

Environmental Sustainability Awareness and Academic Curriculum Improvements: The Case of a Business and Law Faculty in an Australian University

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Climate change, global warming, rising sea levels, ice cap melting, carbon taxes and trading schemes etc. are all major environmental issues that confront the modern world. Universities are now trying to ensure that their students graduate with an understanding of environmental sustainability regardless of their field of expertise. This study investigates 181 undergraduate and 155 post graduate business and law units from five schools within an Australian University to see how they embed environmental sustainability into their existing curriculums. It also examines how environmental sustainability fits into the scaffolding of the main Bachelor of Commerce degree and how each school plays its part into the overall development of graduates' understanding of environmental sustainability. In July and December 2011 all unit chairs in the Faculty of Business and Law at Deakin University were asked if and how environmental sustainability was included in their units. Of the 336 unit chairs that completed the survey, 37% of those unit chairs replied positively and of the remainder, the vast majority of these believed environmental sustainability was not applicable to their unit. However, measuring the effectiveness of the introduction of environmental sustainability into the curriculum is extremely difficult and this is often done by student assessment methods. Only 7% of the units actually carried out any assessment of the students' knowledge of environmental sustainability. The findings across the faculty were mixed, with Post Graduate units and Management and Marketing courses being very strong in embedding environmental sustainability into their curriculum. The Bachelor of Commerce Degree students, especially those with Management or Marketing majors received a good grounding in environmental sustainability. These findings have implications for course and curriculum designers who are trying to effectively embed environmental sustainability into the scaffolding of their existing educational courses.

Field of Research: Teaching and Learning, Environmental Sustainability, Business, Assessment Methods, Curriculum Development,

Key Terms: Business education, Environmental Sustainability, Higher Education, Existing Curriculum, Assessment,

1. Introduction

Whether people believe in climate change and global warming or not, few would deny that environmental sustainability issues have been a controversial news topic during the twenty first century. Almost every day the media present news of rising sea levels, ice cap melting, carbon taxes, trading schemes and politicians wishing to convince the electorate that they have the answer to the world's environmental

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sustainability issues. Many universities throughout the world have been trying for more than a decade to ensure that their students graduate with an understanding of environmental sustainability regardless of their field of expertise. This study examines how environmental sustainability fits into the scaffolding of the main Bachelor of Commerce degree offered by Deakin University and how each school plays its part into the overall development of graduate understanding of environmental sustainability within the Faculty of Business and Law.

Deakin University has clearly stated graduate attributes that adhere to sustainability – *“An understanding of the principles and applications of sustainable development” where graduates adhere to this attribute in their own discipline or field of study. It goes on to say: All Deakin graduates should have an understanding of the principles and applications of sustainable development”* (Deakin 2000 p.15). It is therefore necessary to analyse how effectively the concepts of sustainability have been integrated into the academic curriculum of Deakin University through an exploratory case study of the Business and Law Faculty.

This study’s methodology uses a survey of unit chairs from 181 undergraduate and 155 post graduate business and law units in five schools within an Australian University to see how they embed environmental sustainability into their existing curriculums. The literature review looked at a broad section of universities and educational institutions throughout the world and generally found that different interpretations of concepts of sustainability existed and much more could be done to embed environmental sustainability into university curriculums.

The findings discovered that 62.5% did not teach any aspect of environmental sustainability in their units mainly because they believed environmental sustainability was not applicable to their unit. Only 7% of the 336 units surveyed actually carried out assessment of the students’ knowledge of an aspect of environmental sustainability. However, this was seen as adequate when included in the very creditable 37.5% of Business and Law Units that had some aspect of environmental sustainability embedded in their course. The Bachelor of Commerce Degree students, especially those majoring in management or marketing, will graduate with a more than adequate understanding of environmental sustainability. However, students studying law, accounting, finance, economic or information system will not graduate with a comparable in-depth knowledge of environmental sustainability. In relation to previous research which has highlighted problems not only of defining a relevant concept of sustainability but integrating and embedding it into a range of academic units, the present study of Deakin Faculty of Business and Law shows that these problems can be addressed but that more extensive research is still required. It should be noted that this study was done prior to the July 2012 introduction of the \$23 per tonne Carbon Tax and will mean that there will be changes to laws, new accounting rules, the need for better information technology and new management systems that require a greater understanding of environmental sustainability.

