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# The importance of teaching ethics of sustainability

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## Abstract

**Purpose** – The purpose of this paper is to describe the importance of a focus on ethics in sustainability education and present results from a pilot graduate-level course titled the Ethics of Sustainability.

**Design/methodology/approach** – This is a case study presenting a qualitative evaluation from a pilot 14-week Ethics of Sustainability course. Data are based on observations, surveys and interviews with students.

**Findings** – Students from diverse fields found the ethical concepts new, stimulating and crucial for their careers. Ethical concepts provide a framework for thinking about sustainable practices in their personal and professional lives.

**Research limitations/implications** – Findings are based on a single pilot course and post-participation responses. Future research could explore different teaching strategies and different institutions, and use pre/post studies.

**Practical implications** – This study suggests that a course on ethical principles related to sustainability is a useful and potentially critical component to any curriculum intending to prepare future professionals to be effective contributors to a sustainable society. Higher education may adopt the course concepts and learning tools to enhance their curriculum and businesses and corporations will benefit from entry-level professionals with a solid ethical foundation for making more sustainability-oriented decisions.

**Originality/value** – The paper discusses an innovative course designed with funding from the US National Science Foundation. It confirms the benefit and provides some content advice for a course oriented toward ethics in sustainability curricula.

**Keywords** Ethics, Sustainability, Higher education, Teaching

**Paper type** Case study

## Introduction

Education for sustainability in higher education prepares future professionals to be effective citizens in a more sustainable society. Curricula that emphasize sustainability cover a range of topics based on the academic department (Barlett and Chase, 2004), but rarely dedicate time to instilling a deeper understanding of the ethical principles that provide the backbone for sustainability (Muijen, 2004). Rather, sustainability education often engages students in practical activities such as campus greening initiatives; sustainable technology competitions; field visits to learn about sustainable practices; expanded environmental studies courses; and explorations of how society, nature and economics interact through global studies (Tilbury *et al.*, 2002; Jacobson *et al.*, 2006;



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Cortese, 1999; Buchan *et al.*, 2007; Hayles and Holdsworth, 2008). While these are all worthy endeavors for helping students apply techniques and strategies, the authors' experience suggests that a foundation in ethics as it relates to sustainability is a critical component in the education of all future professionals because it provides a structure for understanding the moral basis for decisions about which technique or strategy to employ.

Ethics defines good and bad (Peterson, 2009). It helps people decide how to live and what to buy (Irving *et al.*, 2002). When applied to institutions, it allows groups to determine fair and appropriate procedures (Ferrell *et al.*, 2011). Decisions about whether to implement new technology, for example, are firmly based in sustainability ethics if the environmental, economic, and social consequences are considered for future generations of people and non-human organisms. When necessary information is not available, moral rules are used to decide how much knowledge is enough (Tversky and Kahneman, 1986; March, 1994). Ethical principles about precaution, reversibility, and future generations that come from the thinking of Plato, Kant, Bentham, and Dewey help individuals wrestle with our moral obligation to those less fortunate, to non-human organisms, and to whole communities (Kibert *et al.*, 2011; Muijen, 2004). Sustainability-based rules and processes such as the platinum principle, the polluter pays principle, multi-stakeholder engagement, and various measures of well-being are practical tools that help people rank options and select outcomes that maximize sustainability. As part of higher education curricula, each of these ethical principles and rules can assist students in assessing their future decisions as engineers, researchers, managers, designers, and consumers of products that purport to enhance sustainability (Kibert *et al.*, 2011).

This case study describes the implementation and evaluation of a college-level course that covered these topics. It is not intended as a research paper; rather, this article is an exploration into the methods and results of one pilot test. The course, designed by an interdisciplinary team of professors and graduate students, was introduced at the University of Florida. It was intended for graduate students in the fields of science, technology, engineering and mathematics (STEM), as they are considered to be the fields which will contribute new ideas that further our society's development. Based on the success of its debut instruction, the authors suggest that such a course is important for all future professionals.

### Course description

The Ethics of Sustainability course was designed in 2008-2009 by professors with expertise in the fields of ethics, political science, architecture and design, curriculum development, and natural resource management. These professors wrote the foundational text with assistance from their graduate students while a team of graduate students designed a curriculum guide with learning activities to complement the readings. The course was intended for graduate students and professionals whose fields could pertain to sustainability, but whose emphasis was not on the ethical or social components of sustainability.

