Academic Sustainability Programs

Annual Report | 2013 - 2014

McMaster University

A Letter from the Senior Manager

In July of 2014, the former Office of Sustainability underwent a reorganization, which divided the office into its operational components, now overseen by Facility service, 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, a 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. 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 project. The individual report pages are published online within one month of creation so that they may be referenced by the student authors during occasions such as preparing graduate school applications and job interviews. Annually in August, all report pages are compiled and additional components of the annual report are prepared for communication. As a result of this transition, the 2013-14 report highlights projects that have taken place over an eight-month time period between September 2014 and August 2014. As such, a fewer number of projects are included in this year's report. While fewer in number, the projects continue to be outstanding examples of student-led initiatives that achieve real, sustainable results.

As you read this report, you will notice that the breadth of student interests related to sustainability is far reaching. Projects range from studying environmental stressors to honey bees on campus, to the development and implementation of a campus-wide waste and recycling strategy, to the creation of a 3D "Unprinter".

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
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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Sustainability Internship Program

Created in 2009 by McMaster's Academic Sustainability Programs Office (previously the Office of Sustainability) in collaboration with a group of highly engaged faculty members, staff members, community supporters, and students, the program has now supported over 95 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.

Help the Honeybee

Holly Steele

Overview

Studies show that environmental stress and environmental degradation are resulting in a negative impact on the health of the honeybee (3). This has been studied and shown to be a result of anthropogenic factors, such as pesticide use (1). In the article, Colony Collapse Disorder: A link to pesticides and their alternatives, Colin Clark states that "It is ironic that one of the largest unforeseen victims of human's heavy use of pesticides is itself also vital to the production of food on this planet" (1). Here, Colin Clark is describing that as more pesticides are being used to improve the quantity of crops, the quality and quantity of crops are actually decreasing due to the negative impact that these pesticides are having on the honeybee population and the quality of crop pollination. Studies show that honeybees pollinate 80% of crops per year (3) and that a poor quality of crop pollen is a result of high pesticide use. Through the process of natural pollination by both honeybees and wind, heavy pesticide use in one area can lead to the spread of pesticides over a much larger geographical area. The potential impacts of reduced quantity and quality of food crops, resulting from pesticide use, would therefore be expected to lead to a decline in human health as well as contribute to local and global food scarcity.

Objectives

1. To obtain information from relevant sources about the connection between honeybees and quality of local produce
2. To determine which chemicals are most harmful to the honeybees at both the residential and institutional levels and to determine which ones are commonly used
3. To test McMaster honeybee honey and wax for the presence of Class 5 and Class 9 chemicals
4. To research and implement plant species that could be placed into the community

Reporting

Colony Collapse Disorder has drastically increased in the past three years, some speculate that this is because of the rise in the use of pesticides. A list of chemicals from Purdue University (2) shows chemicals that are found to be toxic to the honeybee. Research into which chemicals are most harmful to the honeybee and readily available to the public produced a list based on these chemicals and chemicals available for domestic use from the Ontario Government.

After finding out that no chemicals were being used on McMaster grounds, the local community and local stores were surveyed to search for a product that contained a harmful chemical to the honeybee. An inventory of chemicals that are easily accessible to consumers at a local garden center was produced and compared to the list of harmful chemicals.

Samples of honeybee wax and honey from the McMaster Apiary were tested. A GCMS generated a spectrum, and substances found within the spectrum were sorted by atomic mass. The chemical compounds that were found during the GCMS were isolated and the known origin of the chemical was found. The majority of the chemicals found were expected to be found in honey and wax samples as they are natural alkanes, alcohols and fatty acids that are naturally found in nature, however a few were found to be associated with insect repellants.

A list of plants that have been found to regularly attract honeybees had been provided, as well as specifications about when to plant, how to plant as well as which pests are associated with each. The plants were chosen as it will help identify plants that will promote a healthy honeybee habitat as well as plants that require little to no pesticide use.

These plants as well as information about the pesticides found through testing can be found by going to this site and accessing the full report:

Collaborators: Thanks to help from Kate Whalen, Senior Manager, Academic Sustainability Programs Office, Brandi Lee MacDonald, Research Associate, Department of Medical Physics and Applied Radiation Sciences, and Dr. Kirk Green, Facility Manager, Department of Chemistry, McMaster University.

The GUCEL Program

Created in 2013, the GUCEL Program encourages graduate and undergraduate students to work together on a sustainability-related and interdisciplinary project, resulting in the creation of novel intellectual communities. This dynamic interaction facilitates the development of an intellectual community through the exchange of ideas, knowledge, and perspectives. Furthermore, students have the opportunity to expand their existing intellectual community to include individuals from across campus, representing a variety of disciplines and levels of study.

The objectives of this 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.

The GUCEL Program

Melissa Gallina

Overview

In the summer of 2013, with the goal to provide experiential learning opportunities to graduate students, Melissa Gallina, former Sustainability Student Intern, began the development of the Graduate/Undergraduate Collaboration in Experiential Learning (GUCEL) Program. The GUCEL Program encourages graduate and undergraduate students to work together on an interdisciplinary project, resulting in the creation of novel intellectual communities. This dynamic interaction facilitates the development of an intellectual community through the exchange of ideas, knowledge, and perspectives. Furthermore, students have the opportunity to expand their existing intellectual community to include individuals from across campus, representing a variety of disciplines and levels of study.

Objectives

1. To enhance the student experience by contributing to an intellectual community and encouraging engaged scholarship
2. To encourage interdisciplinary and multi-level collaboration between graduate and undergraduate students
3. To foster a culture of collaboration among students, faculty, staff and members of the broader community

Reporting

Melissa received initial project funding through McMaster's School of Graduate Studies SPICES* grant. The objectives included program development, and implementation, which consisted of two GUCEL project teams achieving full and successful completion between September and May, 2014. Melissa and the GUCEL team achieved these ambitious results with great success. An overview of the program and reporting first of the initial project is reported on with McMaster's 2013 Sustainability Annual Report.

The second GUCEL project, "Green Jobs Bridging the Gap", began in January 2014. This project aimed to bridge the gap between student skills and employers of sustainability-related jobs in Hamilton. As part of their project, the group organized an extremely successful Green Jobs networking event. The event brought together students and local sustainability professionals to discuss the skills necessary to succeed in sustainability-related careers.

In the spring of 2014, Melissa secured funding through a successful SPICES* renewal application to extend the GUCEL pilot program into the 2014-2015 academic year. In its second year, the GUCEL Program has created a formal collaboration with the School of Graduate Studies. As such, graduate students who have received SPICES funding, are able to take advantage of the GUCEL Program to obtain personal support in project planning, development and implementation.

The success of the GUCEL Program was highlighted in an article published by The Starfish in February 2014. In May, 2014, Melissa received The Starfish's "Top 25 Environmentalists under 25" award for her substantial commitment to sustainability, which includes her dedication into the development, and success in implementation of the GUCEL Program. Melissa obtained her M.A., graduating with distinction, in the spring of 2014. Melissa has since gone on to pursue her career in sustainability, staying local to Hamilton. Melissa's hard work and commitment to developing a sustainable program, and one which has been fully integrated into the University, has ensured continued operation of the GUCEL Program, which is now actively managed through the Academic Sustainability Programs Office in formal collaboration with McMaster's School of Graduate Studies.

