

## GRADUATE ATTRIBUTES – WHAT ARE THEY AND HOW DO WE KNOW IF STUDENTS CAN ACHIEVE THEM?

Elizabeth Levin, Irene Tempone, and Kay Salehi  
Swinburne University of Technology

### ABSTRACT

This paper considers two practical issues regarding graduate attributes. The first issue concerns the development of a comprehensive list of graduate attributes whilst the second issue addresses the question of how one determines whether graduate attributes and generic skills have been adequately fostered throughout an undergraduate program of study.

### INTRODUCTION

The world is constantly changing and one of the many roles of universities is to equip students with skills that will prepare them for a lifetime of learning. Some of these skills are content specific but many are context free and generic (Candy, 2000). Exactly what specific content knowledge and skills will be needed in the short to medium term is hard to predict, however. While “discipline skills and technical proficiency” (Higher Education Council, 1992, p. 20) are seen as important in the short term, it is generally agreed that generic skills are more highly valued because of their usefulness over a lifetime. The focus on lifelong learning in Australia began in the early 1990s, at about the same time as the push for quality assurance in university teaching (Higher Education Council, 1992). By the end of the 1990s the Department of Education Training and Youth Affairs (DETYA) and the Australian Universities Quality Audit (AUQA) required institutions to describe the graduate attributes (GAs) they seek to develop as an indication of quality assurance. In addition, professional bodies require graduate attributes to be clearly recorded prior to course accreditation. Further, employers expect graduates to possess skills that enable them to meet the expectations of the workplace and graduates themselves expect universities to prepare them for the workforce. In such an environment, no university can ignore the external pressures to carefully consider the learning outcomes students will demonstrate and the generic skills that they will develop through their years of tertiary study.

This paper records the journey from the initial interest in, and the development of, a list of graduate attributes; through to the recording of specific, generic skills across individual subjects within the Bachelor of Business at Swinburne

University. The experiences at Swinburne are not unlike those at other universities, as documented in several papers presented at the biennial International Lifelong Learning Conference, and other conferences (de la Harpe & Radloff, 2000; Watters, 2000; Crebert, 2002; Sparrow & Sharp, 2002).

### APPROACH AND FRAMEWORK

The approach used by the authors of this paper has been action learning or action research. This is an approach that assumes that the social world is constantly changing and the researcher and the research itself are part of this change (Hussey & Hussey, 1997). Action research involves a cycle of planning, acting, observing, and reflecting, in which the main aim is to bring about change and to monitor the results once an issue that requires attention has been identified (Hussey & Hussey, 1997). Action research varies in its application in different settings, but there are three underlying recurring themes (Saunders, Lewis, & Thornhill, 2003). First, an emphasis on the management of change. Second, the researchers are involved in both the change management and the research itself. Third, there is a transfer of knowledge; that is, the findings of the researcher can potentially be applied in other contexts or used to assist in solving future problems.

The framework for this paper is shown in figure 1. Initially the push to explicitly incorporate the mastery of graduate attributes came from external bodies. Once the initial seeds were sown, Swinburne University of Technology developed its Flexible Learning and Teaching Strategic Development Plan (FLTSDP) which incorporated the skills, knowledge, and attitudes desirable in the graduates of the university (Swinburne University of Technology, 2002). In addition the reaccreditation cycle meant that it

was time to carefully consider the content and outcomes of the Bachelor of Business. These events led the researchers to consider how the development of the graduate attributes could be incorporated into existing School of Business (SOB) subjects, and how they could be clearly communicated. This paper provides details of this process.

The final component of action research involves reflection. To this end, the paper concludes with some thoughts and suggestions on the incorporation of graduate attributes into undergraduate courses.

