



ACADEMIC SUSTAINABILITY  
PROGRAMS OFFICE

**SUSTAIN 3S03 COURSE REPORT**

Fall 2017



# A LETTER FROM THE SENIOR MANAGER

In September 2017, another fantastic cohort of students took part in Sustain 3S03 – Implementing Sustainable Change. Students from all 6 faculties and the Arts & Science Program engaged in interdisciplinary, community-based, student-led, and experiential education related to sustainability. Led by instructor Dr. Michael Mikulak, with support from Teaching Assistants Liana Glass, Dalton Budhram, and Coomal Rashid, students had the opportunity to examine the concept of sustainability by focusing on specific case studies and examples in relation to larger questions of power, knowledge, and human and non-human agency. Lectures, tutorials, and assignments were focused on developing truly interdisciplinary conversations that consider the different techniques and tools society has at its disposal for addressing the environmental crisis. During the first week of classes, 41 students formed 11 project groups based on their individual interests in sustainability. To complement their theoretical knowledge of sustainability, each student group undertook an experiential learning project of their choosing. To offer support, guidance, and ensure students had the opportunity to work with members of the McMaster and broader community, 14 individuals formally accepted the role of Community Project Champion by offering their time, resources, and expert knowledge to assist students in achieving their project goals. Additionally, countless members of the community participated in events, provided feedback through consultation, and offered mentorship. The tremendous amount of community support and engagement is illustrated by each group in the pages to follow. As you read this report, you will notice that the breadth of student interests related to sustainability is far reaching. Projects range from establishing a public-facing composting program within the McMaster student centre, to reducing barriers to student participation in the city's bike sharing program, and to designing a mobile greenhouse to support urban farming in Hamilton. 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*

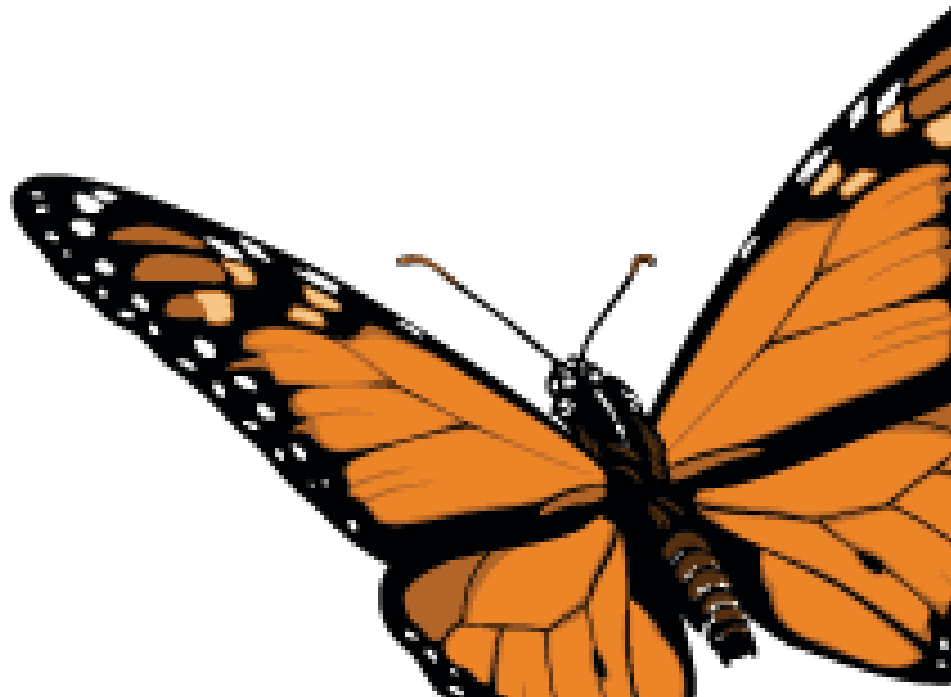
**KATE WHALEN**  
**Senior Manager, Academic Sustainability Programs**

## OUR MISSION

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.

## OUR GUIDING PRINCIPLES

- 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



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# **SUSTAINABLE FUTURE PROGRAM**

# BLOCK PARTY: A STRATEGY FOR COMMUNITY ENGAGEMENT

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Students engaged in group activity

Photo Credit: Dylan Ward

## OVERVIEW

A study done by Mackett shows that with a rising complexity in modern life, there has been an increase from 35% to 51% of individuals travelling by personal vehicles providing a sense of security, convenience, and protection against bad weather<sup>1</sup>. As parents are reducing children's exposure to active travel, there is a loss of valuable roadside experiences such as the independence gained from walking without parents, loss of social opportunities, and a reduction in the amount of physical activity. Additionally, Penedo & Dahn provide evidence that a reduction in physical activity leads to a lower lifelong health and wellbeing<sup>2</sup>. In response to this, the Transportation Management division of the City of Hamilton and our group aim to increase knowledge and awareness of Active and Sustainable School Transportation (ASST) within the Hamilton area. The goal of our initiative is to promote active travel to school and teach youth about sustainable transportation by hosting a block party.

