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University united: A review of the applied student research model in campus sustainability and its value for McGill

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Conducted for the Students Society of McGill University's Vice-President University Affairs

Summer 2008 & 2009

Categories

Academics

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Introduction

This is an exciting time to be involved in the sustainability movement at McGill. In our academic offerings, the McGill School of Environment just celebrated its 10th anniversary, while on the administrative side, we have just opened the McGill Office of Sustainability, and the university is drafting its first set of Sustainability Principles. As well, the 2009 edition of our annual Rethink conference will be the most ambitious yet. Working with professors and administrators, students are leading a significant and diverse set of projects to improve our university - from Tapthirst empowering the university's public water infrastructure and Gorilla Composting installing McGill's first industrial composting system, to Rethink Your Curriculum supporting the integration of sustainability across the university's curriculum. The campus is alive with collaborations between students, professors, administrators and community members, including the established success of the Edible Campus urban garden and the freshly inaugurated Farmers Market at McGill.

The momentum is growing. With financial support offered by enthusiastic community partners, newly established guidelines and requirements passed down from the provincial government, and participation and interest so high in our own campus community, McGill has an unprecedented opportunity to become a leader in campus sustainability and a pioneering model for wider society.

One essential element, however, is missing. Our programs for academic teaching and research on sustainability are established and active, the operational administration of the university is increasing its capacity to improve the sustainability of our campus infrastructure, and students are passionately developing their own community projects. What is not happening, is the combination and cooperation of these three areas of exceptional effort. What McGill is missing, is applied student research.

Definition of Applied student research

Also known as student action research and participatory research, applied student research may be broadly defined as:

> *"research that (a) is conducted ... with the goal of informing and affecting school, community, and/or global problems and issues and (b) contributes to the positive development of a variety of academic, social, and civic skills [in students]"* (Rubin and Jones 2007, 363).

More specifically, it is "a collaborative approach to inquiry or investigation that provides people with the means to take systematic action to resolve specific problems" (Stringer, 2007, 8).

Already a popular model in disciplines such as medicine, applied student research allows students to gain academic credit and develop hands-on experience in their field while contributing their passion and skills to addressing real needs in their community.

This report focuses on applied student research in the context of campus sustainability—in other words, the use of the academic resources of the university to develop solutions to practical problems in the campus's physical infrastructure and operations.

Structure of report

Examining the importance of the applied student research model, this report begins with a discussion of the public literature on the need to refocus higher education to meet the challenges of the 21st century. Two case-studies (University of Toronto and University of British Columbia) then illustrate the value of the applied research model, and examine how it has been coordinated at these peer institutions. Turning to the situation here at McGill, our current inability to use the applied research model is outlined, and a set of recommendations is presented for enabling the coordination of applied research through the McGill Office of Sustainability. The report concludes with a summary of the benefits of the model to McGill University.

Literature Review

Today, in Western society, the university is the most ubiquitous it has ever been. Its role is no longer only to train our social leaders and elites; it now provides the educational foundation of a large proportion of our population. Despite this, we are a society troubled by the current and long-term social, economic, and ecological impacts of our status-quo, and are struggling to define a new direction. It is this incongruity - our situation as an increasingly educated *and* unsustainable society - which suggests a shortcoming in our higher education system. This common critique underlies the arguments of the authors summarized below, but it also provides the thread which unites their vision for the future. Together, they not only question the relevance of the approach, contributions, and very mission of the modern university, they call for a swift development of its unrealized potential.

The university: A leading institution?

The mission of modern university training may be admirable, but many of its results have not been. Though it has certainly not been an intentionally harmful contributor to our current societal concerns, it is important to recognize the university's role in creating our unsustainable present. As Peter Marcus Ford writes in *Beyond the Modern University*,

> *"It is not directly involved in clear-cutting the rain forests, polluting the air, or destroying the ozone layer. Yet it is in the university that our business and political leaders, our planners and analysts, our teachers and citizens are educated, and it is the university that promotes and legitimizes a way of understanding the world that undergirds our destructive practices"* (Ford 4-5, 2002).

However, the university also presents an incredible opportunity for addressing these deep-seated societal issues. The Canadian National Roundtable on the Environment and the Economy issued the statement that:

> *"The educational, research and public service roles of universities enable them to be competent, effective contributors to the major attitudinal and policy changes necessary for a sustainable future. Universities have the necessary capacity to develop the intellectual framework to support practical applications of sustainable development concepts. As academic leaders [they] have the capability to convene academic disciplines on large, complex issues, mobilize resources, create incentives and programs for faculty development and most importantly, to lead by example" (National Roundtable on the Environment and the Economy: "University Presidents' Workshop: Learning and Sustainability", as quoted in POLIS Project on Ecological Governance 2003, 24)*.

Yet how can universities lead a societal sea change when the academics that they proudly support have, in many cases, been warning of the dangers of our societal practices for years, if not decades, to so little effect? Why has the opportunity to *act* on the knowledge held by the modern university been missed in the past, and how can it be developed in the future?