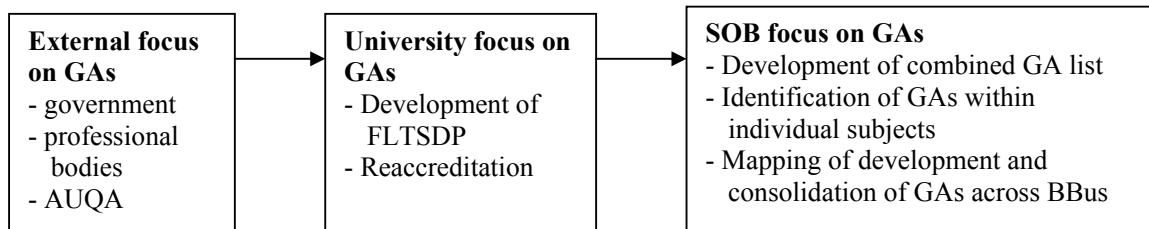


Figure 1. Framework for incorporation of Graduate Attributes (GAs).

## EXTERNAL FORCES

In the early 1990s two government reports drew attention to the need for universities to promote the concepts of lifelong learning. These were *Priorities for Reform in Higher Education* (Aulich, 1990), and *Achieving Quality* (Higher Education Council, 1992). According to the Higher Education Council (1992), university graduates are not only expected to display appropriate skills suitable for professional employment, they are also expected to display lifelong learning skills, an interest in knowledge and learning, a capacity to recognize the limitations of their own learning, a capacity to value diversity, and an awareness of professional ethics and integrity (p. 27). As part of the university's preparation for AUQA in 2002, the five key graduate attributes developed through the FLTSDP (discussed under "Internal Forces") were expanded and supported by detailed characteristics (Tomlinson, 2002).

The Institute of Chartered Accountants (ICAA) and Certified Practising Accountants Australia (CPAA) jointly require schools of business to provide an annual response on the "Core Curriculum Matrix" which requires the identification and location of key generic skills addressed in the curricula (CPA Australia and Institute of Chartered Accountants in Australia, 1996). The accounting bodies have most recently reaccredited the Bachelor of Business at Swinburne University in 2002. Whilst the professional associations have developed their own list of competency standards to ensure that graduates in their association have at least a minimum technical level of competence, the

responsibility has remained with the university as to how these are developed. What has been important in balancing the professional/employer demands with the "fitness of purpose" of the student has been the need to have clear educational objectives, alignment between the content and the purpose of the award, and a commitment to assessment that is fair and linked to the objectives and purpose.

## INTERNAL FORCES

Early strategic-development plans for Swinburne University of Technology were developed relating to entrepreneurship, globalization, research, teaching and learning, and the inter-sectoral advantage. Recommendations for including "student generic skills" started to emerge in documents within the university during the 1990s but were more formalized and linked to the university strategic plans during early 2000. The FLTSDP was developed in 2001 by the deputy vice chancellor (DVC) – teaching and learning with assistance and advice from Learning & Teaching Support (LTS) at the request of the vice chancellor. This plan arose from the commitment to a flexible provision of higher education; an emphasis on learner-centred, interactive approaches to learning; and the need to define expected graduate attributes of Swinburne graduates.

In 2002, strategic initiatives funds were provided by the university's chancellery to establish the Educational Development Coordination Committee to coordinate the FLTSDP, convened by the DVC – teaching and

learning, and serviced by LTS. This committee also included educational development coordinators (EDC) from each school of the university. The group was to provide leadership to implement the vice chancellor's FLTSDP. Part of the brief was to map programs against the "Swinburne Graduates Attributes". These attributes were summarized under five main themes: that graduates,

- are capable in their chosen professional, vocational or study areas;
- contribute in an entrepreneurial and innovative way within their business, workplace, or community;
- operate effectively and ethically in work and community situations;
- are adaptable and manage change;
- are aware of local and international environment in which they will be contributing (e.g., socio-cultural, economic, natural) (Swinburne University of Technology, 2002).

As these attributes were quite broad, a list of indicative characteristics was developed to elaborate each theme (see appendix 1 for details).