*Student Proposals for Intellectual Community & Engaged Scholarship

Collaborators: Funding for this program was provided by the School of Graduate Studies through a SPICES grant. Integral support was provided by Allison Sekuler, Associate Vice-President and Dean of Graduate Studies and Andrea Cole, Coordinator, Graduate Student Recruitment, Retention and Diversity. Support and guidance for the development of the GUCEL Program is provided by McMaster's Academic Sustainability Programs Office. McMaster's Student Success Centre was integral in the planning and implementation of the Green Job's networking event.

Active Management of McMaster's Waste Data

Janelle Trant

Overview

With the introduction of McMaster's This, That and The Other waste and recycling program, which was initiated in 2009, the University has focused on improving waste diversion through infrastructure improvements and education. Waste audit data shows that between 2009 and 2011, McMaster decreased total waste generation by over 45%. McMaster has expanded the initial program to include composting, compact disc recycling, permanent electronic waste collection sites, and furniture recycling programs, to mention a few. With the goal of continuous improvement to further increase waste diversion on campus, new strategies and innovative approaches are required. To identify where improvements could be made, an in-depth review of McMaster's waste lifecycle was conducted, starting from the point of disposal by the individual staff or student, to the building loading dock, and onwards. This initiative proved to be a valuable activity, and the outcomes have provided McMaster with a thorough understanding of potential challenges as well as opportunities for improvement.

Objectives

1. To conduct and in-depth review of McMaster's waste practices and processes for initial disposal, to collection, waste haulage, and beyond

2. To engage with stakeholders to make recommendations for new processes and programs that will have a positive impact on waste diversion at McMaster

3. To work collaboratively with stakeholders to implement new programs and/or processes that will have a measurable and positive impact on McMaster's waste diversion

Reporting

By focusing her analysis to include stakeholder engagement and collaboration, Janelle Trant, MSc student in the School of Geography and Earth Sciences, was able to identify substantial opportunities for improvement relating to waste processes at building loading docks. Janelle worked closely with key stakeholders, including Facilities Services Managers and external waste providers (Progressive Waste Solutions and Niagara E Waste), to understand their goals, the challenges they face, and the opportunities they see.

After meeting with representatives from McMaster's waste providers, Janelle observed the waste pickup process to identify areas for improvement. Working with internal and external stakeholders to present possible solutions, a number of easily employable changes were identified.

One of these changes was to re-develop Progressive Waste Solution's data reporting process for McMaster. Along with a new reporting process, which includes user-friendly reporting template, a new active management strategy was developed by McMaster's Facility Services Department. The developments made through this initiative will be used to track and measure changes in McMaster's waste diversion, which will be reported on within McMaster's 2014 waste report. Additionally, McMaster's new waste management system will facilitate the use of waste data for future undergraduate and graduate research and experiential learning.

This initiative was part of a larger waste diversion project, "Engage with Waste". Janelle worked with undergraduate and graduate students taking part in the Graduate Undergraduate Collaboration for Experiential Learning (GUCEL).

Collaborators: Integral support for this project was provided by Carlos Figueira, Director of Facility Services at McMaster, and Dominic Evangelista, District Sales Manager at Progressive Waste Solutions. Cathy Kelly and Janice Flynn, Facility Services Managers at McMaster, and Ryan Dear, Owner of Niagara E Waste, also provided valuable guidance. GUCEL group members Jeff Chan, Aliya Satina, and Carolyn Williams contributed to this project through their project and team collaboration. A special mention goes to Melissa Gallina, GUCEL Program Coordinator, who provided project support, guidance and mentorship throughout the duration of the project. This project would not have been possible without the incredible support and guidance from McMaster's Academic Sustainability Programs Office.

Employee Education and Engagement

Jeff Chan

Overview

In an effort to improve waste diversion rates on the University's main campus, "Engage with Waste, a multi-faceted education and engagement project was developed and implemented between September and May of 2013/14. The project focused on working directly with custodial staff members from the Department of Facility Services to enhance their knowledge of and engage them in waste diversion practices on campus. Additionally, educational material and waste infrastructure in the form of desk-side recycling bins were provided to students, faculty and staff in the Engineering Technology Building (ETB). Results were measured throughout the project. Data collected and lessons learned will contribute to the continued development of the University's waste diversion strategy.

Objectives

1. To engage custodial staff through monthly presentations and the provision of educational material
2. To engage students, faculty and staff in ETB through the making and promotion of an educational video and the provision of an innovative office waste and recycling bin system
3. To measure results analyzing and comparing trends in monthly waste audits provided by Progressive Waste Solutions
4. To highlight success by positively reinforcing continued participation and completion of educational quizzes
5. To contribute to continued University Sustainability by assessing the effectiveness of the current waste diversion strategy

Reporting

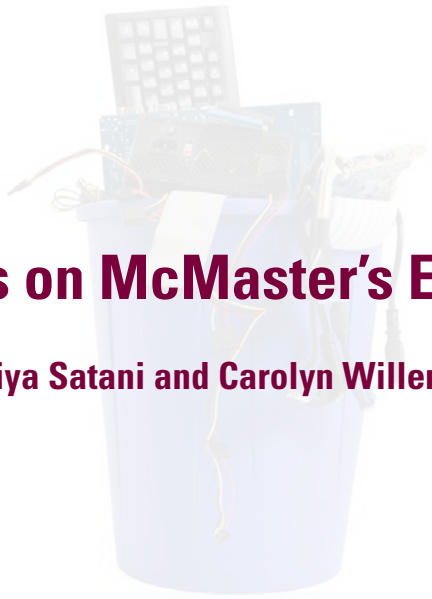
The Engage with Waste Program was developed and implemented by Jeff Chan, a fourth-year Life Sciences student completing an Independent Project with the Office of Sustainability. Jeff worked with a group of custodial staff responsible for the care and maintenance of three (3) buildings of similar size: the Burke Science Building (BSB), the John Hodgins Engineering Building (JHE) and ETB. Staff members who work in ETB were encouraged to take part in a supplementary waste management program in an attempt to engage staff and to facilitate collaboration between the two groups. The primary objective of this study was to determine whether education and engagement plays a role in the improvement of waste diversion at the university. Level of success was based on two measures: 1) Employee education and engagement 2) Waste diversion rates

Bin system with associated waste chart

1) Bi-monthly quizzes were included as part of interactive employee education and engagement workshops. Employees took part in a friendly competition with their colleagues. This initiative was geared towards teamwork in achieving their waste diversion goals.

2) Monthly waste audit reports provided by Progressive Waste Solutions were used to track the progress of waste diversion rates. Analysis of this data was done in order to determine the effect of the initiative on waste diversion in ETB.