Classroom and campus: Missed connections

Though the university's mission is to train society and develop our leaders, what is it really teaching? While sustainability issues may be being confronted academically, the solutions developed and presented too often remain abstract theories and foreign models stuck in the classroom, while the surrounding campus continues to uphold our troubling status-quo.

> *"Students learn that it is sufficient only to learn about injustice and ecological deterioration without having to do much about them, which is to say, the lesson of hypocrisy. They hear that the vital signs of the planet are in decline without learning to question the de facto energy, food, materials, and waste policies of the very institution that presumes to induct them into responsible adulthood. Four years of consciousness-raising proceeds without connection to those remedies close at hand" (David Orr 1992, as cited in M'Gonigle & Starke 2006, 152)*.

This problem - the fundamental disconnect between the academic mission of the university and the physical infrastructure and services which support it - is also demonstrated in administration-led projects to improve campus operations. From identifying efficiency

upgrades to designing new campus space, such operational projects typically funnel resources away from the university instead of building upon the significant knowledge and skills it already houses. In sum, “extensive reliance is placed on external consultants, while internal expertise is limited and, indeed, discouraged ... meanwhile, the broader involvement of staff, academic departments, and students is essentially non-existent” (POLIS Project on Ecological Governance 2003,18).

In short, because of missed connections between classroom and campus, the university is losing twice: It is missing the opportunity to benefit from the academic capacities which it works so hard to create, and – perhaps worse – it is missing the opportunity to develop these resources further by means of such application. As Ford argues, “every new building and every renovation of an existing building is an opportunity to teach students (and faculty) something about the way the world works” (Ford 2002, 124).

The path forward: Applied student research

By establishing an interactive link between academic teaching and research, and the real operational issues of our campuses, applied student research can reduce the university’s costs, support its academic mission, and improve its infrastructure. Instead of merely publishing and teaching sustainable solutions, these lessons can, and need, to be applied where they are developed. “In sum, it is time for universities to *use* their expertise and vision” (Uhl and Anderson 2001, 39).

Further, many of the problems in the university’s own operations mirror those issues faced by society as a whole. Where better to test the critical ideas and technologies needed to meet these challenges than within the university community itself? Thus, through applied student research the university has the potential to provide a vital platform for developing and testing solutions for its own campus and for society at large. As M’Gonigle and Starke argue in *Planet U: Sustaining the World, Reinventing the University,* the “university holds a missing key to global sustainability — a locus for practical action” (M’Gonigle and Starke 2006, xiv).

Case-studies

The following case-studies demonstrate both the value of sustainability-focused applied student research as it has been used by McGill’s peer institutions, and the way in which the model has been coordinated by the Sustainability Offices at these universities.

For maximum comparability to McGill, the analysis of this report was limited to the Group of Thirteen (G13), Canada’s leading research-intensive universities. Out of this selection, the University of Toronto and the University of British Columbia were the only candidates found with well-established Sustainability Offices able to coordinate applied student

research. However, it is important to note that at the time of this study the University of Alberta was in the process of establishing its Sustainability Office, with a comprehensive administrative structure designed specifically to support applied student research. Similar models are also currently being used at least two other Canadian universities outside of the G13, Waterloo and Saskatoon, and at the American universities Tufts and Brown.

Two administrators were interviewed at the University of Toronto, and two administrators and one student representative were interviewed at the University of British Columbia. Interviews were conducted by phone and supplemented by material researched on both universities' websites. All information was gathered between July and August, summer 2008.

University of Toronto

What are they doing?

The University of Toronto's Sustainability Office coordinates efforts to improve the economic, social, and environmental sustainability of the university's three campuses. Established in 2004, the Office works to "create a culture of sustainability" through a hybrid of teaching, research, and application which harnesses the passion and ideas of students and professors, and the dedication and experience of staff. A core component of the Office's mandate is to encourage student sustainability initiatives and to involve students directly in the development of major campus projects.

Situated within a research-oriented university, it is only fitting that the University of Toronto's Sustainability Office is also a research-oriented Office. However, even with two co-chairs, two co-coordinators, and a fluctuating number of interns, the Office does not have the capacity to do its own research. Applied student research is essential to its success. Through facilitating course work projects, independent studies, undergraduate and graduate theses, work-study positions, and volunteer work, the Office has directly involved over 400 students since opening in 2004. It focuses on "using the campus as a living laboratory" and channeling student energy and academic resources to provide "research and implementation capacity to the Office". Thus, not only does the Office promote and coordinate course projects and partner on major sustainability-focused research and curriculum initiatives, it works with relevant staff and administrators to apply this knowledge in making concrete improvements to the university's operational infrastructure.

How are they doing it?

The Sustainability Office is jointly overseen by a Sustainability Director and the university's Director of Utilities and Building Operations. While the involvement of The Director of Utilities and Building Operations, currently Mr. Bruce Dodds, evolved as a new responsibility of an existing *administrative* position, the Sustainability Director, currently Ms.

Beth Savan, was a new position created with the Sustainability Office and has been traditionally filled by a *faculty* member. Through the positions held by Mr. Dodds and Ms. Savan, the Office reports to, respectively, both the higher administrative positions of the Vice-President of Business Affairs, who manages the physical infrastructure and services side of the university, and the academically focused Vice-President and Provost.

