



Academic Sustainability Programs Office

Annual Report 2022-2023

Photo location: Hamilton, Ontario, Canada
Photo credit: Christopher Austin, Unsplash

BRIGHTER WORLD

Academic Sustainability
Programs Office



Year in Review 2022/2023

Addressing sustainability in our society poses complex challenges that require interdisciplinary solutions.

The mission of the Academic Sustainability Programs (ASP) Office is to inspire in all students a desire for continued learning through experiential education. We have achieved this mission through our various curricular and co-curricular programs, in which students are provided with unique opportunities for interdisciplinary, student-led, community-based, and experiential learning about the complex issues of sustainability. On behalf of all faculty and staff in our program, I would like to express how proud we are of all the accomplishments our students have made.

Now, in its ninth year, the Interdisciplinary Minor in Sustainability is the sixth largest minor by number of graduates.¹ Since our last report in the fall of 2022, there have been four courses added to the Minor Course List, 56 more graduates with the Minor, and more than 4,260 students engaged through events and class talks led by the Student Minor Committee. The Sustainable Future Program has also seen substantial growth since the first course was offered in the winter of 2013. In response to continued demand, we expanded enrolment capacity, offered more sections of existing courses, and introduced a new SUSTAIN course. With this expansion, we saw nearly 5,000 students, representing all Faculties and the Arts & Science Program, successfully complete a SUSTAIN course in the 2022/23 academic year.

With four more student interns this year, the Sustainability Internship Program has supported 61 students² to date in their self-directed learning. This year's interns have come from the Faculties of Science, Engineering, and the Arts & Science program, and they have focused on topics related to composting, clean water and sanitation, electronic waste reduction and reuse, and sustainability leadership.

To support our students' community-based, experiential learning, we continue to develop our relationships with the university and broader communities through our focus on collaboration, reciprocity, continuity, and active engagement. This past year, our students worked on 38 projects with over more than 1,400 collaborators to advance our collective sustainability goals.

Momentum continues following the 2020 launch of the Student Sustainability Ambassador Program (SSAP), which is a co-curricular program and community hub for sustainability-minded students and student clubs. This past year, SSAP student coordinators facilitated four large events, engaged over 480 students, and collaborated with six clubs from across campus. The SSAP coordinators also extended their engagement to the local Hamilton community.

Within the following pages, you will read about the growth and evolution of our programs. The highlights are found in the project summaries written by our students. As you read about the work of our students and their collaborators, I hope you find inspiration in their stories, teamwork, and accomplishments in creating positive, sustainable change.



A handwritten signature in black ink that reads "Kate Whalen".

Dr. Kate Whalen
Associate Director
Academic Sustainability Programs Office

Note: This report is primarily the work of our students. Content not attributed to student authors is the work of Kate Whalen and Abbie Little of the ASP Office; we take responsibility for any errors or omissions. Creative design and production of this report is the work of Helena Teng and Ashley Low of the ASP Office.

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Land Acknowledgement

McMaster's Academic Sustainability Programs Office recognizes that it is located on the traditional territories of the Mississauga and Haudenosaunee nations, within the lands protected by the Dish with One Spoon Wampum agreement. It is integral to our work that we practice anti-racism and anti-colonialism, as we cannot achieve sustainability without centering climate justice and actively engaging in reconciliation efforts with Indigenous nations.

About Us

McMaster's Academic Sustainability Programs Office

Mission

Inspire in all students a desire for continued learning through experiential education about sustainability.

Objectives

To realize our mission, we strive to provide all McMaster students with the opportunity to take part in interdisciplinary, student-led, community-based, and experiential learning about sustainability.

Priority Programs

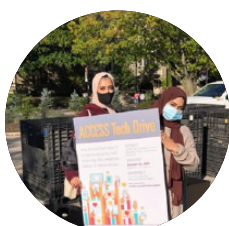
Key to achieving our objectives and inspiring lifelong learning is developing and fostering strong connections, both within the university and the broader communities, and supporting students to develop the knowledge, skills, and abilities to be successful in their learning.

We aim to do this through our four main programs:



Interdisciplinary Minor in Sustainability

An opportunity for undergraduate students to choose sustainability courses from Faculties across campus and tailor a minor that complements their education.



Sustainable Future Program (SUSTAIN)

A suite of undergraduate courses focused on sustainability. Courses are open to all students, independent of their home Faculty, and count towards the Minor.



Sustainability Internship Program

An opportunity for undergraduate students to receive academic credit and graduate students to receive recognition for their self-directed learning.



Student Sustainability Ambassador Program (SSAP)

A co-curricular program and community hub for sustainability-minded undergraduate and graduate students and clubs aimed to foster collaboration.

Our Students in the News

Learn more about these news stories on our [website](#).

DAILY NEWS

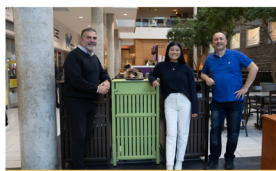
Fostering bold ideas for sustainable change



The Sustainable Future Program (SFP) consists of a suite of undergraduate courses focused on providing students with the opportunity for interdisciplinary, student-led, community-based, and experiential education focused on sustainability.

DAILY NEWS

Students unearth ways to improve campus composting habits



Carlos Figueira, director in Facility Services, Skye Earley, Sustainability Intern, and Luc Bernier, environmental science professor, with waste and

DAILY NEWS

Students and volunteers expand McMaster Carbon Sink Forest



More than 125 people planted 300 trees in the living lab that also serves as a research project.

DAILY NEWS

Students bring bright ideas and solutions to inaugural sustainability pitch competition



21 teams of students took part in McMaster's first Sustainability Development Goals (SDG) pitch

DAILY NEWS

Students planting trees by searching the web



Zero Waste McMaster executive members Paris Liu and Keyra Kam promoting Ecosia at an event in 2022 (Photo courtesy Alexa Kouroukis).

DAILY NEWS

ACCESS Tech donuts for donation drive back on campus



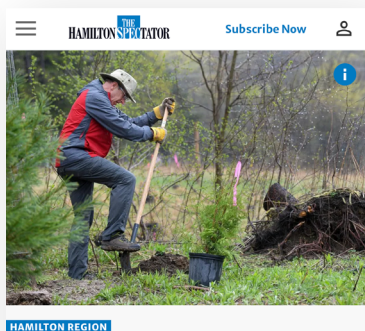
McMaster students working at an ACCESS Tech donation event in October 2021. (Photo by Matt Clarke/McMaster University).

DAILY NEWS

Students meet with Hamilton sustainability professionals to learn about green jobs



A networking event hosted by the Academic Sustainability Programs Office on Apr. 20th connected



HAMILTON REGION

Planting trees to make a difference

Hundreds of trees planted on Earth Day to build a model forest to help battle climate change

UA AU

Career Advice

How a community fridge is feeding students in more ways than one

Sustainability projects like this at McMaster help to meet campus needs and provide valuable opportunities for students to put theory – and their passions – into practice.

BY ABBIE LITTLE & KATE WHALEN | JUN 29 2023

Post a comment

It's easy to expect that students who make it to university are on a straightforward path to success. However, finding steady, affordable access to healthy food is a challenge for many students, which can, among other things, impact their academic

Our Team

The Academic Sustainability Programs Office

Administrative Team



Dr. Kate Whalen
Associate Director



Abbie Little
Community Engagement
Coordinator



Nathan Butterworth
Community Engagement
Coordinator



Kara Salvador
Programs Administrator



Helena Teng
Student Office
Coordinator



Roxann Forget
Student Communications
Assistant



Ashley Low
Student Communications
Assistant

Interdisciplinary Minor in Sustainability, Co-Chairs



Dr. Kate Whalen
Associate Director
Academic Sustainability
Programs Office



Dr. Brent McKnight
Associate Professor
Degroote School of Business

Course Instructors



Dr. John MacLachlan
SUSTAIN 1S03 + 2GS3



Peter Topalovic
SUSTAIN 2S03 + 3SS3



Sarah Precious
SUSTAIN 2SS3



Dr. Kelsey Leonard
SUSTAIN 2IS3



Liana Bontempo
SUSTAIN 3S03



Dr. John Boakye-Danquah
SUSTAIN 2SD3



Dr. Kate Whalen
SUSTAIN 4S06

Teaching Assistants



Alison Laurie
SUSTAIN 1S03 + 2IS3



Anisha Vatti
SUSTAIN 1S03



Anjali Joshi
SUSTAIN 1S03



Armaan Kotadia
SUSTAIN 1S03 + 3SS3



Ayesha Yousuf
SUSTAIN 1S03



Charlotte Duncan
SUSTAIN 1S03



Connor Black
SUSTAIN 1S03 + 2GS3



Elizabeth Lang
SUSTAIN 2SS3



Emilia Nietresta
SUSTAIN 1S03



Emma Van Every
SUSTAIN 1S03



Erica De Oliveira
SUSTAIN 1S03



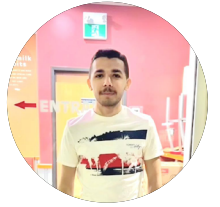
Esther Pereira
SUSTAIN 1S03



Gabriel Lonuzzo
SUSTAIN 1S03



Griffin Kinzie
SUSTAIN 1S03



Hamza Mansour
SUSTAIN 1S03 + 2IS3



Helena Teng
SUSTAIN 1S03 + 3S03



Joseph Clinton
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Kaitlynn Staples
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Neha Dhanvanthry
SUSTAIN 1S03 + 3S03



Nicole Paczowski
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Rebecca Gysbers
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Rebecca Smith
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Roxann Forget
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Mithil Kumar
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Molly Cameron
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Batool Malik
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Clarissa Medrano
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Cristopher Baccala
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Hiya Goyal
SUSTAIN 2GS3



Maryam Sheikh
SUSTAIN 2GS3



Merit Sadek
SUSTAIN 2GS3



Ritika Khetarpal
SUSTAIN 2GS3



Sannah Alam
SUSTAIN 2GS3



Sarah Perry
SUSTAIN 2GS3



Shiny Huang
SUSTAIN 2GS3



Madison Mote
SUSTAIN 4S06

A focus on the United Nations Sustainable Development Goals

McMaster is consistently recognized by Times Higher Education's international rankings as a university with a positive impact related to the UN's Sustainable Development Goals (SDGs). In 2023, the university ranked 33rd in the world overall, 1st in North America for Good Health & Well-Being (SDG 3), and 12th in the world for No Poverty (SDG 1).¹



The Sustainable Development Goals are the blueprint to achieve a better and more sustainable future for all. The 17 Goals are interconnected and address the global challenges, including those related to poverty, inequality, climate change, environmental degradation, peace and justice.²

United Nations, Department of Economic and Social Affairs



As part of our commitment to the Goals, we have indicated the SDGs that align with our student-led projects throughout this report. Listed below, are the **17 Goals**.



