



Business graduate skills in sustainability

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Abstract

Purpose – The purpose of this paper is to review research and strategies in Australian business education that aim to foster graduate capabilities in sustainability concepts and practices, also to present a case study of teaching practice along with ideas for future development.

Design/methodology/approach – The authors report on a research project by seven Australian universities, with financial support from the Australian Learning and Teaching Council (ALTC), on how to develop and grade graduate capabilities with sustainability identified as a core graduate skill. An example is presented from the Faculty of Business and Economics of a strategy in action – the use of a case study (centred on sustainability practices at the university) to enhance the skills of merit scholars.

Findings – Corporate social responsibility is a well-established concept in business management theory, with sustainability principles emerging as a core feature. In the higher education sector, the spirit may be willing, but training in the application of these principles has been implemented as an add-on rather than an embedded part of the curriculum. Although efforts are being made to find ways of nurturing graduate capabilities in sustainability practice, a significant obstacle is the lack of teaching models and materials. The authors offer findings from the ALTC graduate skills project as well as a case study of implementation.

Originality/value – The authors report on practical innovations in fostering business graduate skills in implementing sustainability principles, assess the utility of current education practice and present some suggestions for future learning and teaching strategies.

Keywords Australia, Universities, Graduate skills, Business education, Sustainability, Corporate social responsibility

Paper type Conceptual paper



1. Introduction

In the twenty-first century, business and industry are looking more closely at the impact their actions have on their immediate and the wider community, with increased acceptance of an obligation to give back to the community whilst also protecting the environment. Concerns about the need for businesses to behave ethically – beyond the pursuit of profit – arose out of the effects of the Industrial Revolution, where rapid development led to accelerated environmental degradation and massive influxes into cities unable to cope with increased populations. The initial focus was to alleviate direct social impacts; then with progressive urbanisation and industrialisation, the collective social conscience expanded to include awareness of adverse environmental impacts. Out of the convergence of these themes, the concept of corporate social

responsibility (CSR) was born, generally considered to date to the 1950s (Carroll, 1999; Furrer *et al.*, 2010), with environmental considerations being gradually incorporated into the concept from the late 1960s (Carroll, 1999). The influence of CSR has continued to expand, and since the late 1990s, it has become “almost universally sanctioned” (Lee, 2008) with CSR being widely adopted as the public face of business. For instance, many financial institutions now boast their support for the basic tenets (as an example, a major Australian bank has a link to “corporate responsibility” on its homepage: see www.nab.com.au/) and ethical investment funds have proliferated.

There are, however, inherent tensions between the conventional business model and the inclusion of social responsibilities, with the drive for profit on one side and social justice considerations on the other. Rundle-Thiele and Wymer (2010, p. 6) describe this as a struggle between the impetus to “increase shareholder wealth [and] [...] an alternate perspective suggesting that the true purposes of corporations are to make societies better off and to create societal wealth [...]”. These tensions are displayed in the variety of definitions and levels of application of CSR even within the European Union, where considerable effort has been put into achieving uniform standards (Furrer *et al.*, 2010). A recent paper by Haberberg *et al.* (2010) highlights conflicts in the adoption of CSR principles within businesses, theorising that pressures from government and the general community have led in many cases to CSR being espoused and/or implemented in a watered-down form, which can result in inadequate outcomes in practice.

Within the business context, sustainability is often included as a mainstay of CSR while also gaining wide endorsement as an issue of concern in its own right; the latter conceptualisation of sustainability is our focus in this paper. Business professionals are increasingly employed in developing company policies and strategies for reaching sustainability goals; for instance, in regard to accountants, Clarke and O’Neill (2005, p. 114) suggest that:

In the later years of the 20th century the accountant’s knowledge set also became increasingly applied to the analysis and resolution of environmental issues in the pursuit of environmental sustainability by corporations [...]

Yet, despite the need for these professionals to be skilled in the concepts and practices of sustainability, mirroring the limitations in the business world are the approaches being followed within higher education. Nurturing the evaluation and management of sustainability issues is still predominantly hived off to natural resources and environmental studies courses, and within business it is largely confined to postgraduate courses and MBA programs (Christensen *et al.*, 2007). This wastes a crucial opportunity for change in business practices; that is, education of future managers, policy makers and business professionals of all kinds. Academic literature on business has often included attempts to integrate sustainability into its own discourse, with a focus on management, technical expertise and accountability, alongside establishing a “business case” for sustainability (Banerjee, 2004; Willard, 2004; Coulson and Thomson, 2006; Bridges and Wilhelm, 2008), rather than genuinely incorporating sustainability concepts into views of appropriate practice. This relegates sustainability to the standing of a discretionary add-on, rather than a keystone for attitudes and practices across the curriculum as well as within company practice.

