

A Green Auditing Course for Undergraduate Students: The York University Experience

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Abstract

The environment has become headline news on a regular basis and, in response, going green has become mainstream. Universities have an important responsibility in this context, needing to green both their curriculum and their campus operations. This article describes a course that addresses both these needs at the same time, by providing students with an opportunity to gain hands-on experience working on environmental issues and also providing campus operations personnel with information they need to make the campus more sustainable.

Going green has made environmentalism a global mainstream theme (Stafford and Hartman 2007) and the subject of both public and scientific debate (Ryland 1998). Further, the environment has become headline news on a regular basis, elevating social awareness to levels not experienced in the past. If this environmental momentum is to continue in the future, educational institutions at all levels, particularly universities, will need to play a vital role (Sobreiro and Jabbour 2007). Universities can demonstrate a more aggressive commitment to the environment in two ways: first, by providing their students with a green curriculum in their academic programs and second, by practicing environmentally sound business approaches when dealing with the environmental issues that impact their campus operations.

Providing students with a green curriculum is not a new concept. Early pioneers in environmental education promoted the idea that students first need to be made aware of basic environmental issues. Once these concepts are understood, then skills can be developed and motivation provided for problem-solving related to environmental issues (Hungerford, Peyton, and Wilke 1980; Stapp et al. 1969). Despite this history of environmental education, universities have often been accused of being slow in making changes toward the greening of their academic program curriculum. Business schools, in particular, have been reprimanded by critics on the lack of environmental subject matter in their programs (Barnes and Ferry 1992; Becker 1997; Buchholz 1993; Christensen et al. 2007; Elkington 1998; Freeman 1995). Hoffman (1999), for example, charged that business programs lagged far behind their counterparts such as law, engineering, public policy, and public health, when it comes to the environment and curriculum. However, business schools are not the only programs deficient in this area; several commentators believe that, in general, the process of incorporating a green curriculum has been slow and painful at many universities (Ferreira, Lopes, and Morais 2006; Garcia, Kevany, Huisingsh 2006).

Similarly, universities have been criticized for not demonstrating more leadership in addressing their own environmental issues related to internal operations. In fact, few universities are vigorously pursuing green initiatives throughout their campus operations and, at best, they are a peripheral management issue (Carpenter and Meehan 2002; Dahle and Neumayer 2001; Sobreiro and Jabbour 2007). Sharp (2002) contends that “very few universities have actually institutionalized a systematic commitment to environmentally sustainable campus operations” (130). Student advocacy groups claim that their institutions have bad environmental habits and administration officials are simply “not there yet” when dealing with environmental issues (Lewington 2008).

In response, universities have been attempting to become more proactive toward being green. For example, 360 universities globally have signed onto the Talloires Declaration since its inception in 1990. This official statement proclaims a commitment by universities to environmental sustainability and literacy in teaching, research, operations, and outreach. Specifically, the Declaration requires university signatories to “establish programs to produce expertise in environmental management, sustainable economic development, population and related fields to ensure all university graduates are environmentally literate” and “set an example of environmental responsibility by establishing institutional ecology policies and practices of resource conservation, recycling, waste reduction and environmentally sound operations” (Talloires Declaration 1990).

The integration of environmental content into academic studies and having sound environmental operations is the ultimate collaboration because it offers both students and the university opportunities to be innovative and promote best practices (Carpenter and Meehan 2002; Ferreira, Lopes, and Morais 2006). Many believe that students have a relevant role in getting their university to become environmentally responsible in campus operations, curriculum, and research. This can be achieved by having the students get involved in projects, which lets them to think in new ways and take environmental learning into their own hands (Karol 2006, Stubbs and Cocklin 2008). Sharp (2002) advocates an approach to a student partnership that allows the university to tap into talented, committed students by involving and mentoring them through projects and then ensuring that their work is relevant and integrated into the university’s systems. He goes on to state that applying such an approach “requires a high competency in listening, communication, relationship building, vision development, responsiveness and continuous strategic adaptation” (132). By providing opportunities to students, a greater sense of participation is gained in having a role in the creation of a more sustainable campus (Ferreira, Lopes, and Morais 2006). The university also gets a payback by becoming a stakeholder, bringing a richer engagement that benefits more than just one side of the arrangement (Kearins and Springett 2003).

