



Academic Sustainability Programs

Annual Report | 2014 - 2015

A Letter from the Senior Manager

McMaster's Academic Sustainability Programs (ASP) Office has recently completed its inaugural year of operation. In July of 2014, the former Office of Sustainability underwent a reorganization, which divided the office into its operational components, now overseen by Facility Services, and its academic components, now overseen by the newly created Academic Sustainability Programs (ASP) Office. While previous reporting was conducted on an annual basis following the calendar year, and maintained a focus on university sustainability operations, the new reporting structure and design has been developed to meet the mandate of the new ASP Office. In addition to providing a summary of the priority programs and major initiatives of the ASP Office, the goals of the new reporting structure are two-fold: 1) to highlight the achievements of the students who have taken part in one or more academic sustainability programs with support from their community, faculty, staff, and fellow student supporters, and 2) to align the reporting timeline with the academic year in such a way that students who contribute to the report have the opportunity to utilize the document in their future endeavors as soon as possible. The 2014/15 report includes all projects that took place from September 2014 through to August 2015. All projects found within one of the ASP priority programs, including the Sustainable Future Program, the Sustainability Internship Program, and the Graduate/Undergraduate Collaboration in Experiential Learning (GUCEL) Program have been authored by the students who led the specific projects.



As you read this report, you will notice that the breadth of student interests related to sustainability is far reaching. Projects range from construction of a solar power generator, the development and implementation of campus-wide survey on attitudes towards bike sharing, to executing interactive community events that aimed to educate the McMaster community about the importance of the Bruce Trail.

I hope you enjoy reading this report as much as I have enjoyed my experience in working with the individuals who have created it.



Kate Whalen

Kate Whalen
Senior Manager,
Academic Sustainability Programs



Mission

The mission of McMaster's Academic Sustainability Programs Office is to provide all McMaster students with the opportunity to take part in interdisciplinary, student-led, community-based, and experiential learning focused on sustainability. A key component to achieving this mandate is by developing and fostering strong community connections, both within the University and the broader city of Hamilton.

Priority Programs

McMaster's Academic Sustainability Programs Office includes the following programs listed below.

- Sustainable Future Program: A suit of three undergraduate courses focused on sustainability. Courses are open to all students, independent of their home faculty.
- The Sustainability Internship Program: An opportunity for students to develop and implement a real-world sustainability project and receive course credit from their home faculty upon successful completion.
- Graduate/Undergraduate Collaboration in Experiential Learning (GUCEL): An opportunity for students to work in collaboration with undergraduate and graduate students to develop and implement a real-world sustainability project and receive academic recognition upon successful completion.
- Interdisciplinary Minor in Sustainability: An opportunity for students to choose from a list of sustainability courses from each faculty to direct and tailor a minor that would complement their undergraduate degree and education.

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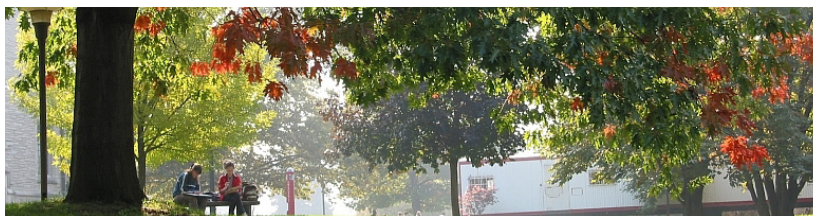
Interdisciplinary Minor in Sustainability

Overview

Initiated in February 2013, and approved by the Undergraduate Council in December 2013, the first offering of McMaster's Interdisciplinary Minor in Sustainability took place in September 2014. Communicating this new minor to current and incoming students is integral to ensuring students are supported in learning more about the minor and, if interested, integrating the necessary sustainability courses into their course load. Furthermore, the one required course for the minor, Sustain 1S03, is only offered during first semester. Due to limited flexibility for electives in some programs, it is important for students to know of this requirement well in advance so that they have the opportunity to complete the minor without taking additional courses later in their undergraduate career.

Objectives

- 1 Promote the minor to current students
- 2 Distribute communication about the minor to incoming students
- 3 Connect with faculties and departments for additional support to promote and communicate the minor



Reporting

Initiated in February 2013, and approved by the Undergraduate Council in December 2013, the first offering of McMaster's Interdisciplinary Minor in Sustainability took place in September 2014. Within this inaugural year, we have already seen 5 students declare an Interdisciplinary Minor in Sustainability. That students were independently pursuing a course of study in sustainability demonstrates the latent demand for this minor. Some students took an expanded course load in their final year to be able to obtain the minor, showing both that there is interest in the minor and that the requirements and process are working effectively in tandem.

To effectively communicate and promote the minor broadly across McMaster this past year, various outlets were used:

- Social media and email communication were sent to each faculty to assist with dissemination, and posters were placed across campus as well as given to each faculty to place in key locations, such as in student lounges and on message boards.
- Connections were made to various student groups, such as MSU clubs and services, as well as faculty-specific groups, student societies, and special interest groups.
- The minor had a presence at university career and recruiting events in order to highlight the minor as well as other academic sustainability programs.
- In-class presentations were made to students in each of the Sustain courses reaching approximately 250 students.

- Two power-point slides were prepared and distributed by minor committee members throughout their faculty. One slide was prepared for those instructors who taught courses associated with the minor, of which there are 56 courses. The second slide was prepared for use by instructors who taught large first-year courses with the goal to help educate first-year students about the minor.
- Information has been drafted for inclusion in first-year handbooks that are sent to all incoming students upon acceptance into McMaster. During this initial year, a focus was placed on preparing information for students entering into the Faculty of Engineering. Engineering students experience the most difficulty in pursuing a minor due to course constraints governed by the Canadian Engineering Accreditation Board.

While promotion and communication efforts have been quite successful, we will strive for greater reach next year by connecting with each faculty to include information about the minor into each first-year handbook.

Collaborators: We would like to thank all members of the Interdisciplinary Minor in Sustainability Committee for their support with promotion and communication: Brent McKnight, Assistant Professor, DeGroote School of Business; Kate Whalen, Senior Manager, Academic Sustainability Programs Office; Luc Bernier, CLA, School of Geography and Earth Sciences; Cameron Churchill, Director, Engineering and Society Program; Carlos Filipe, Professor/Chair, Chemical Engineering; John MacLachlan, Assistant Professor, School of Geography and Earth Sciences; Judy Major-Girardin, Associate Professor, School of the Arts; Dean Mountain, Professor, DeGroote School of Business; Susie O'Brien, Associate Professor, Department of English and Cultural Studies; Maureen Padden, Assistant Professor, School of Geography and Earth Sciences; and Sandra Preston, Assistant Professor, School of Social Work. We would also like to thank the countless instructors and teaching assistants who helped spread communication about the minor, and the staff who provided us with additional avenues of communicate related to specific programs and faculties. Our physical presence at career and recruiting events provided even further opportunities to connect with students and would not have been possible for the departments and groups who have organized these events.