## OBJECTIVES

1. Identify an interested community partner or partners
2. Plan and execute a successful block party event
3. Teach youth about sustainable transportation and promote social cohesion
4. Enhance the City's Block Party Toolkit with a case study example to demonstrate the Toolkit's application

## REPORTING

We reached out to multiple schools in Hamilton. Cootes Paradise Elementary School, near McMaster, identified interest in our active transportation project. Once the relationship was established, we worked together to communicate with parents and students through the school's website to raise awareness of the event and encourage the use of sustainable forms of transportation.

During the event, we ran three inquiry-based games that taught youth about the importance of sustainable transportation. Additionally, we hired a local dance group to get students active and moving on a cool November morning and concluded the event with healthy snacks.

Through a hands-up survey, we found that the majority of youth took a more sustainable form of transportation other than being driven. Through the use of interactive games, 66% of youth felt they learned more about the benefits and importance of sustainable transportation, 58% of youth indicated that they felt more inclined to use sustainable forms of transportation after the event, and 76% felt that they were provided the opportunity to meet new peers from different grade levels and develop stronger bonds.

We were able to use our experience as a case study to understand and demonstrate how collaborators are able to communicate and establish a working relationship with an elementary school. Together, we created a visual infographic outlining the eight steps allowing for greater accessibility of the Toolkit.

## COLLABORATORS

We would like to thank Community Project Champions Rachel Johnson and Dylan Ward from the City of Hamilton for their support and guidance, Principal Denise Minardi, and other administrative staff from Cootes Paradise Elementary School who provided sponsorship and mentorship, as well as the teachers and students who made the day a great success. Finally, we would like to thank The Experience Grove for contributing to the events activities and success.

# SUSTAINABLE ACTION TO REDUCE ELECTRONIC WASTE IN THE MCMASTER COMMUNITY

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Photo Credit: Karen Carr<sup>1</sup>

## OVERVIEW

Most people know how to recycle everyday items such as plastic and cardboard. Beginning in elementary school, the importance of recycling has been taught. However, nothing is discussed about electronic waste items. How are they recycled? Are the methods of recycling safe, reliable, and sustainable? Inadequate electronic recycling can have detrimental effects not only in the local community, but globally as well. One study found that e-waste items from developed countries such as the United States and Canada are shipped to developing countries such as China for recycling<sup>3</sup>. These areas do not have the infrastructure, policies, or procedures in place to properly recycle these products, and have been found to exploit young children for work<sup>3</sup>. Exposure to manual burning and breakdown of electronics has been linked to high levels of cadmium, mercury, and lead, which can cause high cytotoxicity in the blood during long periods of exposure<sup>5</sup>. Moreover, improper e-waste disposal has been linked to environmental pollution, impacting both the natural ecosystem and human populations<sup>4</sup>. With this knowledge, we teamed up to raise awareness at McMaster about why and how to recycle e-waste, as well as to provide feasible opportunities to recycle e-waste in safe and easily-accessible locations on campus.

## OBJECTIVES

1. Raise awareness on e-waste disposal and educate students on how they can recycle electronic waste at McMaster
2. Increase the adoption of e-waste recycling by placing a recycling bin in an accessible location for students during Technology Support Week
3. Evaluate the success of our project and provide analysis for future e-waste projects at McMaster

## REPORTING

Through our collaboration with the McMaster Students Union (MSU) and campus Facility Services, we were able to raise awareness about electronic waste and provide students with the opportunity to recycle their electronics and batteries.

First, we utilised social media and created brochures to raise awareness regarding electronic waste and recycling options on campus. We also used social media to promote our event, Technology Support Week, which was held November 13th to 17th. Technology Support Week provided students with the opportunity to learn about their electronics and recycle their e-waste. To promote the event and available electronic waste options on campus, we connected with over 38,000 people on social media, 2,000 students from class visits, and 100 students through individual conversations.

Our event's success was also attributed to Facility Services, who provided us with bins for electronic waste recycling, and the MSU, who provided us space to place the bins within the Student Centre during Technology Support Week. Students came to recycle their electronic waste throughout the week. By week's end, an estimated 320 kg was collected by Facility Services and sent for proper recycling. Moreover, numerous students collected items for reuse while the rest was recycled.

