

Teaching Managing Sustainability to Non-business Undergraduates: An Exploration in Fluidity Teaching

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Abstract

This paper reviews the challenges and opportunities facing business and environmental management education while outlining pedagogies recommended for creating an environment which encourages transformational education. This approach, deemed 'fluidity teaching' is used to teach managing sustainability to non-business majors with the objective of promoting critical thinking and heightened problem solving skills. The course positively impacted student's awareness of sustainable management complexities and solutions. Techniques utilized help students gain ownership of their learning process and knowledge gathering thus allowing them to make multidisciplinary linkages and offer complex suggestions across boundaries. Finally, students' assessments indicated they felt they developed critical thinking skills which lead to rich discussions and 'thinking for themselves' in determining viable solutions in sustainability issues.

Introduction: Education at a cross roads

Business education is at a crossroads—the issues facing modern day enterprises are far more complex than ever before. The speed of change only exacerbates the inability of managers to fully grasp the diverse complications seen in their daily operations. Rapid globalization, the desire for greater innovation, the need to facilitate horizontal linkages and communication, and the ability to manage organizations sustainably are only a handful of issues facing modern executives.

Business education is struggling to educate future managers to deal effectively with this modern day world (Dehler et al, 2001; Kearins and Springett, 2003) instead, turning out students who have been taught to believe that management is a defined science, with pat answers to difficult questions. Paradoxically as management issues have become more complex, business teaching has become more simplified as rote memorization has become the norm. Put simply, management education has fallen into the 'hegemony of simplification' (Dehler et al, 2001, p. 499). In addition, business education is seen as teaching students the wrong things. As Dehler et al suggest, what is needed is for:

'Management education to become both transformational and emancipatory in order to adequately prepare students for the turbulent new century..the complexity of managerial thinking and action needs to be reduced with sufficient clarity that students can comprehend its essence, while simultaneously raising their own level of complicatedness in order to grasp that extant complexity' (2001, p.494).

A prime example of a multifaceted business issue facing management today is sustainability. Numerous stakeholders and multidisciplinary complexities combine to create a profoundly difficult managerial quandary. To exacerbate the problem, management is often seen as a contributor to problem and with it, management education (Naeem and Peach, 2011). Instead what is being sought is a transformational reassessment of education's approach to sustainability management where those entering the business world become the solution instead of propagating the problem. This requires a fundamental shift in educational learning patterns, innovation, creativity, and issue ownership; however, thus far, this is simply not happening on a large scale (ibid).

Emerging solutions to creating transformational environmental leadership

There is a developing consensus, however, on those pedagogies that better equip graduates to face today's challenges especially that of managing sustainability. These include: critical thinking, active learning, classroom de-centering, interdisciplinary approaches, and participatory action research. Two more, 'Ecollaboration' and the 'Head, hands, heart' approach incorporate several methodologies discussed above and will be briefly outlined in turn.

Critical thinking espouses the robust analysis of all available options before choosing an appropriate solution. Fundamental to this approach is reaching a decision only after one has considered and evaluated all the available options and their relevant implications (Spencer and Hatcher, 2000). In arriving at that measured judgment, all sides of any argument must be considered and accepted or refuted creating a platform for discussion. In most cases the final answer is less important than the learning journey it facilitates as the process acknowledges competing views many of which have viable support, as well deeper learning.

Active learning, also known as Learner Agency and participative learning, encourages student to not only helping shape what they learn, but doing so by taking an exploratory and investigative approach (MacVaugh and Norton, 2011). It is particularly powerful in those subjects where students can explore new ideas, incorporate creative solutions, and concentrate in those areas in which they are most interested (ibid.). A move towards student-led learning is fundamental to this approach with greater student-teacher collaboration as students are given the freedom to explore related topics that are of special interest (Dopico and Garcia-Vasquez, 2011).

Active learning has been successful in increasing student responsibility for their own learning (Parker, 2010; Fortuin and Bush, 2010), increased personal motivation (MacVaugh and Norton, 2011), and improved subject matter understanding (ibid.). Thus, 'successful learning occurs when learners have ownership of their learning, when they understand the goals they are aiming for, when crucially they are motivated, and have skills to achieve success' (Şeker and Kömür, 2008. P. 390).