Concurrently with changes in company culture, business curricula are being influenced by a shift in focus from pure knowledge-based outcomes to more dynamic

skills-based outcomes, with the aim of developing skills that meet the expectation of employers. Business graduates are expected to possess the capacity to adapt to the shifting knowledge, changed circumstances, and sudden upheavals of the business environment. This is still a work in progress, and many consider that this goal is still not being fully met; graduates do not necessarily have the broad skills required by employers, such as critical thinking or communication skills (Arnold *et al.*, 1999; Perrone and Vickers, 2003; Freeman *et al.*, 2008), let alone targeted and/or newly emerging skills such as in sustainability. This situation begs the question: what can higher education institutions do to respond more appropriately to the expectations of business and the wider community?

Our interest here is the need to equip business graduates with high level skills in the concepts and practices of sustainability. The paper moves from the macro-perspective – an overview of sustainability in higher education and business education in particular – down to the micro-level of a program at one university for merit scholars. Our purpose is to report on the position of sustainability in business education in Australia, with a particular focus on a project – the “graduate skills” project (Graduate Skills, 2010b) – that investigated the development of four graduate skills, one of which was sustainability. The project was run by seven Australian universities and incorporated the design of teaching resources and standards for assessment. It represents a unique attempt to investigate how sustainability can be embedded systematically into graduate skills within business education in Australia. The inclusion of sustainability as a core skill in the trials of materials, teaching approaches and assessment strategies is an advance in the pedagogy of this crucial issue.

2. Understanding sustainability

Sustainability as a concept has evolved from the earlier term “sustainable development”, which was first defined by the UNWCED (1987) in the Brundtland Report as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs”. However, the connotations associated with the word “development” have seen “sustainability” emerge as a more appropriate way to express the intent in terms of social responsibility.

The varied descriptions of sustainability essentially include the necessity for consideration of environmental, social and economic perspectives and impacts in decision-making processes, thus the aim for any organisation is to achieve a balance between the principles of:

- (1) *Environmental protection*. Negating the impact of activities upon the environment to maintain or enhance the integrity, quality and quantity of existing biodiversity. This includes the efficient use of resources.
- (2) *Social justice and diversity*. Providing the opportunity for equal employment, decent living and working conditions, as well as gender equity and access to social wellbeing and justice for all, regardless of ethnicity, sexual orientation, religious belief, impairment or educational level.
- (3) *Economic wellbeing*. Maintaining and/or improving the economic position of an organisation to the benefit of its staff and the community, though not at the expense of the other principles (Denby, 2009).

Incorporating sustainability principles into an organisation’s central activities requires challenges to people’s habitual thinking and practices, in order to build better

relationships between people, and between people and their environment. Education plays a key role in change towards sustainability and institutions of higher education are in a position to provide this through operational examples of best practice, learning and teaching activities, and research direction. We focus in the next section on the role of higher education in developing graduate skills in sustainability, in particular through the appropriate design of business curricula.

3. Sustainability and higher education

3.1 The Australian context

Along with the wider acceptance of principles and practices which support sustainability, numerous charters, policies and declarations have emerged that clearly position the place of higher education in achieving change towards sustainability. Some of the more prominent international statements include:

- Kyoto Declaration on Sustainable Development – Lead Organisation: International Association of Universities.
- Agenda 21, Chapter 36: Education, Public Awareness and Training – Lead organisation: UNESCO (1992, 2002).
- Talloires Declaration – Lead Organisation: University Leaders for a Sustainable Future.
- Sapporo Sustainability Declaration – Lead Organisation: G8 University Summit.
- UN Decade of Education for Sustainable Development (UNDESD) – Lead Organisation: UNESCO (1992, 2002).