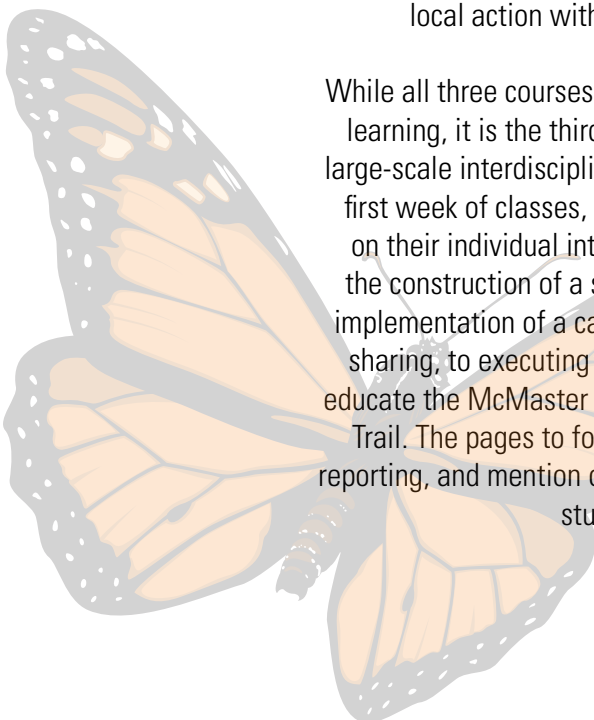
The Sustainable Future Program

Developed in 2012, with the first course taking place in January 2013, the Sustainable Future Program (SFP) now consists of three courses; SUSTAIN 1S03, SUSTAIN 2S03, and SUSTAIN 3S03. The most recent of these courses, SUSTAIN 1S03, was implemented for the first time in September 2014. McMaster developed the SFP for students interested in learning about sustainability while having the opportunity to engage in experiential learning through developing and implementing real-world sustainability initiatives. The SFP aims to build reciprocal relationships between students, community members, and McMaster University to engage all parties in the journey towards a sustainable future.

The objectives of the program are as follows:

- Teach students about sustainability from an interdisciplinary perspective.
- Provide the opportunity for self-directed, interdisciplinary, and experiential learning.
- Support student learning within the University and local community.
- Engage undergraduate students in taking part in meaningful, experiential research.
- Foster opportunities for students to place local knowledge and local action within a global context.

While all three courses include opportunities for student experiential learning, it is the third year SUSTAIN 3S03 course that includes a large-scale interdisciplinary project within the community. During the first week of classes, 40 students formed 10 project groups based on their individual interests in sustainability. Projects range from the construction of a solar power generator, the development and implementation of a campus-wide survey on attitudes towards bike sharing, to executing interactive community events that aimed to educate the McMaster community about the importance of the Bruce Trail. The pages to follow provide an overview, list of objectives, reporting, and mention of the various collaborators who supported the students with their projects.





Bruce Trail Conservancy Community Outreach Project

Student Authors: Moeed Ahmed, Jasjit Birk, Danielle Bove, Elise Desjardins, Ingrid Farnell, Christina New, Sofia Romero Gonzalez and Lindsey Wellstead



Overview

The Bruce Trail Conservancy (BTC) is a non-profit organisation focused on the conservation and protection of over 800km of public footpath, stretching along the Escarpment from Niagara to Tobermory. 50% of this land remains vulnerable to development. The ability to protect and purchase associated properties is made possible by donations, 50% of which is donated by private donors, who largely fall within an older demographic. A similar trend can be seen within those who volunteer on the trail itself. In order to continue the protection of its diverse ecosystems and the endangered species within, involvement of a younger demographic is necessary.

The Bruce Trail Conservancy Community Outreach Project (BTCCOP) aimed to address the situation through social media campaigning, concluding with a student-led event featuring educational speakers.

Objectives

- 1 Create awareness in the McMaster student body about the BTC
- 2 Organize and host an educational hike and event at McMaster to raise awareness and support for the BTC
- 3 Develop an effective BTC awareness campaign and identify potential marketing strategies to appeal to younger demographics

Reporting

The BTCCOP launched popular social media pages, Facebook, Twitter and Instagram under the handle 'Bruce Trail at Mac'. Through these accounts, we have been able to reach 143 followers with 2000 engagements. These platforms were successful in promoting the Sherman-to-Tiffany Falls Hike. Of the 54 participants that attended, 38% heard of the event through social media.

The Sherman-to-Tiffany Hike familiarized attendees with the Bruce Trail and helped them understand its incredible importance. Moreover, the hike facilitated relationships between McMaster students and the BTC since several of the organization's representatives were present at the hike.

The 'Bruce Trail Your Way' educational event included speakers from the BTC, the Cootes to Escarpment EcoSystem Park and Mountsberg Raptor Centre, whose interactive lecture included a demonstration involving live birds of prey. Attendance peaked at 65 participants: 36 students, 2 staff and 27 community members, 14 of which registered for more information. Survey results showed 100% of attendees left with increased awareness of the BTC, successfully achieving the primary objective of the BTCCOP.



The Sherman-to-Tiffany Hike

Collaborators: We'd like to thank project Champion Jan Graves and Marsha Russell of the BTC for their support and guidance, Wayne Terryberry of McMaster Outdoor Recreation who provided sponsorship as well as mentorship, Kate Whalen from the Academic Sustainability Programs Office who provided logistical support and Tom Omorean who photographed and donated his time for the hike.

Facebook: www.facebook.com/pages/Bruce-Trail-at-Mac

Twitter: www.twitter.com/BruceTrailatMac

Instagram: www.instagram.com/brucetrailatmac

Youtube Hike Video: https://www.youtube.com/watch?v=3Cc_sWgxTPs&feature=youtu.be

Building a Portable Solar Generator

Student Authors: Saad Amjad, Aathiq Hameed, Nilushi Kariyawasam, Nabil Khaja and Onkabetse Lekgwere

Overview

Solar power is a sustainable, renewable, and non-polluting source of energy. Although the creation of solar-powered systems is associated with a high fixed cost, the continued generation of solar energy is low-maintenance and more economical over the long term relative to traditional sources of energy. The focus of this project was to test the feasibility of constructing a “Do it Yourself” solar generator for use on Dr. Michael Mikulak’s teaching farm, Common Ground. Our goal for the generator was to measurably reduce the amount of wasteful energy consumption on the farm while demonstrating the practicality and environmental benefit of solar power to students and members of the community. The generator is also designed to be an emergency backup power source that can sustain farm equipment and act as a reliable source of energy, in the case of a power outage.

Objectives

- 1 Consult local Canadian technology manufacturers to optimize cost, performance, and longevity
- 2 Construct a functioning 1600W portable solar generator for use at a local teaching farm
- 3 Perform a life cycle analysis to compare the environmental impact of the proposed generator to existing infrastructure on the farm

Reporting

Imagine your own 1600W rechargeable power system. We wanted to build a powerful, noiseless, pollution free, cost-effective and most of all portable solar generator. With the help of a local technology manufacturer, Gennex Technologies, we purchased the major components of the solar generator at a subsidized cost of \$1300. These specialized parts cannot be ordered through local hardware stores, and can cost over \$2500 if purchased at the existing market price from other vendors.

The final build is compactly stored in a weather-resistant portable Stanley tool cart with dimensions approximately 1.5 ft by 2.5 ft. The construction process requires some technical expertise. The generator will be used at Dr. Mikulak’s teaching farm. Should the farm lose power, the generator can output up to 1600W of power for up to 3 hours on a load of 100% or 12 hours on a moderate load of 50%. The generator will be used to power a freezer in the effort to keep produce cool while



Team members working on the solar generator



The final product

also powering a 0.75 horse power sump pump in the case of flooding. A peak power report was developed alongside the device to inform users how to angle the panel to maximize its power generation in Hamilton’s climate. Our completed life cycle analysis indicates that the generator can last up to 15 years and the batteries up to 3 years.

Collaborators: We would like to thank Dr. Michael Mikulak for his instructional support and for funding this project, as well as Gennex Technologies for providing all the necessary hardware to make our project possible at a subsidized cost.

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The Green Red Cup

Student Authors: Basmah Ahmed, Cristian Ivascu, Erik Jurriaans, Marijke Jurriaans and Amanda Watkins

Overview

The red plastic cups commonly used at parties are an iconic staple among university students. They're handy, disposable, and widely available, but their composition is far from environmentally friendly. Our mission is to develop a prototype of this iconic red cup that is 100% compostable, while still maintaining the original aesthetic appeal. The Green Red Cup (GR Cup) will help reduce the amount of polystyrene waste, and change people's minds about composting and environmental sustainability. By designing the cup, creating awareness, and developing a business plan, we hope to not only fashion an accessible and sustainable product, but to show people that sustainable products can be easily incorporated into current lifestyles and patterns.