The research paper is divided into five sections: First the Introduction presents an overview of sustainability along with background reading related to the focus of the research. Second the Literature review will summarize previous Australian and International research into the subject area and seek to present relevant past research into sustainability and education to enable a deeper understanding of the present study. Third the Methodology will present and describe clear analytical models by which the questions and objectives of the research can be achieved.

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Fourth the Findings will present the results of the analyzed data and provide the major findings through tables and charts. Fifth the conclusion will discuss and interpret the findings in general and seek to compare and contrast them with previous research. It will also present the limitations of the whole research and provide recommendations for future study.

2. Literature Review

“Environmental sustainability is important to business because environmental concerns are placing increased pressure on goods-producing and service providing organizations across the globe”. (Collier & Evans 2012 p.17) Universities must be mindful of correctly educating business students in environmental sustainability since decisions taken for business, political, social or economic reasons can sometimes have devastating social and environmental impact. (Ramirez 2006). In the 1950's, for example, the Soviet Union inaugurated a new cotton growing project by diverting the waters of two rivers away from the Aral Sea region for irrigation to the water greedy crop. It was envisioned that the project would provide much needed income from cotton exports for an impoverished area. However, after short term gains in productivity and profits the unsustainable impact of the project became apparent. The devastating results to the environment of the region are still impacting the health and well-being of the local inhabitants (Guha 2009). Climate change, Chernobyl and the recent Fukushima nuclear accident have highlighted the damage humans are having on the environment (Tilbury and Ryan 2011).

Providing an all-encompassing definition of sustainability has often proved problematic and previous research has highlighted the difficulties in adopting and embedding concepts that can be perceived as relevant to any particular field of study. Sustainability is derived from the word sustain which has a multiplicity of meanings and today, the concept of environmental sustainability has evolved into the idea of the role we, as human beings, have in preserving and protecting the Earth. The United Nations' Brundtland Commission in 1987 defined sustainability as “... *development that meets the needs of the present without compromising the ability of future generations to meet their own needs.*” (Brundtland Report 1987 p.43) Environmental sustainability first came to prominence through the work of environmentalists who argued that the activities of humanity were having serious ecological impacts on the planet. Human activity, whether social, economic or environmental are not mutually exclusive, indeed all three aspects are interdependent (Baumgartner & Quaas 2010).

In Europe in the late 80s the Copernicus Campus was established with the objective of involving universities in a European-wide network to share knowledge and encourage debate on how universities could contribute to sustainable development (UNESCO 2012). Initiatives such as the Talloires Declaration (1990) outlined a ten point plan to commit those engaged in education and research to incorporate into their curricula the teaching of sustainability and environmental literacy. 421 colleges and universities in 52 countries have so far signed the declaration (Talloires Declaration 1990). In Australia, the universities that grasp the educational value of environmental sustainability clearly understand the importance of Education for Sustainability (EfS) and want to embed it into the curricula. Leihy and Salazar (2011) in their Report for Sustainability Victoria recommended a three pronged approach for government agencies to support universities including “recognising and supporting

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the different methods EfS is being developed within Universities, including funding incentives”.

Many tertiary education providers worldwide acknowledge the value of education for sustainability and many institutions have introduced sustainability as stand alone courses or a component in such diverse subjects as Law, Engineering, Science, Business and Finance.

Deakin University is a signatory to the Talloires Declaration and included environmental sustainability as one of their 12 student graduate attributes (Deakin 2000). The purpose of this study is to see how effectively Deakin University have managed to embed environmental sustainability into the Business and Law courses since then.

Deakin University (2010) is similar to many tertiary education providers that have signed up to and acknowledged the importance of the Talloires Declaration however, in a 2004 survey in Australia, it was found that few had significantly changed their curricula to incorporate sustainability and there had been little evidence of change. The findings of a report on The Royal Melbourne Institute of Technology for example, suggests that a more strategic approach is required to introduce the necessary changes to include sustainability in the curriculum. Although it was noted that there was general support for the idea of sustainability/environment in education, implementing the necessary changes would need to be based on strategic approaches and supported through relevant staff development. (Thomas 2004).