In the context of Australian education, the UN DESD has been the most influential statement, to which the Australian Government has responded with *Living Sustainably – Australia's National Action Plan for Education for Sustainability* (DEWHA, 2009). *Living Sustainably* frames a set of principles for nationwide action and incorporates strategies to respond to the needs and priorities of education for sustainability:

- *Transformation and change.* Education for sustainability is not simply about providing information but involves equipping people with the skills, capacity and motivation to plan and manage change towards sustainability within an organisation, industry or community.
- *Education for all and lifelong learning.* Education for sustainability is driven by a broad understanding of education and learning that includes people of all ages and backgrounds and at all stages of life and takes place within all possible learning spaces, formal and informal, in schools, workplaces, homes and communities.
- *Systems thinking.* Education for sustainability aims to equip people to understand connections between environmental, economic, social and political systems.
- *Envisioning a better future.* Education for sustainability engages people in developing a shared vision for a sustainable future.
- *Critical thinking and reflection.* Education for sustainability values the capacity of individuals and groups to reflect on personal experiences and world views and to challenge accepted ways of interpreting and engaging with the world.
- *Participation.* Education for sustainability recognises participation as critical for engaging groups and individuals in sustainability.

- *Partnerships for change*. Education for sustainability focuses on the use of genuine partnerships to build networks and relationships, and improve communication between different sectors of society (p. 9).

There are four strategies outlined in *Living Sustainably*, each of which are intended to address four key institutions in society: government; business and industry; community; and education. The education strategy specifically states that education systems need to be reoriented, to ensure there is a focus on achieving a culture of sustainability in which learning and teaching for sustainability are reinforced by continuous improvement in the sustainability of campus management (DEWHA, 2009).

Federal Government support to undertake the reorientation specified in *Living Sustainably* has not been forthcoming for higher education. Deeper examination of the strategy reveals a lack of specific action, tools and resources to make the significant shift required; instead, there is a distinct focus on high level concepts such as supporting whole-of-institution sustainability programs. As a result, many of the changes within higher education institutions are being implemented by engaged individuals, often for a variety of reasons including impetus from professional bodies (as is the case with accountancy) or institutional directions (such as at Macquarie University, where sustainability is one of the guiding principles for graduate capabilities).

3.2 Sustainability in business education

There is now a wealth of declarations, institutional policies and literature on sustainability and business – whether dealing with sustainability in its own right or under the umbrella of CSR – yet within the context of business education, the learning and teaching of sustainability is still only slowly emerging as an area of interest. So far, it has been largely confined to postgraduate business curricula, particularly MBA programs (Christensen *et al.*, 2007; Tilbury *et al.*, 2004; Stubbs and Cocklin, 2008; Willard, 2004; Starik *et al.*, 2010) and even a recent scoping study on business graduate skills in Australia (Freeman *et al.*, 2008) paid minimal attention to sustainability.

Starik *et al.* (2010, p. 378) emphasise that resources for learning and teaching in sustainability vary between disciplines: “more seems to be available for some areas, such as strategic management, ethics, and business and public policy [...]”; and resources are lacking in many other areas, such as finance and marketing. This is also true of accountancy, despite accountants becoming increasingly involved in analysis of sustainability issues in a range of fields (Clarke and O’Neill, 2005). In Australia and New Zealand, Rundle-Thiele and Wymer (2010) surveyed business faculties in 47 universities about the place of “ethics, social responsibility and sustainability” in curricula. They found that: “Many of the sustainability courses were offered in the economics (13 courses) and tourism (12 courses) disciplines [...] only 13 sustainability business and management courses were identified” (p. 9). To the authors’ disappointment, there were no such courses within marketing programs (their discipline).

There has been a lack of conceptual alignment across business disciplines, as well as limited empirical research or evidence to demonstrate the effectiveness of recommended activities and assessments. Moreover, strategies offered as “best” practice are often of restricted value because they are generally resource intensive; time consuming; impeded by a lack of teacher training; and exclude the needs of students from non-English speaking backgrounds. The graduate skills project (Graduate Skills, 2010b) (discussed in the next section) was designed to address some of these deficiencies.

Students in higher education need to engage critically with, and in the processes of, sustainability, in common with other graduate skills. Rather than learning and teaching being prescriptive, processes need to be situated within constructivist theories of learning. The Australian Research Institute for Environment and Sustainability has conceptualised education for and about sustainability as requiring teamwork, critical thinking and trans-disciplinary collaboration, noting that: “It differs from the traditional environmental education approaches in that it goes beyond addressing values and attitudes of the individual to build their capacity for instigating and managing change” (Tilbury *et al.*, 2004, p. 1). In other words, sustainability needs to be addressed through both substance and process where the acquisition of knowledge and understanding is complemented with the development of essential skills – education for and about sustainability.