When evaluating the success and next steps for this project, there are key factors that can be addressed to make this project more sustainable. Our evaluation found that future events should assess the number of items reused by students, along with the initially recycled items. Furthermore, although semi-regular events such as Technology Support Week are important for raising awareness, it can be further supported by the addition of permanent accessible bins across the McMaster campus. Therefore, students will not be restricted in terms of when they can recycle their electronic waste

## COLLABORATORS

We would like to thank the following individuals for their support during the course of this project: our Community Project Champion and MSU President, Chukky Ibe; the Director of Custodial Services, Carlos Figueira; and the Facility Services staff and team. Our project would not have been possible without their immeasurable support.



# IMPLEMENTING A REUSABLE TAKEOUT CONTAINER: THE ECO-TO-GO PROGRAM

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Marketing poster designed by the MSU to promote the program  
Photo Credit: Sarah Conrad

## OVERVIEW

According to the Environmental Protection Agency, 39 million tons of packaging and containers from restaurants enter the municipal waste services every year<sup>1</sup>. From our student experience, the majority of food purchased on McMaster campus is packaged in single-use takeout containers. Without widespread composting facilities on campus, most packages end up in the garbage. In recent years, McMaster implemented the Eco Takeout Container Program, which enabled students and staff to purchase a reusable takeout container accepted at select on-campus eateries. Participants could reuse the containers, eliminating the need for the single-use alternative. However, the Program was only available at three eateries, and participant adoption was low. Inspired by this opportunity to significantly alter behaviour and reduce waste production, the goal of our project, Eco to Go, is to reduce the single-use takeout containers by encouraging the adoption and use of reusable containers.

## OBJECTIVES

1. Understand current students' attitudes and behaviours about food-related waste
2. Decrease waste resulting from single-use takeout containers
3. Increase composting on campus by raising awareness that current takeout containers are compostable

## REPORTING

To satisfy our first objective, we surveyed students and found that 92.8% respondents would be willing to switch to the Eco Takeout Container to save money and to help the environment. The students demonstrated their support for the program expansion by signing a public petition.

To encourage composting on campus, we worked with a Studio Art student to create a stamp with the words, "compost me" and were prepared to stamp 1,500 compostable takeout containers in the MUSC eatery. Unfortunately, the stamps did not transfer legibly onto the takeout containers, so we pursued promotion through social media instead.

There were two key unforeseen challenges that prevented our project from progressing as planned. The first challenge was that the design of the takeout containers allowed for food leakage. This proved to be a barrier not just for student adoption but also for the food vendors who showed concern for implementing a program that would not satisfy the students. Despite this concern from some campus eateries, Hospitality Services was supportive of pursuing the initiative further. Our second challenge was that although Hospitality Services thought they had the appropriate infrastructure to support the program, after consulting with staff members to pilot the process it became apparent that there was not sufficient room to wash and dry the anticipated number of containers. While our intended plan did not come to fruition, potential next steps for this initiative would be to consider options for students to bring their own reusable container and/or promote the compostability of the current containers.

Due to these unforeseen infrastructural barriers, we were unable to satisfy all of our project objectives. However, our team was successful in developing a network of professionals, gaining valuable skills in real-world problem solving, and understanding the challenges involved in implementing sustainable change. One of the biggest takeaways was that we were successful in starting a conversation with Hospitality Services and the McMaster Students Union (MSU), and we hope that in future years this program will be implemented across campus. We are very grateful for each individual who helped us reach our goals in this project.

## COLLABORATORS

We would like to thank Chucky Ibe, our Community Project Champion and the current MSU President, for guiding us throughout our project. We are also grateful for the support of Sarah Conrad, MSU Communications Officer; Chantelle Stringle, Level 4 Studio Arts Student; Ross Boustead, Manager, TwelveEighty; as well as Chris Roberts, Director, Hospitality Services and Christine Yachouh Sustainability Coordinator, Hospitality Services.

# FOOD WASTE AT MAC: SUSTAINABLE COMPOSTING INITIATIVE

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Green bin located in MUSC  
Photo Credit: Alicia Giannetti

## OVERVIEW

Food waste is a crisis in many areas of North America. An annual report of the Value Chain Management International (VCMi) showed that \$31 billion worth of food is wasted every year in Canada, which is about 40% of the food that is produced. McMaster University produces 902,378 kg of organic waste per year, which is 43.2% of the total waste by weight. Although the kitchens in McMaster University Student Centre (MUSC) are composting, there are no public facing compost bins. As a result, all of the food waste that is generated through the consumption of Hospitality Services offerings is likely to end up in the garbage. Our goal is to establish permanent public facing composting bins at McMaster University to ensure that food waste has an opportunity to be composted.