Objectives

- 1 Design and refine the process to create a red polylactic acid (PLA) biodegradable cup and develop a prototype
- 2 Work with local composting programs to find the best way to dispose of cups
- 3 Draft a business plan to be used for potential marketing
- 4 Create awareness about the product and the cause

Reporting

The project began by developing an AutoCad model of the PLA red plastic cup. The model was constrained through a physical template made from medium-density fibreboard meeting size and design requirements of the final cup. This template will be used for thermoforming, the processes used for manufacturing. By purchasing plastic pellets, sheets were produced in-house and used to develop one prototype of the cup. This prototype did not meet shape requirements and will be modified in future revised prototypes.

The current prototype is in the process of being tested for its ability to compost. Walker Environmental Group has entered into an agreement with GR Cup that will allow the first prototype to be tested in its 8-week composting system. This trial will be complete in early 2015.

A 10-question survey was distributed to 50 students to determine purchasing habits, price sensitivity, and consumer interest in sustainable products. This information aided in the draft of a 3-page business plan which used survey responses and secondary resources to determine pricing, product features, packaging, patenting, and the possibility of taking the product to scale. This working draft outlines short-term (6 months) and long-term goals (1-2 years) to guide GR Cup in its initial stages.

Through a Kickstarter campaign, \$707 was raised to purchase the supplies to develop the prototype. GR Cup finished its campaign with 27 supporters and 713 campaign views. Through Facebook, the GR Cup gained 234 followers, with a total reach of 614 unique users. It had its marketing messages shared through MacGreen's and Sustainability @ McMaster's networks, reaching 1,129 students and members of the Hamilton community. GR Cup presented at the McMaster Innovation Showcase, where a two-minute pitch was presented to a panel of judges. This allowed GR Cup to grow its presence in the McMaster start-up community.

Collaborators: Dr. Thompson, Director, M.Eng in Manufacturing Engineering; "Project Champion" and group mentor; Glenn Crossley, Business Development Advisor, Physical Sciences and Engineering; Patent and legal support; MacGreen: Social awareness support and networking; Sustainable Future Project Facebook Group; Aaron Mimmagh, Procurement Manager, Colourfast Printing; Richard Laurin, Account Manager, Designed Structures and Solutions, Ontario, Canada, PolyOne Corporation; Kendall Justiniano, Marketing Direction, Custom Engineered Structures, PolyOne Corporation; Clealand Berwick, Lead Hand, McMaster Engineering & Science Machine Shop; Diana Aquino, Organics Process Analyst, Walker Environmental Group

Web Page: greenredcup.wordpress.com

Facebook: /GreenRedCup

Twitter: @GreenRedCup

Hamilton Bike Share at McMaster

Student Authors: Rachel Brain, Thomas Nokes, Alexandria Rees, Maia Stevenson and Kristina Vucenic



Overview

Bike share projects are a public service that allow individuals to use bicycles on a short-term basis. Hamilton's 1.6-million-dollar bike share initiative will use 4th generation systems, in which the bike share technology is integrated into bicycles rather than docking stations. Many North American campuses have already made a successful transition to this new technology and lifestyle, but uptake of new bike share programs does not always occur smoothly. Identifying barriers to successful uptake among students can guide effective communication and marketing strategies. The experiences of other campuses, combined with survey data collected from students and staff at McMaster University, was used to recommend preemptive measures that will encourage uptake of the bike share system within the McMaster community upon its launch in March 2015.

Objectives

- 1 Conduct background research, and prepare and distribute a survey within the McMaster community
- 2 Analyze survey results, develop recommendations based on survey data and research conducted on other bike share initiatives that can be impactful on a university-wide scale
- 3 Share results with members of the campus community and the SoBi Hamilton team

Reporting

Research on bike share systems in other university-centered cities, such as Montreal and Boston, informed preliminary discussions and the creation of meaningful survey questions. We developed survey questions that incorporated the key concerns of more experienced bike share teams, such as winter weather, safety concerns, and issues with registration. The survey was shared online through Facebook groups and cooperative clubs on campus. Other advertising techniques involved writing the survey link on classroom chalkboards and handing out flyers. Over 470 students and staff responded.

Over 60% of survey respondents named "cost" as a factor likely to prevent them from using the bike share system. When asked what would most encourage them to use the system, 46% answered "including bike share membership in student fees".

Almost 70% of the respondents aged 18 and under had not previously heard of the bike share system. Furthermore, 36% of all students surveyed cited "preferring to use their own bikes" as a barrier to their use of the system. Based on survey data and the experiences of other bike share programs, we developed recommendations for facilitating the uptake of the bike share program at McMaster: reducing rates for new users over a finite period of time, approaching the MSU about including membership fees in student fees, and providing incoming students with information on the system in their welcome packages. Information included in welcome packages should educate students about how SoBi's bike share system works and inform them about the advantages of bike share systems over personal bike ownership.

Our results and recommendations will be shared with SoBi Hamilton in the form of an in-depth written report. We will also share our conclusions with the McMaster community by posting our report on the website of the Sustainable Futures Department and by approaching the MSU with recommendations.

Collaborators: Survey implementation was facilitated by the members of this student group and the McMaster Sustainable Transportation Services (MSTS). The community project champion is Peter Topalovic, and he was responsible for providing information on the SoBi Hamilton system as well as advising the group throughout the project. Chelsea Cox, from SoBi Hamilton, also provided information and guidance throughout the process. An iPad Mini was provided as a prize for one randomly selected respondent. A number of McMaster clubs helped with data collection by distributing our survey link among their members and within their social groups.

Online Report: <http://goo.gl/eP0Qtr>
SoBi Hamilton: <http://hamilton.socialbicycles.com/>

Local Quinoa Project

Student Authors: Crystal Chan, Kimberly Dowell, Ana-Maria Qarri, Julia Redmond and Michael Spencer

Overview

In the last few years, the global demand for quinoa has soared due to its establishment as a superfood. Since quinoa is primarily grown in South America, the high demand has created various sustainability issues, namely, the environmental impacts associated with shipping quinoa around the globe.¹ The project's purpose is to research and develop methods of harvesting and processing quinoa locally and raise awareness about the sustainability issues surrounding commercial quinoa production. The initiative will take place on Common Ground Teaching Farm, with an aim towards scaling up for larger farms. This project will help demystify issues surrounding quinoa by sharing our findings with farmers, business owners and consumers in the area.

Objectives

- 1 Harvest quinoa grown on Common Ground Teaching Farm
- 2 Identify the most efficient method to process and dry the quinoa after it has been harvested
- 3 Determine how to upscale the harvesting and processing of the quinoa for larger yields in future growing seasons
- 4 Determine how to raise awareness to consumers, business owners, farmers and local food activists about growing quinoa in Ontario and the socio-economic benefits to producing quinoa locally

Reporting

To help create awareness about the socio-economic issues associated with conventional quinoa production, Common Ground Teaching Farm in Hamilton has worked collaboratively with us to determine the best methods of harvesting, processing and marketing locally-grown quinoa for consumption. Together, we hand-harvested 0.75 kg of quinoa, which entailed stalk removal and sifting through undesirable plant debris, as well as washed and dried the crop. The best methods of processing were determined based on time efficiency, resource efficiency and utilizing the least amount of labour. This project has gauged the costs and labour associated with harvesting and preparing quinoa for consumption to determine that it could be feasibly grown on a large scale in the more humid than ideal climate of Southern Ontario. Furthermore, the initiative has provided information for consumers about the importance of eating quinoa locally through informational brochures, which will be available in the near future for consumers of community grocery stores or Common Ground Teaching Farm community-supported agriculture (CSA) members. A packaging and logo template has been created for the quinoa grown, which will give a background to buyers about the farm and what it is trying to initiate by growing quinoa. The package and logo will be used for packaging next year's quinoa production, where it will be sold to community grocery stores, such as The Mustard Seed, which have expressed interest in selling it, or CSA members of the Common Ground Teaching Farm.