In the spring of 2010, the Ethics of Sustainability course was taught by the same professors to a group of 27 graduate students from approximately nine fields of study. Their fields included building construction, agriculture education, religion, political science, forestry, wildlife, and engineering. Females slightly outnumbered male students

at 59 percent, and more students were in a masters program than a doctoral. Each professor took the lead for the three weeks of the course that corresponded to the book chapters he or she wrote. Students were required to read the book chapter and supplemental readings prior to class, and each class was taught through a combination of slideshow presentations that clarified fundamental concepts and in-class activities and discussions that emphasized critically thinking about the application of the topics to their personal and professional lives.

The first section of the course reviewed the challenges of sustainability and the role of technology in society. The next and largest section placed emphasis on understanding key ethical principles and how they relate to sustainability issues; the last section introduced practical tools for applying ethical principles in decision making to emphasize sustainability. Specific ethical principles included the social justice concepts of equitable distribution, the precautionary principle, and the golden and platinum rules; environmental ethics such as the land ethic and deep ecology; and components of ecological economics. Practical tools for applying these principles included systems thinking, multi-stakeholder processes, full-cost analyses, and polluter pays policies. Activities provided students with the opportunity to understand and apply these concepts through small and large group discussions; a debate; role play; videos; technology, entertainment and design (TED) talks; and readings with corresponding homework exercises. Small groups were often formed to include students from different fields of study, and students rotated groups throughout the course. A final assignment allowed students to combine the ethical principles into a larger ethical decision-making framework and describe how the principles have been applied in various contexts through in-depth research on the sustainability plan of a specific company, project or program.

### **Evaluation methods**

The authors used qualitative methods to explore the effectiveness of this pilot course at influencing students' understanding of ethical principles related to sustainability and their intentions of using ethical principles to improve sustainability decisions in their future careers. The evaluation had many components. First, students were asked at the beginning of each class period to respond to three or four brief questions pertaining to the textbook content. The purpose of these short answers was to discern where students were having trouble understanding content and where the textbook should be written more clearly.

Second, throughout the entire 15-week course, an evaluator who was not involved in the development of the course materials attended class. This observer took notes on the teaching tools used, how they differed from the original activity designs in the Curriculum Guide, and how students appeared to respond to the lesson. Last, at the end of the semester, all students were asked to respond to a ten-question survey about:

- career aspirations;
- course expectations;
- how well the course met their expectations;
- what they learned from the course;
- what teaching tools were most effective for their learning;
- what aspects of the course were most important for their careers;

- what they intended to implement personally and professionally; and
- whether the course was an important aspect of the curriculum in their field.

Observation data were reviewed for contextual descriptors and qualitative survey data were summarized and coded for similar ideas. Quantitative data were analyzed with descriptive statistics and measures of central tendency.

## Findings

18 of the original 27 students chose to participate in the voluntary evaluation. They represented career interests in ten different areas: law, politics, academics, planning, architecture, construction, business, non-profit management, environmental science, and non-formal environmental education. Their experience with sustainability topics was minimal for one person and all others had taken multiple courses that highlighted sustainability (Table I). Only one, however, described any prior knowledge of ethical principles related to sustainability. Six had professionally worked on sustainability topics such as LEED projects, sustainable education publications, and environmental non-profit management. Four others had participated in sustainable design competitions or taught courses related to sustainable design and horticulture. Two considered sustainability to be the central theme of their masters or doctoral theses. Students took the course for a variety of reasons, the most common of which was to arm themselves with a general understanding of applied sustainability topics for their future careers ( $n = 9$ ). Other reasons were that it fulfilled a new degree requirement or fit their schedule ( $n = 5$ ), that they had a general interest in taking an ethics class ( $n = 3$ ), and a belief that it would provide a strong foundation for their graduate degree ( $n = 2$ ).

From the in-class observations, students seemed interested and engaged in the course content; they regularly contributed ideas and questions about the concepts being discussed. Diverse opinions and perspectives about sustainability issues and ethical principles were raised by students, often leading to additional class discussion. Many students shared how they felt the ethical principles applied to their daily lives and decisions. Fewer students forecasted how these principles related to their future profession or to a specific institutional context.

Observations also revealed that most in-class activities were well-received by students. They appeared to enjoy interacting in small groups, and generally stayed on-task. In some cases, students became so involved in small group discussions that they needed additional time to complete the task. Students were particularly enthusiastic during a multi-stakeholder process role-play for determining policies about genetically modified organisms. Many students eagerly assumed their assigned role and shared their perspective with the class. Based on their comments, it was

Attended college courses with sustainability focus	17
Professional experience	6
Design competitions	2
Taught courses with sustainability focus	2
Central theme of master's or dissertation	2

**Note:**  $n = 18$

**Table I.**  
Respondents' source of  
prior knowledge  
of sustainability

apparent that this activity allowed students to learn about different viewpoints and the power of negotiation.