The intention was that the graduate attributes would be fostered not only by what material is taught, but by how it is taught. Academic professional development was offered to academic staff, in the form of informal workshops and sessions, and later more formally, with the development and offering of an accredited Graduate Certificate in Teaching in Higher Education, in 2002.

### **INCORPORATING GRADUATE ATTRIBUTES: THE SOB EXPERIENCE**

The seeds were sown in 1995 when two academics from the SOB attended the First Pacific Rim Conference: First Year in Higher Education, where the importance and critical nature of the first year experience was the focus. The Review of First Year Working Party was created in early 2000, and worked together for about a year to understand the strengths and weaknesses of the first-year program and to recommend improvements. The next few months were spent on coming to some consensus on the generic skills that should be addressed, and then conducting an audit of first-year subjects to see if and where they were being addressed in the curricula. It was found

that all generic skills identified were being fostered, some in more than one subject. In addition, it was revealed that students were not expected to have developed proficiency in all of the skills identified during their first year of studies.

Whilst undertaking this project the authors considered the difference between generic skills and graduate attributes and decided that the former are the skills that students develop whilst undertaking their studies, which lead to graduates possessing certain attributes, once they have completed their undergraduate studies. This distinction is important, particularly when considering how individuals develop certain attributes, and was first developed, in the early 2000s, and later published by Tempone and Martin (2003).

The external and internal forces developed momentum by the early 2000s and created the impetus for schools to consider how graduate attributes were developed and to record this in a way that was clearly understood by all stakeholders – both internal and external to the university. In many cases schools already had "generic skills" stated in their accreditation documents and subject outlines, as identified by their professional associations. It was now time for these to be aligned to the university's graduate attributes. While some schools began to customize the university graduate attributes in very specific terms to their professional "generic skills" for their disciplines, in the case of the SOB it was decided to leave the university graduate attributes in their present form, but align the professional association generic skills closely to the broad university ones.

A choice was made that it would be more realistic and appropriate to work with convenors at the subject level rather than with discipline section heads at the discipline level.

Modification was made to a template which the Educational Development Advisor (EDA) in another school had developed in preparation for Institute of Engineers Australia (IEAust) reaccreditation purposes in which the Swinburne and IEAust graduate attributes were mapped. The SOB EDC and EDA refined this document to align CPAA/ICAA graduate attributes with Swinburne's five graduate attributes. This template was presented by the EDC and EDA to each academic discipline (see appendix 1). The EDA then met individually with each convenor to explicitly identify the learning objectives and

to relate the learning activities and assessments with these learning objectives for each subject. Modified subject outlines then became more learner centred and provided a forum for discourse about the value of learning activities, and the validity of assessment choices, and provided an avenue for reflection on the purpose of chosen teaching methods. While time consuming for both convenors and the EDA, academics usually were appreciative of the opportunity to review subject outlines, identify and explicitly state expected learning objectives, and to determine the subject's contribution to building the graduate attributes. Finally, a judgement was made about the level of attainment of each graduate attribute within the subject. A realization was made that not all graduate attributes needed to be present in each subject, but combined, across the degree, all should be covered. A matrix was then developed which mapped these across the Bachelor of Business (see appendix 2) with the objective of identifying any gaps. (This activity was noted by the external chair of the reaccreditation committee, an adjunct professor from another university in metropolitan Melbourne, as a particularly innovative and worthwhile activity, one that is not just paying lip-service to the current demand for inclusion of graduate attributes in reaccreditation documentation. The reaccreditation panel made particular mention of the role of the EDC and EDA in the reaccreditation process; in particular in relation to the development and inclusion of graduate attributes.)