Interdisciplinary Minor in Sustainability

An opportunity for undergraduate students to choose sustainability courses from Faculties across campus and tailor a minor that complements their education.

McMaster created the Interdisciplinary Minor in Sustainability in September 2014 with the goal to develop students' interdisciplinary knowledge and understanding of sustainability.

PROGRAM OBJECTIVES



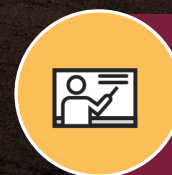
Encourage opportunities for student experiential learning about sustainability



Provide opportunities to meaningfully engage with communities both within and outside of McMaster



Offer a wide selection of courses to enable students to choose the sustainability emphasis that is right for them and to pursue courses that will further their individual learning objectives



Foster engagement among students, faculty, and staff across campus, facilitating interdisciplinary learning



Through the minor, I got to explore my personal interest in sustainability, understand how it intersects with my major, and complete projects that had a real impact in my community. It provided unique, authentic, and unforgettable experiences that sparked my interest in a career in sustainability.

Helena Teng,
Honours Health Sciences,
Minor in Sustainability

Photo location: Toronto, Ontario, Canada

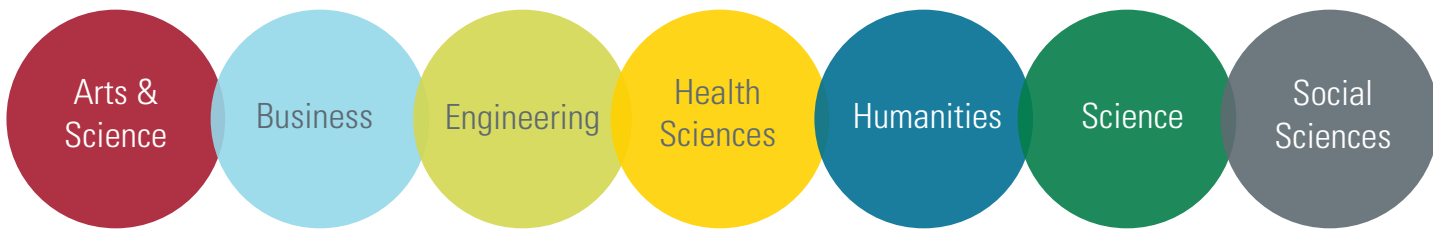
Photo credit: Bekir Donmez, Pexels

Interdisciplinary Minor in Sustainability

Year in Review

Interdisciplinarity

Students from each of the following Faculties and the Arts & Science Program have graduated with the Minor this year:¹



Collaborators

First and foremost, we recognize the **Arts & Science Program** for providing integral support for the implementation and development of the Minor. Additionally, the Minor would not be possible without the hard work and dedication of the past and current members of the Interdisciplinary Minor in Sustainability Committee, including the Student Committee, the faculty members who have opened their courses for inclusion and helped communicate the Minor, the staff members, including academic advisors, who have provided advice and guidance throughout, and the dozens of students who have shown their support by taking the Minor and working with us through its development and continued enhancement.



Student Minor Committee at Plant Upcycling Giveaway
Photo credit: Yifan Wang

307

students have achieved the Interdisciplinary Minor in Sustainability

56

students graduated with the Interdisciplinary Minor in Sustainability in the spring of 2022¹

85

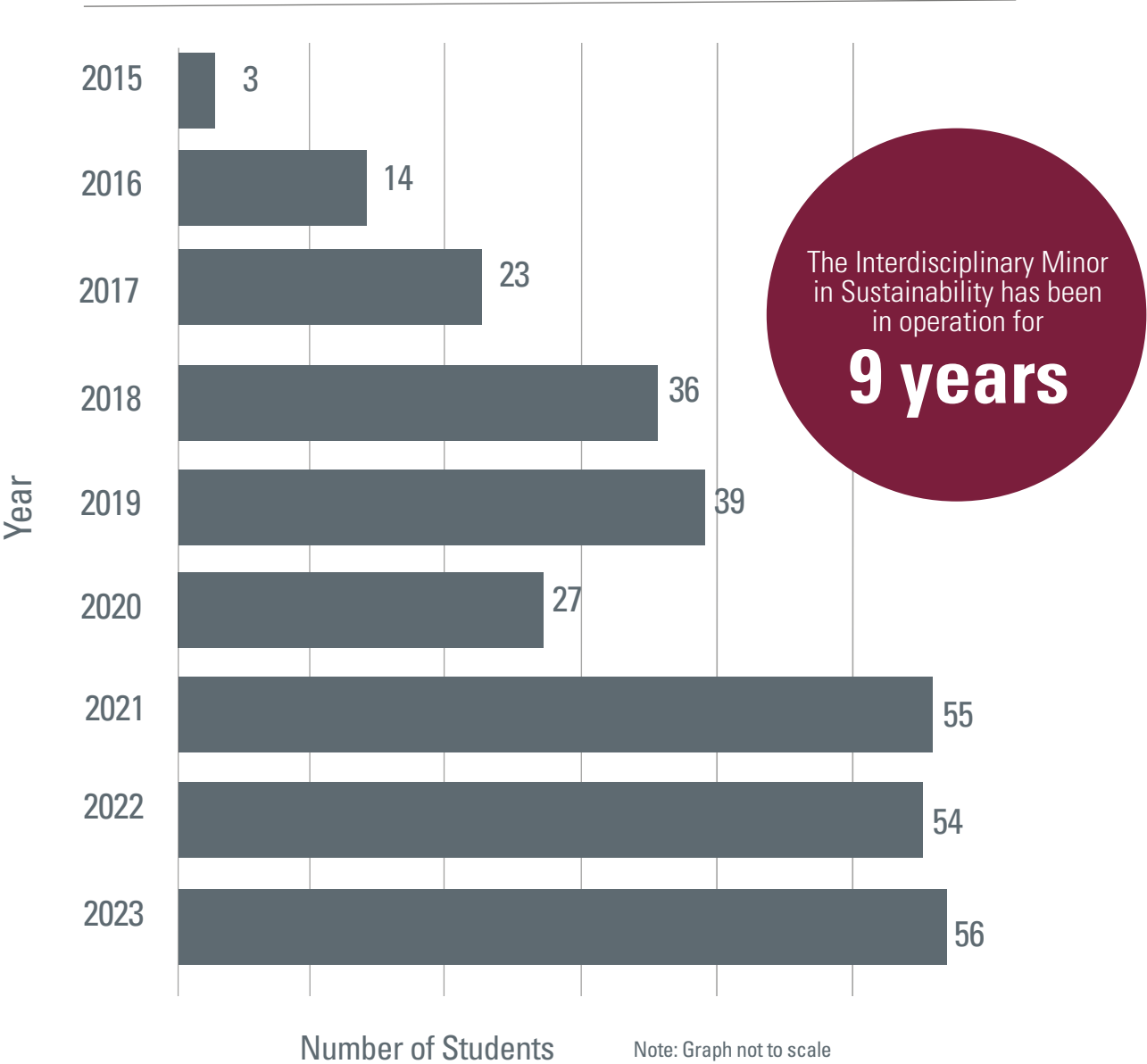
courses are available for students to choose from across all Faculties

We would also like to thank Alpha Abebe, Ananya Yadav, Kara Salvador, Karen Balcom, Natasha Martinez, Rebecca Misiak, Rodrigo Narro Pérez, Shanti Morell-Hart, and Stacy Creech de Castro for their collaboration in serving as thought leaders who drive the agenda and shape McMaster's vision for interdisciplinary teaching and learning. It was in May 2022, through the Office of the Vice-Provost of Teaching and Learning, that this group came together under a common mission. A reporting of the group's impactful outputs is highlighted in the Inspire Office of Flexible Learning's 2022/2023 Annual Report. Through the dedicated actions of the group members and their campus partners, there is greater awareness and engagement in interdisciplinary learning and interdisciplinary minors, including the Interdisciplinary Minor in Africa and Black Diaspora Studies, Interdisciplinary Minor in Community Engagement, Interdisciplinary Minor in Latin American and Latinx Studies, and the Interdisciplinary Minor in Sustainability.