The graduate skills project recognised this need, focusing on four graduate attributes: teamwork, critical thinking, ethics and sustainability. Petocz and Dixon (2011), in a discussion of some of the project findings, suggest that whereas critical thinking and teamwork could be regarded as discrete skills, sustainability and ethics should be regarded rather as “dispositions”. They note that:

[...] these dispositions represent approaches towards academic and professional work [...]
A student does not *learn* sustainability or ethics, nor can they be ‘taught’, though they might learn about some aspects of them [...] the educative task is to expose students to a range of activities where these dispositions can be observed, experienced and practised (p. 18).

The goal is to expand the student’s view of the world and of how to be a professional.

The next section deals with this project, which was designed to foster the four capabilities in business students.

4. Graduate skills project

4.1 Overview of the project

Adopting a critical perspective on education for and about sustainability in activity and assessment design can enhance and promote a range of graduate skills for business students:

A critical theorization of education for sustainability in the business studies curriculum influences not only the content, but also the philosophical and values base of the course, the pedagogical approach and the goal of student self-reflection (Springett, 2005, p. 156).

With these latter concerns in mind, the Australian Business Deans Council (ABDC), with support from the Australian Learning and Teaching Council (ALTC), conducted a scoping study to investigate existing resources, strengths, gaps and challenges for learning and teaching in university business faculties (Freeman *et al.*, 2008).

The Freeman *et al.* study highlighted the development of graduate skills in business education as a significant theme, but found that “there was little agreement about the degree to which generic skills were important [...] whose responsibility they were to teach [...] or how they should be assessed” (p. 23). Although graduate skills were generally seen as important, there was a sense that these were not being developed at universities as well as they could be. The ABDC Teaching and Learning Network (a group of Associate Deans in business faculties across Australia), along with seven Australian universities, developed the “graduate skills project” (Graduate Skills, 2010b) to address these findings. The universities involved were:

- (1) Macquarie University (New South Wales);
- (2) University of Canberra (Australian Capital Territory);
- (3) Australian Catholic University;
- (4) Edith Cowan University (Western Australia);
- (5) LaTrobe University (Victoria);
- (6) University of Southern Queensland; and
- (7) University of Tasmania.

The project received financial support from the ALTC and was managed by staff at Macquarie University. It incorporated a variety of targeted activities – ranging from background research to designing lesson plans – and included a literature review; collaborative investigation; establishment of a web site (www.graduateskills.edu.au); implementation of trial initiatives at the participating universities; academic papers; and a final report (Vu *et al.*, 2011). In addition, papers discussing various features of the project have been published in the journal *Asian Social Science* (2011, Vol. 7, No. 4). The underlying methodology of the project was based on that of action research (McNiff and Whitehead, 2009) which relies on an iterative cycle of reflection, evaluation and modification of strategies at all stages of any research.

The project team focused on a subset of graduate skills: teamwork, critical thinking, ethical practice and sustainability. The first three had been identified (among others) as significant in the ABDC scoping study (Freeman *et al.*, 2008). The project team added sustainability to the other three skills as a vital skill for business graduates, since it is an issue requiring decisive action and because of its expanding place in corporate, public and academic discourse. In particular, there has been a significant lack of systematic strategies for the learning and teaching of sustainability within business education. Along with ethical practice, sustainability was judged to be a more conceptual skill – or even dispositional – as opposed to teamwork and critical thinking, which were considered to be more procedural skills. Discussion about the use of terms (generic skills, attributes, capabilities, dispositions and so on) in the graduate skills literature is included in the literature review by Rigby *et al.* (2009); we use the term “graduate skills” in this paper.

The focus of the graduate skills project was the design, development and dissemination of learning and teaching resources. In particular, the project used findings from previous research, student and staff workshops and evaluations, as well as professional knowledge, in order to design learning and teaching activities and academic standards. It included opportunities for reflection and evaluation in its many stages as well as trials of materials and teaching approaches at the universities involved.

The major findings of background research about graduate skills for the project included (Vu *et al.*, 2011, p. 17):

- It appears that the development of graduate skills is best fostered within the context of disciplinary learning. Thus, within the discipline of business, more attention needs to be paid to how graduate skills are acquired and developed, and to the role of instructors’ teaching and learning strategies in promoting and enhancing these skills.