These connections to both the academic and operations sides of the university are crucial to the Sustainability Office's work, ensuring the scope of the Office's mandate is not limited to that of Mr. Dodds' department of Utilities and Building Operations. While the sustainability efforts of Utilities and Building Operations focus on improving physical infrastructure of the campus, the Sustainability Office is able to bridge academia and operations by coordinating programs which work with the capacities of *people,* including applied research projects which design new infrastructure alternatives and campaigns to raise awareness and change the behaviour of users *within* buildings.

Positioning the Director of Utilities and Building Operations as co-director of the Office ensures adequate representation from the university's administration, generally, and operations, specifically, as well as the support of an established administrative department. Both functions allow the other Office staff to focus on program development and implementation. The position provides technical oversight, advice, and support for Office programs that involve university infrastructure, represents the Office on operations project planning committees, and assists the office in following university administrative procedures and policies.

The second Office co-chair, the Sustainability Director, is the Office's spokesperson to the University's higher administrative and governance bodies, and oversees the programs and focus of the Office. Daily operations in the Office are carried out by recent alumni and current student interns who work directly under the Sustainability Director. Two full-time Sustainability Co-Coordinators manage the Office, while specific programs are run by full-time and part-time interns, whose number fluctuates according to need.

How is it working?

Co-chair Model

The academic-operations co-chair model directing the Sustainability Office has been essential for providing the internal capacity and collaboration connections necessary to coordinate applied research. The Office's direct connection to Facilities and Services through the Director of Utilities and Building Operations helps provide credibility and expertise on all projects which involve the physical operations of the university. As an academic co-chair, the Sustainability Director provides the Office established relationships with academic departments and provides legitimacy when working with faculty members and deans.

Ms. Savan's connections as a well-respected academic and highly integrated member of the University of Toronto community, especially her position as Undergraduate Coordinator of the Centre for Environment, has been crucial to building the collaboration needed for the Office's success in coordinating interdisciplinary, community-based campus projects. Most marked, however, has been the benefit for student engagement and staffing of the Office. As a professor, Ms. Savan has a direct link to students through her own classes, while guest-lecturing provides an opportunity to foster awareness and involvement with students across departments and faculties. Almost all of the Office's programs have grown out of student-generated projects that were taken up and institutionalized under the Sustainability Director, and the Office is primarily staffed by recent graduates which the Director has recruited. Ms. Savan believes this level of student involvement and retention through both project support and paid internship opportunities would be significantly more difficult if the Office were completely staff-run.

Ms. Savan cautioned that finding an appropriate faculty member to fill the Sustainability Director position could pose a challenge. The significant time commitment required is difficult to balance with the expectations of personal research and teaching, while directing an office and publishing co-authored reports lacks the prestige of personal research and doesn't fit well into the standard academic career stream. Further, moving between university academia and administration brings the difficulty of establishing credibility with staff and proving the ability to understand and appreciate their context, constraints and goals. However, if solely operations-focused and staff-run, Ms. Savan argued, the Office risks becoming isolated from a dominant part of campus activities, and the university's focus: teaching and research. Therefore, she emphasized, the academic co-chair is an essential position, and potentially a very gratifying one, for those with the necessary commitment and experience.

Paired together, the two co-chairs and their connections allow the Office to be deeply involved in curriculum, research, and the operations of the campus, spanning the University of Toronto's entire institutional mission. Working with both the Provost and the VP Business, the Office has been able to draw on the strengths of students, staff, and faculty to not only engage the participation of, but provide services for, all parts of the university. Such wide-scale collaboration across departmental, faculty, academic and administrative boundaries has not only expanded the profile and credibility of the Office, it has been essential to its very mission. This inclusive scope and extensive engagement allows the Office to more fully address *sustainability* at the University of Toronto, rather than only saving money from individual structural retrofits and disconnected user programs.

Applied student research

Both the Sustainability Director and Director of Utilities and Building Operations were enthusiastic and emphatic in describing the substantial benefits which applied student research has provided to the university. Grouped together, these benefits include:

Innovation & efficiency

Student research enables the Office, and by extension, the university, to take advantage of the latest ideas and technologies in sustainability. Coordinated by the Office, independent and course projects are instrumental in developing pioneering programs, monitoring their effectiveness, and reporting successes back to the university and academic community. Without access to the enthusiastic and experimental push of students and their overseeing professors, Ms. Savan believes an exclusively staff-run Office would be much more likely to gravitate towards established technologies rather than moving forward on the cutting-edge of efficiency and design.

Research publications & grants

The Sustainability Office's focus on supporting the development and publication of innovative research not only helps the University of Toronto be a leading contributor to the wider academic community, it also provides another avenue to tap into the financial support for sustainability which exists outside of the university. With an average of 45% of the Office's funding provided by external research grants, applied student research allows the Office to benefit from significant funding sources that would not be available if it were exclusively staff-run.