2022/2023 Interdisciplinary Minor in Sustainability Committee

- Kate Whalen** (Co-Chair) - Associate Director, Academic Sustainability Programs Office
- Brent McKnight** (Co-Chair) - Associate Professor, DeGroote School of Business, Faculty of Business
- Shelley Anderson** - Academic Program Administrator, Arts & Science Program
- Luc Bernier** - Assistant Professor, School of Earth, Environment and Society, Faculty of Science
- Aubrey Cannon** - Professor, Anthropology, Faculty of Social Sciences
- Jim Cotton** - Professor, Mechanical Engineering, Faculty of Engineering
- Shelir Ebrahimi** - Assistant Professor, Chemical Engineering, Faculty of Engineering
- Chad Harvey** - Associate Professor, School of Interdisciplinary Science, Faculty of Science
- Addisu Lashitew** - Assistant Professor, DeGroote School of Business, Faculty of Business
- Shanti Morell-Hart** - Assistant Professor, Anthropology, Faculty of Social Sciences
- Susie O'Brien** - Professor and Chair, Department of English and Cultural Studies, Faculty of Humanities
- Stacey Ritz** - Assistant Dean of Education Services, Faculty of Health Sciences
- Derek Woods** - Assistant Professor, Communication Studies and Media Arts, Faculty of Humanities

Minor in Sustainability Graduates by Year



Interdisciplinary Minor in Sustainability

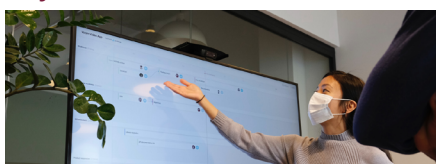
Student Committee

Student Authors: Mann Badami (Health Sciences), Hayley De Vries (Business), Roxann Forget (Health Sciences), Gloria Hauer (Business), Gabriel Lonuzzo (Engineering), Runisan Natheeswan (Life Sciences), Surbhi Rao (Arts & Science), Fiona Sharpe (Social Sciences), Hannah Shouldice (Integrated Business and Humanities), Yifan Wang (Humanities)

In September 2018, the Interdisciplinary Minor in Sustainability Student Committee was created to foster student engagement. The group has expanded its reach and impact every year since.

The goals of the Student Committee are to (1) generate awareness of the Interdisciplinary Minor in Sustainability, and (2) create a community among students pursuing the Minor.

Objectives



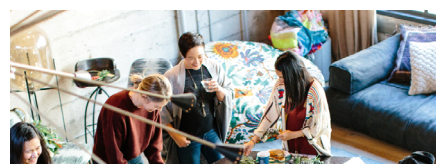
1

Promote the Minor through class talks and events



2

Increase the Minor's online presence through active participation on social media



3

Bring students together through co-hosting fun sustainability events

Reporting

Our 2022-2023 Student Committee consisted of 10 undergraduate students representing each Faculty and the Arts & Science Program. Coordinated by Abbie Little, we met weekly to put our ideas into action.

We engaged with students through in-person class talks and/or shared a two-minute video with instructors that discussed the Minor and how it could benefit students' education. We engaged 30 course instructors and over 4,000 students through Avenue2Learn and class talks, the highest to date.

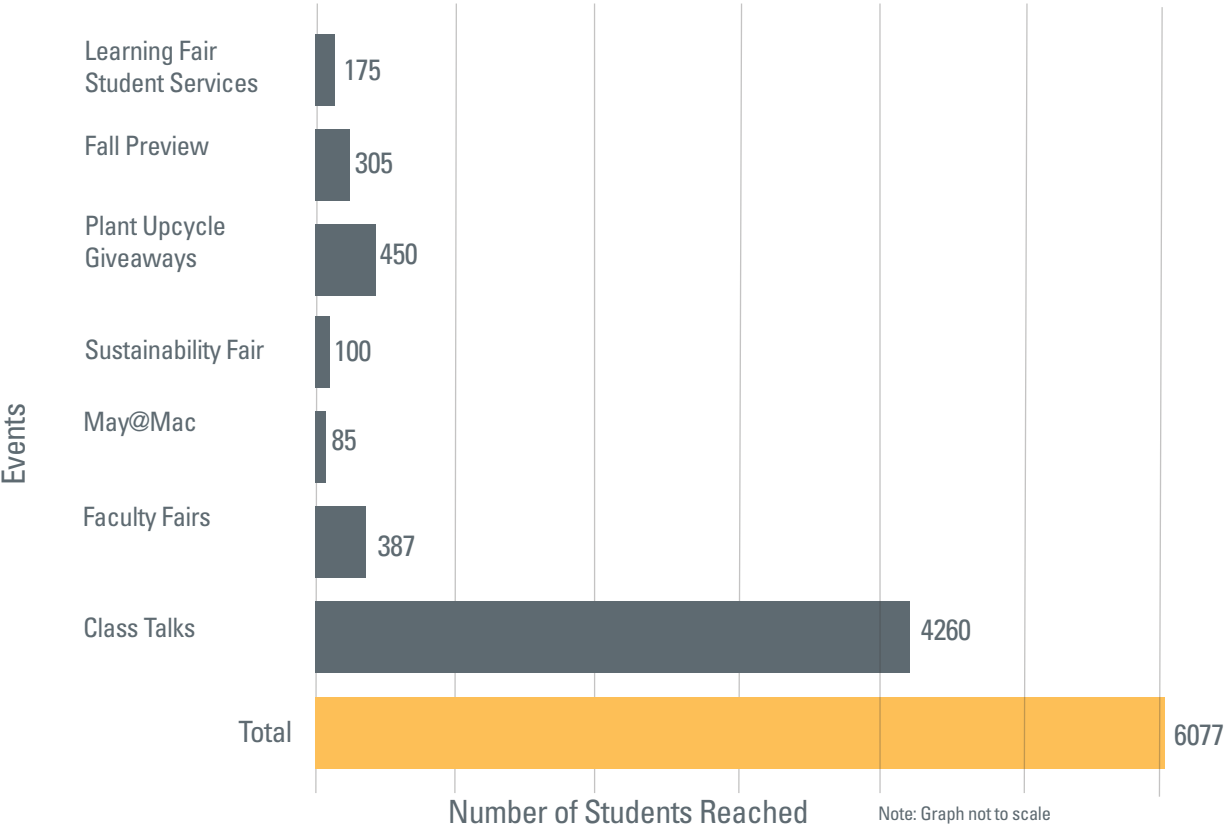
We were excited to offer in-person events that brought students together, and we did so through 10 events from September to April. We hosted two major in-person events, a plant giveaway event in November and another in March. In collaboration with the Biology Greenhouse, we clipped and propagated 500 plants and we upcycled and painted over 500 containers to house and grow the clippings. The plants were planted in the upcycled containers and given away to individuals. Students were asked to follow @macsustain in exchange for a plant, which resulted in ~225 more Instagram followers. We engaged in dialogue with the students about the Minor and handed out informational postcards. This event has been a huge success in previous years, with these events being the largest to date. Consistent with recent years, some students shared that their program does not have a lot of elective space, making it challenging to achieve the Minor. First and second year students shared that they had not previously heard about the Minor, signaling the need for continued communication and early promotion.

One goal for next year's Minor Committee is to reach potential, incoming, and new students early on in their first year to let them know about the Minor, offer mentorship, and share resources for additional support.

Collaborators

This was a year of tremendous growth, collaboration, and creativity and we are grateful for the individuals who helped through the journey. Thank you to the Student Minor Committee Coordinator, Abbie Little, for making each meeting a joy to attend, for inspiring us to dream bigger, and for being a great mentor and leader. Thank you to Minor Committee Co-chairs, Dr. Kate Whalen and Dr. Brent McKnight, for their guidance and support as well as the entire Minor Committee, the Office of Sustainability, and the McMaster Students Union. Thank you to the McMaster Biology Greenhouse and volunteers for continuing to support our plant giveaways. Finally, thank you to the instructors who allowed us to present to their classes and share resources online with their students.

Student Committee Outreach 2022-2023



Interdisciplinary Minor in Sustainability Student Committee 2022-2023



Left to right: Gloria Hauer, Roxann Forget, Surbhi Rao, Yifan Wang, Runisan Natheeswan, Gabriel Lonuzzo, Abbie Little

Absent: Hayley De Vries, Fiona Sharpe, Hannah Shouldice

Sustainable Future Program (SUSTAIN)

A suite of undergraduate courses focused on sustainability. Courses are open to all students, independent of their home Faculty, and count towards the Minor.

Developed in 2013, the Sustainable Future Program was created to provide students with opportunities for interdisciplinary, student-led, community-based, and experiential learning about sustainability.

PROGRAM OBJECTIVES



Teach students about sustainability from an interdisciplinary perspective



Provide opportunities for self-directed, interdisciplinary, and experiential learning



Support student learning within university and local communities



Engage undergraduate students to take part in meaningful, experiential research



Foster opportunities for students to place local knowledge and local action within a global context

Photo location: Moraine Lake, Alberta, Canada

Photo credit: Garrett Parker, Unsplash

Sustainable Future Program

Year in Review

Reporting

Since launching the first course in the winter of 2013, which had an enrolment of 97 students, the Sustainable Future Program has grown to include nine courses and has supported nearly 5,000 student seats in the 2022/2023 academic year.

Annual program growth has taken place through expanding enrolment capacities of select courses, offering additional sections of existing courses, and adding new courses. This past year, we saw our highest enrolment of 1,250 students in the winter semester of our first-year course, SUSTAIN 1S03 – Introduction to Sustainability. To support even more students, we have offered our courses multiple times each year and in different semesters. This past year, among all nine SUSTAIN courses, there were 20 sections available throughout five semesters.

To contribute to sustainability on campus and in our communities, students from SUSTAIN 2SS3, 3S03, 3SS3, and 4S06 completed a total of 33 projects. Combined, these students collaborated with over 400 individuals to learn about sustainability through leadership and action. A sample of these projects can be found in the pages to follow.