One method of capturing both goals of implementing green curriculum and fostering a greener campus is to develop a course that involves student participation in a problem-solving project and also includes the participation of university administration staff

who have environmental responsibility related to campus operations. Kearins and Springett (2003) have tried this concept, describing a course that includes real-world problem-solving within the campus. Working in small groups, the students are required to act as management consultants within the local campus setting. Such an activity presents first-hand experience on the difficulty of convincing others to accept their ideas and how ideas do not always translate easily into practice. Similarly, Ferreira, Lopes, and Morais (2006) promote the suggestion that a problem-solving exercise will provide students with the skills needed in a business world setting after leaving university. They firmly state that this type of approach is far superior to having students prepare standard research essays and assignments.

A team exercise that requires students to think and act on a problem at their university also provides them with an opportunity to make their campus more sustainable, lessen its impact on natural systems, and make it a better place to live, learn, and socialize. This type of approach has been successfully practiced over the past five years through a course taught at York University, Toronto, Canada. The course achieves each of these objectives, offering the students an opportunity to practice the skills taught in class by actually conducting an on-campus green audit. In addition, the university administration is a willing participant in the course by offering full cooperation and support from top management down, including active involvement in the auditing process.

The purpose of this article is to describe how the implementation of this green course has been practical for both the students and the university, presenting an avenue to continually improve the environmental performance of campus operations. The first section gives a brief description of the York University Keele Campus, including its size and location within Toronto's large metropolitan area. An overview of York University's Faculty of Environmental Studies then sets the stage for a discussion on the course lectures and activities, with particular emphasis on the required on-campus green audit. A short review of the most significant results obtained by the class over the past five years demonstrates some of the benefits of doing this type of green auditing course both from the perspective of the students and the university. Finally, the article makes some suggestions on ways this type of course could be adapted to yield similar results in different settings.

The Campus Context

Established in 1959, York University's Keele Campus has experienced exponential growth over the past fifty years to meet an ever-increasing need for postsecondary education. Located centrally in the Greater Metropolitan Toronto Area, the campus is large and sprawling, with a student population in excess of 50,000 (full time and part time) plus an additional 7,000 faculty and support personnel. Like most universities of its size, York is a city unto itself, complete with a plethora of related environmental issues such as waste, water, ecology, transportation congestion, and air emissions from its on-campus electrical power plant. Given its age, many buildings and infrastructures are beginning to deteriorate, requiring constant maintenance and upgrading.

Although the university has some on-campus student residences, approximately 80 percent of the student population commutes to the campus on a daily basis. Fortunately, the Greater Toronto Area has a comprehensive mass transit and road system that allows the students to generally make the commute to campus within a one-hour timeframe from as far as 50-60 km (35-40 miles).

In an effort to improve the university's environmental footprint and sustainability image, a Presidential Task Force on Sustainability was established in 2000. This Task Force issued a report in 2001 that recommended a number of operational improvements related to the following: energy efficiency, water management, waste management, biodiversity, building design, transportation systems, and green curriculum (York University 2001). The report also recommended signing the Talloires Declaration, which was done in 2001. Since then, the university has continued to make additional strides toward improving its environmental performance and overall sustainability. In 2009, a President's Sustainability Council was formed, involving participation from students, faculty, and administrators for "providing input to York University's sustainability initiatives, projects and practices" (York University 2009). The university's environmental achievements were recently recognized in the College Sustainability Report Card: an independent evaluation of campus sustainability at colleges and universities in the United States and Canada. In the report, York received a B+ rating, the highest of any university in the Province of Ontario and amongst the highest in Canada. In particular, the university received A ratings in the categories related to energy, food and recycling, green buildings, and transportation (College Sustainability Report Card 2010).