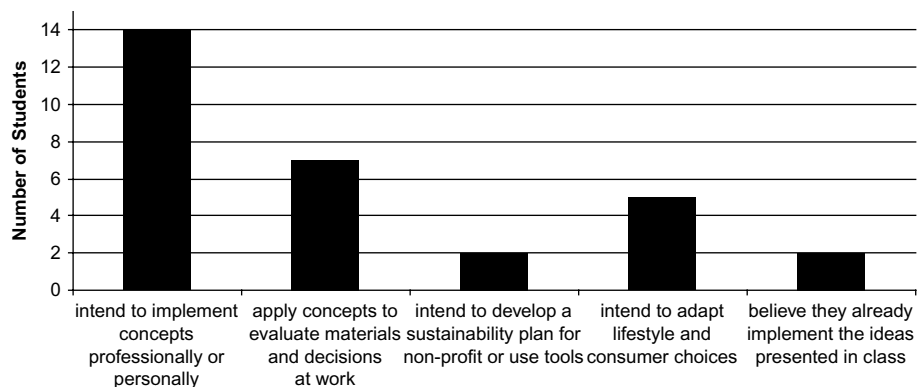
In their written surveys, all students reported learning critical aspects about sustainability from participation in the course. First, they gained more detailed understanding of diverse ethical principles that are normally glossed over, or often left out of discussions of technology and decision-making. They grew to recognize that sustainability is not just about environmentalism or energy efficient technologies. The social justice component was new to some and greatly enhanced for others. “Now I feel a stronger tie between social and environmental forces,” explained one student. And another explained:

I used to think sustainability was an economic and ecological issue (and didn’t incorporate the importance of social considerations). Now I see that sustainability [requires not only] behavior change, but also technology, social, economic and ecological impacts.

This amplification of sustainability to incorporate ideas from outside their fields made it “no longer a black and white issue in my head” for one student.

In addition to expanding the context of sustainability, the Ethics of Sustainability course increased the tools available to students for promoting sustainability in their professions. One student explained, “Never before [had I] thought about how ethics and decision making play a role in sustainability [...]” Similarly, a student mentioned the new degree to which she believes multi-stakeholder groups need to work together to make sustainability decisions. Another mentioned that the use of full-cost accounting would be helpful in her career, while one admitted that for the first time she saw technology as both a solution and a problem.

14 students described their intention to implement many of these concepts and tools in their professional and personal lives (Figure 1). Seven students’ professional intentions were oriented toward applying their greater understanding of social, economic and environmental ethics to evaluate materials and decisions made and used in their offices. Two students also felt committed to developing a sustainability plan for their non-profit organization or using multi-stakeholder processes and adaptive management for decision-making and project monitoring. Five students described



Note:  $n = 18$

Figure 1. Students’ intentions for using the information gained in the ethics of sustainability course

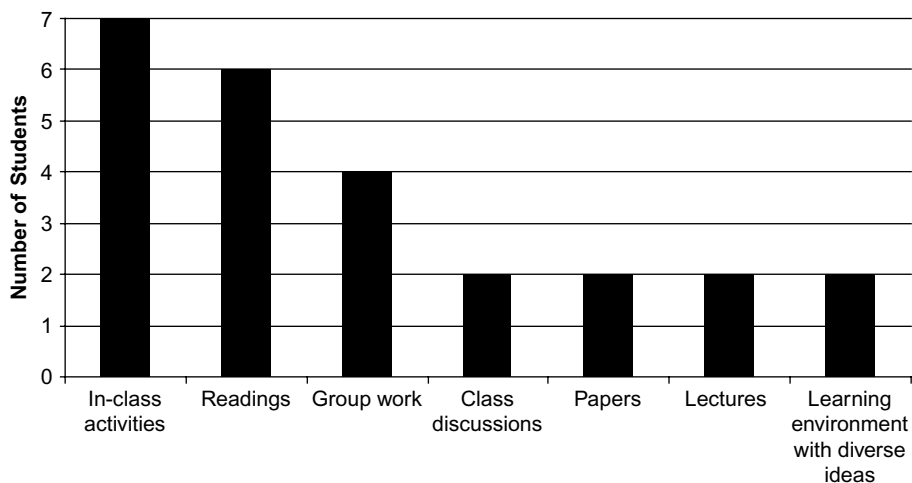
personal intentions that included being more conscious of their carbon footprint and adapting their consumption choices to consider the sustainability of the product and the manufacturer's practices. Two students felt they already implemented many of the ideas presented in the class and thus would not alter their behaviors. Two others felt the class was more oriented toward the global complexity of the issue of sustainability and thus did not provide them practical ideas for personal implementation.