A decentered classroom is also seen as a positive methodology in teaching sustainability being one 'where faculty and student stand on the same epistemological ground' of mutual learning (Dehler et al, 2003; p 502). Students' interests and areas of focus are developed by the students themselves and facilitated by the faculty, but not necessarily taught by the faculty. The coursework remains somewhat fluid, where texts and other inputs are used by students to form their own opinions, not regurgitate those espoused by the teacher. Thus, teaching environments flourish where 'some relinquishing of control and facilitating a learning environment where there will be some rules...but also some freedom for students to engage in defining appropriate learning goals and assessment activities for themselves' (Kearins and Springett, 2003. p. 196).

An interdisciplinary approach is seen as crucial for successful sustainability management (Welsh and Murray, 2003; Pretorius, 2004; Bacon et al., 2011) where students learn not only by a variety of methods (lectures, texts, first hand experiences, field trips) but across a host of disciplinary perspectives. Environmental science, biology, political science, business, economics, philosophy, geography, and ethics all combine creating a complex and integrated sustainability landscape; to omit disciplines oversimplifies the overall learning experience.

'Head, heart and hands' and 'ecollaboration' encapsulate many approaches mentioned above into holistic methodologies encouraging transformational sustainability learning through personal experience and growth (Sipos et al, 2008). These processes use cognitive engagement, practice skill development, and encourage attitudes into actions with the ultimate goal of profound attitude shifts (ibid).

These various methodologies are not unrelated—but rather share a common theme promoting:

- an environment of exploration and journey for all involved,
- where all well-considered opinions are valid,
- students take responsibility for their own learning and have input into developing it, and

- a holistic approach that encourages information from as many diverse experiences, sources and disciplines as possible.

This pedagogical approach was what chosen when Goucher College became one of the first colleges in the United States to offer a sustainable management practices course to non-business undergraduates in 2009. ‘Introduction to Managing Sustainability’ was taught utilizing this holistic approach; its methodology is discussed below.

Case background

Goucher College is a primarily undergraduate liberal arts college of 1500 students located outside of Baltimore, Maryland. Its motto, ‘Transcending Boundaries’, is core to its ethos as Goucher differentiates itself by seeking out transformational strategies for its students. It was the first liberal arts college in the United States to require students to study abroad in order to graduate in 2006. Similarly, it began adopting sustainable practices long before it was fashionable. The resulting ethos of sustainability permeates the campus. It is one of only 21 colleges to have achieved The Princeton Review’s Green College Honor Roll’s highest marks. Goucher has on its campus a LEED certified ‘Gold’ building and its most recent renovation exceeds the LEED Silver certification guidelines; indeed Goucher has pledged to build and renovate all future buildings to LEED standards. In addition, the campus food service is sustainability minded, serving locally grown produce whenever possible and composting food waste. There is a residential ‘Green House’ on campus and vegetable and fruit gardens are used to supplement campus’ dining requirements. The college has hosted a local farmer’s market and showcases thought provoking environmentally based movies to promote debate and awareness to students and staff alike. Finally, relevant environmental speakers are frequent guests and over the past three years have included Robert Kennedy Jr., Jean-Michel Cousteau, Jane Goodall, and Michael Pollen.

As part of its commitment to environmental issues, Goucher began increasing its environmental science academic offering. Both a chair and major in environmental studies were established in 2010. Since 2009, all students must complete an environmentally focused class as part of their liberal arts education requirement regardless of major. To fulfill this need, Goucher’s business department began offering a 100 level course, ‘Introduction to Managing Sustainability’, open all students regardless of major.

Challenges of teaching the management of sustainability

There were several challenges associated with teaching management of sustainability. Firstly, there were no known templates—teachers at Goucher were unaware of any similar course offering in the United States. While there were graduate courses, those catered to MBA students who already had a strong grasp of business practices while this course required students to become familiarized with business fundamentals before learning about their application to sustainability. This also meant there was no suitable textbook. This initial ‘problem’ of no textbook actually led to the unusual course design and ultimately has been a key strength.