Capacity & expertise

Applied student research allows the administration and staff at the University of Toronto to benefit from the most valuable, and underused resource which exists on campus: students themselves. Both Ms. Savan and Mr. Dodds emphasized the success of the Office in drawing upon the passion, commitment, and skill of students and channeling it to tackle important issues that the university simply lacks the staff or time to address within its normal operations. Instead of just hiring students on summer work terms, Administrators in Facilities and Services have discovered that student course-work is both an economical and efficient means for developing and testing practical solutions to improve campus infrastructure. Mr. Dodds highlighted that students are eager to apply the training of their discipline to issues they are concerned about, and the Office has not become just another bureaucratic body telling staff how to do their job. Having so many different actors working together has built excellent working relationships and the Office has become a very positive, collaborative environment. Students have proven open to the technical oversight and feasibility advising of Utilities and Building Operations staff, and have consistently produced bright ideas, smart designs, and very professional, usable results. In addition to obvious cost benefits, Mr. Dodds confirmed that senior student researchers frequently provided much higher quality work than the hired consultants Utilities and Building Operations has traditionally relied upon.

Student experience

For the hundreds of undergraduate and graduate students working through the Sustainability Office, applied research has provided an opportunity receiving academic credit while developing hands-on experience in their field of study. The value and gratification of working on projects *that are used*, Mr. Dodds declared, is at least as memorable and influential a part of students' training at the University of Toronto as all their classroom experience. Ms. Savan agreed that, by supporting students' ability to

contribute their academic skills to research which actually makes a difference, the Office provides an exceptional experience and opportunity for students, who get to see “their ideas turned into reality.”

Academic goals

Many of these benefits of applied student research at the University of Toronto tie directly to the institutional aspirations set by the university in *Stepping Up* (University of Toronto 2009), its framework for academic planning for 2004-2010. The applied student research coordinated by the Sustainability Office has helped the university to meet its goals of:

- Increasing interdisciplinary collaboration
- Linking teaching and research
- Ensuring scholarship and academic programs positively impact the broader community
- Providing student opportunities for strong research experiences and community-based experiential learning

There is a clear consensus among students, professors, and administrators involved with the Sustainability Office: the applied research model has been very successful at University of Toronto. The hybrid of research, application and education has been mutually beneficial to both students and administrators, allowing Utilities and Building Operations to tap into the university’s significant academic resources while providing incredible learning experiences for students. The unique, synergistic solutions that have developed out of applied research have been crucial to the success of the Sustainability Office, reducing costs and increasing both the diversity and effectiveness of sustainability efforts at the university.

University of British Columbia

What are they doing?

Sustainability Office

The first of its kind to be established in Canada, UBC’s Sustainability Office has been running successfully since 1998 with the focus of *institutionalizing sustainability in every aspect of campus life.* Supporting the efforts of other actors within the university and facilitating over a dozen of its own issue-specific programs, the work of the Office is tied together with the common goals of increasing the sustainability of learning, living and working at the university through the use of internal teaching, research, and operations, and external alliances.

SEEDS

The Office coordinates applied student research through its Social, Ecological, Economic Development Studies program (SEEDS). Launched in 2001, SEEDS is an academic program that brings all stakeholders together to address sustainability issues on campus by engaging faculty and staff and providing students with "sustainability leadership opportunities." Coordinating internships and course research, the program involved just under 400 students, staff, and faculty in 2006 alone, and boasts attracting more than 2,000 participants and saving the university hundreds of thousands of dollars in its eight year history. Its website header proudly declares:

"Student, staff and faculty working towards sustainability in tandem."

<u>How are they doing it?</u>

Sustainability Office

The University of British Columbia's Sustainability Office is led by a Director of Sustainability, currently Ms. Charlene Easton. Though this position is responsible only to the operations side of the university because of its lone reporting relationship to the Associate Vice President Land and Building Services, and by extension the overseeing VP Administration and Finance, the Director of Sustainability does work with all sectors of the university. The Office has created its own mandate and retains the ability, if not the official authority, to work outside of the activities of Land and Building Services.

The Office has continued to grow in size and scope over the past eleven years and now contains three full-time positions and four part-time positions. These include dedicated coordinators for the Office's water and energy programs (Climate Change and Energy), a volunteer program to help staff and faculty take leadership in implementing the university's sustainable development policy on a departmental basis (Sustainability Coordinators), student outreach and engagement programs, and the university's applied student research program (SEEDS).

SEEDS

Called for under UBC's original Sustainability Policy in 1997, UBC SEEDS was modeled upon a successful applied research program at the University of Waterloo. Brenda Sawada, founder and manager of the program, coordinates with students, staff, and faculty to design projects and facilitate connections and dialogue between all actors. Ms. Sawada ensures that projects will be useful to staff, secures professors relevant to the issue and willing to oversee students, and finds students interested in doing the research.

SEEDS projects focus on sustainability issues across the campus's operations, but one of the program's most active areas has been the UBC Food Systems Project. SEEDS

typically coordinates 10 food-focused case studies per semester, each run by a class group averaging 10 students. University departments involved include agriculture sciences, land and field studies, chemical and biological engineering, business, and commerce. All completed case-studies are compiled for future reference and made publicly available in the SEEDS Project Library (http://www.sustain.ubc.ca/seedslibrary/), and a student is hired over the summer to help stakeholders with the actual implementation of each report's recommended changes.