- A learner-centred approach, located in constructivist pedagogy, is generally considered best practice as it situates the experiences, goals, and values of the students at the centre of the learning process, thus enhancing their cognitive and affective development.
- It is essential to adopt an approach to teaching and learning that allows teachers to focus simultaneously on the students' self-regulation of the learning and motivation processes, as well as on the environmental triggers that affect these processes.

Thus, by providing opportunities for the development of graduate skills, students will also increase their capabilities for self-regulation, which is considered to complement the development of any one graduate skill.

A major feature of the project was the embedding of these principles into the design of a range of learning and teaching activities, including many with a focus on sustainability. The resources were evaluated by students and teachers, using both qualitative and quantitative measures, and then revised accordingly. For instance, at one of the workshops within the project (Section 5), pre- and post-tests were undertaken of the students' perceptions and levels of understanding of sustainability; the project members then rated these independently on a four-point scale that related to the level of complexity of the conceptions. Further evaluation involved opportunities for feedback by the students during the workshop itself, with some also being interviewed after the workshop. The full results of the qualitative testing and feedback are presented in the final report of the project (Vu *et al.*, 2011). The overall project methodology was designed specifically to obtain feedback from students of their understanding of the skills, and to test various teaching strategies.

The activities were also designed to act as templates for the development of other resources in order to promote and enhance a variety of graduate skills across the business curriculum. These resources are publicly available on the graduate skills web site – www.graduateskills.edu.au – as adaptable lesson plans.

Examples of approaches used include:

- an intensive workshop model for students and staff;
- case studies, such as one on an oil spill in Moreton Bay (Queensland, Australia) and another on a proposed pulp mill in Tasmania;
- immediate feedback assessment technique;
- icebreakers;
- debates;
- the jigsaw method; and
- ethical dilemma scenarios.

The lesson plan for one of the sustainability case studies, the “Macquarie University case study” (Graduate Skills, 2010a), is presented in the Appendix (and see also Section 5.1). Accompanying the lesson plan for the case study are a number of resources including general information about the scenario, as well as expositions of the perspectives of the most prominent stakeholders. It exemplifies the underlying philosophy and approaches considered by the team to be critical to the project; for instance:

- It sets out clear learning outcomes, which allows for more targeted – and thus more effective – assessment.

- It allows students to critically engage with the concepts, policy and practices of sustainability in the business environment, rather than prescribing a problematic and narrow definition of sustainability. Students learn to understand and think critically about different perspectives of sustainability through a stakeholder analysis.
- It is based on the idea of “jigsaw groups”, a technique which involves students becoming “experts” in a case study activity, and then sharing that knowledge with other students. This is an example of good practice in collaborative learning, where students teach and learn from one another.
- It builds on and develops students’ self-regulated learning by facilitating both interpersonal and internal learning opportunities (Vu *et al.*, 2011).

Many of the project’s resources were used in undergraduate and postgraduate business, statistics and interdisciplinary units within the project team institutions, some as a trial initiative and others on a more permanent basis (thus representing concrete change in these institutions). We discuss one approach in Section 5 (a program for merit scholars) that has been implemented at Macquarie University.

4.2 Assessment

A major feature of the graduate skills project was grappling with assessment. There is a pressing need to improve the assessment of graduate skills so that staff, students and employers are clear about what has been learnt (Freeman *et al.*, 2008). The project team considered it crucial that standards of achievement were developed, for university grading purposes as well as to identify standards to enhance learning outcomes for students.

This approach aligns with the standards-setting agenda of Australia’s Federal Government (Australian Government, 2009); the project considering minimum threshold standards for accounting degrees in Australia (ALTC, 2010); and the “assurance of learning” mechanism being adopted by many business schools internationally, due to the accreditation requirements of the Association to Advance Collegiate Schools of Business (AACSB) for business and accounting which were revised in 2010 (AACSB, 2010). Assurance of learning requires a business faculty to set out the outcomes their students will gain from their learning and what standards are achieved, and then to demonstrate that the students have achieved the outcomes to the required standard. Defining and calibrating standards of achievement for business graduates is a major challenge for Australian universities.

Five standards were defined in the graduate skills project, in relation to three criteria: conceptual, procedural and professional. These standards were designed for each of the targeted graduate skills and those for sustainability are set out in Table I.