York's academic portfolio includes a highly regarded Faculty of Environmental Studies, which was first established as a small masters program in 1968 and has since grown to include both undergraduate and Ph.D. programs. The overriding goal of the Faculty's academic curriculum is to provide an interdisciplinary education in fields relating to the natural, built, and social environments. A unique aspect of several programs includes a joint degree with the university's law school, as well as joint diploma programs with the law school and the Faculty of Education. The Faculty of Environmental Studies has approximately 1,200 students (800 undergraduates and 400 graduate students), 38 tenured and tenure-stream faculty, and 35 part-time faculty.

The Environmental Auditing Course

The official name of the fourth-year course is Environmental Monitoring and Auditing and in 2004, the course was restructured to emphasize environmental auditing. The following is the course description provided to the students:

This course focuses on the principles, processes and techniques of environmental auditing and management systems (ISO 14001). A highlight of the course requires the students to conduct, in a team setting, an on-campus environmental audit that includes a formal presentation of findings and a final

audit report. Concepts of environmental monitoring, environmental risk assessment and occupational health and safety are also addressed through lectures, class discussions, demonstrations and assignments.

There were several reasons for developing this course. The first reason was to provide the basic theories and concepts of environmental auditing using a series of lectures and discussions. Environmental auditing is a relatively new field of expertise that is gaining more traction in the business world as a venue for demonstrating environmental due diligence. Second, universities are often accused of providing too much intellectual theory in their academic programs and not enough practical on-the-job experience. Environmental courses are generally not structured to deliver problem-solving skills (Ferreira, Lopes, and Morais 2006) and by having the students actually do the on-campus green audit in a team setting, they gain experience that can be taken away for the future. Third, the university, through its active participation in the course, gets a return on that investment. In the end, the university gets a “free auditing service” from an on-campus group that also has a vested interest in the university. This particular aspect of the course is critical to its success. At York, administration personnel from the campus operations group provide specific audit topics related to campus environmental issues and make a personal commitment to participate by taking time from busy work schedules to meet and direct the students. They also actively listen to what the students’ propose at the end of the course when making their final presentations and reports. The participation and support provided has been impressive and is a big reason for the interest and popularity of the course.

Course Overview

The first two weeks of the twelve-week course introduce the students to how “the environment” is considered in a typical business setting. Beginning with a general lecture on the topic of risk and risk management, the lecture also stresses how successful businesses are constantly assessing their risks related to finance, operations, laws, health and safety, and the environment. As a first assignment, the students are required to identify the top five organizational risks associated with the university. York, like many organizations, is constantly assessing and evaluating its risks and it is always an interesting exercise to observe how the students perceive the university’s risks compared to the senior administration of the university. Next is a lecture on how environmental issues are still a “tough sell” in most business contexts (Hoffman 1999). But the students are also made aware of the fact that “times are changing” with the current environmental movement in response to climate change concerns and the efforts of environmental crusaders such as Al Gore and David Suzuki.

During weeks 3 and 4, the course introduces the popular but controversial world of ISO 14001–Environmental Management Systems, including discussion on the five main elements and the seventeen sub-elements of the standard. Additional lectures are given on the more critical components of environmental management systems, such as environmental risk assessment, environmental laws and due diligence, corporate social

responsibility, and integrated management systems (quality, health/safety, and finance). At this point, the students should have a good understanding of how environmental issues are typically addressed in the world of business.

The focus of the course then shifts to “Environmental Auditing.” Starting with a brief history of its origins, definitions are presented along with examples and a rationale for why conducting environmental audits is a good business practice. Through weeks 5 and 6, the critical environmental audit process is taught, including details on identification of environmental issues for auditing, terms of reference set-up, development of audit protocols/plans, interview techniques, field observation methods, document review, auditor notes preparation, meetings and communications, report writing, and post-audit monitoring requirements. By the end of this session, the students have been provided with all of the basic skills needed to conduct a successful on-campus green audit project.