The second challenge was pace of change within the business world regarding its ‘greening’—information was constantly changing and considerable flexibility was required to stay current on the various topics. It also made it impossible for one professor to be an expert in all areas covered. Because of this, the role of professor became more of a coordinator and facilitator of knowledge thereby lessening the power authority within the classroom; this fit nicely with the classroom decentering approach discussed above. At least once a term, a student taking the class has been expert in one of the subjects covered; as will be seen later, those students become co-teachers for that class.

Thirdly, there was an enormous diversity of students taking the class. Firstly, the level of understanding and enthusiasm of students in terms of the various modules of information being taught differed enormously. Business

majors and minors understood the business practices thoroughly yet many had no grounding in sustainability issues. Likewise many environmental studies majors understood environmental issues but not business. Some students had a fervent passion for some sustainability topics but less knowledge in others while still others had no knowledge or burning interest in any of the modules and were taking the course simply to fulfill their liberal arts requirements.

The dispersion is seen in the majors of those taking the class. The ratio of business majors to non business majors has dropped during the tenure of the course from one-third to roughly fifteen per cent of students as non-business majors realized the course was truly an introduction to management and that pre-existing business knowledge was not required. To date, students with twenty nine different majors have taken the class including: sciences (pre-med, biology, chemistry, environmental science), education, arts (dance, theater, studio, historical preservation, music), humanities (English, communications, women's studies, peace studies, Judaic studies), social sciences (sociology, business, economics, psychology, political science, international relations, arts administration) and languages (Spanish, Russian, and French) with a further twenty per cent of students being undeclared. In addition, classes are generally split evenly between students in each grade.

This student diversity influenced the unusual course design with the objective of gaining greater subject matter tailoring. This allows students who are more advanced or passionate to push ahead in their areas of interest, thereby creating greater student 'ownership' of their personal learning. This supported the participative learning approach discussed above.

Course design

The course is divided into four modules:

1. Introduction to management practices (twelve hours). The basics of management are broadly covered including strategy, organizational structures, marketing, finance, human resources, and information technology.
2. History of the US green movement with special emphasis on non-profits and global legislation (twelve hours). The green movement from its early pioneers is discussed through the 'Age of Environmentalism'. Special emphasis is placed on the global historical context and the development and management of non-profits. Goucher graduates an inordinately large percentage of students who work in non-profits; the business fundamentals learned in the first module are applied and reinforced through analyzing green non-profits as businesses.
3. What businesses are doing to increase their sustainability efforts (thirty two hours). This module analyzes different industries and businesses as they become more sustainable (discussed below).
4. Global warming and forms of green energy (14 hours). Global warming and different alternative energy options including 'clean coal', nuclear, gas, wind, hydro, solar, algae and fusion are discussed. Initially potential long-term solutions such as algae and fusion weren't covered although at the students' requests, they are now included.

In light of different audiences and subject matter and fuelled by no textbook and set structure, a fluid approach to delivering the material is taken thus prompting this author to classify this approach as 'fluidity teaching'. The four modules are pre-agreed and some are more structured than others; for instance the first module ('Business 101') is a standard introduction to business practices while modules two and four are somewhat structured. The ability to tailor learning to interests is achieved through more exploratory homeworks and classroom discussions. Module three, however, is not decided until after the first couple weeks of class as more information has been gathered and subject matter can be tailored to meet the students' interests.

Initially students are asked to put forward their expectations of the class, why they are taking it, what they hope to learn, and any subjects in which they are particularly interested. From this initial information, it becomes clear there are some students who were already 'experts' in their fields. Over the years this has included students who:

- worked in organic farming,
- was certified as a 'green' HVAC engineer,
- helped take their family restaurant 'green',
- led green initiatives for Starbucks,
- studied the impact of ecotourism on the Costa Rican economy as her study abroad project,
- wanted to open Baltimore's first 'green' mortuary,
- studied the impact of phytoremediation (using plants to clean biohazards) and
- participated with her family in a green car competition.