The ethical implications of a decision-making paradigm within the context of teaching civil engineering at the University of Sydney explored the advantages and disadvantages of including sustainability and ethics in the teaching framework (El-Zein et al. 2008) In a study of third year undergraduates it was found that including sustainability and ethics in the same engineering course could be effective but only if the syllabus recognises the interconnection between the two and relevant pedagogical methods incorporating practical and theoretical case studies are provided.

In a case study of sustainability and corporate social responsibility (CSR) in two different but aligned approaches in the design of business curricula programme at Monash university it was revealed that individual faculties were the main drivers of curriculum initiatives. Although many universities are supportive of environmental sustainability education, an absence of integrated or mainstreamed programmes for sustainability has often resulted in grass-root initiatives by individual faculties and this was viewed as a welcome development. The study found that there was an institutional commitment to Education for Sustainability (EfS) and that this had a positive influence on students' learning (Stubbs & Schapper 2011). Although the concept of sustainability has been well accepted in education for the last thirty years the level of intergration into Australian tertiary education has often been problematic. Sherren (2006) in an internet based audit found that environmental and sustainability programmes tended to emphasise solutions of a scientific and technological nature rather than cultural or behavioural change. The report further found that sustainability was not well integrated in either general or specialist coursework programmes mainly because the tertiary education sector was “customer“ focused.

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The idea that the core content of studies should be purely scientific and technological should be dispelled and it should be more liberal in design to allow more cosmopolitan philosophies to be transmitted via core studies in sociology, history anthropology, geography and even the field of literature. (Lugg 2007) (Boyle 2004). How well the concept of environmental sustainability can be integrated into tertiary curricula is, as we have seen, sometimes problematic. It is necessary to ensure that adequate methods to measure how well concepts of sustainability are embedded into different programmes in tertiary education, especially in many degrees that are bound by industry standards and are in universities that are constrained by academic freedom traditions. (Leihy & Salazar 2011).

In a review of organizations that influence architectural education in the United States, Wright (2003) found that although the concept of sustainability was recognized as a core issue within architecture education the problem of how to fully integrate it into the curriculum still remained and the direction of architecture education in the USA needed to be re-evaluated. Similarly Djordjevic & Cotton (2001) in an exploratory case study of communicating sustainability in higher education (SHE) in a new, post 1992, UK university found that the concept of sustainability needed to be effectively and collectively defined in order to facilitate greater understanding of the contextual issues involved. Greater support was needed along with clear communication strategies.

The University of Wales, Newport developed the software Sustainability Tool for Auditing University Curricula in Higher Education (STAUNCHq) to audit Welsh university programmes for content relating to sustainability and global citizenship. (Glover, Peters & Haslett 2011) The audit was able to identify what the curriculum offered, however, it could not identify the quality or effectiveness of the curriculum content. It can be noted that software programs related to environmental sustainability are a possible area of much needed growth for the Information Technology Schools within Business and Law Faculties.

MacVaugh & Norton (2012) used action research over two years to explore issues related to the introduction of environmental sustainability into business related degree programs. The study recommended active learning based on a problem based learning model (PBL) which would enable students to become more independent adopters of environmental sustainable practices. However, in a recent comparative multi-case study of German institutions Barth (2013) found that there were institutional and academic drivers and barriers to implementing environmental sustainability in teaching, research and operational practice and that these drivers and barriers produce distinctive patterns of implementation. Although the research was too limited to draw generalized conclusions it was seen as useful in recommending that stakeholders be offered incentives in implementing the process of environmental sustainability education.

Finally, Campbell & Ching (2007 p.33) found that the concept of Curriculum Scaffolding is a process which may provide students with a level of support and structure that will enable them to complete classroom tasks and that Curriculum Scaffolding enables students to maximise their learning potential and this support can range from 'prompts, pictures, hints, diagrams, graphs, story maps, concept maps to just underlining key words for the students. Similarly, Gibbons (2002 p.87) argues that scaffolding is a "central notion in the teaching-learning framework that draws on teachers and students working together, through their classroom

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interaction, to develop new skills, concepts and levels of understanding.” In the context of endeavouring to inculcate Deakin University’s core commitments, the scaffolding process is a necessary component of the embedding process.