With the main course content covered, the students are now ready to embark on their green audit. To prepare them, a general lecture is given on project management, including the definition of teams and teamwork, the need for time management, and the use of communication venues—all of which are critical to the success of the project. The lecture emphasizes that all successful teams require effective leadership and equal effort by team members. Recognition is also given to the fact that not every participant has the ability to be a team leader but all members do have certain capabilities to contribute to the team. Students are encouraged to determine how to make use of their strongest assets in a team setting.

Green audit teams are formed according to the specific issue topics provided by the campus business operations personnel. Often a representative from this group attends the class and introduces the audit topics, after which the audit teams are created. The students are then required to designate a team leader or leaders and begin planning their audit activities, which have to be completed over the next four weeks of the course. At this point, a specific campus operations representative is assigned to each team, acting as their “audit client”; that is, the audit is being done for them. Each team is responsible for contacting this individual in order to set up an opening meeting to discuss the scope and objectives of the audit plus identify potential internal contacts that the team should make. The students are instructed that this opening meeting may be the only opportunity for the team to meet with their “audit client” in person, so they need to quickly establish rapport and determine how to proceed.

Through weeks 8, 9 and 10, the three-hour weekly class changes format. Each week starts with a specific lecture related to different topics, including health and safety, environmental monitoring, and sustainability. For the second half of each class, the audit teams move to separate breakout rooms to work independently on their green audit projects. During this time, the course instructor meets with each team individually to discuss progress, examine issues, and provide direction as necessary. Conducting the audit over this time period is a major challenge for the students: they have to meet with their audit client, prepare the terms of reference, and form an audit

plan. Interviews, field observations, and document review need to be completed in a timely manner. Although class time is allowed for the teams to interact with each other and the course instructor, each team must work independently on the audit project outside of class time in order to complete the task. This can be daunting since most of the students commute daily to the campus. Trying to arrange meeting times that are convenient for 5–6 team members can be difficult, given other classes, campus activities, and transportation schedules. Students are encouraged to plan their audit activities effectively. For example, they are allowed to conduct the audit interviews in mini-teams of two and three. They can communicate regularly by whatever means they feel comfortable: e-mail, telephone, text, or Twitter. As in a real-world setting, good communication amongst team members is paramount.

At week 11, it is “show time” and the students must be fully prepared to present their audit findings and recommendations to an audience of class peers, campus operations personnel, and invited faculty. Rules for each team in making this presentation are strict: a half-hour time limit is given to cover team introductions, methodologies used, findings, recommendations, and a conclusion. In addition, a short question and answer period with the audience must be allowed for within this time frame. Each team is required to distribute a one-page handout of their findings and recommendations to the attendees prior to their presentation. Teams are evaluated on leadership, timeliness, flow, graphics, comprehension, and completeness. Again, this presents a major challenge to produce a top-quality presentation in the time given. The teams are encouraged to rehearse in order to ensure timeliness and address any potential glitches in their presentation.

At the last class of week 12, the teams are given instructions on producing a final report to be submitted for a grade. The team leader is also required to assemble “auditor notes” from each auditor as a means of demonstrating that all team members contributed to the audit effort and final product. The audit report is submitted both in hard copy and soft copy (Microsoft Word format) to the course instructor, who then forwards each report to the respective “audit clients,” usually within a month of course completion.

The Results

Over the five years of teaching this course, students have completed twenty green audits and in each case their reports have been forwarded to university administration for reference and possible implementation of recommendations. These audits have covered a range of university environmental issues, including waste management, water use, biodiversity, transportation systems, and energy efficiency. In addition, two of the audits deviated, at the request of the university, from the environmental perspective and focused on campus safety and security issues.