Collaborators

We thank the faculty and staff members, course teaching assistants, and Community Project Champions for supporting students enrolled in the SUSTAIN courses, as well as for supporting continuous course and program development. Our sincerest appreciation extends to the hundreds of students who have contributed by taking courses and providing feedback for continuous improvement. We extend a special thanks to the Faculty of Engineering and the Engineering & Society Program for providing administrative support for the Sustainable Future Program. Specific individuals who supported our students' experiential learning projects are highlighted in the pages to follow.

SUSTAIN/INSPIRE 2GS3

GLOBAL QUESTIONS IN SUSTAINABILITY

In SUSTAIN/INSPIRE 2GS3, students have a unique opportunity to hear the perspectives of multiple questions of sustainability from experts across academia.

Dr. John MacLachlan

Course Instructor



"I've embraced diverse academic perspectives, realizing that sustainability goes beyond one field. The course mantra 'think globally, act locally' empowers students to become catalysts of change, weaving sustainable futures, one thoughtful action at a time."

Elizabeth Lang, Honours Life Sciences

Photo location: Sechelt, British Columbia, Canada

Photo credit: Lauren Kan, Unsplash

The newest SUSTAIN course, Global Questions in Sustainability, was first piloted as an INSPIRE course in May of 2022 during the Intersession semester. Its success led to its permanency as a SUSTAIN course in the fall of 2022.

The course was developed by Dr. John MacLachlan and in collaboration with over a dozen sustainability experts from across Canada. The innovative course was funded by a grant, awarded through eCampus Ontario, a non-profit organization funded by the Government of Ontario, which aims to develop and test online learning tools to advance the use of education technology and digital learning environments.

Dr. MacLachlan, who continues to teach the course, is an earth and environmental scientist who looks at the intersectionality of academic disciplines and ideas to work towards unique ideas in building a sustainable future. Since its first offering, more than 1,400 students from all Faculties have taken the course and applied their knowledge to their thoughts and perceptions of what sustainability is and ultimately should be. Through a series of asynchronous lectures, students have unique opportunities to hear perspectives on multiple questions of sustainability from experts across academia. In following the mantra of 'think globally, act locally' students apply the knowledge acquired in the course towards assessing and proposing solutions to local questions of sustainability.

For one assignment, students learned from Dillon Consulting about the company's sustainability work in eight business units. After being introduced to real-world problems that Dillon consultants were working on, students applied their course knowledge to propose sustainability approaches for one or more of Dillon's business units to consider. As an additional opportunity, students could choose to share their ideas with Dillon's business unit leadership team who evaluated the submissions on their practicality, effectiveness, and cost benefit. Of the 125 student submissions, one concept per business unit was chosen to be featured by Dillon Consulting as an example of student innovation and application of their sustainability knowledge. Brief summaries of highlighted submissions of business units can be found on Dillon Consulting's website.¹

Acknowledgements

We express our gratitude to Dr. John MacLachlan for creating and facilitating this course and with support from the 12 topic experts from across Canada: Dr. Emmanuelle Arnaud, Karine Gagné, Michael Egan, Jay Brodeur, Dr. Sophie Wilkinson, Dr. Greg Zilberbrant, Jeff Monague, Gustavo Betini, Heather Stuart, Catherine Bush, Dr. Zobia Jawed, Dr. Rodrigo Narro Perez, and Becca Collins-Nelsen.

We also thank the inaugural group of Teaching Assistants: Sannah Alam, Christopher Baccala, Hiya Goyal, Yun-Shin Huang, Batool Malik, Clarissa Medrano, Sarah Perry, Merit Sadek, Maryam Sheikh, and Sarah Woods for their leadership, innovation, and creativity in implementing a successful course.

We thank Heather Stuart and her team at Dillon Consulting for supporting students' experiential learning, and we thank the SUSTAIN/INSPIRE 2GS3 students, class of 2022, for their participation in this course and engagement in its important content.

SUSTAIN 3S03

IMPLEMENTING SUSTAINABLE CHANGE

SUSTAIN 3S03 engages students in exploring agency, leadership, and strategy effectiveness within the context of sustainability. The course includes interdisciplinary perspectives, experiential learning and community engagement projects.

Liana Bontempo

Course Instructor



From left to right: Ryan Rexworthy, Madalyn Morrison, Heidi Bruins, John Hemmer, Eesha Rehman, Noa Lichtenshtein Serebro
Photo credit: Georgia Kirkos

“SUSTAIN 3S03 allowed me to be fully immersed in learning about sustainability in class and through our group project where we enacted real, sustainable change.”

Madalyn Morrison,
Honours Bachelor of Commerce in Integrated Business
and Humanities with a Minor in Sustainability

Photo location: Green Gardens, Gros Morne National Park, Newfoundland and Labrador, Canada

Photo credit: Nathan Butterworth

Assessing Efforts to Reduce Single-use Plastic Water Bottles



Used plastic water bottles placed in an overflowing bin.
Photo credit: Mr.Tin MD

Student Authors

Darren Wong, Science | **Jenny Chau**, Science
Shavaiz Kanth, Science | **Anushka Rajaram**, Social Sciences

Community Project Champions

Monica Palkowski, Living Learning Coordinator, Housing and Conference Services
Holly Gibson, Manager, Marketing & Communications, Housing and Conference Services

Overview

As major sources of greenhouse gas emissions and water pollution, the production and use of plastics are pervasive and long-lasting threats to both human health and the Earth.¹ In Ontario, over 1.5 billion plastic bottles rest in landfills and the environment annually,² necessitating a move away from single-use plastic bottles.

While other universities have looked to ban single-use plastic bottles, they saw mixed results; in some cases, a ban resulted in increased sales of other bottled beverages.³ McMaster’s Bring Your Own Bottle (BYOB) initiative aims to reduce the use of single-use plastic bottles and encourage water bottle reuse.⁴ To support the BYOB initiative, the goal of our project was to assess the current status of water bottle refilling and reuse by students living in McMaster residence buildings.

Objectives

1. Identify residence students’ water bottle use habits from survey data
2. Track on-campus bottled water sales data
3. Monitor refill station use in student residence buildings

Reporting

To achieve our first objective, we analyzed responses to Residence Life survey data and found that in Fall 2021, 70% of students report ‘never’ purchasing bottled water, which rose to 73% in 2022. This is consistent with roughly 80% who say they use a refillable bottle daily. However, in winter 2022, 59% of students reported ‘always’ or ‘sometimes’ storing cases of bottled water in their rooms. The discrepancies in self-reported measures indicate a need to track other data sources.

To achieve our second objective, we tracked sales from in-residence eateries, Bistro and Centro. We compared sales data over a three-month period from September to November for 2021 and 2022. We found that in both years, sales decreased from September to October but increased from October to November. This decrease in October may be due to Reading Week and Thanksgiving. Due to COVID-19, there were more students in residence in 2022, so we calculated sales per capita and found that sales were nearly 30% higher in 2022 than 2021.

To achieve our third objective, we tracked eight refill stations biweekly from October to November. Refill stations were selected in three residence buildings and the Commons eatery. Usage at all refill stations increased from October to November, which might suggest a shift in students’ perceptions of water bottle refilling. We created a report of our methodologies and suggested steps for future students to continue this work and support water bottle refilling and reuse at McMaster.

Collaborators

We are grateful for our Community Project Champions, Monica Palkowski and Holly Gibson, for their support and guidance throughout our project and to Dr. Kate Whalen and Abbie Little from the Academic Sustainability Programs Office for their continuous feedback. We also thank Liana Bontempo and Gord Cooledge from Hospitality Services for their help with obtaining bottled water sales data.

Reducing Single-use Water Bottle Usage On-Campus: Bring Your Own Bottle, Student Engagement

Student Authors

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Community Project Champions

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Joan Palparan (left) and Jiyeon Park (right) during the BYOB engagement event.
Photo credit: Joan Palparan

Overview

In Ontario, only 14% of all single-use water bottles are recycled, resulting in over 1 billion bottles being dumped into landfills each year.¹ Although this poses a serious problem to the environment, there are several barriers for users that keep them from using reusable bottles – plastic water bottles can be more convenient, lack of trust in water quality, and limited access to refill stations. The Bring Your Own Bottle (BYOB) initiative was launched to diminish the use of single-use plastic water bottles within the McMaster community by encouraging the use of refilling stations throughout campus. As part of the BYOB initiative, an interactive map of water refill stations were advertised throughout the university.² However, not everyone was aware of this initiative. Thus, the goal of our project was to host an event to engage students and raise awareness of the BYOB initiative and the interactive map.

Objectives

1. Promote and raise awareness about the BYOB engagement event
2. Interact with first-year students through event activities and conversation
3. Encourage first-year students to participate in a survey and pledge

Reporting

To achieve our first objective, we created a virtual poster and distributed it to Community Advisors on each floor of McMaster residence buildings. We also shared one post on the MacRezLife Instagram account gaining 100 likes overall. On the day of the event, we created posters to hang around the event space to further gain the attention of the first-year students about the event.

For our second objective, we organized several activities for students to engage in, including decorating reusable water bottles and a photobooth. Through these activities, we interacted with over 50 first-year students, and used the bottle-decorating station to have casual conversations with them. Conversation topics included; what BYOB McMaster's goals are, the interactive map, and what their water-bottle habits have been like since moving to McMaster. These conversations were used to raise awareness of the BYOB initiative.

To achieve our last objective, we designed a survey and created a QR code so it would be accessible to students. Upon entry to the event space, we asked students to scan the QR code. The survey contained a link to the BYOB interactive map and asked students if they would use it in the future. The survey also included a pledge that students could sign by answering 'yes' in response to the question "I pledge to avoid using single-use plastic bottles." Overall, 53 students completed the survey and entered in 'yes' for the pledge.