## OBJECTIVES

1. Conduct a pilot study to determine infrastructure and educational needs for composting practices
2. Educate students on food waste and composting practices
3. Evaluate study results to determine the impact of infrastructure and education on composting practices and recommend program enhancements
4. Collaborate with campus stakeholders to ensure that the composting program becomes permanent

## REPORTING

We conducted a pilot study by placing two compost bins in MUSC. One of the bins had signage and the other did not. We monitored the bin with signage during the first week in order to educate students on composting practices. We did not monitor the bin for the rest of the study to evaluate if composting was still done properly. Over the three weeks of our pilot study, we found an increase in collected compost and a decrease in contamination from non-compostable items. Furthermore, the bin with signage contained more compost and had less contamination compared to the bin without signage. This suggests that education resulted in a decrease in contamination. We collected a total of 101.34kg of compost during our three week pilot study. This illustrates the importance of implementing permanent public facing compost bins in frequently accessed campus spaces. We promoted the composting bins and educated people by monitoring the bins, displaying 3D signage above the bin, communicating social media, reaching out to other student clubs, tabling at Sustainability Day, having an interview with the campus radio (CFMU), and writing an article for the student newspaper (The Silhouette). Through collaboration with Chris Roberts (Hospitality Services), Carlos Figueira (Facility Services), and Lori Diamond (MUSC Administrator), we were able to complete this pilot project and ensure that the program will be made permanent with newly designed bins and signage by Spring of 2018.

## COLLABORATORS

We would like to thank Adam Chiavarelle, Chris Roberts, Kate Whalen, Carlos Figueira, Lori Diamond, and Fiona McGill for working with us to make this project a success. Also, we would like to thank all students and staff who took part in this program.

# FOOD WASTE AT MCMASTER: EXPLORING WAYS TO DISTRIBUTE EXCESS FOOD FOR CONSUMPTION

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Leftover food remaining at Tim Hortons

Photo Credits: John Vu

## OVERVIEW

Obtaining healthy food at a reasonable price can be a challenge for many students. It has been reported that 4 in 10 students in Canada lack food security<sup>1</sup>. Additionally, food waste is a prominent issue in Canada; \$31B worth of food is wasted annually<sup>2</sup>. At McMaster, two on-campus organizations, NoLunchMoney and Mac Bread Bin, focus on alleviating the problem of food waste on campus. Specifically, there is often excess food available at on-campus eateries, however Hospitality Services has a number of policies in place that prevent the distribution of excess food. The goal of this project is to engage on-campus stakeholders as project collaborators, and develop possible opportunities for distributing excess food from McMaster eateries, rather than discarding it at the end of the day.

## OBJECTIVES

1. Identify on-campus eateries that have excess food at closing
2. Collaborate with various McMaster groups that focus on raising awareness of food waste on campus
3. Communicate with McMaster's Hospitality Services to gain a better understand of current food policies
4. Implement a Hack-a-thon workshop to raise awareness of food waste and facilitate discussion relating to solutions for distributing excess food
5. Present key solutions to Hospitality Services that were identified at the workshop

## REPORTING

Our group identified eateries at McMaster that have excess food at the end of the day. From observation, the Tim Hortons in MDCL, BSB Café, and Thode Café all had food remaining. Thode Café was the primary eatery that our group decided to focus on for our project.

On-campus groups Nolunchmoney and Mac Bread Bin have similar visions related to identifying solutions to deliver excess food. After meeting with the groups, we decided to collaborate and provide them with an opportunity to speak at our Hack-a-thon workshop. We also met with Director of Hospitality Services, Chris Roberts, to get an understanding of policies preventing the reallocation of excess food. Chris highlighted three policies: one related to food safety, another focusing on franchise policies, and a third connected to revenue generation.

The Hack-a-thon event was a success with the help of keynote speaker, Chris Roberts and the participation of 15 students. Students at the workshop engaged in food-related activities, shared their responses to discussion questions, and stayed engaged through speakers and informative videos. Participants were also divided into teams to come up with solutions to the problem: "How can we distribute excess food from Thode Café to students?" The majority of the solutions were similar and simple in context. For example, you could just leave excess food on a table in the library for students. Surveys at our workshop also reported that 80% of students found that food was overpriced on campus.

While we could not implement the suggested solutions within our project timeframe, through reporting resolutions from the Hack-a-thon workshop to Hospitality Services, we hope that the ideas generated will help to facilitate future progress in food sustainability on campus.

## COLLABORATORS

We would like to express our sincere thanks and gratitude to our Community Project Champions, Adam Chiaravalle (McMaster Alumnus) and Chris Roberts. Specifically thanking Adam for helping move the project in the right direction and guiding us with the implementation of the Hack-a-thon workshop. Additionally, thanking Chris for being the keynote speaker at our event and discussing policies in place by Hospitality Services. We would also like to thank John Vu from NoLunchMoney and Taylor Mertens from Mac Bread Bin for their collaboration and assistance with the promotion of the workshop and remaining as enthusiastic as us during the process, which was incredibly encouraging! Finally, we would like to thank all those who attended our Hack-a-thon workshop for their participation and constructive feedback.

