied to the various Level three outcomes, thus providing standards for the attainment of the more discipline specific component abilities in context. Regardless of the eventual form of such standards, in light of the importance of assessment in shaping learning and the need for universities to grapple with the challenge of assessing such outcomes, research into the assessment of generic graduate attributes is an area worthy of investigation.

The notion that there might be different levels of achievement of the different types of outcomes identified and described in this research leads to yet a further avenue of potentially fruitful inquiry. What of the generic outcomes of the different levels of a university education? Recently some Australian universities (for example Melbourne University) have attempted to specify generic attributes for graduates of higher degrees. Interestingly the development of these lists appear to have taken a similarly a-theoretical approach to that observed in the composite lists of generic outcomes for undergraduate degrees. There are many questions that might be asked in this regard. Are there graduate attributes for postgraduate coursework degrees or are the outcomes of these degrees by their very nature (knowing more about less) specialised rather than generic? How are postgraduate attributes different to the generic outcomes of undergraduate educational experiences? Do the categories of description identified in the present study hold true for the outcomes of postgraduate coursework degrees?

What of the outcomes of a very different type of university educational experience - the postgraduate research degree? Might the findings of this research help elucidate the generic outcomes of the research higher degree experience? Certainly there is renewed interest in 'skills' courses for postgraduate research students, on the part of government and universities themselves. In the UK the Research Councils have recently articulated a set of 'skills outcomes' for all research graduates and there are signs these will be incorporated in the new set of HEFCE threshold standards for research degree programs in the UK (Metcalf et al 2002). Some Australian universities already offer research students programs in skills such as project

management, academic writing and information literacy as an adjunct to undertaking doctoral research. However, it might be reasonable to expect that academics' understandings of their role in developing such postgraduate generic 'skills' - and how such skills relate to discipline knowledge and other outcomes of supervision - might be equally if not more variable than those of their undergraduate counterparts. In a similar vein there has been renewed interest internationally in defining the outcomes of the PhD experience. Much of this interest is associated with the debate as to the equivalence of professional doctorates and other alternatives to the traditional research doctorate.

Interestingly it is towards an investigation of the elusive quality of 'doctoralness' that I now find my research efforts turning. Perhaps in part this reflects my personal experience of undertaking such a degree and as a result, of having come to understand the nature of the outcomes somewhat differently myself.

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Publications related to this thesis

Several papers have been presented at national and international conferences in the course of completing this research. Two further papers have been accepted for presentation in 2003. Two journal articles reporting on the findings of this research are currently under review.

Journal articles

Barrie, S.C. (under review). Understanding what we mean by the generic attributes of graduates. *Higher Education*.

Barrie, S.C. (under review). Understanding how students develop graduate attributes. *British Journal of Educational Psychology*.

Conference papers

Barrie, S.C. (2003). Using conceptions of graduate attributes for research-led systematic curriculum reform. Paper accepted for presentation at *11th Improving Student Learning Conference*, Hinkley UK, 1-3 September.

Barrie, S.C. (2003). What are Generic Graduate Attributes? Paper accepted for presentation at *HERDSA Conference* Christchurch New Zealand, 6-9 July.

Barrie, S.C. (2002). Understanding Generic Graduate Attributes. Paper presented at *10th Improving Student Learning Conference*, Brussels, 4-6 September.

Barrie, S.C. (2002). Understanding what we mean by generic graduate attributes. Paper presented at the *27th Improving University Teaching Conference*, Vilnius, Lithuania, 1- 4 July.

Barrie, S.C. (2001). How Generic are Graduate Attributes paper presented at *AARE Conference*, Fremantle, Australia, 2-6 December.

Invited presentations

Barrie, S.C. (2002). Phenomenographic conceptions of graduate attributes. Research seminar presented at *The Institute for the Advancement of Learning, Oxford University UK*, 17 September.