This framework was developed from workshops with students near graduation as well as input from the literature (Wood *et al.*, 2011). We have organised the standards into conceptual, procedural and professional (adapted from Billett, 2009). Conceptual knowledge is discipline-specific and/or skill-specific knowledge; procedural knowledge is discipline-specific knowledge that is specific to strategic procedures; while professional knowledge is values, attitudes and capabilities related to practice. Several writers have called our professional dimension a dispositional or attitudinal/values dimension, but here we choose to use “professional” to encapsulate the concept of becoming a professional upon completing an undergraduate degree. In Australia,

	Conceptual	Procedural	Professional
Level 4. Highdistinction	Demonstrates a critically reflective theorisation of the concept, recognising its evolution in the public discourse, controversial nature and location within certain theoretical and disciplinary paradigms Defines sustainability as a complex process of adaptive management and systems thinking across disciplines and sub-discipline areas Demonstrates an understanding that the concept is constitutive of more than personal views and the three domains, critically recognising the relevance of external authorities, societal rules and organisational agendas Demonstrates knowledge of certain aspects of the process of sustainability such as lifecycles, stakeholder interpretation and systemic thinking	Identifies and critically examines the full range of sustainability aspects in any given situation, recommending and justifying an appropriate response Demonstrates the ability to make connections with other attributes, such as critical thinking, ethical practice and teamwork Demonstrates the ability to analyse the sustainability aspects of given situations and identify and support a range of recommendations for action using certain processes and frameworks	Demonstrates the ability to innovatively evaluate and adjust sustainable conduct strategically to fit the organisational context and consider competing demands Demonstrates an appreciation of the main sustainability issues, taking account of legislative and organisational requirements
Level 3. Distinction	Discerns sustainability across three broad domains of economic, social and environmental, acknowledging the notion of generational responsibility	Demonstrates a knowledge of the existence of sustainability frameworks and a basic understanding of how those frameworks might be applied to decision making Demonstrates knowledge of the ways of dealing with environmental aspects of sustainability, such as recycling Unable to use any aspect of sustainability beyond the definition. Unable to apply even basic notions of sustainability to practice	Can identify the key issues involved and demonstrates a basic knowledge of their impact on professional practice Demonstrates a basic but limited understanding of the resource issues of sustainability in the workplace Only focus is keeping their business or employment going. Unable to apply legislative requirements to a professional situation
Level 2. Credit	Demonstrates a basic understanding of the environmental domain of sustainability Understanding of sustainability limited to the idea of "keeping self or business going". Unable to define sustainability in any of the three broad domains		
Level 1. Pass			
Level 0. Fail			

Source: Graduate Skills (2010a)

Table I. Sustainability standards of achievement

students are marked with five grades ranging from Pass to High Distinction. We were able to make qualitative distinctions between these levels.

The framework can be used to design marking rubrics. We do not suggest that students need to demonstrate achievement across all three domains in order to achieve a particular grade; this would depend on the learning outcomes of the particular unit of study. We would recommend, however, that all students be able to demonstrate at least level 1 achievement across all domains at the end of a degree.

5. Aspiring Professionals Program for merit scholars – a case study

5.1 The program

Initiative and enterprise, communication and presentation skills, and problem solving and team interaction abilities have been identified as essential for successful employment (Candy and Crebert, 1991; Australian Chamber of Commerce and Industry, 2002; Perrone and Vickers, 2003), but it has also been suggested that graduates may not adequately develop these required skills by the end of their degree (Arnold *et al.*, 1999; Perrone and Vickers, 2003). Even where such capabilities have been acquired, their application by graduates may be hampered by a factor suggested by Fallows and Steven (2000), who note that graduates of vocationally focused degrees are often the slowest to recognise the generic (graduate) skills gained during their higher education. It was within this context that the Aspiring Professionals Program (APP) was developed at Macquarie University for merit scholars, that is, those students who had achieved very high scores in the Higher School Certificate (awarded at the end of secondary education in Australia).

In 2009, the majority of the participating students were from the actuarial studies department; however, in 2010, the program was extended to merit scholars across the entire university as well as other high achieving students, with participation limited to invitation only. The program had three key focus areas: an initial stage of development of self-awareness; followed by career development; and community focus (Harrison, 2011). As part of the trials of different strategies developed within the graduate skills project, it was decided to incorporate sustainability within the community theme.