# PROMOTING OPPORTUNITIES IN THE GIG ECONOMY TO SECONDARY SCHOOL STUDENTS

## STUDENT AUTHORS

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Volunteering in the local community as part of the Gig-economy  
Photo Credits: Victoria Wong

## OVERVIEW

An article written by Randstad Inc. suggests that the size of the non-traditional (i.e., remote, independent contractor, on-demand workers) workforce is between 20% to 30% and is rapidly growing<sup>1</sup>. As the economy transitions towards more modern forms of employment and community service, technology has to evolve to meet these needs. The gig economy is a labor market characterized by the prevalence of short-term contracts or freelance work as opposed to permanent jobs<sup>2</sup>. The gig economy provides entrepreneurs and freelancers the freedom to choose their work engagements, which includes volunteering and community-based ventures; this is one such way to accommodate the changing needs of the workforce<sup>3</sup>.

Gigit is a Hamilton start-up focused on the emergence of the gig economy by introducing an online marketplace for volunteer and employment opportunities in the community. Our project goal is to identify barriers to and opportunities for highschool students to engage in the local gig economy for both volunteering and employment. By encouraging community work, Gigit is promoting social sustainability.

## OBJECTIVES

1. Approach school board officials about including the use of the Gigit platform during school classes such as Civics and Careers
2. Create awareness of the Gigit platform among high school students and encourage users to apply for volunteering and employment opportunities
3. Identify trends in gig economy knowledge
4. Identify areas that can be focused on during marketing campaigns by using results from Objective 3

## REPORTING

We were successful in engaging 35 high school students through promotions and communications that were facilitated by school teachers. It was difficult to achieve this goal as building partnerships and collaborating with high schools is a long and tedious process. However, we were successfully able to present the Gigit platform to students and outline the benefits it provides like volunteer experiences, community engagement, and social sustainability. In addition, the students filled out research surveys (19 surveys filled in total) pertaining to their opinion of the gig economy and where they see themselves working/volunteering. Approximately 40% of the survey participants indicated that they enjoy reading and playing sports as their primary hobbies. Based on that key finding, we contacted local libraries and sports clubs and encouraged them to post volunteering opportunities on Gigit.

## COLLABORATORS

We would like to thank our Community Project Champions and the Gigit team members, Midhat Malik, Christian Paetkau, and Chris McIntosh for their support and guidance throughout the project. We would also like to thank the students who supported our project by learning about the gig economy, fostering a discussion about volunteering and the gig economy, and providing valuable survey information to help attract popular organizations. Last, but not least, we would like to thank Nora Frances Henderson Secondary school for providing support to allow us to enter their Civics and Careers class to present to students.

# MENT-IT: CULTIVATING MENTORSHIPS AND COMMUNITY IN AN AMBITIOUS CITY



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HIVEX conference advertisements  
Image credit: D'Ambrosio, C. (2017).  
Urbanity magazine

## OVERVIEW

Mentorship is a fundamental part of fostering sustainable and collaborative communities, as it cultivates knowledge, skills exchange, personal connections, and common interests. In the United States, for every \$1 spent on effective youth mentoring programs there is at least a \$3 return in benefits to the community<sup>1</sup>. The literature in Canada shows similar results: mentorships support young individuals' growth and development, as well as social and economic opportunities in their personal, academic, and professional lives. Also, youth with mentors are 130% more likely to engage in leadership roles<sup>1</sup>. However, three quarters of youth miss out on the benefits of mentorship<sup>1</sup>. Though mentorship resources are available online, this information is not being widely distributed to individuals outside of institutions in Hamilton, such as universities and corporations. To create more interconnected and sustainable communities, we need to teach mentorship skills and distribute mentorship resources to a wider demographic. Our goal is to teach young people how to cultivate positive mentorship relationships and provide information, tools, and resources to support and sustain mentor-mentee relationships.

## OBJECTIVES

1. Conduct research on what mentorship relationships look like in Hamilton in 2017
2. Promote the valuable impact that mentorship relationships can have on community growth and development
3. Guide individuals on how to initiate and cultivate mentorships to encourage positive and sustainable impact

## REPORTING

To understand more about mentorship in Hamilton, we conducted qualitative interviews with 24 mentor-mentee pairs from different industries, including culinary arts, entrepreneurship, transportation, engineering, athletics, general labour, finance, real estate, business, and education. From this research, we learned that mentors and mentees value meaningful relationships that foster mutual respect, trust, and honesty. Mentors and mentees invest more in relationships that are mutually beneficial and involve shared interests and values.