## SUCSESSES

The process of aligning the university's graduate attributes with those expected by external bodies, and then identifying where such skills are fostered and developed, has been a lengthy yet rewarding process with several successes achieved along the way. First, this exercise ensured a pedagogical change to a learner-centred approach to teaching and learning methods via the inclusion of active learning strategies, as well as learning-objectives-driven approaches to assessment. This occasionally required a review of the assessment types and changes to approaches to ensure assessment tasks were directly related to learning requirements. The intensive one-to-one sessions between the EDA and convenors allowed academics to explore and reflect on past practices and, in some cases, to review their own teaching philosophies.

In one case, as part of the reflection process, academic staff realized that some subject prerequisites needed to be reviewed as it was identified that some of the basic learning prerequisites were missing in the early subjects – with this resulting in a high drop-out rate. The process of identifying the graduate attributes by subject highlighted the weakness and has been the catalyst for a total review and restructure of the major.

Second, the review helped academics to develop a better understanding of graduate attributes, and to identify where students developed and built skills and knowledge related to graduate attributes and lifelong learning as opposed to content-specific knowledge. However, there is no guarantee that all students will possess the desired skills on graduation, although it is reassuring to know that if students apply themselves they will have the opportunity to learn and practice lifelong learning skills throughout their undergraduate course.

## CONCLUSION

Opportunities to build graduate attributes must be integrated into the learning experiences of students. Learning activities should be designed and facilitated by academics to enhance these attributes and therefore, this needs to be explicitly communicated within the subject outline. It was found by the authors to be more effective to incorporate these changes at the subject level, rather than the course level, for established degree courses. The authors are mindful, however, of the importance of mapping these graduate attributes at the course level, as a way of making sure all attributes are adequately covered.

When making these attributes more explicit in their curriculum documentation, academic staff seemed to be more receptive of support from educational specialists from LTS than when support was offered from within the School. This is consistent with the findings of de la Harpe and Radloff (2000). An ad hoc approach to including graduate attributes into a degree program, led by enthusiasts, is likely to produce patchy results. Although earlier attempts had been made to specifically incorporate generic skills into subject outlines, it was not until faced with reaccreditation that the process was formalised and undertaken. The importance of management support to ensure academic "buy-in" when seeking to incorporate graduate

attributes into existing courses is noted by Zuber-Skerritt (1992) and Auger (1998). The authors concur and believe that there needs to be a coordinated approach led by authorised experts and supported by senior management to ensure a consistent inventory of graduate attributes throughout an academic program and to show how these skills can be fostered and developed over time.

Developing a list of graduate attributes and having them made explicit at the subject level, and being given opportunities to develop these within the learning program, does not guarantee that students will be automatically achieve all these attributes and be adequately equipped for employment or lifelong learning. There is no minimum level set regarding attainment, and many skills cannot easily be assessed, nor may be evident immediately. Graduate attributes provide a useful roadmap for the purposeful development of suitably skilled and employable graduates. At best, the majority of graduates should be equipped with most of the required skills that they will need to be adaptable, professional, and able to take on lifelong learning. This is a vast improvement to the situation of having a few “motherhood” statements exist somewhere on a university website, that no one either can find or pay attention to. Thus, although the debate about ill-prepared graduates who are not equipped for the demands of the workforce may linger, this process at least has attempted to address this issue.

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# APPENDIX 1

## Generic Skills/Graduate Attribute Audit by Subject

(Note: numbering against CPA generic skills has been added by the authors)

Subject:	Convenor:	Date:
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### 1. Graduates are capable in their chosen professional areas.

CPA generic skills	Tick if applies	Learning objectives to be achieved	Assessment or learning activity used	Specific attribute or skill contribution
identify, find, evaluate, organise and manage information and evidence (2.1)				
Know what questions to ask (3.5)				
Apply disciplinary and multi-disciplinary perspectives (3.9)				
appreciate processes of professional adaption and behaviour (3.10)				
<b>SUT graduate attribute:</b>				
are informed and knowledgeable in the area				
have an appreciation of areas of uncertainty within a body of knowledge				
have the ability to engage in informed critical inquiry				
have pertinent skills and abilities				
display attitudes appropriate to the professional area				
have a sense of social responsibility for knowledge and its application				
understand the relationship between theory and practice				

[A similar table was developed for each of the five Swinburne Graduate Attributes and the corresponding generic skills as specified by the CPA. The contents of the first column of the table have been reproduced on the following page.]