Measuring the effectiveness of the scaffolding process is quite difficult, with assessment of students being one of the principal methods to achieve this (Watty, *et al* 2010). Wallis & Wallis, (2005) found that there are four main ways in which Universities are able to engage with the community in order to maintain and enhance environmental sustainability in their operational region. These are: 1. Through best practice in sustainability. 2. Through producing graduates who are skilled and committed to sustainability. 3. Through Research and 4. Through Partnerships with businesses, the community and other universities. Although this study focused on these particular areas it specifically sought to examine the amount of assessment taking place in Deakin’s business and law units.

It can be seen from the above overview that different academic institutions in different countries need to confront the problem of effectively providing a relevant context for embedding sustainability into a range of academic disciplines (Wright 2003) Research has been conducted but little that can be generalised across a range of courses. Further, providing an effective definition of sustainability and embedding it into curricula is often still problematic.

3. Methodology and Research Design

In July and December 2011 all unit chairs of 372 units in the Faculty of Business and Law at Deakin University were surveyed. Of these, the unit chairs of 336 units responded (90%). (Please note, some faculty members are unit chairs of more than 1 unit). Unit chairs were asked if and how environmental sustainability was included in their units. If their response was **yes**, they were asked in which of the following ways:

- A. My students participated in internships, clinical or paid placements, cadetships, traineeships, field work, site visits or practicum that developed their environmental sustainability knowledge. (internship)
- B. My students undertook case studies or attended lectures and tutorials based on building their environmental sustainability knowledge. (taught)
- C. My students were provided with data sets or other material relating to environmental sustainability. (data)
- D. My students completed industry projects, reports or assessment tasks that were based on assessing their environmental sustainability knowledge. (assessed)
- E. My students were given the opportunity to build their environmental sustainability knowledge through their unit, with professional bodies, community organisations or local businesses. (professional)

If Unit Chairs responded with a **No**, then they were asked the following:

- F. Was environmental sustainability not applicable to your unit (n-a)
- G. Was environmental sustainability covered in an allied unit (allied)
- H. Will you consider covering environmental sustainability in the future (future)

All results were placed into an excel spreadsheet for analysis. Undergraduate and Post graduate units were separated and divided amongst the four school disciplines of:

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School of Accounting, Economics and Finance (AEF)

School of Law (Law)

School of Management and Marketing (M&M)

School of Information System (Info)

Because the Deakin Graduate School of Business outsources many of its post graduate units to the various schools throughout the Faculty of Business and Law, all post graduate survey results were allocated to those four schools above.

The 24 units making up a Bachelor of Commerce Degree majoring in management were also separately examined.

The following Hypotheses became the provisional suppositions:

Hypotheses 1 (H1): That undergraduate students from the School of Marketing and Management will be taught and assessed more than the average of all schools. Or

H1 alternative: That undergraduate students from the School of Marketing and Management will be taught and assessed less than the average of all schools.

H2: That Post Graduate students from the School of Marketing and Management will be taught and assessed more than the average of all schools. Or

H2 alternative: That Post Graduate students from the School of Marketing and Management will be taught and assessed less than the average of all schools.

H3: That Bachelor of Commerce Degree students majoring in management or marketing students will graduate with an adequate understanding of environmental sustainability. OR

H3 alternative: That Bachelor of Commerce Degree students majoring in management or marketing students will not graduate with an adequate understanding of environmental sustainability.

4. Findings

35% of all unit chairs replied positively that they had included environmental sustainability in their unit. Of the remaining 65%, the vast majority of those believed environmental sustainability was not applicable to their unit. With 35% of the units in the faculty it would appear that this should be more than adequate to achieve Deakin University's goal "that students graduate with and understanding of the principles and application of sustainable developments". (Deakin 2000 p.15).

However, measuring the effectiveness of the introduction of environmental sustainability into the curriculum is extremely difficult and this is often done by student assessment methods. Only 5% of the units in the Faculty of Business and Law actually carried out assessment of the students' knowledge of environmental sustainability. This could be of concern in some of the degrees in the faculty.