Without a background in academia, Ms. Sawada found an advisory subcommittee of staff, faculty, and students very valuable in the program's first four years. However, as SEEDS became more established and Ms. Sawada became well-connected within the university, the advisory role became unnecessary, and SEEDS now reports directly only to the Office's Sustainability Director.

Curriculum

While SEEDS already has a wide range of professors and students to work with, picking from the more than 400 sustainability-related courses which UBC currently offers, the further establishment of the university's new Presidential Advisory Council on Sustainability will create direct ties between the Sustainability Office and the academic operations of the university. This connection, it is hoped, will greatly facilitate and streamline the further integration of sustainability into the curriculum, and provide even greater support for applied student research.

Funding

A crucial point of comparison to the situation at University of Toronto and at McGill is that UBC's Sustainability Office has benefited from the university's unique funding structure under which each University department pays utility costs directly, and also receives back all energy savings. This financial model has allowed the Sustainability Office to run off, and grow with, the energy savings from the programs it coordinates. Further, placement under the university's VP Administration and Finance, the VP most concerned with these efficiency savings, has strengthened the Office's support within higher administration. However, while these are important factors in the continued growth, acceptance and influence of the Sustainability Office, they do not alone explain the success of the applied student research at UBC.

<u>How is it working?</u>

UBC's Sustainability Office has branded itself "Canada's leader in campus sustainability", and with good reason. Despite limitations in the official reporting structure of the Office and SEEDS, the university implemented Western Canada's first applied research project and built it into a well-established program able to reach across university departments and

faculties, enrich student experience, build capacity and connections, and save costs. The undergraduate student society's Vice-President Finance, under whose portfolio sustainability falls, was "really impressed" with the Sustainability Office, confirming that its reputation was well-founded and the Office is "really doing a good job".

Office placement

Unlike the University of Toronto's Sustainability Office, where the faculty-administrator co-chair structure ensures a direct connection to both the academic and operations side of the university, the Office at UBC is solely staff-run and reports only to the operations side of the university. The championing work of the Associate Vice-Principal, Land and Building Services, under which the Office was started, helped it gain support and traction, while the low-hanging fruit of energy efficiency improvements provided an easy entry point to prove its worth. Further, the incentive to focus on operational improvement has been increased by UBC's unique funding structure, which has allowed the Office to run not on a fixed budget but on the savings it creates.

The Sustainability Office's operational focus and direct connection to Land and Building Services has brought it financial success and allowed greater autonomy and power; however, Ms. Easton did emphasize that the lack of official connection to the university's academic administration has limited the Office's ability to coordinate the integration of sustainability into learning and research. Though the Sustainability Director position is officially advised by the Provost, Ms. Easton has not been able to build an active relationship between the Provost and the Sustainability Office. There is no position under the Provost responsible for sustainability in the university's academic programs, and the Provost's position itself has had only infrequent involvement or contact with Ms. Easton.

SEEDS placement

Despite this lack of an official connection to the academic side of the university's administration through the Sustainability Office, Ms. Sawada reported that the SEEDS program has not had difficulty in working directly with students and faculty. Instead of needing jurisdictional authority to impose projects on faculty, Ms. Sawada takes the time necessary to find interested professors with related research focuses, understand their perspectives, and develop the projects with them. Further, by relating project involvement to the goal of UBC's Sustainability Policy for the integration of sustainability into academics, SEEDS has benefited from being able to *help others meet their commitments* to the university.

Similarly, though her administrative authority is limited to that of Land and Building Services of which the Office is a part, Ms. Sawada has found that focusing on the ways in which applied student research projects *provide a resource* to staff has allowed SEEDS to work with departments across the university. Most fundamentally, being good to people,

not jurisdictional legitimacy, has been the key ingredient in the exceptional success of the SEEDS program.

Ms. Sawada believes inclusion of applied student research in UBC's 1997 Sustainability Policy was vital to SEEDS' initial establishment and funding, and its continued support. However, one weakness of the program, identified by the student representative interviewed, is a lack of reliable funding to ensure the implementation of finished projects. Mr. Diplock pointed out that though SEEDS consistently supports the development of very useful projects and reports, it often lacks the resources and administrative framework to make sure the hard work and valuable recommendations of students are *used.* Instead of relying on staff or faculty to provide the funding to put projects into place and thus ending student participation with the submission of their reports, it was suggested that project members themselves should be able to apply to a recognized funding body and see the project through to completion. While not directly discussing this concern, Ms. Sawada did mention that she is trying to arrange a small independent funding source for occasional use through the university's Vice-President Research.

SEEDS coordination

A dedicated program manager has been critical to the success of the SEEDS model. Working to coordinate and facilitate the collaboration of students, faculty, and staff, Ms. Sawada emphasized the importance of a coordinator to help bridge the pervading cultural divide between operational staff and academic students and faculty.