### 2. Graduates operate effectively in work and community situations.

#### CPA generic skills

listen effectively (5.1); present, discuss and defend views (5.2); transfer and receive knowledge (5.1); negotiate with people from different backgrounds and with different value systems (5.3); understand group dynamics (5.4); collaborate with colleagues (5.5); to think and act independently (4.4); report writing (1.1); computer literacy (1.2)

#### SUT graduate attribute:

have the ability to work both independently and collaboratively  
have the ability to effectively communicate using a range of media and in varied contexts  
have the ability to operate locally, nationally and internationally.

### 3. Graduates are adaptable and manage change.

#### CPA generic skills

identify, find, evaluate, organise and manage information and evidence (2.1); initiate and conduct research (2.2); analyse, reason logically, conceptualise issues (2.3); solve problems and construct arguments (2.4); interpret data and reports (2.5); engage in ethical reasoning (2.6); receive, evaluate and

react to new ideas (3.1); adapt and respond positively to challenges (3.2); engage in lifelong learning (3.6); flexibility in new/different situations (4.2); tolerate ambiguity (4.6)

**SUT graduate attribute:**

are self-motivated  
have multifaceted research and problem solving skills  
have a general capacity for flexibility and curiosity

**4. Graduates are aware of environments.**

**CPA generic skills**

listen effectively (5.1); present, discuss and defend views (5.2); transfer and receive knowledge (5.1); negotiate with people from different backgrounds and with different value systems (5.3); understand group dynamics (5.4); collaborate with colleagues (5.5); appreciate ethical dimensions of situations (3.8); a commitment to think and behave ethically (4.1); make judgements derived from one's own value framework (3.3)

**SUT graduate attribute:**

have a broad understanding of the role of technology in our society  
are culturally sensitive and have respect for multiple points of view  
are able to evaluate the economic, social and environmental impact of their decisions  
are able to make a balanced decision taking into account all of these factors  
respect a plurality of viewpoints

**5. Graduates are entrepreneurial.**

**CPA generic skills**

to act strategically (4.3); to be focussed on outcomes (4.5); think creatively (4.7); flexibility in new/different situations (4.2); think and act critically (3.4); recognize own strengths and limitations (3.7)

**SUT graduate attribute:**

have the ability to critically understand innovations and developments  
have the ability to make links and connections between developments and opportunities within/across diverse environments  
have the ability to identify and realize opportunities for responsible innovation  
have an aptitude for calculated, socially responsible risk-taking  
have the ability to deal with success and failure through informed critique and self-reflection

**APPENDIX 2**

**Core Graduate Attributes Matrix by Course**

NA - not applicable B – beginning C – consolidating E - established

Using the matrix below indicate where graduate attributes are consciously taught. Note that not all subjects need necessarily incorporate each of the graduate attributes. To complete this matrix, look over how each area is rated and make a value judgment as to what you see as the contribution your subject makes to the overall course.

<b>Graduate Attributes (CPA - Generic Skills) Graduates will ...</b>					
Subjects that make up the Bachelor of Business	<b>Capable in their chosen professional areas</b> 3 Appreciative skills 2. Analytic/design skills	<b>Operate effectively in work and community situations</b> 5. Inter-personal skills 4. Personal skills 1. Routine skills	<b>Adaptable and manage change</b> 2. Analytic/design skills 3 Appreciative skills 4. Personal skills	<b>Aware of environments</b> 5. Inter-personal skills 3 Appreciative skills 4. Personal skills	<b>Are entrepreneurial</b> 4. Personal skills 3 Appreciative skills
Subject 1					
Subject 2					
Subject 3					