Crystal and Julia process the first round of quinoa using a screen

Collaborators: In collaboration with Common Ground Teaching Farm, the Local Quinoa Project team harvested, processed and marketed local organic quinoa with support from academic supervisor and community project champion/mentor, Dr. Michael Mikulak, Sessional Professor in the Sustainable Future Program and non-academic supervisor Kate Whalen, Senior Manager, Academic Sustainability Programs. Notable mention goes to The Common Ground Farm for providing local organic quinoa for experimental harvesting and processing.

Common Ground Teaching Farm Website: <http://www.michaelmikulak.com/current-projects/>

¹Romero, S., & Shahriari, S. (2011, March 20). A Food's Global Success Creates a Quandary at Home. The New York Times , A6.

Solar-powered McMaster

Student Authors: Aqsha Adam-Haji and Brandon Huzevka

Overview

The project envisioned proposes an energy efficiency initiative, based on the simple concept of a portable solar-powered generator. This initiative is one part of a larger two-part project to prototype and install a simple, portable solar-powered generator on a local Hamilton farm. The intention of these two projects is to use the farm generator to exemplify to McMaster students, staff, and faculty that sustainable energy sources can be easy to implement and can provide a viable alternative to non-renewable sources. By implementing a solar-powered system on a small organic farm, the process of producing food becomes increasingly sustainable, and promotes self-sufficient food generation. In addition to this, the do-it-yourself (DIY) aspect ensures that the construction of the generator is practical and achievable using simple and locally-sourced individual components.

Objectives

- 1 To learn how to build a DIY solar generator and contribute to the knowledge base for Building a Portable Solar Generator project (see page 6)
- 2 To subsidize some of the costs of the solar panel through external funding sources
- 3 To spread awareness within the McMaster community of students, faculty, and staff regarding the benefits of solar generators

Reporting

We began our project by obtaining solar equipment at a reduced cost through Gennex Technologies. Although there were initially some issues with the delivery of the components, once the miscommunication was resolved the components arrived. As project B commenced the build, we started to document progress and work towards creating an Instructable, that will be available on the website below. Upon the completion of the website, we began to spread awareness throughout the McMaster community through short (5 minute) introductions in classes pertaining to sustainable energy.



The informational website containing content related to sustainable energy resources

Our approach to objective 2 was indirect, as the acquisition of funding was directly tied to grant application. While initially we sought private sponsors to fund a small demonstration, we were unsuccessful in reaching our financial goal. Although this setback was disappointing, we decided to change our approach to the issue of funding by directly applying for grant funds. As the completion of a grant proposal for funding was a parallel course objective, we are currently working towards a grant for a portable solar generator.

Overall, we are confident that we were able to contribute further to the collective consciousness of McMaster students regarding sustainable energy sources. We are thrilled that we were ultimately able to complete our major goals, and are hopeful that many students were inspired by the class talks we gave. Finally, we believe that the website we created will continue to provide knowledge on solar energy for the McMaster, Hamilton, and global communities.

Collaborators: This project was made possible with the support of Community Project Champion Michael Mikulak, in collaboration with Saad Amjad, Aathiq Hameed, Nilushi Kariyawasam, Nabil Khaja, and Onkabetse Lekgwere from Building a Portable Solar Generator. We would like to thank Kate Whalen and the Academic Sustainability Programs Office for guidance and support throughout the project. We would also like to thank Gennex Technologies for providing us with reduced cost components for our project.

Website: <https://solarpoweredmcmaster.wordpress.com/>

Textbooks for Change

Student Authors: Jeremy Bober, Emily Guan and Matthew Thomson

Overview

Textbooks for Change, which is a B-corporation, aims to take the surplus of quality educational material and distribute it to those who lack the resources to purchase expensive textbooks. Drop boxes are set up in high traffic areas in universities/colleges across Ontario where students can donate their unwanted textbooks. These textbooks are then taken to a warehouse where they are evaluated and repurposed. A large portion of the textbooks collected are sent to universities and colleges in Africa that are in need of high quality educational material. Our group brought this campaign to McMaster, in the form of increasing awareness and driving textbook donations so that Textbooks for Change can continue to grow and reshape the educational landscape both at McMaster and abroad.

Objectives

- 1 Provide educational resources to students in countries with socioeconomic disadvantages
- 2 Reducing the environmental impact by recycling and reusing used textbooks
- 3 Spreading the idea of providing used resources to Africa and efficient recycling of disposed textbooks within the student community

Reporting

The goal of this project was to promote Textbooks for Change to the McMaster community. Currently, we have five drop boxes on campus, in the following locations: Mills Library, Thode Library, Health Sciences Library, Innis Library, and DeGroote School of Business. There have been over a hundred textbooks collected from McMaster students on campus in the first two months that the drop boxes have been on campus. These textbooks will eventually be evaluated to see whether they will be donated to African universities/colleges, sold online for profit or recycled sustainably, thereby helping to accomplish two of our main objectives.

Multiple Facebook posts were made on McMaster based groups, and all together, received 50+ "likes" from individuals in the McMaster community. A two-day information event was held at Mills Library to promote Textbooks for Change, and provide additional information to the McMaster community. Over 20 people came and stopped by the booth on the first day to learn more about Textbooks for change, where pamphlets and buttons were also given out to individuals. On the first day of the event, over 20 textbooks were collected from individuals that learned about the event from the Facebook group. There were also 22 individuals that RSVP'd to the event on Facebook. Both of these outcomes contributed to our outreach objective by using social media, pamphlets and events that help promote Textbooks for Change.



Jeremy and Matthew promoting Textbooks for Change

Collaborators: Collaborators involved in this project include our Sustainability 3S03 group: Jeremy Bober, Emily Guan and Matthew Thomson; The founders of Textbooks for Change: Chris Janssen and Tom Hartford; Textbook for Change's Marketing & Media Director: Brady Burke; our Academic Sustainability Programs Office liaison: Kate Whalen.

Website: <http://textbooksforchange.ca/>

Waste Management at St. Joseph's Healthcare Hamilton

Student Author: Anton Gallego, Katya D'Costa, Michael Hissink and Sara Sahota

Overview

Non-hazardous wastes make up approximately 80 to 90% of the waste produced in the average Hamilton hospital. This often consists of food waste, office materials, non-infectious patient waste, disposable masks, gowns and other supplies. Trends in waste disposal at St. Joseph's Healthcare Hamilton (SJHH) suggest an excess of waste, and the need for more sustainable practices. Most recently, SJHH launched the "365 Days of Green" campaign led by the staff-run Environmental Co-operative Program (ECO). Contributing to this campaign is our Waste Reduction project, which aims to identify and help change trends in waste-related attitudes and practices by staff within the hospital. The goals will be accomplished by performing a waste audit and analyzing relevant available data, as well as observing the habits of staff members. The data gathered will be used to create awareness on sustainable practices within the hospital.