While new operational infrastructure or procedures frequently require considerable investment of staff's time, effort, and funds, Ms. Sawada has found it can be easy for students and faculty to overlook all of the on-the-ground ramifications of their ideas and the demands their projects create on the people who will actually put them into place. To enable this mutual understanding and support, the program manager must be skilled in negotiations, able to cultivate an open, cooperative environment and bring all three parties to the table as equals. Ms. Sawada believes her background in NGO volunteer management has been an important strength in this regard.

SEEDS benefits

Students: credit & experience

The value of SEEDS involvement to students' university experience is unquestionable. In 2007-2008 the program won two prizes from UBC's Student Development Awards program for its contribution to the lives of students, and the student representative interviewed described it as "an amazing program", highlighting the exceptional value of being able to practically apply classroom training *and receive academic credit* for this real-world experience. Ms. Sawada emphasized the opportunity for mentoring and developing a real connection to the university and was proud to report that many students tell her it was "the best experience they ever had at UBC".

Campus: capacity & community

However, as at the University of Toronto, the heart of the success of applied research lies not only in its value to students but in its value to the entire university community. While students gain exciting research opportunities, staff and administrative members gain useful information and practical solutions for their areas of operation. SEEDS provides the mechanisms for university members to work together to tackle issues of concern to them, but for which they, separately, lack the financial, networking, or time resources needed to make a difference. Further, with hundreds of students and dozens of staff and faculty involved each year, Ms. Sawada argued that SEEDS is working on a scale large enough to build and strengthen community, creating not only opportunities but an environment of, and expectation for, collaboration across the campus.

Context: Situation at McGill

Opened in February 2009, the McGill Office of Sustainability is an important step forward for the institutionalization of sustainability at our university. Intended as a catalyst for the campus community, the Office's mission is to "create a culture of sustainability at McGill". The establishment of this administrative office with two dedicated staff positions is certainly something to be proud of, and a step that the majority of our peer institutions in the G13 have not yet taken. However, the McGill Office of Sustainability is not yet able to take full advantage of the applied student research model.

Placed within University Services, the McGill Office of Sustainability was created to work directly with the operations side of our university. As Jim Nicell, Associate Vice-Principal, University Services, emphasized, because of the amount of deferred maintenance in McGill's physical infrastructure, working on renovation and maintenance presents one of the largest opportunities for implementing sustainability on our campus. This focus is reflected in the responsibilities of the Office's two staff positions.

The Environmental Officer, currently Ms. Kathleen Ng works directly with the Office of Planning and Institutional Analysis and is occupied primarily by managing environmental assessments and reporting. While the Sustainability Director position was designed to facilitate the incorporation of sustainability throughout McGill's operations, Director Dennis Fortune's focus is coordinating with staff across University Services, not with academic departments or administration. Mr. Fortune has already been directly involved in a number of student-led applied research projects *(see Appendix II, the McGill Food Systems Project)*, but primarily by providing assistance, not coordination. While both the Environmental Officer and Sustainability Director are crucial positions, they are both *full* positions, established to work with the operational side of the university. It is neither possible nor appropriate for either to take on the additional work of networking with faculty and directing students, nor would this be an efficient use Ms. Ng's or Mr. Fortune's expertise. However, without more capacity, the Office of Sustainability will not be able to be

more than a valuable resource to external initiatives, and without coordination, it will be difficult for applied student research to be developed outside of a handful of small, disconnected projects.

This is a disadvantage for McGill. “The low hanging fruit” of operational improvements are, as emphasized by Mr. Nicell, the area where the Office of Sustainability can produce the largest benefits to the university now, and applied student research could help this process significantly. However, currently lacking the capacity or administrative connections to “encourage and *unite the efforts of students, faculty, staff and administrators* to incorporate principles of sustainability in university operations, campus living *and learning*” (McGill Office of Sustainability 2009, emphases added), the Office will not be able to make use of the model which has proven so valuable at the University of Toronto and the University of British Columbia. We are one step closer, but still not fully able to bring all the university’s resource together to address sustainability at McGill.

Recommendations

Though the experiences of our peer institutions provide a map of the opportunities to capitalize upon and the disadvantages to avoid on the path to sustainability, they don’t provide a finished model. No one is “good” at sustainability, because we haven’t reached it. We don’t even know what a sustainable campus will look like, but we do know where to start. We need to learn together, building off each other’s strengths to design something which has never existed before: a modern culture of sustainability.

The following recommendations are drawn from an analysis of the current situation at McGill and the best practices identified at the University of Toronto and the University of British Columbia. To effectively implement the applied student research model, the McGill Office of Sustainability needs to strengthen its ability to work with the academic side of our university. Based upon interviews with students and administrators at McGill and our two peer institutions, it is suggested that the following specific needs must be addressed:

1. Access to the academic community

Students and professors are two fundamental actors in the applied research model. Students provide the time, energy, and training necessary to do the actual research, while the technical knowledge, student mentoring, and research oversight professors provide is vital to the success of each project. However, being able to attract interested students and find appropriate professors requires far-ranging connections across departments and faculties, while designing projects which work within the confines of course focuses, semester schedules, and degree requirements takes a thorough understanding of academic particularities and politics.