Collaborators: Jeff Chan was the lead facilitator of this program, with support provided by academic supervisor Dr. Maureen Padden, Assistant Professor, School of Geography and Earth Sciences; non-academic supervisor Kate Whalen, Senior Manager, Academic Sustainability Programs Office; and Graduate-Undergraduate Collaborative Experiential Learning (GUCEL) Program Coordinator Melissa Gallina. Support to the program was provided by Facilities Services: Carlos Figueira, Cathy Kelly and Don Davidson; Progressive Waste Solutions; and Zeinab Rahal, Coordinator, Academic Sustainability Programs Office.
A special thanks to the custodial staff whose hard work, dedication, commitment and engagement were integral to the success of this project.



A Focus on McMaster's E-Waste

Aliya Satani and Carolyn Willems

Overview

The rapid pace at which technology is advancing has resulted in a culture where electronics are continuously becoming outdated and obsolete. In response to this trend, campus wide electronic waste (E-waste) collections take place twice annually. Emphasis is placed on educating and informing students and faculty on the importance of electronic waste recycling and how to properly do so on campus.

Objectives

1. To increase awareness of current electronic waste management and diversion strategies on campus
2. To educate and promote the importance of responsible electronic waste management through social media and other educational pathways
3. To identify areas where new e-waste initiatives can be implemented

Reporting

Since 2009, the electronics recycling program at McMaster has been continually expanding. There are currently 23 permanent collection sites at various locations on campus. In addition, collection events are held semi-annually.

The 2013 fall E-waste Collection Reuse and Recycle event was held in conjunction with McMaster's annual Sustainability Day on October 17th. A total of 4,285 lbs. of e-waste was diverted and generated $340 of revenue based on this collection total. Additionally, a savings of $260 was made possible by avoiding costs for waste haulage and landfill fees.

As well as engaging with students, faculty, and staff at McMaster's annual Sustainability Day a Twitter and Facebook page have been established, to sustain communication in regards to future collection events and the broader collection initiatives. Through our E-mazing Race activity held during Sustainability Day, we were not only able to connect with members of the campus community using our new social media platforms, but also educate about the importance of proper E-waste disposal on their campus. Future E-waste initiatives can build on the success of the 2013 E-waste campaign by further educating individuals about the process of E-waste recycling and by sparking awareness about the social issues surrounding improper E-waste dumping in other parts of the world.

Through consultation with Niagara E-waste and McMaster's Facility Services Department, a need for better signage for on campus collection sites was identified. Improved signage of the collection sites was designed and implemented for the permanent collection sites on campus.

Aliya and Carolyn at Sustainability Day

Dropping off some E-waste during Sustainability Day

Collaborators: We would like to thank the following individuals and groups with whom we have worked to plan, implement and expand the E-waste program: McMaster's Facility Services Department; Ryan Dear from Niagara E Waste; Carlos Figueira, the director of McMaster Custodial, Grounds, Logistics and Mail Services; Melissa Gallina from the Graduate Undergraduate Collaboration for Experiential Learning (GUCEL) and Zeinab Rahal from the Academic Sustainability Programs Office. Support for communication and promotion with MACgreen and with Lavinia Ghinea, Hani Ramzan and Peter Fenlon from the Sustain Race 2013 planning team, enabled us to spread awareness about the E-waste program at McMaster. We would also like to thank the student volunteers that helped with the E-waste collection and E-mazing Race game on Sustainability Day 2013.

Identifying Sustainability-focused Employment Opportunities and the Associated Skill Requirements

Simon Webb

Overview

In the demanding process of completing a degree, many post-secondary students may neglect to consider how they would like to apply their skills after graduation. "Even after years of study and thoughtful reflection, many still are not completely certain of what employment path to follow or how to begin"1.The field of sustainability is particularly complex, and an information gap may exist between students and employers, with respect to sustainability-related careers2. In particular, students may not know: 1) the types of sustainability-related jobs that exist; and/or, 2)the types of skills necessary to obtain these jobs.

Sustainability student, Simon Webb, worked within a larger GUCEL team on a project aimed to bridge this aforementioned information gap. Simon focused on identifying types of sustainability-related employment opportunities available to graduating students and the types of skills required.

Objectives

1. To identify local employers that offer sustainability-related career opportunities
2. To determine the skills, abilities, and qualifications needed for entry-level sustainability positions
3. To utilize study findings to support current students and recent graduates who wish to explore, identify, and prepare for sustainability-related careers
4. To develop opportunities to foster connections between employers, the University, its students, and recent graduates

Reporting

The project was successful in all four of its objectives. The two main initiatives used to accomplish the overall project objectives were: 1) a survey of sustainability professionals in the city of Hamilton; and, 2) a Green Jobs networking event. Each of these components is described in detail below:

Survey of Sustainability Professionals

The survey of sustainability professionals ran in tandem with another survey, which was also part of the same GUCEL project (See page ##) and focused on student perspectives of sustainability-related employment. The GUCEL team members utilized the survey findings to compare and contrast student and employer perspectives. These findings were used to foster discussion between sustainability professionals and students during the networking event that would eventually follow.

The survey received eleven responses from sustainability professionals from a variety of industries and from both the private and public sector. Each respondent provided insightful advice for students interested in sustainability-related employment. Common themes included: the importance of networking; interdisciplinary knowledge; and, passion for sustainability. A full report on survey findings is available onMcMaster's Academic Sustainability Programs website.

Green Jobs Networking Event

The collected findings from both surveys were used to inform discussion at the networking event, which was held on April 4th, 2014. The event was attended by 58 McMaster students and 11 sustainability professionals. A follow-up satisfaction survey showed that 95% of students believed the event had fully satisfied their initial reason for attending and 100% indicated that they were either "satisfied" or "very satisfied" with the event overall.

Collaborators: Gisela Oliveira, Chalene Begin, Rachel Nelson and Deborah Everest-Hill from the Student Success Centre were instrumental in planning, promoting and running the networking event. Dr. Brent McKnight from the DeGroote School of Business provided guidance in the planning of the project and acted as a facilitator for the panel discussion. Hamilton Sustainability Professionals Network provided support by distributing the survey and participating enthusiastically in the networking event. Melissa Gallina and Kate Whalen both played a crucial and active role advising and supervising the design of the survey and the event. Zeinab Rahal provided support for promotion and communication of the networking event. Funding for this program was provided by the School of Graduate Studies through a SPICES grant.

Green Jobs Student Survey

Connie Cheung

Overview

In his September 2011 letter Forward With Integrity: A Letter to the McMaster Community, President Patrick Deane emphasized the priority of the University to develop a distinct, effective and sustainable undergraduate experience that enhances the way we see and build connections between McMaster and the community. With emerging job opportunities in the Canadian sustainability sector, students must become aware of these increasing opportunities, and become engaged in a curriculum that fosters the skills and knowledge that will allow them to succeed in such careers. The goal of this project is to gain an understanding of current student perspectives on sustainability-related careers. Furthermore, this project will identify types of training and resources that can be mobilized in order to better align the career goals of students with the needs of professionals in the field of sustainability.