Objectives

- 1 Conduct a waste audit on the West 5th and Charlton campus through quantifying and analyzing the waste generated
- 2 Provide recommendations on appropriate disposal techniques and employee practices based on recorded and analyzed observations with behavioural audits
- 3 Design a campaign to create awareness among hospital staff and patrons, collect feedback on opportunities to minimize waste

Reporting

The group toured and assessed the SJHH Charlton campus on Thursday, October 2nd. After discussing necessary areas of improvement with the project champion, an action plan was drafted. A waste audit was performed at the West 5th campus over a period of 6 hours by 4 people. The second audit for the Charlton hospital campus occurred over a span of 2 days and a total of 14 hours by 3 people. The audit entailed weighing all landfill waste and recycling that was generated within 24 hours at both of the campuses. Approximately 20% of bags were opened and sampled, often between 1 and 5 kg from each section of the hospitals. These were opened and sorted into different components, then each component was then weighed and recorded to understand what areas generate more landfill waste than necessary. Behavioural audits were conducted as the group walked through and waited at the hospital during the audit. In these inspections the observations echoed the results found in the waste audit, being that a very large number of coffee cups being tossed in the garbage instead of being recycled, and a large amount of organic food waste was generated in the cafeterias that was not going in the compost bins. Our group provided the recommendation to focus on these problems for waste reduction. These recommendations were incorporated into a PowerPoint presentation, posters, and a survey designed to increase awareness for employees and patrons. The slides and posters outlined the current project of selling reusable travel mugs to reduce coffee cup waste as well as visuals for recycling the paper cups, and the interactive survey asked questions about what can be recycled. The media files were sent to our project champion for distribution and use in the hospital, but will not be implemented until 2015.



Anton and Sara having fun at the audit!

Collaborators: A special thanks to our project champion, Victoria Brzozowski for all her support and guidance and her delicious homemade lunches.

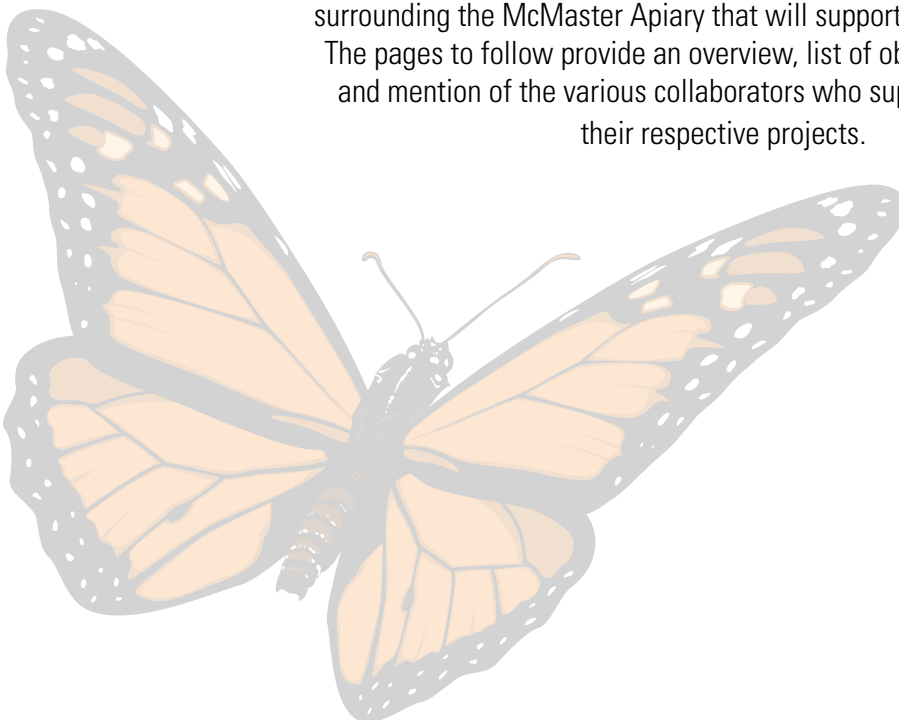
Sustainability Internship Program

Created in 2009 by McMaster's Academic Sustainability Office in collaboration with a group of highly engaged faculty members, staff members, community supporters, and students, the program has now supported over 100 students in their self-directed experiential learning. The program was developed with the purpose of enabling students to apply their theoretical knowledge of sustainability to address a real-world sustainability problem.

The objectives of the program are as follows:

- Provide opportunities for McMaster students apply their theoretical knowledge of sustainability to a real-world sustainability problem of their choosing.
- Highlight the achievements of students who have successfully completed their internship.
- Provide an avenue for collaboration and information sharing between students, faculty, staff, and the broader community.

There are two internships that took place this year. Jane Zhang developed a survey to assess the sustainability literacy level of staff and students at McMaster University. Chris Galano conducted a research to make recommendations for planting in the area surrounding the McMaster Apiary that will support the bee population. The pages to follow provide an overview, list of objectives, reporting, and mention of the various collaborators who supported them with their respective projects.



McMaster University Sustainability Literacy Assessment

Student Author: Jane Zhang

Overview

Sustainable development has become ever more important in today's society as we utilize finite resources at a rate that will deplete them for future generations. Many organizations have placed a focus on education as an important component to support sustainable development. The United Nations highlights "promoting education, public awareness and training"¹ as a primary means for implementing sustainable development. Institutions of higher education have a large role to play in various aspects including teaching students about sustainability, which equips community members with tools to address sustainable development. To support colleges and universities who are working to develop their sustainability programs, the Association for the Advancement of Sustainability in Higher Education (AASHE) maintains the Sustainability Tracking, Assessment & Rating System (STARS) program. The STARS program aims to provide a framework to allow institutions around the world to rate their sustainability performance. One component of the STARS program is a Sustainability Literacy Assessment, which assesses knowledge, behaviours, attitudes, opinions, and values relating to sustainability.

Objectives

- 1 Develop a guide of best practice for campus sustainability literacy assessment
- 2 Create a comprehensive campus sustainability literacy survey based on best practices identified and community consultation
- 3 Share suggestions for survey implementation with representatives at McMaster, sustainability professionals at Ontario colleges and universities, and through AASHE STARS

Reporting

As part of her LIFE SCI 3EP3 course project, 4th-year Life Sciences student, Jane Zhang worked with a wide variety of stakeholders to research, develop, pilot, and plan for the implementation of a campus-wide sustainability literacy survey at McMaster University. Through research of sustainability literacy surveys conducted at institutions of higher education in Canada, a report on best practices for survey development was created, which highlighted three key components: 1) including questions on all three pillars of sustainability (environment, society, and economy); 2) including questions about campus sustainability; and 3) engaging a multidisciplinary team of faculty, staff, and students from across campus in survey development and implementation.

In reviewing surveys from other colleges and universities, it was found that the University of Alberta and the University of Maryland had surveys that were most closely aligned with the objectives of this project. Permission was granted by each school to allow for institution-specific modifications to be made for McMaster. Utilizing information based on the best practices identified, a sustainability literacy survey was created, which included 18 questions divided by the following sections: 1) science, 2) social well-being, 3) opinions and values, 4) campus sustainability, and 5) demographics.

An implementation plan was created for the launch of the survey in January, 2016. The results will be posted online by both McMaster's Department of Facility Services and Academic Sustainability Programs Office. The results will also be shared with AASHE for inclusion of McMaster's report to the STARS program. Within the McMaster community, this project would seek to engage members from all faculties to create holistic understanding and development of sustainability on campus. On a larger scale, it is envisioned that this survey will support and engage institutions across Ontario and Canada in creating a network of collaboration and innovation on sustainability literacy.

Collaborators: This project involved members across Ontario, Canada, and the United States. This project was made possible through the incredible support provided by a variety of groups and individuals, including 21 members of the Ontario College and University Sustainability Professionals (OCUSP), Trina Innes and Dr. Peter Boxall from the University of Alberta, and Nicole Horvath from the University of Maryland. Within McMaster, tremendous support and guidance was provided by Dr. Karen Szala-Meneok, and Michael Wilson from the McMaster Research Ethics Board. Student colleagues provided feedback during survey development. Academic Supervisor Dr. Pat Chow Fraser and non-academic supervisors Kate Whalen and Shahid Naeem provided guidance and support to Jane throughout her project.