Prior to the Ethics of Sustainability course, only 60 percent of these graduate students felt it was important to incorporate sustainability ideals and practices into their future career. After the course, 94 percent of these students agreed with this intention. Students from the building construction field shifted their opinion the most. One explained that her primary goal was to get a job, and then she would work within the existing system to see if opportunities existed to implement sustainability practices. One apparent result of the Ethics of Sustainability class was to demonstrate that sustainability is already practiced in some companies and students could and should publicize their sustainability knowledge to increase their competitiveness as employees.

Elements of the course that most influenced student learning and behavior intentions included the in-class activities ( $n = 7$ ) and readings ( $n = 6$ ) (Figure 2). Particularly effective in-class activities included those that required students to practice a sustainability tool and actively consider different ethical viewpoints. Small group work, papers that required action and analysis, class discussions on the ethical conceptual framework, and lectures were also most helpful to some. Potentially the most critical learning aspect of the course, however, was the opportunity to engage with a diversity of students and professors, as described by two students below:

By talking, brainstorming with students from various fields I was able to logically reach solutions to problems of sustainability that I myself was not familiar with before.

Being around students and professors with differing perspectives (especially those whose primary driver is economic or profit driven) [was most helpful to my learning]. I may disagree with them fundamentally but it helps me better strategize my conservation efforts and [environmental education] programming.



**Figure 2.** Elements of the ethics of sustainability course that most affected learning

Although students found the course generally effective, they suggested a variety of improvements to aid their learning. Specifically, students expressed a need to visualize and understand how ethical principles can actually be implemented in a clear, practical manner. At times the lectures accompanied by slideshow presentations and in-class discussions of the concepts did not fulfill these needs. Students suggested beginning or ending each class with a brief case study that demonstrated one ethical principle being practiced by an organization, program or project. They also suggested more practice activities such as the role play on multi-stakeholder processes. Most importantly, a few students found the class to be depressing and requested that practical examples and case studies be more positive and give hope for solutions and strategies that can be implemented.

Finally, students were asked whether they found this course important for their future careers. About 88 percent felt it was extremely important, even if they perceived that their departments would not agree. One student responded, for example, that “the legal field doesn’t think so, but I do.” Another explained that:

Though it may be perceived as “hippie” and “liberal” to the [Building Construction] world, I highly recommend this to be incorporated into [Building Construction] curriculum.

Most believed, however, that the course was cross-departmental. “All principles could be instilled in any industry, so more students should be taking this class,” claimed one student. About 10 percent of respondents who did not say it was extremely important explained that it would depend on their final career path, whether “I go the old fashioned ‘just build’ or ‘LEED’” and “what job I land.” In all, 94 percent felt the topic of ethics for sustainability was worthy of an entire 15-week course, while one person believed the concepts could be taught in one three or four-day session.

### **Conclusions**

When thinking about sustainability education, it is easy to jump to practical applications through technology, science, and other applied fields. A variety of behavioral research, however, has found that values and social norms have an important influence on behavioral intentions (Ajzen, 1985; Rogers, 1995; Schultz *et al.*, 2005; Stern, 2000). A potentially critical component to sustainability education, therefore, is an ethical foundation, particularly for students in STEM fields who may be less familiar with the humanities and social sciences. Understanding the ethical basis of sustainability-oriented decision making is a powerful partner to the technical expertise of applied professionals and can ensure the success of training future leaders for a more sustainable society.

This case study briefly describes a method for incorporating ethics into sustainability education, and its potential impacts on student knowledge and intended professional and personal behaviors. While the evaluation is limited to a single pilot course, these preliminary results may inspire future research and course development. From the students’ perspective, the most important aspects of the ethics of sustainability course were the practical examples of how specific ethical principles have been applied in the students’ particular fields. Additionally, activities that required students to engage in the application of the principles, such as through a role play or simulation, were extremely effective at demonstrating the real need for certain decision-making tools. Because ethical principles are inherently intangible, the combination of ethics education, real examples, and practical exercises is critical to promoting the adoption of ethical



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thinking when making sustainability decisions. Discussions with students who held other perspectives were also a critical component to their ethics education. Higher education institutions with an education for sustainability curricula should consider offering and potentially requiring an interdisciplinary course focused on the ethical components of sustainability to provide a more holistic sustainability education to our future professionals. Future research about this topic should consider at what stage in a student's education such a course is most effective, in which fields it is most critical, and whether there are long-term behavioral effects of an ethics foundation that differ from a curriculum focused on technical tools.

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