While not all of the students’ recommendations can be implemented, a number have been. As a result, improvements have been made to the university’s overall sustainability performance, its environmental footprint/aesthetics, and, in several cases, its financial bottom line. In addition, there have been upgrades to the safety and

security of students, faculty, and administration personnel. The following summarizes some of the more interesting and significant successes to date.

Waste versus Energy

The university has used a combination of hand drying methods in its washroom facilities, including paper towels, cloth roll towels, and electric dryers. The purpose of the audit was to evaluate these different methods and determine which option would best serve the university's interests in terms of preference, sanitation/hygiene, waste management, and economics. The audit recommended the use of brown paper towels over white for environmental reasons; but more significantly, the audit recommended the installation of energy efficient hand dryers throughout the university. In this audit, the students were able to make a case, using statistical research and analysis, that the cost of disposing of waste paper towels was higher than the increased energy costs incurred by the installation of energy efficient hand dryers. The audit also indicated that the York University community preferred hand dryers from a hygiene and personal perspective.

The university responded by removing cloth roll towels in most locations, changing from white paper towels to brown paper towels, and installing energy efficient hand dryers in many washroom locations.

Food Waste Management: Compost Digesters

Given the large size and population of the campus, the amount of food waste generated on a daily basis is substantial. Two green audits have been conducted on this issue, the first in 2006 and more recently in 2008, in order to examine the university's practices on food and organic waste diversion. In both cases, the audits recommended the need for more food compost digesters on campus, more aggressive communications on the location of these digesters, and more education on their proper use in order to avoid cross contamination with other wastes.

The university responded by installing an additional fifty cone-shaped compost digesters (twenty-two were already in place) throughout the campus. These units include stickers to clarify the kinds of waste that are acceptable. Communication and education programs have also been advanced via the student newspaper, the university Web site, and student orientation programs.

Water Use

The university provides drinking water fountains in most campus buildings, as required by regulations (e.g., the Government of Ontario Building Code). The purpose of the audit was to examine the drinking water fountains on campus by comparing the quality and accessibility of the fountains in both the older and newer buildings. The most significant recommendation of this audit was the need to improve access to drinking fountains for the physically disabled. The audit also recommended better maintenance regarding sanitation, cleanliness, and drinking water quality; and an increase in the number and location of fountains across the campus.

The university immediately responded by making improvements to its maintenance procedures in order to ensure better quality and cleanliness. A plan is being prepared to improve access for the physically disabled and the location of additional high quality fountains throughout the campus. Of interest, this audit was completed in 2006 and since that time, the university, like many other institutions, is considering an on-campus ban on bottled water sales.

Ecology

Stong Pond is a storm water retention area built in the 1960s and it represents one of six remaining large open spaces on campus. Due to the significant expansion of the university's facilities over the years, the capacity of the pond for retaining water has been often exceeded, resulting in water quality and other ecological issues (e.g., overgrown vegetation, water turbidity/stagnation, and discarded debris in the pond such as old tires, rusty oil drums, etc.). The audit recommended improvements to water quality, reduction in surrounding soil compaction conditions, the planting of new vegetation for animal habitat, and better integration of the pond area into the campus plan.

The university responded by emptying, dredging, cleaning, and expanding the pond area. Several artificial rock islands were created to provide improved waterfowl habitat. Surrounding the pond, adjustments were made to soil conditions followed by strategic planting of native trees and vegetation. Lawn mowing and maintenance practices, including the use of pesticides, have been curtailed to allow for a gradual return to more natural conditions.

Transportation

A majority of the students travel to the campus on a daily basis from within the Greater Toronto Area. Generally, they opt for public transit (buses and trains) or use private vehicles. Access to the campus via designated bikeways is generally very limited. In addition, the use of public roads and streets is not conducive to safe bike riding and can be both dangerous and unappealing. Bike security and storage on campus is another issue that discourages riding a bike to campus. The purpose of the audit was to provide a snapshot of the campus cycling habits and determine how the campus could upgrade its cycling infrastructure and culture. The audit recommended improvements to bike rack and storage facilities, development of more on-campus bike pathways, more aggressive communications with the City of Toronto for the creation of better bike pathways to the campus, and the promotion and encouragement of cycling as a transportation option via internal communication systems such as the university Web site.