Objectives

1. To understand how students perceive sustainability-related jobs and the types of skills and experiences they believe are valuable in this field

2. To examine the sustainability job market needs and how students can align with emerging jobs in the field of sustainability

3. To present survey findings to the university in order to address the skills and knowledge gaps that could be integrated

Reporting

The "Green Jobs" student survey was designed to gain an understanding of student perceptions of sustainability-related careers and opinions on important qualifications for employment in the field. After the survey was disseminated, two follow-up focus group sessions were held, as well as a networking event hosted by the Graduate/ Undergraduate Collaboration for Experiential Learning (GUCEL) and the Student Success Center. The survey received a total of 212 responses from McMaster students from different faculties and levels of study.

Almost 65% of students indicated that it was important to find a job with an employer that values sustainability. Students also ranked experiential learning opportunities, including co-op, internship, and service learning, as one of the most useful methods in preparing for employment in comparison to curriculum adjustments, assistance in career identification, and volunteer activities. This result was echoed in the follow-up focus groups, where undergraduate and graduate students from Engineering, Life Sciences, and Geography & Environmental Sciences programs emphasized the need for more experiential learning opportunities in order to develop critical thinking and interdisciplinary collaboration skills which would be applicable in their sustainability-related careers.

A recent article published by Inside Higher Education revealed a gap between the skills hiring managers have seen in recent graduates and the skills the students perceive themselves as having mastered. Similarly, McMaster students who completed the "Green Jobs" survey perceived themselves to be "prepared" or "very prepared" to effectively employ job-related skills, while employers who completed a survey prepared by Simon Webb, only described students as "somewhat prepared".

The GUCEL team hopes to utilize the results from this survey as well as feedback from the networking event to provide recommendations to the university and improve future networking events to promote greater connections between students and employers.

Collaborators: Integral support was provided by Dr. Brent McKnight, Assistant Professor at the DeGroote School of Business, Kate Whalen, Senior Manager of McMaster's Academic Sustainability Programs Office, Melissa Gallina, Coordinator of the GUCEL Program, Simon Webb and Jessie Lu, GUCEL interns. McMaster's Student Success Centre was integral in the planning and implementation of the Green Job's networking event.

How Interdisciplinary Collaboration and Epistemological Pluralism Contribute to Sustainable Solutions

Jessie Lu

Overview

This research stemmed from the idea that interdisciplinary collaboration in the development of sustainable solutions is impeded when divergent epistemologies are not recognized and valued. By incorporating a pluralistic framework, interdisciplinary learning can be better implemented, resulting in graduates who are well-prepared to contribute meaningfully to their communities and the world at large. This project sought to identify gaps between disciplines in higher education and propose strategies to combat the challenges associated with truly integrated interdisciplinarity. Aligned with Forward with Integrity's mandate to enhance the student experience, it succeeded in identifying the benefits and challenges of interdisciplinary learning and its assimilation in higher education.

Objectives

1. To identify the benefits and challenges of implementing a cross-campus interdisciplinary learning strategy

2. To determine the barriers to implementation of epistemological plurality in higher education

3. To conduct a scan of current practices at McMaster University to provide a benchmark for which to propose developments based on the following:
    a. Program requirement flexibility and cross-disciplinary access to courses
    b. Faculty-specific support for interdisciplinary learning and collaboration
    c. Centralized support for interdisciplinary learning and collaboration

4. To make recommendations for improvement based on research of best practices of leading institutions prioritizing interdisciplinary collaboration and epistemological plurality

Reporting

In the Winter Term of 2013-2014, Jessie Lu, a third year Arts & Science student, undertook this research project in fulfillment of the requirements of the experiential learning course, Arts & Science 3X03. Jessie conducted an extensive literature review on methods of interdisciplinary problem solving and global change scenario planning. This information was integrated with an environmental scan of current practices at McMaster, assessment reports provided by the Institutional Quality Assurance Program (IQAP Review), Patrick Deane's Forward with Integrity Proposal, survey results from Green Jobs: Bridge the Gap, and best practices at other institutions. A list of recommendations and an analysis of barriers for implementation was created in light of these components, and is documented in her Jessie's final report: Benefits and Challenges of a Cross-Campus Interdisciplinary Learning Strategy.

Recommendations for strategic change fell under three broad categories:

1. Emphasizing skills, methods, and resources for interdisciplinary collaboration

2. Enhancing the mentorship network

3. Developing a welcoming climate for interdisciplinary research on an institutional level

The report concluded that small steps, such as starting a cross-campus interdisciplinary research publication and the integration of interdisciplinary collaboration methods into various courses, will assist in accumulating momentum in the short-term. For long-term changes aligned with the Forward with Integrity Proposal, funding and administrative flows inevitably need to be steered towards rewarding collaborative interdisciplinary research.

Collaborators: This independent study project would not have been possible without the support of academic supervisor Dr. Anne Pearson, Professor, Department of Religious Studies. Non-academic supervisor Kate Whalen, Senior Manager, McMaster's Academic Sustainability Programs Office, provided integral guidance during the experiential learning process. Support from the following individuals was also influential: Melissa Gallina, Coordinator, GUCEL Program; Simon Webb and Connie Cheung, GUCEL interns; Zeinab Rahal, Coordinator, McMaster's Academic Sustainability Programs Office; and Jean Wilson, Director, Arts & Science Program.

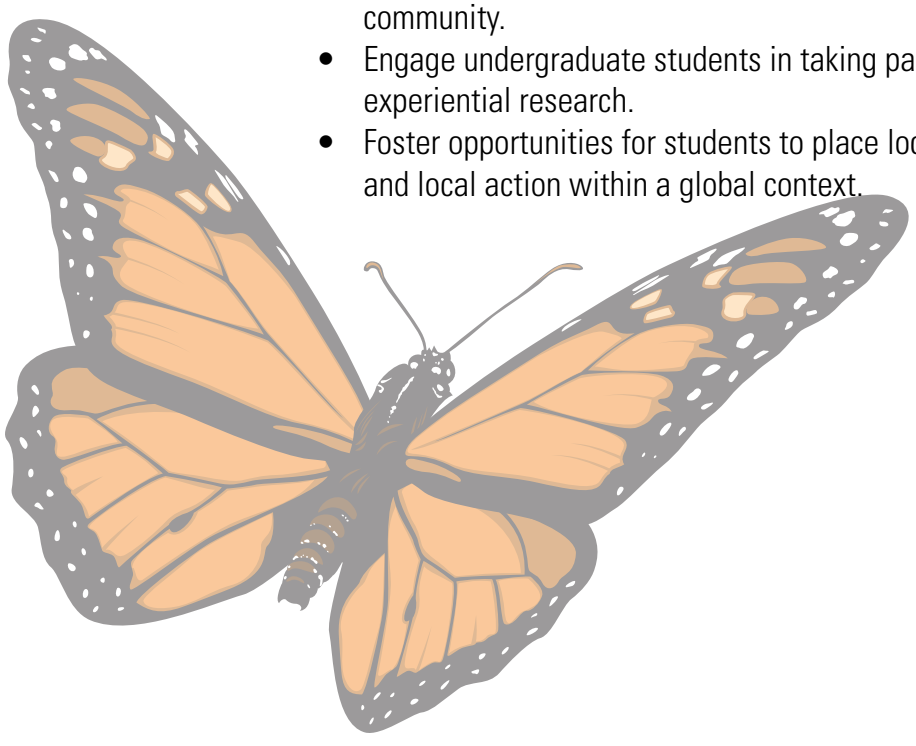
The Sustainable Future Program

McMaster developed the Sustainable Future Program 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 Sustainable Future Program (SFP) aims to build reciprocal relationships between students, community members and McMaster University to engage all parties in the journey towards a sustainable future.