Collaborators

We would like to express our gratitude to our CPCs, and to Dr. Kate Whalen and Abbie Little for their guidance and support throughout the term. We would also like to thank Liana Bontempo and the SUSTAIN 3S03 instructional team. Most importantly, we appreciate all the McMaster students that took time out of their day to come to our events and engage with our project.

Improving Event Logistics and Expanding the ACCESS Tech Initiative

Student Authors

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Community Project Champions

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Emilia Nietresta, ACCESS Tech



CPCs Clare Benson (left) and Emilia Nietresta (right) disassembling hard drives from laptops to prepare them for data sanitization, during the IT Donation Event on October 27, 2022.
Photo credit: Matt Clarke

Overview

Forty million tons of e-waste are generated annually worldwide – equivalent to throwing out 800 laptops every second.¹ In Hamilton, citizens are estimated to generate over 2.4 million kilograms of e-waste annually.² The ACCESS Tech initiative aims to reduce e-waste by accepting electronic donations from the McMaster community, providing high-quality donations to Hamiltonians in need through partnership with Empowerment Squared³ (E2), offering other usable electronics to members of the McMaster community, and recycling any items not suitable for reuse.⁴ Following the 2019 and 2021 donation and reuse events, with over 1,000 kg⁵ and 780 kg⁶ of e-waste diverted, respectively, our goal was to improve event logistics and expand the ACCESS Tech initiative to reduce waste and provide greater access to technology within our local communities.

Objectives

1. Improve the efficiency of donation and reuse events
2. Create a stronger relationship with the McMaster community
3. Track and report on the outcomes of the overall process

Reporting

To achieve our first objective, we hosted separate donation and reuse events to improve the attendee experience. We held the IT Donation Event on October 27th to receive used electronics from the McMaster community. We revised the logical flow for the event, allowing us to efficiently record, store, and prepare items for data sanitization, leading to considerably reduced processing time and allowing for timely donation to Hamiltonians in need. On November 17th, we hosted the IT Reuse Event for members of the McMaster community to upcycle remaining items. Items not reused were responsibly recycled.

To achieve our second objective, we provided gourmet donuts to attendees during the IT Donation Event, which also increased awareness of and attracted passersby to learn more about the ACCESS Tech initiative. Following the event, we sent our donors a thank-you email with statistics from the event to show their impact, along with additional ACCESS Tech information. We strengthened relationships with attendees during the IT Reuse Event by offering prizes, displaying improved signage and information, and offering stickers.

To achieve our third objective, we reported on the success of our events, highlighting the 114 items donated through E2, over 2,000 kgs*reused by members of the McMaster community, and 650 kgs responsibly recycled. Compared to previous ACCESS Tech events, these have been the most successful to date, based on the number of devices diverted from the waste stream and donated for reuse.

Collaborators

We extend our gratitude to our Community Project Champions (CPCs) for their involvement and mentorship throughout the project. We acknowledge the SUSTAIN 3S03 ACCESS Tech Communications Team, SUSTAIN 4S06 Research Team, Dr. Kate Whalen, our dedicated event volunteers, and the ACCESS Tech Working Group (Carlos Figueira, Richard Godsmark, Paula Brown-Hackett). Thank you to Donut Monster for contributing to our donation event. Thank you to E2 for disseminating the collected electronics to those in need. Thank you Greentec for recycling our collected end-of-life electronics. Finally, a huge thanks to all members of the McMaster community for donating and upcycling used electronics; your contribution to ACCESS Tech is invaluable!

Website: <https://facilities.mcmaster.ca/accesstech> | **Email:** acctech@mcmaster.ca | **Instagram:** @accesstechmcmaster

*metrics captured from two reuse events, with the first being run by ACCESS Tech staff on September 29th with support from SUSTAIN 3S03 students.

Communicating to Encourage Donations to ACCESS Tech

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Community Project Champion

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SUSTAIN 3S03 student and member of the ACCESS Tech Logistics Team, Devyanee Mehta, at the “Sign In” table of the IT Donation Event on October 27th, 2022.

Photo credit: Matt Clarke

Overview

A global surge in electronic waste (e-waste) was recorded in 2019 to have increased by 21 percent in 5 years.¹ In 2012, Canada produced 14.3 million tons of e-waste.² Recycle My Electronics, Habitat for Humanity ReStores, and ACCESS Tech are Canadian initiatives for recycling and re-using e-waste.^{3,4} McMaster’s ACCESS Tech initiative aims to “collect donations of used technology and distribute it to Hamiltonians in need” through a partnership with local non-profit, Empowerment Squared.⁵ Electronics are collected during donation events, with items not suitable for community donation made available for upcycling by McMaster students during reuse events. In collaboration with the ACCESS Tech Logistics Team, our goal was to raise awareness of the initiative and associated events to encourage technology donations and reuse through promotional strategies.

Objectives

1. Identify and understand the target audience for the donation event
2. Spread awareness about the donation event using various promotional strategies
3. Share event outcomes and recommendations for future improvement

Reporting

To achieve our first objective, we looked at past event outcomes and identified our target audience as faculty members and staff. In collaboration with our Community Project Champion, we focused on our communication strategies to advertise through hard copy media around campus, as well as social media.

To achieve our second objective, we shared our message through e-newsletters to all faculty and staff and displayed posters in faculty offices around campus. We promoted the event on the Academic Sustainability Programs Instagram page. Furthermore, we hung up 25 posters and had digital screen displays around campus. We also updated the ACCESS Tech web page, which addressed FAQs and general information. Through these outreach tactics, we shared our initiative’s purpose, event details, and the secure donation process, to effectively encourage donations.

To achieve our third objective, we received event outcomes from the ACCESS Tech Logistics Team and prepared ACCESS Tech staff for an interview with the McMaster Community radio (CFMU). We also shared an infographic with event statistics on Instagram, highlighting the 114 items donated, over 2,000 kgs* reused, and 650 kgs recycled! We shared our recommendations for future ACCESS Tech communications teams with our Community Project Champion and the ACCESS Tech Working Group.

Collaborators

Special thanks to our Community Project Champion, Megan Bieksa, for her outstanding guidance to maximize outreach and to Empowerment Squared for their collaboration and support. Thank you to our project supporters: Dr. Kate Whalen; Abbie Little; Lesley Ure Hardsand; the ACCESS Tech Working Group (Carlos Figueira, Clare Benson, Emilia Nietresta, Richard Godsmark, and Paula Brown-Hackett); the Faculty Services and UTS staff; our fellow SUSTAIN 3S03 ACCESS Tech Logistics Team; and all those who donated, participated, and supported the Fall 2022 ACCESS Tech Events.

*metrics captured from two reuse events, with the first event being run by ACCESS Tech staff on September 29th with support from SUSTAIN 3S03 ACCESS Tech students.



Pedaling Together: Facilitating Cycle Hamilton's AGM & Social

Student Authors

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Community Project Champions

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Rachel Weldrick, Former Cycle Hamilton Board of Directors Member and current volunteer



Cyclists arriving at Cycle Hamilton's 2022 AGM.
Photo credit: André Morgan



Overview

Cycling is one of the most effective, sustainable alternatives to vehicular transportation, helping to mitigate the effects climate change and providing environmental,¹ societal,² and human health benefits.³ Local not-for-profit cycling organization, Cycle Hamilton, strives “to make Hamilton the best place for anyone to get around by bike.”⁴ Every year they host an Annual General Meeting (AGM), open to the community, to review yearly accomplishments, finances, and policies. Past AGMs hosted by Cycle Hamilton were harmoniously successful; however, the COVID-19 pandemic hindered the organization’s ability to come together. With greater opportunities for in-person gatherings, the goal of our project was to unite Hamiltonians by facilitating the return of an in-person Cycle Hamilton AGM & Cycle Social, focusing on community engagement.

Objectives

1. Plan and host an enticing AGM
2. Facilitate community group rides to the AGM
3. Co-create community engagement at the AGM

Reporting

To achieve our first objective, we hosted the Cycle Hamilton AGM at the accessible, downtown restaurant, Radius. At our event check-in, we welcomed 85 community members and provided the opportunity to buy Cycle Hamilton t-shirts and memberships. Throughout the evening, individuals were encouraged to enjoy food, connect with others, and contribute to a collaborative music playlist made available through a Linktree.

To achieve our second objective, three cycle-friendly routes were selected and led by four riders, starting from Dundas, Gage Park, and Mohawk College, and ending at the event venue. An online registration tool helped encourage 45 local riders to register for their route of choice. By collaborating with the City of Hamilton, bike storage equipment was obtained to run a bike valet led by two high school student volunteers. These community rides helped bring individuals from different parts of the city together, whilst being mindful of our carbon-footprint.

To achieve our third objective, we selected three community members to share their personal stories on what cycling and the cycling community means to them. We also created a slideshow based on 98 photo submissions to celebrate the joy and diversity of cycling within our community. Using the power of stories and images to engage and educate our community, this year’s AGM helped build a more interconnected, resilient, and sustainable society.

Collaborators

The success of the AGM was made possible by the extraordinary help from the community. We wholeheartedly express our gratitude to the following individuals for contributing to the success of this event: Community Project Champions, Abbie Little & Rachel Weldrick; Liana Bontempo; Cycle Hamilton Board Members; SUSTAIN 3S03 Communications Team, Fatima Arshad, Heba Fahed, Noor Al-Humuzi, and Huda Al-Humuzi; Radius; Event Storytellers, Tyler Roach, Shelley Carr, and Chris McAnally; Dr. Kate Whalen; Local Bike Shops; Helena Teng; Ride Leaders, Cora Muis, Richard Gelder, Julia Hamill, and Anthony Magliaro; SUSTAIN 4S06 Student Researchers; Bike Valet Volunteers.