We reviewed academic research to support our primary research and learn more about the impact of mentorships on personal and community growth. Results from a meta-analysis found that mentoring is linked to positive behavioural, relational, health-associated, and goal-setting outcomes<sup>2</sup>. Furthermore, through our research we learned about Simon Sinek, best-selling author of the book *Start With Why*, who describes that "people don't buy what you do, they buy why you do it" (2017). In connection to our research findings, it is important for mentees to know their 'why,' so that mentors can buy in, creating shared value and a deeper understanding of each others' purpose and goals. We compiled our research into a 3-minute animated video, which we distributed via social media. We also designed a presentation and workshop for the Hamilton Hive, HIVEX young professional's conference on November 18, 2017. During the conference, we presented our video and invited guest speakers to share their personal mentorship stories. Following the presentation, 5 mentor and/or mentee facilitators led discussions at 6 tables, using guided questions. A total of 40 participants shared personal experiences, asked thought-provoking questions, and shared mentorship advice. Additionally, participants provided feedback including that they gained confidence to approach a possible mentorship and/or tools to sustain a mentorships.

We posted our research findings, video, and infographic on the [Hamilton Sustainability Professionals Network website](#) to offer greater accessibility of these resources and encourage more people to engage in mentorships in Hamilton. We hope our project inspires others to put into action purposeful, accessible, and educational mentorship programs.

## COLLABORATORS

We would like to thank our Community Project Champion Vikram Hardatt for his support and guidance; mentor and mentee pair interviewees for supporting our research, members of the Sustainability Professionals Network who helped us execute our vision, and HIVEX coordinators, volunteers, and attendees for actively participating and providing us with positive and constructive feedback.

# SEEDY SATURDAY

## STUDENT AUTHORS

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Advertisement for movie night  
Photo credit: Molly Bradford

## OVERVIEW

The use of commercial seeds has increased in popularity throughout Canadian farms<sup>1</sup>, causing a push towards uniformity and homogeneity in agriculture which threatens seed biodiversity<sup>2</sup>. Seedy Saturday is a global event that educates the public on the importance of sustainable growing practices, supporting locally-sourced food, and supports a growing collective of individuals passionate about these issues. Working with community-based not-for-profit Green Venture, our group aimed to increase McMaster student involvement in Seedy Saturday Hamilton. Through social media campaigns and a promotional documentary screening on campus, we worked to achieve our project's objectives. By educating a younger generation the practices promoted at Seedy Saturday can continue to be cultivated in Hamilton.

## OBJECTIVES

1. Educate McMaster students about the importance of maintaining heritage seed varieties, eating locally-sourced food, and engaging in local sustainable growing practices
2. Generate interest among Hamiltonians in Seedy Saturday Hamilton 2018
3. Engage undergraduate students and promote active participation in Seedy Saturday Hamilton 2018 through volunteer and experiential learning opportunities

## REPORTING

The documentary screening held at McMaster introduced the dangers of industrial beekeeping and large-scale farming to a variety of students and community members. Following the documentary screening, a discussion was led by a local apiarist who will be acting as a vendor and running a workshop at Seedy Saturday 2018. Individuals engaged in discussion about sustainable beekeeping practices, threats to native pollinators, and the role of pollinators in maintaining seed diversity.

Through the use of social media, a variety of McMaster clubs facilitated the promotion of the McMaster documentary screening and managed to reach 6550 students and 1940 community members. Among these individuals, 150 students showed active interest in the event by joining our social media following on Facebook and Instagram.

To gain undergraduate student participation in Seedy Saturday Hamilton, an online volunteer database application was used. The posting, directed towards youth who were interested in volunteering at an environmental event, was viewed by 58 app users. Volunteers applied through this service and were put in contact with the organizers of Seedy Saturday. In addition, nine McMaster students volunteered at the Seedy Saturday event on February 3, 2018, including the student members of this project.

## COLLABORATORS

We would like to thank the Green Venture representatives Kelly Vanwalleghem and Laura Anderson, who advised our team, oversaw the event at McMaster, and helped plan Seedy Saturday Hamilton. We would also like to thank Luc Peters from Humble Bee for being an active participant in our McMaster documentary screening and donating a jar of honey that was given to a fortunate student. The McMaster OPIRG was very generous in supplying the equipment for our McMaster event. We would also like to thank the Mac Veggie Club, McMaster Water Network Student Chapter, McMaster Outdoor Club, Mac Bread Bin, and McMaster Btech Events for expanding the reach of our event through social media promotion.

# CYCLE HAMILTON: LINKING INDUSTRIES AND FORGING VALUE

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**Stephen Folorunsho**, Science

**Joy Park**, Science



A SoBi at Durand Coffee Shop in Hamilton

Photo Credit: Kate Whalen

## OVERVIEW

Cycle Hamilton is a non-profit organization with the vision of making Hamilton the best city for anyone to ride a bike. To achieve this, Cycle Hamilton's 2020 Strategic Plan includes the goal of seeing an increase in the percentage of bicycle trips by encouraging a modal shift<sup>1</sup>. The benefits of a bike-friendly city are not limited to safer streets, decreased pollution levels, and improvements to the city's environment and infrastructure.