Courses in the program are open to students from all faculties. Each course provides students with the opportunity for interdisciplinary, student-led, community-based, and experiential education focused on sustainability.

The objectives of this 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.



Cultural Heritage Project

Student Authors: Scott Dawson, Gabriela Gepilano and Holly Thomson

Overview

For our Sustain 3A03 experiential learning project, our group chose to facilitate the research of historic buildings in coordination with members of our community to enhance efforts underway with the goal to preserve heritage buildings within our city. We believe that heritage buildings are an integral component to what gives Hamilton it's unique sense of community, history, and diversity.

Objectives

1. Research and report on best practice in heritage site criteria
2. Generate criteria to evaluate possible heritage buildings
3. Develop a neighbourhood context statement in collaboration with the Ainslie-Wood Westdale community
4. Asses the 12 properties identified as possibly significant in Ainslie-Wood Westdale
5. Host a neighbourhood information session in the Ainslie-Wood Westdale neighbourhood

Reporting

The City of Hamilton currently has a list of over 6000 buildings that may have cultural or heritage significance.[1] It is important to preserve heritage buildings, since the City of Hamilton is undergoing much growth and revitalization. It is also a more sustainable practice, as far fewer resources are needed to construct new properties. The City hopes to engage local neighbourhood associations to help analyze the properties in their district, based upon neighbourhood specific criteria and that would be relevant for the possible designation of heritage status. Buildings that meet the criteria would be placed on a register. If a demolition permit is applied for and the building is on the register, it is made public knowledge. A context statement was developed for the Ainslie-Wood Westdale community by using the Beasley neighbourhood as a template. Amendments were made to existing criteria in order to evaluate properties in this specific neighbourhood. Twelve properties in Ainslie-Wood Westdale recommended by the city were surveyed and 7 of them were recommend to be placed on the register. A community information session was held at the Westdale Public Library on December 4 2013 with 23 people attending. Speakers at the event included Councillor Brian McHattie, Gord Beck of the McMaster Maps Library, Ian Ker-Wilson from the City of Hamilton, and a heritage architecture expert, Megan Hobson. Our group members Gabriela Gepilano and Scott Dawson also gave a short presentation while Holly Thomson hosted the event. Topics discussed included: how to recommend and assess possible significant properties, how histories of properties can be determined with the current resources available to the Westdale community, and a brief overview of architectural gems in the neighbourhood. The atmosphere of the event was very positive, with many community members engaged in a stimulating discussion on the matter. The Ainslie-Wood Westdale Community Association and the City of Hamilton was provided with written documents so that processes and lessons learned can be utilized and tailored for other neighbourhoods throughout the city.

Collaborators: Brian McHattie: Councillor of Ward 1, City of Hamilton & Project Champion, Kenneth Ockenden: Westdale Heritage Coordinator and member of AWWCA, Mary-Louise Piggot: Active member of the AWWCA, Gord Beck: Map Specialist, McMaster Maps Library & Event Guest Speaker, Ian Ker-Wilson: Culture Division, City of Hamilton & Event Guest Speaker and Megan Hobson: Heritage Consultant & Event Guest Speaker.

Getting Your Greens

Student Authors: Nicholas Austin, Colin Delsey, Kamal Prasher and Matt Terry

Overview

In 2012, 39% of Ontarians reported that they consumed the recommended 5-10 servings of fruits and vegetables a day.[2] The average student diet often lacks nutritious and local food and many students are not aware of the resources at their disposal.[3] Students are eating cheaply priced, unhealthy food, often because they believe that they do not have the time or money to do otherwise.[4] Prices continue to increase for prepared food, whether it is healthy or not.[5] For our Sustain 3A03 experiential learning project, we decided to create a resource to help students make healthier, affordable, and sustainable food choices by empowering them with the skills and knowledge to prepare their own meals. Our goal was to create, test, and share recipes that focus on local, seasonal ingredients and provide students with opportunities to save money and learn how to prepare their own food.

Objectives

1. Promote local, healthier diets by providing easy access to recipes that utilize nutritious Canadian fruits and vegetables

2. Highlight the importance of consuming a variety of local fruits and vegetables, following recommended 5-10 servings per day

3. Educate McMaster students about cost-effective ways to "get your greens"

Reporting

To meet our objectives, we focused first on researching and highlighting the benefits of incorporating more fruit and vegetables into one's diet. We published this information in an engaging way through our blog by focusing on benefits such as experiencing an increase in energy, mental focus, and physical health.

To ensure we were presenting meal ideas that were realistic from a financial perspective, we identified resources that provide local produce at a reasonable price to satisfy a student budget. One key resource that was identified is the Good Food Box program, which is run through MAC Bread Bin, a service focused on anonymously providing food assistance to students.[6] Furthermore, we focused on food items that were locally available and cost effective when creating our online recipes.

By promoting local food and showing students how to prepare it, we hope that we have shared the importance of healthy eating and encouraged students to make a healthy diet a priority.

To inspire students to utilize the information we gathered, we created recipes and posted them online. We also encouraged students to post their own ideas on the Sustainable Future Program Facebook page. We promoted the contribution of healthy, easy recipes that focus on local fruits and or vegetables.

We uploaded twelve recipes to our blog, which had over 900 visitors within two months. If an even larger cohort of students utilized resources such as our blog, the impacts would be far-reaching. Increasing the number of diets that focus on local, seasonal produce would have positive impacts on our population and environment. These impacts would include a decreased dependence on imported and prepared foods, which would, in turn, reduce our carbon footprint through a reduction in waste and shipping. Additional impacts may include improved mental and physical health, and a stronger, more robust local economy.

Collaborators: Our project champions, Andrew Kamphuis and Jordan Weisz, from the Mac Farmstand were instrumental in providing guidance along the way and helping establish connections with the Mac Farmstand. MAC Bread Bin and the Farmstand supplied us with much of the produce that we used in our recipes. We would also like to thank Micaela Delsey for providing photographs for several of our recipes. We would also like to thank several online cooking blogs and the odd cookbook for inspiring some of our recipe ideas. Finally, we would like to thank the many visitors that read and contributed recipes and comments to our blog and Facebook page. Everything we achieved is thanks to you! Stay hungry, friends.