Cycle Social: Promoting a Cycle Celebration

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Community Project Champions

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Rachel Weldrick, Former Cycle Hamilton Board of Directors Member and current volunteer



Community members at Cycle Hamilton's AGM.
 Photo credit: Heba Fahed

Overview

Cycling is beneficial for all as it is a low-polluting, low-cost, and exercise-efficient mode of transport.¹ Despite the benefits of cycling, a considerable number of commuters choose to use other forms of transport.² Concerns regarding road safety is part of the issue. In 2021, there were 183 reported cycling-related collisions in Hamilton.³

Bringing the community together to share their stories and support one another is imperative to promote and advocate for safe cycling within the city. Cycle Hamilton is a non-profit organization that encourages bike riding and advocates for, "Hamilton to be the best place for anyone to get around by bike."⁴ Cycle Hamilton hosted their Annual General Meeting (AGM) on November 22nd to celebrate cycling with Hamiltonians. The goal of our project was to communicate and promote the AGM as a cycling social celebration to bring cyclists together.

Objectives

1. Spread awareness about the Annual General Meeting
2. Engage online audience through social media takeovers
3. Gather and share feedback from event attendees

Reporting

To achieve our first objective, we led a social media campaign in the three weeks leading up to the event, consisting of three Instagram posts per week. We created and sent out an online registration link via Eventbrite to over 100 Cycle Hamilton members to share event information and track registration. We also updated Cycle Hamilton's website to include the 2022 AGM and Cycle Social information. An informative newsletter was developed and emailed to 1,000 people. Out of the 102 who registered for the event, approximately 76 guests were in attendance.

To achieve our second objective, we broadcasted the event happening live at Radius through Cycle Hamilton's Instagram and Twitter. We initiated the social media takeover at 6:00 pm, where we began sharing live Instagram stories and tweets of the event's highlights. The social media takeover ended at 7:30 pm as we thanked all in-person and online attendees. A total of 139 people viewed the Instagram stories during the event and the live tweets received 57 likes.

To achieve our third objective, we developed a feedback survey and sent it to all 85 attendees. Respondents highlighted that they enjoyed the social aspect of the event, the location, and the bike valet. Some feedback for future AGMs included having a bigger venue, louder microphone, and more discussion about existing and planned bike infrastructure. A summary report of feedback was shared with the Board to provide insight for future AGMs.

Collaborators

This project could not have been accomplished without the support of the following collaborators: Our Community Project Champions, Abbie Little and Rachel Weldrick; Dr. Kate Whalen; members of the AGM logistics team; venue host, Radius restaurant; and Helena Teng. We are grateful to those who engaged and shared our promotional material and participated in the event.

Growing the McMaster Carbon Sink Forest

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Community Project Champions

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Participant planting a white pine tree at the McMaster Carbon Sink Forest.
Photo credit: Peter Rukavina

Overview

McMaster Centre for Climate Change in collaboration with Nature at McMaster, the Academic Sustainability Programs Office, and Trees for Hamilton, are working to develop a model forest. This Carbon Sink Forest will facilitate carbon sequestration through planting trees to help mitigate climate change.¹ Trees are a fundamental part of life, responsible for supplying and maintaining a habitat for over 80% of the world’s terrestrial biodiversity.² Trees also sequester harmful emissions and provide cleaner air.³ Approximately 46% of trees have been removed globally and Canada ranks first among nations with the most greenhouse gas emissions per capita.⁴

The McMaster Carbon Sink Forest has planted over 500 trees in the past two years to help alleviate some of the devastating impacts of climate change. The goal of our project was to grow the McMaster Carbon Sink Forest, a forest that absorbs more carbon than it releases, by planting 300 trees.

Objectives

1. Educate about and engage community in McMaster’s Carbon Sink Forest
2. Facilitate a community tree-planting event
3. Share recommendations for continuous improvement

Reporting

To achieve our first objective, we created informative and engaging Instagram posts and stories on the importance of carbon sink forests and promoting the tree planting event. Leading up to the event we shared reminder posts with pictures and videos. Emails were sent with graphics and additional information on carbon sinks. On the day of the event, we hosted an Instagram takeover providing directions to the event, tree planting procedures, and key facts about carbon sink forests. We also interviewed participants highlighting community members’ experiences engaging in the tree-planting event. In total, the posts reached over 7,500 accounts and were shared 132 times*.

To achieve our second objective, we worked with several collaborators to facilitate the tree-planting event. Prior to the event day, we helped transport 300 native trees and flag their planting location at the site. On the day of the event we, provided local food, set-up planting supplies, and welcomed the 125 participants. Our partner from Trees for Hamilton provided a demonstration and answered questions on how to effectively plant trees, use mulch for weed prevention, and apply tree wraps to deter pests. Following the event, we thanked collaborators, shared photos, and contributed to a [Daily News story](#).

To achieve our third objective, we facilitated a participant feedback survey and debrief meeting with event partners. During which we shared our survey results and personal reflections to highlight what was successful, and what can be implemented in the future. We also selected and communicated the next community tree planting event, thereby planting the proverbial seeds to further achieving our goal of growing the McMaster Carbon Sink Forest.

Collaborators

We would like to give a special thanks to our Community Project Champions, Abbie Little and Lejla Latifovic, for providing us with the resources and guidance to reach our objectives as well as landowners, Bill Walker and Mark Tamminga for making the Carbon Sink Forest possible. We also thank supporters from Trees for Hamilton, Trees for Life, Nature at McMaster, McMaster’s Centre for Climate Change, Office of Alumni Engagement, the President’s Office, Faculty of Science, and Academic Sustainability Programs Office. We also thank the SUSTAIN 3S03 instructional team for their continuous support and guidance. Finally, this would not have been possible without the community members for their participation and engagement.

*As of November 15, 2022



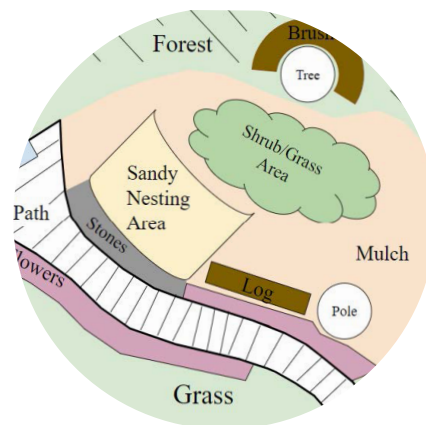
Laying the Groundwork for McMaster's Ground Nesting Bee Garden

Student Authors

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Community Project Champions

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Noah Stegman, Coordinator of Nature at McMaster and Pollinator Team member



Layout of the future ground nesting bee garden.
 Photo credit: Emma Chau

Overview

Ground nesting bees make up 70% of the solitary native bee population, and what distinguishes them is that they lay their eggs in the bare earth.¹ They are also responsible for pollinating 80% of the world's flowering plants.² Hence, the conservation of these bees is crucial to the life of many species. Unfortunately, it is reported that 25% of North America's ground nesting bee population faces some risk of extinction.³ Since 2019, McMaster has worked to promote native bees and is a Bee City Campus. McMaster is situated in a native bee 'hotspot' with over 200 native bee species.⁴ Creating a habitat for ground nesting bees fosters preservation by providing them with a protected space to lay their eggs.⁵ Our goal was to create a plan for the eventual implementation of a nesting space for native bees that dually serves as an educational space and outdoor seating area.

Objectives

1. Design the bee nesting garden
2. Engage stakeholders in planning the design, implementation, and maintenance
3. Create a toolkit for the implementation of the garden

Reporting

To achieve our first objective, we visited the proposed site on McMaster campus and designed our initial layout. This included measuring the approximate 175 m² garden, identifying the South facing slopes for potential habitats, and designating areas for both manicured and wild gardens. Through our research, we determined the types of nests and plants for the garden, which informed our materials list.

To achieve our second objective, we first consulted with our Community Project Champions (CPCs) to refine the design. From there we connected with the Facility Services Grounds Department to pitch the design and receive feedback. We revised our layout to include an accessible pathway, clearance for utilities, and improved the ease of maintenance. The updated layout was approved by Facility Services and our CPCs to commence in summer 2023.

To achieve our third objective, we created a toolkit of implementation guidelines. This included a materials list, where to source materials, community engagement plans, maintenance plans, educational elements, and more. This toolkit will be shared with future sustainability students to advance the initiative towards implementation.

Collaborators

We would like to thank our CPCs, Dr. Susan Dudley and Noah Stegman, for their recommendations throughout the term. We would also like to thank Carlos Figueira, Luke Vlatkovic, and their team from the McMaster Grounds Department for their design and implementation suggestions. Lastly, we would like to thank Abbie Little and Dr. Kate Whalen from McMaster Academic Sustainability Programs Office for their support and guidance along the way.

Composting Champions Pilot Program

Student Authors

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Community Project Champions

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Composting Champions and supporters posing with compost bins on campus. From left: Carlos Figueira, Helena Teng, Madalyn Morrison, Heidi Bruins, Ryan Rexworthy, John Hemmer, Eesha Rehman, Noa Lichtenshtein Serebro, Dr. Kate Whalen.
Photo credit: Georgia Kirkos

Overview

Organic waste that ends up in landfill produces more greenhouse gases than if it were composted. When organic material begins decomposing in landfills, it releases methane, a gas that is estimated to be about 25 times more potent than carbon dioxide over a 100-year span.¹

A study showed that Ontario alone generated roughly 3.7 million tonnes of food and other organic waste.² Of this waste, 60% was sent to landfills rather than composting facilities.³ At McMaster, an audit conducted in 2018 showed that McMaster diverts approximately 54% of waste from landfills through recycling and compost programs.⁴ Our project aimed to increase composting by successfully piloting a composting champions program at McMaster.