Links:

- AASHE STARS: <https://stars.aashe.org/>

References:

1. United Nations, United Nations Conference on Environment & Development, AGENDA 21 (June, 1992), available from <https://sustainabledevelopment.un.org/content/documents/Agenda21.pdf>



Pollen Analysis of McMaster's Apiary

Student Author: Christopher Galano

Overview

Bees play a necessary role in our ecosystems. As bees forage, they transfer pollen between the flowers they visit, which allows the plants to reproduce¹. In fact, bees are important for the production of many of the fruits and vegetables that we eat^{2,3}. Unfortunately, bee colonies today are collapsing². The research is not conclusive, but there is agreement on several factors: flus and viruses are affecting populations³, monoculture farms do not provide a sufficient variety of vegetation for bees, and heavy pesticide use harms the health of the bees⁴. There are several initiatives to support and increase the bee populations. For example, beehives are being established in urban areas, bees are given vaccinations and probiotics², and homeowners are being encouraged to grow bee-friendly flowers or even meadows instead of lawns^{3,4}.

A protocol for pollen analysis will support many of current and new initiatives aimed to support bee health. With this protocol, McMaster's apiary will be able to identify which flowers the bees visit at various times of the year. Perhaps some patterns may become apparent through addressing the following questions: 1) Do the bees have preferences for certain types of flowers? 2) Are bees foraging nearby or further away, and why? 3) With this knowledge, can we identify any potential gaps or room for improvement? Ultimately, the goal of this initiative is to make recommendations for planting in the area surrounding the McMaster Apiary that will support the bee populations.

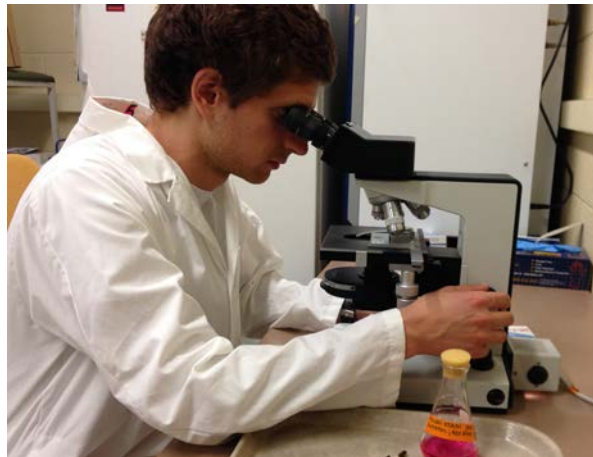
Objectives

- 1 Develop a protocol for pollen analysis
- 2 Through pollen analysis, identify foraging patterns and habits of the bees between the months of July and September
- 3 Establish a database of local pollen for identification, which can be expanded as information becomes available
- 4 Share findings, results, and recommendations with the McMaster Apiary

Reporting

The first phase of the project required developing the protocol for pollen analysis in order to develop the local pollen database and analyze pollen from the apiary. I first researched best practices for collection, preparation, and microscopic analysis of pollen grains. Using goldenrod as my test sample, because it was available for reference from online databases, I was able to effectively identify ideal methods and develop the protocol. Using this protocol, I identified the pollen of three additional local flowers: Calico Aster, White Wood Aster, and Queen Anne's Lace. These samples were used to develop the local pollen database, to which other plant species can be added as further research is conducted. This database aids in identification of pollen from the apiary, as it provides a reference against which findings can be compared.

The second phase of the project was to analyze the pollen from the apiary, which was collected between July and September. The database proved to be successful, as it allowed me to compare and identify some of the pollen from the apiary. I found that during the middle of August, the bees had foraged on asters, likely Calico Aster and White Wood Aster. I confirmed that these aster species were indeed found in bloom near the apiary at that time. During late August and early September, the bees foraged on these asters, as well as goldenrod, likely Canada Goldenrod because of its abundance around the apiary. Some pollen, however, was unidentifiable. It will be for future studies to identify this pollen, as the local pollen database grows. Together, the protocol and working database will support future studies to better understand the foraging behaviour of bees and how we can support local bee populations. Based on these findings, I was able to make recommendations for future plantings that would provide an ideal habitat for bees in the McMaster Apiary. These recommendations were shared with the lead researchers and organizers of the apiary, as well as on the Hamilton Urban Beekeepers website. The full report can be found online at ASP.McMaster.ca.



Chris examining pollen from the hive and wild flowers under the microscope

Collaborators: Special thanks to my Community Project Champion, Brandi-Lee MacDonald, Beekeeper, Research Associate, Department of Medical Physics and Applied Radiation Sciences; Academic Supervisors Marvin Gunderman, Technical Manager, Instructor of Entomology, Department of Biology, and Dr. Reuven Dukas, Associate Professor, Department of Psychology, Neuroscience & Behaviour; Non-academic Supervisor, Kate Whalen, Senior Manager, Academic Sustainability Programs.

References:

1. Drori, J. (2010, February). Johnathan Drori: Every pollen grain has a story. [Video file]. Retrieved from:http://www.ted.com/talks/jonathan_drori_every_pollen_grain_has_a_story/transcript?language=en#t-71794
2. Wilson-Rich, N. (2012, June). Noah Wilson-Rich: Every city needs healthy honey bees. [Video file]. Retrieved from:http://www.ted.com/talks/noah_wilson_rich_every_city_needs_healthy_honey_bees/transcript?language=en
3. vanEngelsdorp, D. (2008, July). Dennis vanEngelsdorp: A plea for bees. [Video file]. Retrieved from:http://www.ted.com/talks/dennis_vanengelsdorp_a_plea_for_bees/transcript?language=en
4. Spivak, M. (2013, June). Marla Spivak: Why bees are disappearing. [Video file]. Retrieved from:http://www.ted.com/talks/marla_spivak_why_bees_are_disappearing/transcript?language=en

The GUCEL Program

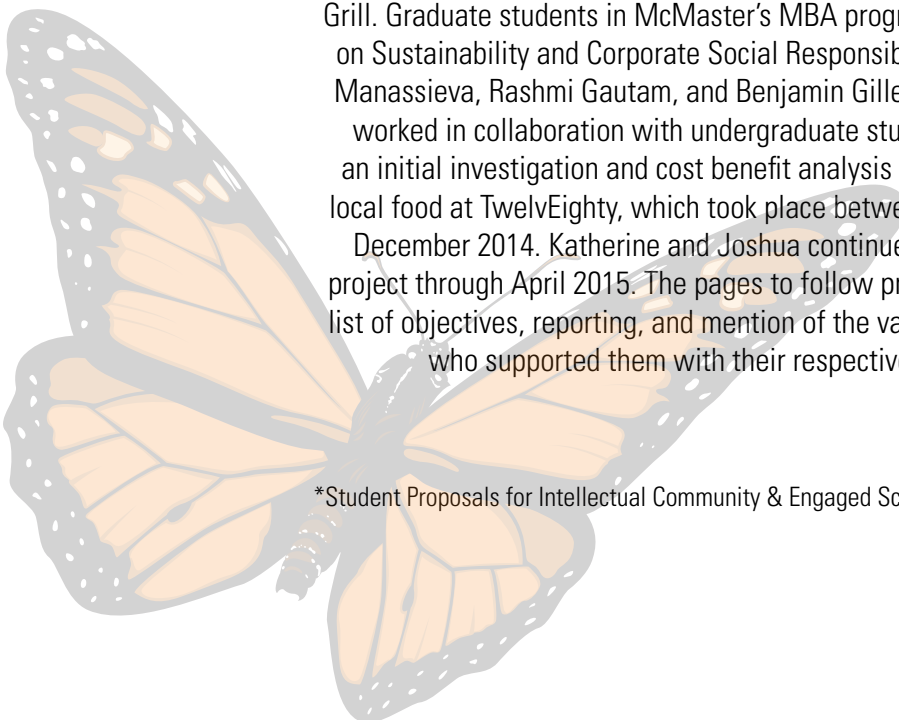
First implemented in the summer of 2013, by then intern Melissa Gallina, the GUCEL program has provided opportunity for 12 students to take part in interdisciplinary, student-led, community-based, and experiential learning about sustainability. A unique aspect of the GUCEL program is that it encourages academic collaboration between graduate and undergraduate students to work together to solve a real-world sustainability problem. Supported by the School of Graduate Studies and funded by SPICES*, the GUCEL program has been developed to enhance the student experience by contributing to an intellectual community and encouraging engaged scholarship.