Links: - Blog: http://gettingyourgreens.blogspot.ca/

Growing the Garden

Student Authors: Lucia Jara, Scott MacDonald and Chelsi McNeill

Overview

Implemented in the summer of 2012, the McMaster Teaching & Community Garden (MTCG) was developed with the goal to incorporate a food-producing garden on McMaster's main campus that would provide a venue for teaching, learning, community engagement and local food production. For our Sustain 3A03 experiential learning project, our group chose to focus on increasing student engagement through active participation in planting workshops.

Objectives

1. Obtain superior knowledge of gardening and permaculture techniques
2. Identify plant species for which to focus educational workshops
3. Implement an efficient irrigation system
4. Educate staff, students, and community members about fall garden maintenance and plantings

Reporting

To achieve our goal to educate about fall gardening, we undertook substantial research into gardening and permaculture techniques. We also chose to focus on best practice of planting, growing and harvesting of two plant species, garlic and ginger, for which we conducted educational workshops on. To enhance our workshops and further educate ourselves, we then engaged in practical application of the knowledge we obtained. First, we analyzed the soil of the MTCG and ran sunlight analysis to determine areas for improvement to soil health as well as optimal planting location. Through this process, we identified specific nutrient depletion for which we applied permaculture techniques of amending with compost and nutrient rich plant material. We hosted our first garden session on November 8th with 20 participants who had the opportunity to plant garlic in the MTCG as well as plant their own garlic in pots to take home. To further promote the MTCG, we presented information about the garden and our project at the Student Life Enhancement Fair, hosted by the Student Success Center. During this event, we engaged participants in learning about gardening through a hands-on activity where they could plant their own ginger. From the information obtained in our initial analysis, we were also able to research plant species and recommend an efficient garden design for implementation in spring 2014. Our design includes application of permaculture, companion planting and organic gardening practices. In coordination with the Office of Sustainability and Facility Services, we facilitated the implementation of an irrigation system, which will be installed in spring 2013. This irrigation system has the capability to tailor irrigation levels in various quadrants of the garden; can function on a timer, and includes a weather sensor to ensure that irrigation does not take place in instances of rain events.

Participants at the garlic workshop

Collaborators: The primary stakeholders consist of Carlos Figueira and Shawn Flemming, Facility Services Department, Grounds Division; Dr. Chad Harvey, Integrated Science Program; Kate Whalen, Office of Sustainability; and Karin Gordon, 2013 Director of Mac Farmstand. Integral support has been provided by volunteers from MACgreen, SUSTAIN 3A03, and the broader student body.

Less Waste, More Taste

Student Authors: Yaman Al-Nachwati and Brianna Smrke

Overview

According to a November 2010 report by the George Morris Centre, more than 40% of all food produced in Canada is wasted. As students of McMaster University, we have noticed significant food waste issues. Many campuses have Twitter accounts that inform students about available free food on campus. The University of Waterloo has also implemented a Twitter-linked "Easy Button" at one of their cafeterias that can be used to alert students about excess food. Implementing a similar, community-driven program at McMaster will help reduce food waste resulting from events on campus.

Objectives

1. Develop a communication process utilizing social media tools such as Facebook and Twitter to facilitate the food waste reduction program.
2. Design and implement the Facebook page and Twitter account to be used as an initial pilot.
3. Utilize the social media sites to put a spotlight on the issue of food waste at McMaster University.
4. Publicize the program and encourage event planners to think more carefully about estimating catering requirements as well as to utilize the social media sites to reduce waste if and when required.

Reporting

With the goal to develop, implement and popularize a sustainable, community-driven, food waste reduction program, we created Free Food for Mac, a program linked to both a Twitter account and Facebook page that can be used by event organizers to reduce the amount of wasted event catering. Our desired outcome is to make Free Food for Mac a platform that students will check daily to find out about free food and that event planners will use to advertise their events as well as to communicate about excess food.

Within two months of our launch date on September 24, we gained 322 combined followers on Twitter and Facebook and provided information about seven events. We followed up with the planners of three events and found that all potential food waste was eliminated at each event as a result of the Free Food for Mac program. In addition to use by event planners, the program has been used by students to alert others about free food on campus. The results from our pilot shows that Free Food for Mac is not only effective at reducing food waste on campus but is also operationally sustainable as a community-driven program.

Poster promoting FreeFoodForMac

Collaborators: Matt McCollow, and Jay Brodeur, Sherman Center for Digital Scholarship: provided advice about the feasibility of an easy button project at McMaster. Randy Kay, OPIRG[13], Coordinator of Volunteers: helped in popularizing the FreeFoodForMac platform among students and event planners. Ellen Xu, McMaster Breadbin: assisted in developing a plan for continued monitoring of the FreeFoodForMac Platform through the creation of a new Breadbin executive position.

Links:
- Facebook: www.facebook.com/FreeFoodForMac
- Twitter: www.twitter.com/FreeFoodForMac

Recycling Plastics: Construction of a 3D "Unprinter"

Student Authors: Kara Grace Hounsell, Matthew Le Feuve, Eric Phillips-Sheldon and Taha Shoaib

Overview

In the 1980s, the first 3D printer was invented as an additive technology that creates 3D prints through the successive layering of PLA[7] or ABS[8] plastics. Over the past 30 years, the practice of 3D printing has grown both at home and in industry. It is an opportune time now, before the widespread implementation of 3D printers, to consider the impact of 3D printing on social, environmental and economic sustainability. With guidance from our community project champion, Ben Keller, we have constructed a 3D "Unprinter". The Unprinter is capable of recycling printed PLA objects into filament, the raw material or "ink" for 3D printers. Our open-source document detailing our materials and process allows for the easy replication of this project, enabling users to recycle plastic into filament to reduce waste and make 3D printing more economically viable.

Objectives

1. Design and construct a pneumatic 3D Unprinter with the ability to melt used PLA plastic into 3D printer filament

2. Create an open-source document to facilitate easy replication of this project so that plastic may be recycled into filament worldwide

3. Disseminate results to the McMaster Faculty of Engineering and share insight into the project through a blog, updated weekly

Reporting

Through our own research, and with support from our project champion, our group created a working prototype. Our Unprinter is fully functioning and capable of melting down PLA plastic for use in 3D printers. Using easily obtainable materials, costing a total of $35. 65[9], the device can reach sufficiently high temperatures for melting the plastic. The liquefied plastic can then be extruded and cooled for use as 3D printer filament. The inclusion of a microcontroller, a system for grinding the plastic down before melting, and a spool for winding extruded filament could lead to widespread implementation of recycling filament pneumatically. We have recommended that the project be taken up by the local open-source community, such as Think Haus, where the majority of the construction of the prototype was completed.

The final document summarizes the procedure of construction and includes plans for design, as well as the materials used. The document provides step-by-step instructions as well as insights into the operation of the pneumatic system, images of the prototype throughout the construction process, and suggestions for improvement.

Over the course of the project, we made 15 posts on our blog describing our progress through images and descriptions. The blog functioned as an online lab book, allowing us to recall and access our results from week to week and also records our experiments with melting plastic prior to the adoption of a pneumatic system.