Objectives

1. Engage at least 10 individuals to champion composting in their area
2. Foster opportunities for information sharing, feedback, and program enhancement
3. Ensure operation and continuation of the program beyond the pilot

Reporting

To achieve our first objective, we contacted 20 groups and departments that were located near one of the existing central compost bins on campus. We hand-delivered composting champions starter kits that included a compost bin, liners, and educational posters to the 15 individuals who signed up to pilot the Composting Champions program.

To achieve our second objective, we sent feedback forms and weekly emails to our champions and encouraged them to share questions and comments about their experiences. Once feedback was collected, we addressed questions and comments to all champions through the following week’s email communication to ensure our responsiveness, foster information sharing, and build community within the group.

To achieve our final objective, ensuring the continuity of the program beyond the pilot, we created a Composting Champions section on the Facility Services webpage that provides information about the program, resources for composting on campus, and a link to sign up to become a composting champion. As an exciting conclusion, our project was featured in a McMaster [Daily News](#) story, which highlighted the composting champions who were instrumental to the program, the custodial team members running the program following the pilot, and an invitation to all staff, students, and faculty to take part by championing composting and contributing to a more sustainable McMaster.

Collaborators

This project could not have been possible without the support of our Community Project Champions Carlos Figueira and Ryan Rexworthy. We would like to thank Dr. Kate Whalen for her continued support and guidance throughout the entirety of the pilot program and Megan Bieska for her support and creativity. We would also like to thank our composting champions, John Hemmer, Ben Shefter, Roxann Forget, Helena Teng, Lori Diamond, Owen Saull, Alex Coldwell, Elizabeth Way, Zena Shamli Oghli, Lynne Serviss, Karin Hewlett, Katie Millar, Seirra Haziza, and Karen McQuigge for their leadership and help in turning this pilot into a formal program for all at McMaster to enjoy.



Reintroducing the Bring Your Own Mug Program

Student Authors

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Community Project Champions

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#MACMUGSHOTS

Bring Your Own Mug, social media campaign post.
Photo credit: Liana Bontempo

Overview

Disposable cups are massive contributors to air, water, and land pollution, and threaten health of humans and animals.¹ Furthermore, manufacturing and use of disposable cups require natural resources like trees, contributing to deforestation.² The Bring Your Own Mug (BYOM) program aims to eliminate single-use paper and plastic cups at McMaster, thereby promoting a sustainable campus environment. Through discussions with the Hospitality Services team, it was found that the BYOM program is under-utilized. The goal of our project was to create awareness about the BYOM program to the McMaster community.

Objectives

1. Develop a marketing campaign to increase awareness
2. Implement a social media giveaway to increase engagement
3. Present recommendations to senior operations manager of Hospitality Services

Reporting

To achieve our first objective, we executed a successful marketing campaign. In collaboration with Hospitality Services (@maceatsfoodie), we shared three posts and an Instagram reel of students using the program, which received over 3,000 views.

To achieve our second objective, we raffled a \$50 gift card to students who posted a picture with their reusable mug and used the #mugshotsmac tag. By the end of the weeklong campaign, a mere 11 users participated. This was surprising but signaled a barrier to using the program or engaging in the giveaway. To better understand the low engagement, we compared program usage at the on-campus Starbucks to the previous week and found that only 14 transactions included the BYOM discount, which was increased to 16 transactions during our campaign. While we did not meet our expectations for increased engagement, we uncovered important information that barriers exist to using this program.

To achieve our third objective, we created a report of recommendations for future work, with our main recommendation being to study and better understand the barriers to using a reusable mug on campus. Further, we recommend implementing a more approachable means to encourage participation, such as in-person engagement at the point of sale to connect with the target audience and increase their awareness of the BYOM program at McMaster.

Collaborators

We would like to give a special thanks to our Community Project Champions, Liana Bontempo and Cathy Tatsis, for their continuous support and guidance throughout our project. Furthermore, we thank Sarah Young from Hospitality Services for helping us run our BYOM social media campaign. Finally, we thank the students, faculty, and community members for supporting our marketing campaign and social media giveaway.

McMaster Community Fridge – Creating Consistent Community Donors

Student Authors

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Community Project Champions

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Chitrini Tandon, Director, MSU Food Collective Centre



The McMaster Community Fridge located behind Mills Library on campus.
Photo credit: Ankush Sharma



Overview

Prior to the COVID-19 pandemic, two in five students experienced daily food insecurity.¹ Since COVID, food insecurity has reached record breaking numbers.² The McMaster Community Fridge is a fridge, freezer, and pantry complex that offers food to anyone who needs it at any time. Aligned with the Sustainable Development Goals, the goal of the Fridge is to provide free, healthy food to students and other community members experiencing food insecurity.³ The goal of our project was to partner with members of the McMaster and broader community to create consistent donations to the McMaster Community Fridge.

Objectives

1. Contact local businesses and organizations for food donations
2. Create a food donation guide for interested on-campus groups
3. Engage campus groups to collect and donate food

Reporting

To achieve our first objective, we contacted 38 local business that sold food and personal care products and that were located within a 20-minute drive from campus. In addition to calling, and to maximize potential donations, we emailed each business with a formal letter outlining the goals of the Community Fridge and how they could help.

For our second objective, we met with and learned from staff and faculty in McMaster's Kinesiology department who had been organizing small-scale food drives in their area. Working with our Project Champions, we created an instructional guide for other groups wanting to support the Community Fridge through their own food drives. We disseminated this guide to over 100 departments, societies, and offices on campus, including all six McMaster Faculties. The guide was also posted publicly on the [Community Fridge's website](#).

For our third objective, and to inspire uptake in small-scale food drives and donations, we helped organize a 'Winter Food Drive' event during the month of December. We publicly recognized groups who had already established drives in their areas as inspiration for others. We invited everyone on campus to participate in the event through disseminating information on social media and through a university-wide email. We are grateful to the 19 groups who took part and have also committed to continuing their support by keeping a donation bin in their office year-round, therefore helping to secure consistent community donations and tackle food insecurity in our communities.

Collaborators

We would like to extend sincere thanks to our Project Champions, Zeinab Khawaja and Chitrini Tandon, who have given us immense guidance, community connections, and constant support throughout the process. A special thanks to Zachary Nott, the Community Fridge Liaison, who assisted with writing formal letters and contacting required sponsors. We would also like to thank Katie Luong from the Kinesiology department for teaching us how to positively impact the community by offering materials and insights into securing food donations from other Faculties and departments. In addition, a huge thank you to all the individuals who took part in community donations.

Creating a Sustainable Food System at McMaster's Department of Family Medicine

Student Authors

Ameena Shakeel, Social Sciences | **Cherish Zhang**, Science

Ravi Verma, Science | **Shruti Cheetu**, Science

Community Project Champions

Tracey Carr, Executive Director, Department of Family Medicine

Cathy Risdon, Professor and Chair, Department of Family Medicine

Joanne Cordell, Executive Office Lead, Department of Family Medicine



An example of a sustainably catered event.
Photo credit: Jill Sauve, Unsplash

Overview

One-third of all food produced for human consumption goes to waste, which is equivalent to approximately 1.3 billion tons yearly.¹ The implications of food waste have economic and ethical ramifications. Besides the evident monetary loss from food waste, it poses an ethical issue locally as the city of Hamilton is greatly affected by food insecurity. Approximately 12% of Hamilton households struggle to afford food.² The catering industry contributes significantly to this food waste,³ which is why the Family Medicine Department at McMaster aims to create a sustainable food system for catering. The goal of our project was to create a sustainable food guide that focuses on reducing food waste, while considering the broader social and environmental ramifications in the catering process.

Objectives

1. Identify social, environmental, and dietary considerations for sustainable catering
2. Create a sustainable catering score card to generate a database of caterers
3. Develop a guide of best practices for sustainable catering

Reporting

To achieve our first objective, we worked with our Community Project Champions (CPCs) to identify the social, environmental, and dietary considerations that were important to them. We consulted relevant literature and existing resources for sustainable catering. Aligning the goals of our CPCs and existing best practices, we identified 13 key considerations including companies that are owned by or supporting equity-deserving groups, that provide compostable and/or low waste packaging, and/or that offer common allergen-free food options.

To achieve our second objective, we used our 13 considerations to create a scorecard whereby each consideration was used as a criterion assessed on a 3-point scale. To generate our database of sustainable caterers, we used our score card criteria as keywords to search local caterers that would satisfy the scorecard criteria. We created a database of 16 local catering companies containing our evaluations based on information from their websites and follow-up phone interviews. To make the database user-friendly, we added additional details including contact information, pricing, and ordering options.

To achieve our third objective, we developed a guide to support those responsible for choosing who to order from and what to order. The guide includes practices to consider before, during, and after ordering. Examples from our guide include ordering beverages in bulk and requesting guests to bring their reusable mug, making a compost bin available to capture organic waste, and donating leftover food. We have made this guide a living document, so others can contribute, grow the database, and support sustainable catering at McMaster University and in our local communities.

Collaborators

We would like to thank our Community Project Champions, Tracey Carr, Cathy Risdon, and Joanne Cordell for their guidance and support throughout the project. We are also grateful to other members in the Department of Family Medicine for the feedback provided on the scorecard. We extend a special thank you to Abbie Little and Dr. Kate Whalen from the Academic Sustainability Programs Office. We thank the businesses who contributed to the creation of our guide.