The university responded by providing bike racks at major buildings; an indoor, monitored bike parking location; and designated shower facilities for cyclists. Creation of designated bicycle pathways is being planned and negotiations with the City and local bike clubs are ongoing in an effort to improve biking conditions to the campus. Communication improvements to promote cycling use are also taking place on regular basis.

Energy Efficiency

The Ross Building is a large and dominant structure centrally located on the university campus. Built during the early 1960s, the building is burdened with obsolete energy technology, regarding its lighting and heating/cooling systems. The purpose of the audit was to investigate energy consumption from a heating and cooling perspective in the north section of the building. The audit recommended upgrades to the building temperature control mechanisms and promotion of better personal habits for energy efficiency by the building occupants.

Using the audit as a reference, the university started with the Ross Building when commencing its massive energy management retrofit across the campus. This initiative is projected to take place over the next five to seven years with a total payback in financial savings within ten years.

Safety and Security

As part of its overall safety and security program, for a number of years the university has had a “Blue Light Emergency System” that includes an interactive voice communication system to report emergencies directly to Campus Security. At the special request of the university, this audit deviated from the environmental theme of the course in order to assess concerns regarding the overall state of the campus emergency system in regard to awareness, design, location, quality, maintenance, effectiveness, and procedures. The audit recommended improved education programs (training, communications) to students and staff on the system’s actual existence, technical and maintenance improvements, relocation of several blue lights to higher traffic areas, and regular testing of the system.

The university immediately responded by making a number of quick fixes to system quality and maintenance procedures. Internal communication programs to students and staff were also improved via the university Web site, student newspaper, and student orientation programs. Since then, additional upgrades have been made to the campus safety and security systems, including more use of new technology such as safety phones in classroom locations, campus-wide electronic bulletin boards, and improved communications.

Applicability of Course on Other Urban Campuses

The format described in this paper is a twelve-week, one-semester course, to which the students must make a full commitment in order for their environmental auditing project to be useful and timely. As such, readers might want to apply the same basic ideas and techniques in developing a similar course for their own university, depending on need and context. Alternatively, the course could be taught as a short, intensive workshop over a one-week period. Another option would be to teach the course over a one-month period, employing mid-week and weekend classes (Stubbs and Cocklin 2008). In either case, the lecture format would have to be adjusted, as would the time allowed to conduct the green audit. However, in order for the course to be a success,

no matter what format it takes, the full commitment and cooperation of both the students and the university administration is required. Finally, any university can implement this type of course by taking the approach to “think differently” about what can be achieved within a specific academic program.

Conclusion

The importance of both student and university engagement and responsibility is the main theme of the green auditing course at York University. By focusing on real problems within the campus environment, the students get an opportunity to be involved in environmental issues that are local and with which they are familiar. In doing this type of project, the students have often taken a personal ownership and pride in their university, wanting to make it a better place both for themselves and for future students. As a result, they have brought a fresh set of ideas plus a different perspective on what they feel their university should look like. Often this viewpoint has been different from that of university administration personnel. In addition, the students have gained valuable hands-on problem-solving experience or learning by doing, which can be taken forward as an example of practical knowledge when competing for a job or pursuing other career opportunities.

On its part, the university has received a free auditing service and its overall environmental footprint has been reduced, thus benefiting the local community. For example, the several audits conducted on waste management have improved campus recycling and composting practices, resulting in less waste being transported to municipal landfill. The investment of time and money for administrative personnel to actively participate has been minimal while the product received, as illustrated, has been worthwhile from an environmental, financial, and safety/security standpoint. In the end, everybody wins: the students, the university, the community, and the environment.

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