Each year, a list of potential topics is assembled which includes previously covered topics as well as those specific to the talents of each class' members. Additional topics are requested from students. Students are, at first, relatively reticent about voicing their preferred topics although by waiting a week into the semester students are more communicative and vocal as they experience, and get used to, the different class format. Usually between twelve and fifteen topics are put forward, many from the initial list or because of access to an interesting speaker or field trip, while students nominate other topics they find compelling. Students then vote on their choices and the most popular topics are covered. Every semester has brought at least one new topic. Topics have included:

- food production
- retail
- hotel management
- restaurants
- commercial and residential construction
- fish farming
- environmental remediation
- defense industry
- big business's changes to become more green and its impact on suppliers
- green packaging
- careers in sustainability
- clothing production
- urban planning
- cap and trade legislation
- cars, and
- ecotourism.

Not coincidentally, some of the topics covered included those where students taking the class were experts. In these cases, the student co-taught that class relaying his or her experiences. In one case, eco-tourism, the now former student comes back and continues to co-teach that class. In several cases the student/teacher was tentative regarding his or her expertise but in all cases, gained confidence as he or she discussed experiences and answered classmates' questions. Students learning from their peers had a positive impact on classmates who began to understand that they can be experts and make a difference at a relatively young age. No student/teachers got extra credit for participation nor did any request it. It was just seen as 'part of the package' of taking the course. This approach supports the pedagogical approach of utilizing participative teaching within a decentered classroom.

To further support the multidisciplinary approach, classroom discussions are linked to fieldtrips and external speakers. Goucher College's LEED Gold building is a very popular field trip as students tour the building's inner workings to truly understand that 'green' building is more than just superficiality. In addition, the college has hosted a farmer's market on campus where during one class, students visited with local organic farmers and discussed farming issues; this was coordinated with a student/teacher leading a discussion about working in organic farming. On another occasion students met with the sustainable catering company who provides Goucher's food and discussed green initiatives. This supports the 'hands, head, heart approach' of teaching where students benefit from a multi-faceted approach to learning about the subject.

Due to the class' diverse subject matter, it is impossible for one individual to single handedly teach the entire course. Instead, both internal and external speakers are utilized including: a speaker from the University of Maryland's revolutionary fish farming laboratory, a remediation industry expert who talked about how 'green solutions' are being found to clean ex-military sites, a Dow executive who discussed the company's 'greening', and a restaurateur who took his business green (co-presenting with his son who was taking the class). Internal speakers are also encouraged and include a class led by an environmental studies professor on Understanding Global Warming. The use of multiple perspectives and external resources supports the 'collaborative pedagogical philosophy espoused for sustainability teaching (Welsh and Murray, 2003).

The course topics are also coordinated with related on-campus events. For example, the screening of Food, Inc corresponded with class discussion on sustainable food practices. Robert Kennedy, Jr's lecture on West Virginia strip mining was coordinated with class discussion on the myth of 'clean coal' and its alternatives. While students do not receive extra credit for attending, on average one-third to one-half of students attend related external events while taking the class.

Assessment techniques

Several assessment means are used throughout the term. A standardized pre- and post-class assessment administered to all Goucher students as part of their environmental liberal education requirement was implemented during the course's second year. It provides an excellent benchmark and learning tool linking the class' issues to the wider sustainability debate. Of the 172 students who have taken the class, all but two have has passed the assessment; fewer than 20 percent were able to pass the assessment at the class' beginning.

The remaining class assessments are broken into four parts:

- homework (25 % of the grade)
- two fact based tests—one on management practices and another on business sustainability practices (each 25%)
- final project (25 %) and a
- final reflection paper.

Because of the wide spectrum of subject knowledge and interest, students were given a large degree of freedom when choosing homework content often being asked to pick an individual, industry, or non-profit of their choice and conduct exploratory research. For example, when studying pre-World War I 'green pioneers', students were tasked with choosing a person to further explore. The results are always creative and thoughtful.

An excerpt from one student's homework highlights the point. The homework began,

'I know that this may not have been what you expected, and before I start this paper I understand that the two people I am about to cover were not traditional environmentalists, but I feel like in a class like this you will be open to creative responses. Accordingly, I, as an English Major and weirdly interested in old literature saw this assignment and my mind ran to these two people. Though they are not "traditional environmentalists," they were "early green pioneers," in a creative but applicable sense of the term.