The objectives of the program are as follows:

- Enhance the student experience by contributing to an intellectual community and encouraging engaged scholarship.
- Encourage interdisciplinary and multi-level collaboration between graduate and undergraduate students.
- Foster a culture of collaboration among students, faculty, staff, and members of the broader community.

This year's GUCEL team focused their effort to research and investigate the feasibility of incorporating more local ingredients into popular menu items of on-campus restaurant, TwelvEighty Bar & Grill. Graduate students in McMaster's MBA program taking a course on Sustainability and Corporate Social Responsibility include Cveta Manassieva, Rashmi Gautam, and Benjamin Gilles. The MBA group worked in collaboration with undergraduate students to conduct an initial investigation and cost benefit analysis of transitioning to local food at TwelvEighty, which took place between September and December 2014. Katherine and Joshua continued to develop the project through April 2015. The pages to follow provide an overview, list of objectives, reporting, and mention of the various collaborators who supported them with their respective projects.

*Student Proposals for Intellectual Community & Engaged Scholarship





Local Food at TwelvEighty

Rashmi Gautam, Benjamin Gilles & Cveta Manassieva

Overview

TwelveEighty is McMaster University's on-campus bar and grill. The restaurant is operated by the McMaster Students Union, and provides high quality food at a competitive price. This project aims to understand the current status of TwelvEighty's product sourcing, and evaluating the possibility of more sustainable alternatives – in particular, the use of locally-grown produce. Our team's definition of local is within Ontario only, and did not consider products having to be organic.

Objectives

- 1 Determine viable alternatives that improve sustainability through:
 - Identifying the location of produce items used to prepare the most highly-sold products on the menu
 - Identifying potential local suppliers for those items not already sourced locally
 - Conducting a cost-benefit analysis for implementing the proposed changes and sourcing more local items

- 2 Devise a green marketing strategy to promote TwelvEighty's commitment to sourcing products locally

Reporting

We were pleased to find that many items used by TwelvEighty were already sourced locally. However, among the most highly-used items, romaine lettuce, white and yellow onions, and tomatoes were imported. Through research and consultation with various suppliers, we were able to identify a farmer that could provide these items in line with our definition of local. We obtained product prices based on purchase volumes provided by from TwelvEighty, which would support our cost-benefit analysis in comparing the current costs incurred by TwelvEighty for non-local items. Based on our analysis, we recommend TwelvEighty to contact Otis Farms* and switch the procurement of romaine lettuce, yellow and white onions, and tomatoes. Since the iceberg lettuce supplied by Otis Farms is grown in the US and more expensive than the current supplier, we suggest that TwelvEighty continues to buy from its current supplier but consider altering the menu to substitute romaine for iceberg where feasible.

Sourcing these items locally is more sustainable from a social, environmental, and economic perspective as it would support local jobs, reduce vehicles miles traveled, and result in weekly savings of \$48 to TwelvEighty.

If TwelvEighty chooses to implement these suggested changes, the top five menu items would be nearly 100% local. This is worth advertising and promoting. This could turn out to be a real asset for TwelvEighty given the increasing awareness and sensitivity towards sustainability amongst its customers.

Collaborators: We would like to thank the management team at TwelvEighty for their support in providing information about their purchasing practices, and being encouraging of our project and our recommendations. We would also like to thank the many other local suppliers who have helped us in our investigative research. Our undergraduate student team members, Joshua Patel and Katherine Marino, helped to connect us with campus stakeholders and will be utilizing the results of our project to conduct a survey of consumer preferences based on our recommended changes.

*Otis Farms is an alias. The student authors were unable to obtain confirmation from the farm owner for approval to include their name publicly within this document.

Perspectives, Attitudes, and Values towards Local Food

Katherine Marino

Overview

The purpose of completing this study was to further educate the McMaster community on the environmental effects of non-local food* items and to bring more attention to the importance of this topic, so that we can contribute to the overall sustainability of McMaster and benefit the surrounding environment. To gather this information, I worked closely with the management team of on-campus restaurant, TwelvEighty and my student colleagues to obtain information about the current status of local sourcing at TwelvEighty, as well as alternatives available. This information, along with the current pricing model at the restaurant was used to create a survey of the McMaster community to learn about how this demographic views food sustainability and how knowledge of environmental impacts and price influence their decisions.

Objectives

- 1 Understand the current status of local food sourcing on campus
- 2 Identify areas for improvement with respect to local food sourcing
- 3 Understand current perspectives, attitudes, and values towards local food
- 4 Share research findings with on-campus stakeholders

Reporting

Working in collaboration with my student colleagues, we were able to identify the source location of the ingredients in some of TwelvEighty's of the most popular menu items, the current prices, and local alternatives. With this information, I was able to develop a survey that would capture the current perspectives, attitudes, and values of students towards locally-sourced food, based on a number of factors, including the price they are willing to pay. The survey received 215 student responses within a two-week period. The results showed the majority of students are in support of incorporating local food into TwelvEighty's menu. When asked about their willingness to pay more for current menu items that include local ingredients, a slight majority prefer to have no change in price, while nearly as many would be willing to pay 10-20% more. For example, 30% preferred no change in price for the \$8.99 chicken wrap, but 28% were willing to pay 10% more, and 14% would pay 20% more. Survey participants were also provided with information showing that the increased price would also come with a large reduction in vehicle miles traveled. This was shown to impact the price students were willing to pay. For example 26% of students would pay 10% more for a vegetable stir-fry that had a reduction of 13,000 miles traveled.

As one of the main objectives of this project was to share my research findings, I worked with my project partner Joshua Patel to produce an informational YouTube video. This video will be used by the TwelvEighty management team to communicate this initiative to staff members, as well as by faculty members in the instruction of sustainability-related courses.

Collaborators: I would like to thank the various individuals who helped make this project possible: GUCEL project colleagues including 4th-year Science Student, Joshua Patel, as well as MBA students Cveta Manassieva, Rashmi Gautam, and Benjamin Gilles. A special thanks goes to Rick Haja and the members of the TwelvEighty management team for providing information, and support along the way, as well as to Dr. Karen Szala-Meneok and Michael Wilson from the McMaster Research Ethics Board for all their assistance with the creation of the student Survey. Collaborators also include our non-academic advisor Kate Whalen and academic advisor Dr. Luc Bernier.

*Local food in this report is considered as sourced within a 100 mile radius

Finding Alternatives & Increasing Awareness

Joshua Patel

Overview

The decisions we make as students in our daily lives can have a big impact on how we shape the future of our planet. The local food movement has gained more traction than ever before through increased awareness, and because governments are encouraging citizens to choose more local food¹. Educating members of the community about the benefits of buying local and how the food items make it to their tables have been very important in helping raise awareness². Working with on-campus restaurant, TwelvEighty Bar & Grill, this project aims to employ these findings to increase the amount of local food options available, as well as the number of local menu items purchased.