Though they used significantly different models to provide this capacity, both case-studies emphasized the necessity of being able to think, network and collaborate within the framework of their own academic communities. At the University of Toronto the academic-operations co-chair structure fulfilled this need for the Sustainability Office as a whole. The faculty-filled position of Sustainability Director ensured connection to the university's students and professors and a background in wider academia. While the University of British Columbia's Sustainability Office lacked this direct connection, the establishment of a recognized program (SEEDS) for applied research and the initial oversight of students and staff on a special advisory committee allowed a dedicated coordinator to *develop* the necessary networks and experience to work effectively with their academic community.

✓ *McGill's Office of Sustainability needs a personal connection to our academic community. This will facilitate building good working relationships with students and professors, designing effective research projects, and developing recognition and participation across departments and faculties.*

2. Coordinating capacity

While access to both academic professors and students, and operational administrators and staff, is crucial, alone it won't translate into successful applied student research. Projects need to be designed, students and professors to be found and directed, staff consulted, meetings organized, research facilitated, useful reports produced, results shared and put into practice — in short: the entire research process needs to be coordinated from conception to implementation. The goal is not only to oversee highly involved students, staff or professors who already have the confidence, vision, and connections to seek out and establish their own projects, but also to manage a system which creates opportunities for all interested community members to contribute. Someone needs to be responsible for cultivating dialogue and cooperation and managing negotiations between these actors, bringing together all the resources necessary to support them and produce effective, tangible results. This is no small task, and requires reliable, long-term commitment, focused attention, and significant skill and influence.

At UBC, this capacity is provided by the manager of the dedicated applied research program, SEEDS. At the University of Toronto, where applied research does not have its own program but is used by the Office as a whole, the capacity is filled between the Sustainability Office's two co-coordinators and the multiple interns overseeing individual projects.

✓ *The McGill Office of Sustainability needs a minimum of one position to directly oversee the development and implementation of applied research projects, and coordinate supporting resources and the collaboration of students, professors, staff and administrators.*

3. Support of the academic administration

The strength of the applied student research model is that it brings together all the resources of the university to address campus sustainability. By using research to develop solutions to real issues in the infrastructure and running of the campus, it ensures that both the operational and academic sides of the university are not only engaged, but actively collaborating to improve student experience, develop a healthy and responsible university community, and build knowledge and technology for a sustainable society. By definition, the coordination of applied research thus requires both a close relationship with the administrative departments and staff that oversee the physical infrastructure and operations of the university, and those that coordinate its academic teaching and research.

This is the area in which the two case-studies differed most significantly. The University of Toronto's Sustainability Office uses a dual-reporting structure under which it's academic and operations co-chairs each report to a high administrative position on their respective side of the university. UBC's Sustainability Office, however, has no direct reporting relationship to academic administration. Its Director emphasized that this has been a weakness, making it much more difficult to officially coordinate broad-based integration of sustainability into the university's curriculum and research, outside of the project-by-project work of its SEEDS program. Despite this difficulty, applied student research is being used on a significantly larger scale at UBC than at the University of Toronto; however, it is important to recognize the two very different contexts. UBC's SEEDS applied research program was started in 2001 and came into an already well-established and highly successful Sustainability Office running since 1998, while the University of Toronto's Sustainability Office opened only in 2004 but has been growing quickly. Thus, though applied research has worked well at UBC, the lack of direct support and involvement of the university's academic administration has been a weakness of this Sustainability Office, while the presence of these connections has been a strength at the University of Toronto. Further, the dual-reporting structure used at the University of Toronto has not only been very effective there, it is a widely respected model also being used at the University of Alberta, as well as at Harvard and Yale.

✓ *An active relationship with the university's academic administration would enable the McGill Office of Sustainability to engage actors and resources from across the entire university community, promoting the integration of sustainability into the university's teaching and research and providing legitimacy and support for applied student research.*

4. Bottom line: Start now, work from where we are

While all components identified above have been crucial to the success of the applied research model at the University of Toronto and the University of British Columbia, they are capacities that were built over time and whose necessity emerged through practical experience. The common thread that ties together the different reporting structures and coordination approaches between the universities studied and referenced is that they were

systems developed to work within their own institutional contexts. Thus, though it is important to learn from the strengths and weaknesses of the models used at these peer universities, the most valuable resource will be the experience gained from our own efforts. Without question, the first step to developing a system for applied student research is to identify our opportunities and start where we can.

Partnering with existing upper-level courses is one important opportunity. Seminars, independent studies, and honours theses have been some of the most successful partners of both UBC's SEEDS program and the University of Toronto's Sustainability Office, and established high-level research courses are a major focus at the University of Waterloo and Brown University. Supported by their campus Sustainability Offices, these established course structures provide ideal vehicles to start coordinating applied student research. Facilitating access to necessary data and staff positions enables research to be done on relevant and pressing issues that exist on campus, while coordinating the design, implementation and reporting of these projects with staff and administration ensures that practical results are produced and put to use.