Finally, before I break any more rules, I know the assignment calls for one person, but these two go so well together and are a natural pair, so I could not write about just one.'

The student went on to write about William Wordsworth and Samuel Coleridge.

Homeworks are also designed to encourage thinking and choices rather than find a 'correct answer'. Another example asks students to analyze the Picken's Plan, its pros and cons, and whether or not students would support it. Their actual position is not the issue—it is digesting the information and making an informed opinion that is the real lesson.

Throughout the class students are encouraged to submit related articles and web links which are discussed at the beginning of every class. Approximately two-thirds of students submit some kind of discussion article or link during the course of the year for which they receive no additional credit. Former students continue to submit related links years after they finish the course.

Tests are a combination of recalling course information and critical thinking. A sample test question is, 'Do you agree or disagree with the statement that hunters make the best conservationists?' For the student to get full credit, they must define 'conservationist', give three examples of hunter/conservationists, take a position and outline their argument. Those who follow the methodology get full credit regardless of their position.

The year end has two assessment tools—a reflection paper and final project. The reflection paper is the final homework and counts as three homeworks—asking students to reflect on their semester and how, if at all, this course has changed their views and behaviors in addition to providing critical feedback. The paper reinforces the critical learning perspective and ensures students consider, at least fleetingly, how the course impacts their future decision making. The feedback has been strongly positive with a significant number of students stating how they initially took the class to fulfill their liberal education requirement and have, surprisingly, found their perspectives fundamentally changed in the process.

The final project synthesizes many of class concepts as students form groups and choose a low performing company from the Newsweek Greenrankings. They then analyze the company's strategy and marketing, compare it to its competitors in terms of sustainability, and suggest innovative sustainability solutions (with their costs and benefits). Finally, they are asked to find a green non-profit with whom the company should partner and support their choice. The teams present their findings on the final day of class. The project amalgamates the course elements and ensures collaboration amongst classmates—anecdotally students report that the final project highlights the complexities of implementing sustainable initiatives across diverse stakeholder groups. It also reinforces the multidisciplinary and critical learning perspectives through an 'ecollaboration' approach.

At the course's end, students submit course evaluations assessing the course's impact. The results have been very positive (see Table 1) with the majority of students viewing the course in an affirmative light in terms of impact, interest, and critical thinking. As seen in Table 1, the biggest difference is seen in the class promoting dialogue and discussion as well as encouraging students to think for themselves. In both cases, the class outperforms its departmental peers.

Insert Table 1

Conclusion

The effective teaching of sustainability management lends itself to a methodology of collaboration, critical thinking and exploration rather than the memorization of rote fact or regurgitation of the 'right' answers. This methodology, 'fluidity teaching, provides an optimal pedagogical method for creating transformational learning relying heavily on existing pedagogies including critical thinking, the decentered classroom, 'hands, head and heart' and 'ecollaboration'. Through the use of critical thinking, active learning, an interdisciplinary approach as well as a decentered classroom, a transformational learning experience was delivered. It would be untrue to

say it was transformational for every student but for a significant portion, their perspectives in terms of sustainability were changed through their learning experience.

This research does have some limitations. Goucher's sustainability environment has tremendous administrative support as well as internal resources of on-campus guest speakers, visiting speakers, and potential field trips. The ability to provide this course in less ideal circumstances would be far more challenging. The research also highlights only one template of a positive learning environment—no doubt it can, and will be, improved upon over time. But for now, it adequately meets its objective of creating an environment promoting transformational learning in a complicated world.

Goucher College has been able to provide its students a highly positive learning experience in terms of truly managing sustainability. The real test will be if those students channel that knowledge into transformational career and personal choices. These students are, however, some of the first in the United States to be given this perspective and only time will tell in terms of the longer term results.

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Table 1. Student reported assessments in various categories Fall 2009-Fa02013 (n=125)

	Class assessment ranking (1 to 5, 1 being low and 5 being high)	Business course rankings
Does the written work contribute to the course understanding?	4.66	4.61
Does the course encourage you to think for yourself?	4.71	Not available
The class encouraged discussion and dialogue?	4.90	Not available
Overall course rating?	4.71	4.25

*This number differs from the number of students having taken the course as not all students who took the course completed course evaluations