Objectives

- 1 Identify the source and miles traveled of ingredients in popular menu items
- 2 Identifying alternative local suppliers
- 3 Raise awareness on the topic of local food
- 4 Present findings and recommendations to TwelvEighty's management team

Reporting

Working closely with TwelvEighty's kitchen manager, the ingredient lists of the top five menu items (based on volume sold) was analysed to determine the location of which they were sourced. This analysis supported the creation of a carbon footprint, based on total vehicle miles traveled, for each of the top menu items. The analysis showed that TwelvEighty was already doing a very good job at sourcing local food, but there was still opportunity for improvement. A number of local suppliers were then contacted to determine their pricing, delivery options, and seasonality of ingredients. Initial findings suggest that transitioning nine of TwelvEighty's most used ingredients to local alternatives is a viable option, from both a financial and logistics perspective. To support the proposed shift to more local ingredients, a green marketing campaign was created specifically for TwelvEighty, which includes the use of educational infographics, social media tags, and engaging posters. The goals of the green marking campaign were to: 1) educate about the importance of supporting local food, 2) highlight existing local food operations at TwelvEighty, and 3) support the transition to new, local options by showcasing the reduction in vehicle miles travelled from previous to new menu items. These findings were presented to the assistant kitchen manager who provided the opportunity to present this information to the entire TwelvEighty team. A YouTube video was then created with project partner, Katherine Marino, to summarize findings as well as increase awareness on how a local food movement can be started at McMaster University through TwelvEighty. Academic supervisor, Luc Bernier, also requested that the video made available to him for use during his environmental issues course. With the creation and dissemination of the YouTube video, I was able to expand the reach of my education material to a much wider audience, therefore having an even large impact. It is hoped that through providing both education about local food along with a greater list of local options, members of the McMaster community will be better equipped to make informed decisions about their food choices.

Collaborators: I would to thank the following individuals who helped make this project possible: TwelvEighty Bar & Grill Management, Jen Christine, Richard Haja, and Alena Lukich; Academic Supervisor, Dr. Luc Bernier, Professor; MBA Student Group, Cveta Manassieva, Benjamin Gilles, and Rashmi Gautam; Graphic Designer at MSU Underground Media & Design, Rebecca Arboly & Student Designers, Kishan Patel and Sarah Conrad; Undergraduate student and project collaborator, Katherine Marino; Co-Founders at 100KM Foods Inc., Paul Sawtell and Grace Mandarano; and Non-academic supervisor, Kate Whalen, Senior Manager, Academic Sustainability Programs.

¹Source: <http://www.theglobeandmail.com/news/national/local-food-movement-goes-national/article585262/>

²Source: <http://news.ontario.ca/omafra/en/2015/01/ontario-establishes-goals-to-increase-awareness-of-local-food.html>



Community-based Leadership in Sustainability

Overview

The Community-based Leadership in Sustainability (CLS) initiative was created in the Fall of 2014 as a joint initiative between a number of groups and organizations with the goal to develop a culture of sustainability through education, community engagement, and collaboration that inspires practical implementation. The central focus of the initiative was to host a series of educational and networking events between November 2014 and May 2015. The events were designed to take a unique approach to teaching and learning about, as well as engaging in, sustainability that would provide value to individuals, groups, organizations, institutions, businesses, and the City of Hamilton. Furthermore, we hope that through this initiative, connections were made and new ideas generated that may provide benefit to the city of Hamilton as a whole.

In line with Forward with Integrity, McMaster's directional letter written by President Patrick Deane, one of the main objectives of the CLS initiative was to engage all members of the community. As such these educational and networking events were free of charge and open to all.

Objectives

1 Develop a culture of sustainability through education, community engagement, and collaboration that inspires practical implementation

2 Form and foster a collaborative and formal working relationship between individuals, groups, institutions, and organizations who share a common mission to advance sustainability within the city of Hamilton

3 Offer opportunities for sustainability education and involvement that is inclusive of various groups and individuals within the city's diverse and unique communities

4 Communicate and report on the outcomes of each event and the initiative as a whole

Reporting

The CLS initiative achieved all of its objectives through successfully hosting four events over a period of six months between November 2014 and April 2015. The events were as follows:

- Love Your Streets: Hamilton's Changing Transportation Network
- Claiming Green: Fact or Greenwashing?
- Green Buildings, Resource Conservation, and Urban Regeneration
- Green Jobs Networking Event



Each event focused on a unique topic that was of interest to students, local businesses, city staff, and community members. Various experts in the respective topic fields contributed, resulting in a total of 22 different speakers participating in the four events. The initiative also engaged 11 volunteers to help out during the events; this included university and college students as well as community members.

Over 400 people attended the events. In a survey sent to attendees after each event, they identified themselves mostly as students, professionals, and business owners. A small percentage of attendees were also educators and community members. Overall, when asked, 39% were “Very Satisfied” with the events, 41% were “Satisfied”, and 14% were “Neutral”. A total of 97% of event attendees said they were interested in attending another CLS event in the future.

To ensure that events were free of charge and open to all who wanted to attend, the CLS committee reached out to various individuals, groups, and organizations to request in-kind and/or financial support to make this initiative possible. A special thanks goes to those listed in the Collaborators section below, as well as to the 400+ community members who attended the CLS events.

Collaborators

The success of the CLS initiative was, in part, due to the partnership that formed between various groups who have a strong belief in the capacity that can be built from community empowerment and social change through education. These groups include:

- **Hamilton Sustainability Professionals Network (SPN):** SPN Executive Board provided joint leadership along with McMaster University in bringing this initiative from idea to implementation. The SPN maintains a CLS sub-committee consisting of nine dedicated individuals. The working group is led by Kate Whalen, SPN Education Coordinator, and McMaster’s Senior Manager of Academic Sustainability Programs.
- **McMaster’s Academic Sustainability Programs (ASP) Office:** provided joint leadership along with the SPN in developing and implementing the CLS initiative
- **McMaster undergraduate student representatives:** Chitman Josan, Moeed Ahmed, and Zeinab Rahal contributed to the implementation of the CLS initiative through planning and hosting events
- **McMaster Faculty representative:** Dr. Brent McKnight: provided guidance and mentorship and acted as a liaison to McMaster faculty members
- **McMaster’s Committee on the Minor in Sustainability:** provided continuous support during the development and implementation of this initiative
- **Forward with Integrity:** provided generous financial support to help make the implementation of the CLS initiative possible
- **Art Gallery of Hamilton:** provided generous support in hosting all four CLS events
- **McMaster Office of the Provost:** provided generous financial support for the CLS initiative
- **McMaster Faculty of Engineering:** provided generous financial support for the CLS initiative
- **McMaster W. Booth School of Engineering Practice:** provided generous financial support for the CLS initiative
- **McMaster Alumni Association:** provided generous financial support for the Green Jobs Educational and Networking Event
- **McMaster School of Graduate Studies:** provided generous financial support for the Green Jobs Educational and Networking Event
- **McMaster Student Success Centre:** provided generous financial support for the CLS initiative
- **City of Hamilton’s Economic Development Department:** supported the CLS initiative through financial sponsorship and speaker participation for the Green Buildings, Resource Conservation, and Urban Regeneration event
- **Sustainable Hamilton:** worked with SPN and McMaster to jointly host the Claiming Green CLS event
- **Smart Commute Hamilton:** provided generous financial support for the Love Your Streets event
- **Grand & Toy:** provided generous in-kind donation of all speaker gifts
- **Ontario Public Interest Research Group (OPIRG) McMaster:** provided Fair Trade gift baskets used as survey prize incentives to support participation, event feedback, research, and continuous improvement of the CLS initiative



Designed by the Academic Sustainability Programs Office