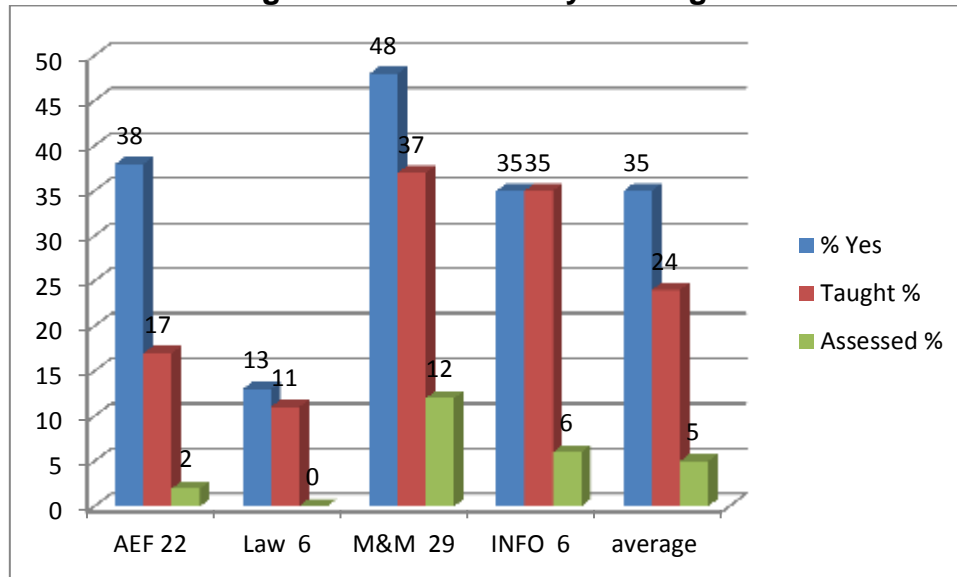
4.1 Undergraduate Unit Survey Findings T1 & T2 2011

Chart 1 below shows the four major undergraduate schools in the Faculty of Business & Law in Deakin University and examines their approach to embedding environmental sustainability into the scaffolding of their existing educational courses. (Watty, *et al.* 2010; Wallis & Wallis 2005) The chart below only shows the Yes % and

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the Taught and Assessed responses since the responses for the other three categories were not significant.

Chart 1 Undergraduate Unit Survey Findings T1 & T2 2011



The inclusion of environmental sustainability in 35% (in blue) of the units with 24% (in red) having ES actively taught in lectures and tutorials is interesting since Law, Accounting, Economics, Finance (AEF) and Information Systems (Info) are not normally associated with the environmental sustainability sciences. The higher inclusion rate amongst School of Marketing and Management (M&M) units suggests that Hypothesis 1: That undergraduate students from the School of Marketing and Management will be taught and assessed more than the average of all schools, should be accepted based on these results. The figures in Chart 1 below reflect a more proactive use of environmental sustainability in modern management practices and indicate that the university's goals are achieved in some areas.

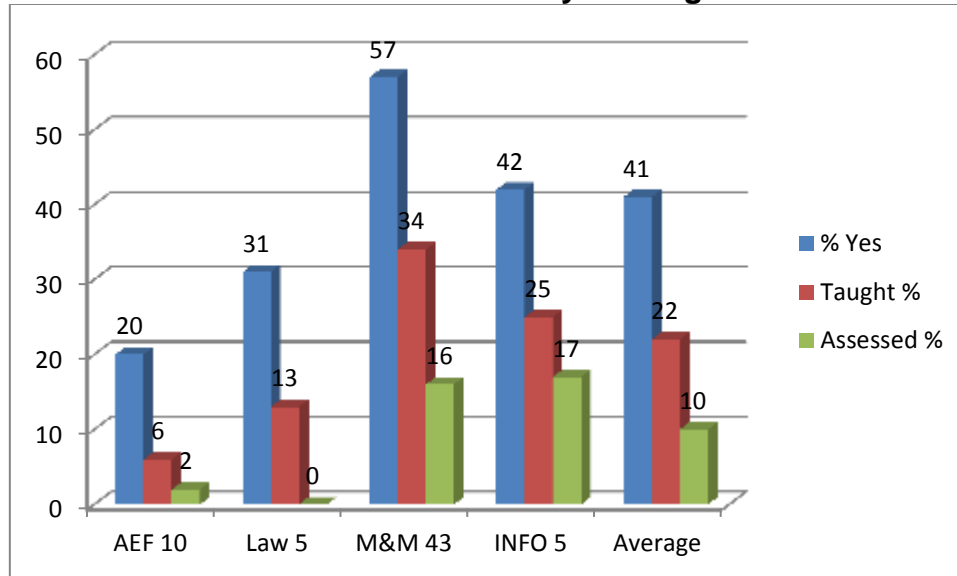
4.2 Post Graduate Unit Survey Findings T1 & T2 2011