At McGill, faculties from Arts and Science to Agriculture and Management already offer courses which provide applied student research opportunities. Through the partnership and support of the McGill Office of Sustainability, many classes which don't currently focus their research on McGill could be easily adapted to examine our campus, while courses that are designed to work directly with the community, such as ENVR-401 Environmental Research and MGCR-360 Social Context of Business, could be made much more effective if coordinated to fit into the larger projects of the university. New relationships and additional positions will be essential to provide the Office with the connections to the academic community, adequate coordinating capacity, and administrative support necessary to successfully coordinate applied student research on a university-wide scale. However, it is also important to recognize our existing resources.

This is only McGill's first year with a Sustainability Office, and our second with a Sustainability Director. These are critical achievements to be built upon. Already, Mr. Fortune has developed experience working with student initiatives. His position has the potential to formalize its involvement with student research, providing an official conduit for working with the operational side of the university and facilitating the establishment of the connections with staff and administration required for each project. What is needed is a decisive effort to continue this direction, a public commitment to developing this capacity. The more it is supported, the more quickly applied student research can be expected to prove its worth.

✓ *Building off the examples of peer institutions, identifying our existing resources, and generating our own experience, we will develop our own path forward. McGill needs to start coordinating the applied research model now.*

Summary: Benefit to McGill

Applied student research offers an exceptional opportunity for McGill. By providing an integrated approach to sustainability, it will not only involve, but will benefit, all actors within our campus community.

Research for students and professors

Applied research is a different approach to education. It will provide hands-on, practical experience for students — a chance to work in their field while still at school, and receive credit for using their skills and knowledge to make a real contribution to improving our campus. By implementing the applied student research model, McGill will be taking an important step to meeting its goals set out in the 2006 white paper, Strengths and Aspirations, to

> *"Guarantee that students have access to meaningful research experiences during the course of their studies ... [and] Expand the research opportunities for our students by creating optimal synergies between teaching and research" (Masi 2006)*

For professors, it is important to clarify that the involvement with the McGill Office of Sustainability would not restrict academic freedom. Quite the opposite, the Office would facilitate faculty research, providing the connections and coordination necessary for professors and their students wanting to study the local representation of global concerns, creating the opportunity to work with staff and administration to solve the pressing sustainability issues which exist on our own campus.

Resources for staff and administrators

McGill wants to reduce costs and improve the sustainability of its campus infrastructure. The Associate Vice-Principal, University Services emphasized that the creation of the Office of Sustainability was intended to meet both these needs: saving money and reducing environmental impact through targeting the low-hanging fruit of energy efficiency. However, Mr. Nicell also stressed that McGill's greatest asset is the "renewable resource" of students. Applied student research provides a means to tap into and channel this incredible flow of constant energy and talent. Employing the expertise of students and professors will not only reduce our reliance on costly external consultants, it will also provide new access to academic funding sources. With an ever-aging campus infrastructure and a tightening budget, McGill's growing student population is an unparalleled source of cheap, innovative and practical solutions, eager for the opportunity to get to work.

Position as a social leader

It is the university's role to develop and test new ideas and technologies, and applied student research is a vital resource in this mission. Using the university as a living laboratory, McGill has the potential to develop pioneering solutions appropriate not only for our own campus, but applicable, and essential, to wider society.

Support for a sustainable university community

To develop a culture of sustainability at McGill we will need not only awareness, but participation from across the university. As McGill's Sustainability Director emphasized, the McGill Office of Sustainability can not make the university sustainable, that will and must remain the responsibility of every individual person, department, and faculty. We each have a part to play, and it is only through working together that our common goals will be reached. The Office of Sustainability has been founded to facilitate this discussion and collaboration, and applied student research holds the key to coordinating the work of all actors within our campus community.

By offering a transformative student experience, facilitating pioneering research, *and* supporting cutting-edge campus facilities and infrastructure, applied student research will continue McGill's reputation for leadership, excellence, and innovation. Implementing this model is the first step not only to sustainable campus infrastructure, but also to a more sustainable campus community.

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Appendix: Recommended qualifications for applied student research coordinator

The following recommendations are based upon a synthesis of best practices identified from the case-studies of the University of Toronto and the University of British Columbia.

Two models:

- A well-established faculty member (University of Toronto)
- A non-academic, supported by an advisory committee (University of British Columbia)

Faculty member qualifications:

- Established academic, with a relevant publication record, and well-respected in the university's academic community

- Understands the academic research process but is no longer focused on contributing through their own publications

- Ready to dedicate themselves to engaging with the campus community outside of the classroom, passionate about finding practical solutions to sustainability, and enthusiastic to work directly with the administration and staff who oversee the university's physical operations

- Comfortable within the university's political system and is able to deal with the complexities and idiosyncrasies of working within the framework of institutional administration and governance

General qualifications

- Experience in program management, coordination of multi-stakeholder projects

- Skilled in facilitation and negotiations, is able to create an open and inclusive environment for collaboration

- Able to develop a positive working relationship with individuals from many different backgrounds and perspectives, eager to work with professors, students, staff, and administrators

- Looking for a multi-year position, able to commit to long-term program development