Extrusion of plastic filament from "Unprinter"

Collaborators: Tremendous support has been provided by Mr. Ben Keller, PhD candidate, Department of Physics and Astronomy. Think Haus has also provided considerable aid and resources throughout the project.

Links:
- Blog: http://unprinter.wordpress.com/
- Open Sourse Wiki: https://github.com/bwkeller/unprinter/wiki/Sustainability-3A03-Report:-Recycling-Filament-Pneumatically
- Video of Recycled Filament Extrusion: http://youtu.be/bl9zWh7cWMo

Small Scale Organic Farming

Student Authors: Stephen Clare, Christopher Galano, Ritika Goel and Spencer Imbrogno

Overview

Organic farming is growing in popularity as people are becoming increasingly concerned and aware of the source and quality of their food.[10] However, organic farming is often attacked as inefficient compared to conventional farming methods.[11] The goal of our Sustain 3A03 experiential learning project is to develop a tool that will enable more efficient, sustainable farming; specifically, we wanted to design a tool that would help with effective planning and farm management for long-term success. We wanted the tool to be useful for anyone, whether a veteran farmer or a beginner with a backyard garden, to encourage a socially, environmentally, and economically sustainable way to feed us all.

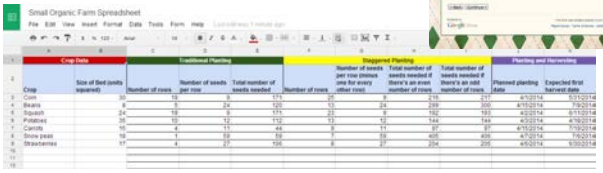
Objectives

1. Identify and understand the challenges, opportunities and best practices in small scale organic farming
2. Design and implement an interactive tool to support cost effective and efficient farm planning to allow farmers to make informed decisions
3. Enable the farmer to compile their data over multiple years and include specific observations
4. Provide a user manual to enable farmers to develop additional components that will meet their individual needs

Overview

We researched the various aspects of sustainable organic farming, such as crop diversity, crop rotation, and careful planning.The project evolved over time, and eventually narrowed to focus on the planning stages of organic farming, since we came to believe that it is at this early point in the process that we would best be able to offer suggestions to organic farmers. Working collaboratively, our group members each took a lead role in one of the various aspects of planning and project implementation, such as crop selection, projected yields, and data collection systems.

Our final product is a comprehensive package accessible online through Google Drive. The package comprises of a Small Organic Farm Form, a Small Organic Farm Spreadsheet, an AgSquared Form, an AgSquared Spreadsheet, and a User's Manual. The Small Organic Farm Form allows farmers to enter information from seed packets of any crop, along with either how many seeds they want or how much area they have. The responses are sent to the Small Organic Farm Spreadsheet where useful values are calculated and presented. The Small Organic Farm Spreadsheet provides the user with planning information, such as required area, number of seeds, number of rows, and time of expected first harvest. The Small Organic Farm Form and Small Organic Farm Spreadsheet can be used alone to facilitate farm planning. The AgSquared Form asks farm planning questions, which are then uploaded to the AgSquared Spreadsheet. The AgSquared Spreadsheet is compatible with an app, AgSquared, which allows farmers to further plan and manage their farm if they so choose. All the spreadsheets can be downloaded so that farmers can track progress over the years.



Small Organic Farm Form and Spreadsheet

Collaborators: We would like to thank our community project champion, Michael Mikulak, for his continued support and devotion to helping us learn about organic farming and engaging us to take part on his own farm so that we could have an incredible and truly experiential learning opportunity.

Social Impact Bonds

Student Authors: Madeline Lawler, Christopher Raptopoulos and Guang Zheng (Greg) Sun

Overview

The business world is changing to account for societal demands for a more sustainable economy aligned with environmental needs, resulting in a new field called social finance. For our Sustain 3A03 experiential learning project, our goal was to conduct research and gain a better understanding of innovative opportunities for funding projects that bring positive social change. The primary method we focused on is known as the social impact bond (SIB). With the support of impact investors and intermediaries, social projects can be funded to target social and environment problems while achieving economic growth. SIBs are one time investments from investors into a do-gooder company and if the project succeeds under predetermined metrics, the government will repay the principle investment plus additional returns.

Objectives

1. Develop an in depth understanding of relationships between sustainability and the economic impact of SIBs.

2. Educate the Sustain 3A03 class about the significance of SIBs and how they contribute to the triple bottom line.

3. Work to develop a specific idea for how a Social Impact Bond could be implemented in Hamilton.

Reporting

Collectively, the entire group showed genuine interest in the idea of social finance. This, coupled with limited knowledge in the subject, drove us to pursue research. In conducting our own research along with guidance provided by Ryan Nelson, our community project champion, we were able to learn a great deal about how financial models from our business courses can be applied to help fund projects focused on providing social benefits.

On October 22, we gave a one hour presentation to our Sustain 3A03 class on SIBs, which included a rich discussion between our group, our fellow classmates, the course instructor, and our project champion. Through the class discussion and feedback provided, it was evident that sharing the knowledge we obtained was of great value to our fellow classmates. Furthermore, we have analyzed two past implemented SIBs and generated three ideas of our own. While all three ideas have great potential, we chose to do further research into how a social impact bond could help fund a local community arts and education project.

The development team for the Social Impact Bond Project attending one of their regular meetings at the Mulberry Cafe. From back: Christopher, Madeline, Greg and Ryan.

Collaborators: Integral support was provided by Ryan Nelson. In addition, feedback and support from our fellow Sustain 3A03 classmates further contributed to our understanding of SIBs as they relate to a variety of other projects and applications.

Links: The following links provide some basic information about SIBs and their current status in Canada.
- http://socialfinance.ca/social-impact-bonds
- http://financeforgood.ca/

Sustainable Fashion

Student Author: Tsering Shrestha

Overview

As consumers, we are not aware of how our clothes are made or what impact they have on the environment. This is something that normally doesn't cross people's minds. It is imperative to be more aware of environmental impacts certain clothing materials have. Alternatively, the project I embarked on was creating awareness about sustainable clothing. The project's main objective was to raise awareness of sustainable clothing materials such as hemp and organic cotton to students at McMaster University and help students question some of the cheap fast clothing materials used today that harm the environment.

Objectives

1. Educate students about sustainable clothing materials.

2. Incorporate social media to influence students to choose more sustainable clothing when purchasing clothes.

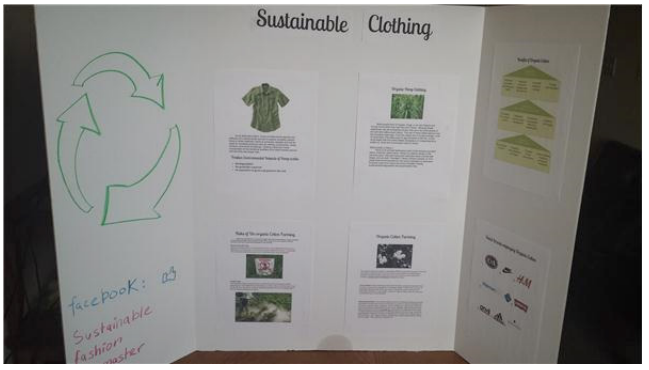
3. Develop a greater understanding of the scope of retail clothing markets and its impact on the environment through research.