This theme was developed at a three-day residential workshop in July 2010, as part of the wider APP. There were 23 participants: most were then in their third year of study with the majority enrolled in the Faculty of Business and Economics. Sustainability was one of four topics addressed, the others being teamwork, critical thinking and ethical practice – all intersecting with sustainability and specifically targeted within the graduate skills project. One session was held for each of the four-targeted graduate skills in addition to an icebreaker session.

Sustainability was addressed from a theoretical point of view at the outset. After ensuring a common understanding, students worked together to review a case study (Graduate Skills, 2010a), which represented an actual scenario that Macquarie sustainability had already undergone, relating to an initiative to encourage engagement and communication on campus (the Appendix). The jigsaw method developed by Elliott Aronson and others was used (Aronson and Patnoe, 1997; Aronson, 2010), as it is a cooperative approach to learning in which each individual's contribution is significant, as for each piece of a jigsaw puzzle.

Students were divided into groups of five, with each member then being appointed as a representative of a different perspective in the decision-making process: senior

executive, professional staff, academic staff, students, and Macquarie sustainability. The original teams then split into the various stakeholder groups and were provided with a brief of the situation from the perspective of the stakeholder they were representing within the organisation; only information pertaining to the stakeholder they represented was provided, in a deliberate measure to ensure that the case study accurately reflected a real-world problem. Working collaboratively, each stakeholder group discussed the issues surrounding the initiative in order to become “expert” in that particular perspective. The original teams then reformed, now with an “expert” from each of the different stakeholder groups, to further discuss the case study; the goal was to make a persuasive case for the requirements identified to further their needs and to determine the next steps for action towards supporting or rejecting the initiative. Each team then presented their case to the whole workshop group, with an open discussion for questions and comments at the end of each presentation. This tested and developed a number of graduate skills including teamwork, communication and listening skills, critical thinking, problem solving, and presentation skills – those skills identified earlier as essential for successful employment.

5.2 Outcomes

The results of the qualitative measures described earlier (in Section 4.1) to evaluate the success of the workshop model indicate that the students were positive about the experience, raising a variety of benefits they had gained. Perhaps more importantly in relation to sustainability, the changes in their perceptions and understanding show that such a model can be effective in the learning and teaching of sustainability concepts and their application. These quotes from two participants indicate a greater awareness of the need to consider sustainability within their discipline:

[Sustainability] wasn't really raised much in university at all. [...] Whereas before it was something you always knew about but didn't really apply it in university so much. [...] Particularly I've found [since the workshop] when I was looking at case studies at university you did consider the sustainability issues of resource management, broader concerns, when you were actually conducting business practices rather than just focusing on littler things.

But for me thinking about business at least, as a business type, sustainability is much more than long-term growth, but asking the why questions like: why are we doing this, why are we wanting to increase our GDP every year, why do we want businesses to be continually more profitable, and how sustainable is that progression. I think they're the big questions.

Benefits also flowed to the academics and professionals involved in facilitating the various workshop sessions, as their participation acted as a professional development initiative to equip them to embed graduate skills into their own teaching and practice.

Workshop facilitators and students alike found the model to be an effective adjunct to other modes of delivery. Limitations of the program approach can include that of being resource intensive in terms of both initially setting up a program and, if case studies are being used, in keeping the material fresh and relevant. It also assumes that academics delivering the program have the necessary skills and training to lead the workshop, although this can be addressed through modification as necessary as well as by involving those with expertise in sustainability and teamwork methods. It is also possible that it may not be as effective with a group of students who are less motivated

than those in the APP, but it is certainly worth testing in other situations. Furthermore, the model can be tailored to specifically enhance aspects of the curriculum to overcome the potential separation from other coursework.

Clearly, there are challenges to be met, but we found the students embraced the program with such enthusiasm, and it was so effective in influencing their approach to sustainability, that we would support the model's use in a range of situations. Further discussion of the use of the model in the project can be found in Petocz and Dixon (2011) and Daly *et al.* (2011).

In all, the program demonstrated that it is possible to intertwine learning in and for sustainability with development of other graduate skills, particularly in contexts not generally considered to be sustainability focused. In the future, this program will be expanded to service an average of 80 merit scholars each year – 25 from the Faculty of Business and Economics – with high achieving students being selected through a more flexible process (rather than just high school results). The three focus areas of “self”, “career” and “community” will be expanded and become comprehensive workshops in their own right (see Harrison (2011) for more detail). The workshop on sustainability tested in the graduate skills project will remain within the community theme.