To work towards this goal, the project's objective was to strengthen Hamilton's cycling culture by increasing the benefits offered to Cycle Hamilton's partners and members, and increasing awareness of the organization amongst non-partner businesses and non-member customers. Therefore, we sought to build partnerships with businesses by proposing a certification that would identify the businesses as being bike-friendly and in support of Cycle Hamilton's vision. A certification is lucrative as studies have found that customers prefer businesses that identify as being socially responsible<sup>3</sup>. These ideas were presented to three businesses and one non-profit corporation through individualized value propositions that outlined the tangible and intangible opportunities of partnering with Cycle Hamilton.

## OBJECTIVES

1. Identify and evaluate Cycle Hamilton's current partnerships and business proposal to revise a value proposition that will enhance the organization's existing assets for a more marketable partnership approach
2. Understand how non-partners view Cycle Hamilton as an organization and as a business partner, and ask businesses about the potential value that could be forged in their partnership
3. Form sustainable and equitable partnerships by presenting tailored value propositions that outline how the partnership improves Hamilton's bicycling culture by creating value for Hamilton's bicyclists and the respective businesses

## REPORTING

In order to achieve Objective 1, we interviewed Cycle Hamilton's Head of Membership, Jethro Krause, and reviewed documents related to their partnership agreements. We also identified which businesses confirmed partnership as of January 2017, as well as those that had not confirmed or were yet to be contacted. Furthermore, to compare our findings, we conducted a literature review that presented an analysis of business models enacted by similar organizations in North America.

We then scheduled 3 community walks to interview 5 non-partner businesses. We asked questions such as what value they identified and sought in partnering with non-profit organizations. Moreover, the interviews and walks were invaluable in allowing us to tailor each value proposition by observing customers' primary transportation mode as well as the business' views on partnering with non-profit organizations.

In completion of Objectives 1 and 2, we identified the need for a marketable proposal that presented mutually beneficial incentives for an equitable partnership. Thus, we assured business owners that there would be advertising and promotions on Cycle Hamilton's website, mailing list, and social media outlets. Additionally, we proposed a certification by means of a window sticker that would allow businesses to identify themselves as supporters of Cycle Hamilton. This sticker also informs bicyclists that the business is bicycle-friendly (i.e., with a bicycle rack, water station, toolkit, and tire pump). Furthermore, this certification acts as a great foundation towards achieving Share the Road's Bicycle-Friendly Business certification.

We are pleased to report that Sobi Hamilton and Durand Coffee have confirmed their desire to partner with Cycle Hamilton come 2018.

## COLLABORATORS

The development of our value propositions and project plans were made possible through the support of our Community Project Champion, Jethro Krause, who was an invaluable mentor from the project's inception to implementation. Additionally, we are thankful to Chelsea Cox, General Manager of Sobi Hamilton, and Chris Redmond, Owner of Durand Coffee, for their receptibility to discuss and willingness to support collaboration opportunities with our team members. Lastly, the constructive feedback provided by members of the Sustainable Future Program and the Hamilton community were integral throughout the project and our experiential learning experience.

# REDUCING BARRIERS TO SOBI USE ON CAMPUS

## STUDENT AUTHORS

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Sobi bike and rack at McMaster University  
Photo Credit: Connor MacLean

## OVERVIEW

With rising CO<sub>2</sub> emissions, increasing use of sustainable transportation within the community is a priority. Social Bicycles (SoBi), in collaboration with the City of Hamilton, hosts and maintains a system of shareable bikes across the city. With over 800 bikes in circulation between 130 bike hubs, this program has seen a lot of success in engaging working professionals to use the service<sup>3</sup>. As the concentration of students living around the McMaster campus continues to increase with increased enrolment, SoBi Hamilton has started looking for ways to engage students in the Bike Share program after noticing a lack of use from the student demographic<sup>3</sup>. After the failure of the October 2016 SoBi Referendum by 3%, which if successful, would have offered students a full-year SoBi membership for less than \$17, SoBi is continuing their efforts to understand why students are not using SoBi bikes<sup>1</sup>. The goal of this project is to work with SoBi Hamilton to further understand the barriers that exist between students and SoBi on campus, and to mitigate these barriers for increased use.