41% of unit chairs replied positively that they had included environmental sustainability in their units. There was a much more even spread across the schools when it came to Post Graduate units. Most unit chairs stating that they actively taught environmental sustainability as part of lectures or tutorials but to a lesser extent some of the other teaching categories were included. 10% of the Post Graduate units in the Faculty of Business and Law carried out assessment of the students' knowledge of environmental sustainability. This would indicate that most Post Graduate students would have an adequate knowledge of environmental sustainability when they graduate.

Chart 2 below shows the four major undergraduate schools in the Faculty of Business & Law in Deakin University and examines their approach to embedding environmental sustainability into the scaffolding of their existing educational courses.

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Chart 2 Post Graduate Unit Survey Findings T1 & T2 2011



The inclusion of environmental sustainability in 41% (in blue) of the units with 22% (in red) having ES taught in lectures and tutorials is interesting since Law, Accounting, Economics, Finance (AEF) and Information Systems (Info) are not normally associated with the environmental sustainability sciences. The higher inclusion rate amongst School of Marketing and Management (M&M) in Post Graduate units suggests that Hypothesis 2: That Post Graduate students from the School of Marketing and Management will be taught and assessed more than the average of all other schools in the Faculty of Business and Law should be accepted based on these results. The figures in Chart 2 below reflect a more proactive use of environmental sustainability in modern management practices and indicate that the university's goals are achieved in some areas.

4.3 Bachelor of Commerce Degree Majoring in HR or Management Analysis

The Bcomm is a 24 unit degree of which 10 units are core to the Bcomm, 6 units are core to the major and 8 units can be electives. 11 out of 24 units (46%) cover some aspect of sustainability and that 3 (12.5%) of the units carry out assessment of environmental sustainability. These findings indicate that hypothesis 3: That Bachelor of Commerce Degree students majoring in management or marketing students will graduate with an adequate understanding of environmental sustainability should be accepted. It was interesting to see that 7 units (30%) actively teach environmental sustainability in their lectures or tutorials and 2 units (8.3%) indicated that environmental sustainability may be taught in their units in future years. However, 10 units (41.6%) believe that environmental sustainability is not applicable to the units they teach.

5. Conclusion and Implications

Many degrees granted by the Faculty of Business and Law especially those in Law, Accounting, Finance, Economics and Information Systems are bound by industry standards and specifications. So embedding a new student attribute such as environmental sustainability into the existing curriculum of those degrees can be extremely difficult. However business degrees in Management and Marketing are a

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little more flexible and are often only constrained by academic freedom traditions. To the best of the writers knowledge no faculty has been officially approached to proactively include environmental sustainability into the teaching of their unit.

The flagship Bachelor of Commerce Degree does offer adequate coverage of environmental sustainability within its 10 core units and does ensure that the majority of students within the Faculty of Business and Law do graduate with 'An understanding of the principles and applications of sustainable development'. (Deakin University 2000 p15)

The above study indicates that Deakin University is similar to many other tertiary institutions in that there is a perception in many courses that the concept of sustainability was not applicable to their particular specialism (Leihy & Salazar 2011; Sherren 2006; Thomas 2004; Lugg 2007; Boyle 2004) Deakin University is also aware, as are many other universities, that many courses are constrained by industry standards that are barriers to the effective embedding of sustainability education (Barth 2013; Leihy & Salazar 2011; El-Zein et al. 2008) It also highlights the need for effective qualitative and quantitative tools with which to accurately measure the adoption and embedding of sustainability in tertiary education (Glover, Peters & Haslett 2011; Watty, et al 2010; Wallis & Wallis 2005). However, as the study into Deakin's Faculty and Business and Law shows, very real progress can be made in the adoption and embedding of sustainability education into tertiary education. It should be noted that this study focused on a particular faculty within Deakin University and the results, though encouraging may not be generalised across all sectors of academia. Although certain findings are encouraging, further research is still required if the integration of sustainability education into a greater range of academic specialism's is to be realised.

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