6. The way forward

“Sustainability” is a complex concept and undoubtedly there will continue to be discussions about the best model for developing graduate skills for many years to come. Our experience in the graduate skills project and the APP has led us to the conclusion that embedding sustainability within a discipline using a teamwork approach is certainly an effective method, though perhaps not the only way forward. A main teaching strategy was the development of case studies to increase students' proficiency in dealing with the ever-changing scenarios they will face in their professional lives. New world views of business may appear; concepts of sustainability will continue to evolve; as will situations that pose problems for its realisation. Graduates will need the flexibility of mind to deal with these as they enter professional life.

One outcome of the graduate skills project is that consciousness has been raised amongst students and academics across Australia of the ways that sustainability can be embedded and assessed within the business curriculum. It is still early days for standards of graduate skills in sustainability. Nonetheless, through the graduate skills project models have been developed, tested and implemented, with the APP showcasing one that specifically works in business education. The current work on standards in Australia may mean that a different standard to the one we developed and tested will be implemented; however, any standard needs to be tailored to local conditions and this is the basis for the design of the APP.

Much has changed since the scoping study carried out in 2008 (Freeman *et al.*, 2008), where there was no mention of sustainability from business and industry. It shows how quickly there has been a shift in thinking about the need for business students to be able to work with the ideas and practices of sustainability. It is essential that graduates have the skills in comprehending sustainability concepts and how to apply them in practice, whether as key to CSR principles or as a critical issue of concern in its own right. For this to occur, higher education needs to apply a range of techniques (such as those mentioned within this paper) to embed sustainability-focused graduate

skills across the business curriculum, rather than just as an add-on to programs or as separate courses.

It is clear that sustainability and ethical practice, as graduate skills, are linked and rely on graduates with high level teamwork and critical thinking skills. The project showed that these skills can be developed and assessed together – indeed to reach a high level of achievement graduates need to synthesise conceptual, procedural and professional knowledge across a range of graduate skills.

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Further reading

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Description	Case study analysis
Task type	In-class or tutorial activity
Time	50 minutes
Level	Intermediate, advanced
Class size	Minimum 20 students
Learning outcomes	Students should be able to: Demonstrate an understanding of the complexity in trying to engage different stakeholders in changes towards sustainability Develop an argument and counterargument in two contexts
Method	Use this case study as an example of an organisational activity that raises sustainability issues Prepare a general factual introduction and up to five statements of the viewpoints of stakeholders Link this back to learning about sustainability from the student activity.
Concluding activity	Issues to address might be: What do we mean by sustainability? How do stakeholders view sustainability differently?
Assessment	Assessment may occur on the basis of the argument/perspective put forward by individuals; or as a group task
Tips	Keeping to time is the key to the success of this activity You will work in groups of five. Everyone will be given some background material on the project. Each group will then be given some material relating to five stakeholders with differing views about the project. One group member will be assigned to each stakeholder. You should read the material for the stakeholder you have been assigned to but do not discuss it with the rest of your group The groups will then be rearranged so that those with the same information become an expert group on each stakeholder's views. Each of these expert groups will consider the information given and decide how each member will present their views to "non-experts". For example, if you are part of the Academic Group, how could you best explain the company's position to other stakeholders? The original groups will then reconvene and will now contain an expert on each stakeholder's views You will then consider and discuss the issues based on the background information you have been given, and the contributions of each expert who will argue the interests of their respective stakeholder
Student instructions	Your discussion should include, but need not be limited to, the following: What sustainability issues does the project raise? How would the stakeholder you are representing argue the sustainability case? Based on your view of sustainability, should the project proceed? Assume the project is going ahead; what concessions or assurances would the stakeholder you represent seek in order to feel satisfied that the project was sustainable? You will have about 25 minutes to work on this: 10 minutes for each expert group, and then 15 minutes for the original groups At the end of this time each original group must give a 5-minute group presentation which addresses the following two questions: What sustainability issues are relevant to the project? Does your group believe this project can proceed and be successful?

Table AI.
 Engaging in sustainability: Macquarie University case study

Source: Graduate Skills (2010b, pp.1-2)

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