## OBJECTIVES

1. Identify various prominent barriers for SoBi use on campus
2. Identify which factors contributed to the failure of the SoBi referendum and offer recommendations for SoBi to address these issues
3. Implement marketing strategies to address identified barriers and increase SoBi use by McMaster students

## REPORTING

Our team launched an online survey asking students about barriers to SoBi use on or around campus. The survey was completed by 260 students and included questions about participant demographics, specific areas for improvement of the SoBi program, and the real or perceived barriers to SoBi use. Participants were offered the chance to win a free year-long SoBi membership in exchange for their participation in the survey. Upon analysis, our results indicated that the most common reason students do not use SoBi is that they are unsure of how the program works. Other common reasons included financial constraints, as well as feeling that they would not use it because they live far away. Furthermore, the 2016 referendum appeared to fail because students wouldn't use it enough, they didn't want to increase tuition, and that there weren't enough bikes on campus. Beyond the increased amount of bike racks, respondents also indicated other factors that would encourage them to sign up for a membership, including more information regarding the overall SoBi system, payment details, and the set-up process. Other suggestions include greater promotion, as well as more affordable and flexible payment plans that include pay-per-use or one-time user fees. To improve their experience with SoBi, the most popular recommendation made by students was increasing the number of bikes and bike racks on campus near residences, lecture halls, and densely populated student housing areas. In response to the primary factor of not using SoBi because of a lack of knowledge of the program, we created a video addressing the key barrier identified in our survey. By leveraging our student social media outlets, our video reached over 5000 people, was viewed 3000 times, received 203 total reactions, and had 19 total comments on Facebook within the first 24 hours.

## COLLABORATORS

We would like to thank our Community Project Champions: Peter Topalovic, the Transportation Project Manager at the City of Hamilton; Chelsea Cox, the General Manager of SoBi Hamilton; as well as all those who helped share and participate in our survey and promote our video.



# DESIGNING A MOBILE GREENHOUSE

## STUDENT AUTHORS

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CAD image of hoop-house style mobile greenhouse

Photo Credit: Nicholas Moss

## OVERVIEW

Backyard Harvest is an urban agriculture business striving to increase the quality and sustainability of Hamilton's food system. Today, the community-supported organization operates out of 11 backyard farms in the Strathcona and Kirkendall neighbourhoods.<sup>1</sup> They sell ultra-local, organic produce at local farmers' markets and supply local retailers.<sup>1</sup> Many scholars believe urban agriculture to be the future of sustainability due to its ability to build the capacity of communities while mitigating the negative effects of our modern food system.<sup>2,3,4</sup> Studies found that residents of communities that participate in urban agricultural projects have increased access to healthy and affordable food, spend more time outdoors, and have more active lifestyles.<sup>2,3</sup> Likewise, Backyard Harvest aims to provide local, organic food while strengthening neighbours' social connectivity. Currently, the farm's productivity is greatly limited by the short growing season of the northern climate. Moving forward, Backyard Harvest requires a solution in order to expand their operations. Our goal is to help Backyard Harvest design a mobile greenhouse in this unique urban setting that will lengthen the growing season and expand the local business, while positively impacting the agricultural sustainability of the community.

## OBJECTIVES

1. Investigate the regulatory requirements, including City by-laws and community values, pertaining to the construction of a mobile, backyard greenhouse
2. Provide design recommendations for mobile greenhouses that are cost effective and environmentally-friendly
3. Recommend granting options to fund the implementation of the greenhouse

## REPORTING

Working alongside Backyard Harvest and Greenlight Projects Inc., our project developed blueprints for a 20' x 72' mobile greenhouse, customized to two backyards in the Strathcona neighborhood. Our project blends theoretical research with knowledge from experts we consulted, including local farmers, community members, engineers, and suppliers. In accordance with our objectives, we created three key deliverables: a report that investigates the legal requirements for zoning and building permits within Hamilton, a design write-up with blueprints for the greenhouse, and a grant application to be submitted to Carrot Cache for \$5000 by February of 2018. In accordance with City regulations, community values, and our sustainable sourcing goals, we recommend a modular hoop-house design, with a galvanized steel frame, untreated pine foundation, and roll-up sides with a double polyethylene sheet covering. Optional fitted amenities include automatic windows controlled by electromechanical actuators, indoor heating and ventilation, and a rain barrel system. We modelled this structure in Autodesk Inventor, allowing us to create a 3D computer-aided design (CAD) to succinctly explain our final design and exact dimensions. After completing a financial analysis, we estimate that the project will cost approximately \$6229-\$6706, along with 100 hours of work to obtain, purchase, and assemble the mobile greenhouse. After approving and refining the design, Greenlight Projects Inc. will obtain building permits and begin construction in Spring 2018.

## COLLABORATORS

We would like to thank George Sweetman, P.Eng at Greenlight Projects Inc., for his mentorship and support as our Community Project Champion; Russ Ohrt, owner of Backyard Harvest for his vision and guidance; Dr. Chad Harvey, professor at McMaster University for his advice on granting; Lucy Dubeckyj, co-owner of L&R Shelters for her advice on greenhouse framing; and our professors, teaching assistants, and classmates for their ongoing feedback and support.

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