Reporting

The project started off very ambitiously with objectives of educating the big retail-clothing industries by pursuing them to use more sustainable materials in the designs of their clothing. However, as the project progressed it was quite difficult to reach the big retailers, as several e-mails sent to them were not replied.

The focus then shifted in a different direction; to help promote sustainable clothing to local companies. However, this also resulted in no success. Most of the sustainable clothing stores were located in Toronto.

Finally the most feasible objective became to impact and educate students to help them become more aware of the positive impacts of buying sustainable clothing. The results were quite successful and got positive remarks from fellow students. Social media and an information booth were the tools used to generate awareness among students and it turned out to be successful. Using the information booth was helpful in directing them to like the Facebook page "Sustainable Fashion - McMaster" as it generated 21 likes.



Information board on sustainable clothing

Collaborators: The project was an individual generated project. Support from the Sustain 3A03 instructor and Teaching Assistants was provided to help determine possible next steps and generate ideas for project implementation.

The Plan "Bee" Initiative

Student Authors: Anna Iwanicki, Nashwa Khan, Mark Lee and Mark Westerink

Overview

In North America, honeybees are the most important natural pollinators to crops, with more than one third of crops pollinated by honeybees. Since 2006, a drastic decline of honeybee colonies has been seen in Canada, due to Colony Collapse Disorder.[12] In February 2013, the OPIRG[13] group, along with local beekeeper Brandi Lee-MacDonald, formed the Hamilton Urban Beekeepers (HUB) to help spread awareness about this crisis impacting the honeybee population. For the Sustain 3A03 experiential education project, The Plan "Bee" Initiative was started with the goal to build a sustainable honeybee education and awareness program at McMaster and extending to the broader community.

Objectives

1. Promote awareness of the campus beekeeping initiative, in affiliation with HUB.

2. Educate the McMaster community on the importance of honeybees in agriculture, as well as the current global crisis affecting its population.

Reporting

Promotional awareness and education was accomplished through two main initiatives: Campus Sustainability Day and High School Outreach Program. To help promote events, a Facebook page and Twitter account were developed, along with new updated posts on the HUB webpage.

McMaster's annual Campus Sustainability Day was held in October 2013, where our group displayed information about the McMaster honeybees, as well as the current crisis impacting the honeybees. We encouraged participation through a variety of engaging techniques including the following:

- An information board with pictures from the McMaster hive site
- Free handmade buttons
- Support campaign with a white board for participants to answer: "Why do you support bees?" Statements include: "It makes the world a sweeter place" and "They pollinate flowers that make our food"
- A raffle prize incentive of a free jar of honey for engaging with our booth
- Sale of local honey produced by the McMaster honeybees

Through this event, we were able to engage over 150 McMaster community members, including students, staff, and faculty members.

In collaboration with McMaster's Centre for Climate Change, our group visited two Hamilton high schools in late November to share our project. The presentation included general information on honeybees and a discussion on the value of honeybees in agriculture and the causes for the drastic population decline. Though these sessions, we broadened our reach beyond the McMaster community, educating over 60 students and teachers.

The Plan "Bee" team at Campus Sustainability Day. From left: Mark Lee, Mark Westerink, Nashwa Khan, Anna Iwanicki

Collaborators: This project was initiated through the support of Brandi Lee MacDonald & Amina Suhrwardy, who were the founding members of the HUB. Brandi is focused on maintaining the hives on campus and lends her expertise from her work at her own apiary, Three Bees Honey. Amina is representing OPIRG[13] and helped the group with expanding the current Hamilton Urban Beekeepers website. OPIRG[13] was helpful in providing funding for advertisement such as boards, pamphlets and buttons. The collaboration with McMaster's Sustainability Program was significant in promoting the group at Sustainability Day. The group was supported by Kate Whalen and Zeinab Rahal from McMaster's Office of Sustainability.

Links: - HUB Website: http://hamiltonurbanbeekeepers.com/

Sustain Race

Student Authors: Peter Fenlon, Lavinia Ghinea and Hani Ramzan

Overview

Hosted annually by the Office of Sustainability, Campus Sustainability Day celebrates advancements made toward developing a culture of Sustainability at McMaster University and within the broader community. By further developing this annual event, opportunity exists to enhance student and staff engagement as well as to offer new avenues to educate about sustainability.

Objectives

1. Educate students and staff about Campus Sustainability Day
2. Engage students and staff in Campus Sustainability Day
3. Create a culture of sustainability on campus through education and engagement

THE SUSTAIN RACE

The Sustain Race logo

Reporting

With these goals in mind, we hosted an educational sustainability game, The Sustain Race, modelled after the television show The Amazing Race. Similar to the television show, we asked participants to actively partake in broad challenges across campus, for example, one of the challenges was to locate an empty tutorial room in one building on campus and turn off the lights. Once participants completed a variety of different challenges, they were given a chance to enter their name for a prize basket.

Following our sustainability challenge, we surveyed participants to measure how well our deliverables were achieved. We sought to engage 30 participants and ended up with a total of 42 participants within 29 teams taking part in the Sustain Race. These participants expressed their satisfaction with 70% saying the race was “more enjoyable than expected”.

We also wanted to educate participants on sustainability and found that 90% of participants reported an improved awareness of McMaster sustainability services, such as MACycle (the on-campus bicycle co-op) and the on-campus technology recycling initiative. In addition to improved awareness, all of the participants reported being more likely to use these services in the future. All of the Sustain Race participants also reported that they were more likely to incorporate sustainability in general into their lifestyle.

The Sustain Race was successful in engaging and educating McMaster students on the importance of sustainability. This success has been well received by the Office of Sustainability and, through ongoing support, the Sustain Race has been incorporated into future Campus Sustainability Day event planning.

Collaborators: Zeinab Rahal; Sustainability Coordinator and Project Champion has provided integral support and guidance throughout. Furthermore, the success of this initiative would not have been possible without the support from our student peers from the Sustain 3A03 class, such as E-waste group, and all the individuals and groups who took part in the Sustain Race Challenge.

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[7] PLA, short for polylactic acid, is a type of plastic made from natural sources such as corn starch or sugar cane. Currently, PLA is used in a broad range of products, including biodegradable bags, medical implants, and diapers. Due to its natural source, PLA was chosen as the primary material.

[8] ABS, short for Acrylonitrile butadiene styrene, is a plastic produced through the polymerization of chemicals, and is widely used in objects such as small kitchen appliances, car parts, and carrying cases.

[9] This figure includes the cost of the hot plate and some hardware. It does not include the vacuum pump or air compressor, which were available through Think Haus.

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[13] OPIRG stands fo Ontario Public Research Interest Group, a student-funded and student-directed non-profit organization.

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