Calculating Carbon Emissions from Academic Travel and Identifying Offset Strategies

Student Authors

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Meet Surti, Science | **Nishara Vathanakumaran**, Science

Community Project Champions

Tracey Carr, Executive Director, Family Medicine
Joanne Cordell, Executive Office Lead, Family Medicine
Cathy Risdon, Chair, Family Medicine



Cars traveling on a highway surrounded by smog.
Photo credit: Bogdanov, I., Unsplash



Overview

In the past decades, scientists have proven the planet is rapidly warming because of human actions.¹ In Canada, transportation accounts for 27% of carbon emissions, with 86% attributed to road vehicles and aviation.² Hamilton is no stranger to this, with 1.3 million tonnes of CO₂ being released from transportation.³ In 2016, gasoline and aviation fuel heavily dominated Hamilton's transportation sector, accounting for 75% of total emissions.⁴ Hamilton's City Council has set a goal to achieve net zero greenhouse gas emissions by 2050.⁵

The staff of McMaster's Department of Family Medicine travel by car and plane to attend academic events, not only releasing emissions, but also causing adverse respiratory health impacts. Our project aims to support the department in their goal to reduce their transportation-related emissions associated with academic travel through education and offsetting.

Objectives

1. Identify applicable carbon emissions calculators
2. Present options to offset carbon emissions from academic travel
3. Inform staff members about emissions produced from their academic travel

Reporting

To achieve our first objective, we provided instructions for carbon emissions calculators to quantify the CO₂ production (kg) of a journey via car or airplane. We also created a spreadsheet for staff to track their travel emissions. We produced an instructional video⁶ on how to use these tools, allowing staff to understand and be accountable for the environmental cost of their travel.

To achieve our second objective, we identified that planting trees is one of the most effective and accessible ways for communities to offset CO₂ emissions.⁷ A single tree can offset an astounding amount of CO₂ (approximately 20 kg) at a comparatively low cost of \$5 per tree.⁸ We also proposed that the department partner with NGOs, such as Cycle Hamilton, that promote low-emission methods of transportation, indirectly preventing future emissions from local travel.

For our third objective, we created and shared an infographic⁹ depicting the planetary impacts of travel emissions. The infographic presents easy-to-access information about the adverse effects that transportation has on climate change, a link to carbon emissions calculators, and opportunities to effectively offset emissions. Our infographic is supported by a report detailing our background research and sources for more information to support the department of Family Medicine in making sustainable choices for their academic travel.

Collaborators

We would like to express our sincere gratitude to our Community Project Champions, Tracey Carr, Joanne Cordell, and Cathy Risdon, who provided endless guidance and support toward reaching our goal. We would also like to thank the SUSTAIN 3S03 instructional team, Dr. Kate Whalen, Liana Bontempo, Abbie Little, and Neha Dhanvanthry, whose knowledge and passion for creating a sustainable future was an inspiration towards our project.

SUSTAIN 4S06

LEADERSHIP IN SUSTAINABILITY

SUSTAIN 4S06 is a final-year course where students gain leadership skills and apply them by working in interdisciplinary teams to develop and implement a sustainability-focused project within the community.

Dr. Kate Whalen
Course Instructor



"SUSTAIN 4S06 was unlike any other experiential courses I've taken. It prepared me for graduate-level research and provided an opportunity to work in an interdisciplinary team and with community mentors, leaving me with rich and memorable experiences."

Derek Zhang,
Chemical Engineering with a Minor in Sustainability

Photo location: Baker's Brook Falls Trail, Gros Morne National Park, Newfoundland and Labrador, Canada
Photo credit: Nathan Butterworth

Members of Cycle Hamilton Encourage Advocacy and Community Engagement

Student Authors

Helena Teng, Health Sciences | **Ali Salma**, Science
Omar Shahid, Science | **Mann Badami**, Health Sciences
Kiran Bassi, Commerce

Community Project Champions

Rachel Weldrick, Volunteer, Cycle Hamilton
Abbie Little, Board Member, Cycle Hamilton



Cycle Hamilton Board of Directors and Kate Whalen at Winter Bike Day on February 10, 2023.
Photo credit: Peter Topalovic

Overview

Cycling is a sustainable and active means of transportation that benefits the environment ¹, human health ², and economy ^{3,4}. As the population grows, there is a greater societal need to provide sustainable, efficient, and equitable modes of transportation, like cycling.⁵ In 2016, the city of Hamilton had the highest proportion (27.8%) of commuters using sustainable transportation in southern Ontario's Greater Golden Horseshoe.⁶ However, cities like Toronto see higher proportions of ridership, reaching above 40%, demonstrating opportunity for improvement.⁷ Cycle Hamilton, a non-profit organization, aims to make Hamilton "the best place for anyone to get around by bike."⁸ To inform their future practices, the goal of our project was to explore their members' perceptions of the most significant impact that Cycle Hamilton has had or could provide. We leveraged the Cycle Hamilton's Annual General Meeting (AGM) to connect with current and potential members.

Objectives

1. Conduct interviews with AGM event attendees
2. Identify recurring themes from interview data
3. Present and share findings with Cycle Hamilton

Reporting

To achieve our first objective, we leveraged the work of Fall 2022 SUSTAIN 3S03 students ^{9,10}, who hosted Cycle Hamilton's AGM on November 22, 2022, to recruit and conduct our qualitative interviews. In our questions, we touch on topics such as member experience, how their experience with the organization can be further excelled, and overall engagement with the organization. We asked AGM attendees about what Cycle Hamilton can implement or offer to achieve their goal of making Hamilton the best place for anyone to get around by bike. In one hour, we conducted 20 interviews. Our participants were made up of 15 Cycle Hamilton members, and five non-members.

To fulfill our second objective, we identified reoccurring themes in the interview data suggesting that Cycle Hamilton can better serve its members through increased individual advocacy (e.g., educating younger demographics) and structural advocacy (e.g., advocating for better cycling infrastructure to governing bodies). Cycle Hamilton can also better serve its members through increased engagement, specifically increasing event promotion, diversity of attendees, and community collaborations.

To achieve our third objective, we discussed our findings and recommendations with Cycle Hamilton's Board of Directors and shared our results with the broader organization through online promotion. Our recommendations included advocacy through campaigns, increased consistency and frequency of smaller events, and leveraging current community relationships for increased support and resources.

Collaborators

Thank you to our Community Project Champions, Abbie and Rachel, for the opportunity to conduct this study and support us throughout our entire project. Thank you to our course instructor and principal investigator, Dr. Kate Whalen, for the continuous support and expert guidance. A special thank you to Fall 2022 SUSTAIN 3S03 students for organizing and hosting the AGM and to the participants for sharing their insights. Our sincerest gratitude to the Cycle Hamilton Board of Directors for the opportunity to discuss and present our work. We thoroughly enjoyed our experience and greatly appreciate the insights and learnings we have gained.



ACCESS TECH Student Reuse Event: Understanding Student Motivation & Experience in Upcycling Technology

Student Authors

Alison Laurie, Social Sciences | **Carmen Huynh**, Engineering
Derek Zhang, Engineering | **Shanathan Selliah**, Science
Summer Akhtar, Humanities

Community Project Champions

Emilia Nietresta, ACCESS Tech, McMaster University
Clare Benson, ACCESS Tech, McMaster University



Donated technology from McMaster University
Photo credit: Jessica Radko

Overview

Given that the current technological industry follows a linear economic model, the end result leads to electronic waste with few sustainable resolutions to mitigate the environmental impacts.¹ Upcycling — upgrading and recycling — is a way to reduce electronic waste² and is a method employed by McMaster University. The ACCESS Tech Initiative at McMaster aims to collect, reuse, and donate technology to community members in need.³ Following electronics collection and hard drive sanitization, the highest quality items are donated to community members in need. All remaining items, many of which are still of great quality, are offered to students during the ACCESS Tech Student Reuse Event. Our goal was to enhance the Student Reuse Event and to improve the student experience by understanding the underlying motivations of students in upcycling technology.

Objectives

1. Collect data on the student experiences of upcycling technology
2. Analyze the data and identify common themes
3. Refine findings and present recommendations to decision-makers

Reporting

To achieve our first objective, we developed five core interview questions that focused on students' experience at the event, if they were looking for something specific, what they hoped to use the technology for, their perceived value of the event, and feedback to improve future events. We attended the ACCESS Tech Student Reuse Event on September 29th, 2022, and recruited 21 students to participate in our interview. Interview data was collected through either an audio recording or a hand-written transcription.

To achieve our second objective, the transcribed interview data were analyzed to identify key themes. Each student researcher reviewed their interview transcriptions and coded the data accordingly. Using qualitative thematic analysis, we came up with two distinct groups for the themes: experience and motivation. After, we counted the prevalence of each code across all interviews and recorded the most prominent ones. This was summarized into four key themes under the motivation category and three key themes under the student experience category.

To achieve our third objective, we refined our findings and presented them to the ACCESS Tech working group on March 15th, 2023. During the presentation, we proposed three recommendations based on the findings of our research, which are to implement a time-slot system where students sign up and come to the event at specific times, to broaden the list of items being offered to upcycle, and to increase the purchase of technology with modular designs at McMaster University. These recommendations target the improvement of student experience and the promotion of circular economic practices.

Collaborators

We would like to give a special thanks to our Community Project Champions and sponsors, Emilia Nietresta, Clare Benson, Carlos Figueira, Richard Godsmark, and Paula Brown-Hackett, for their continuous support and guidance throughout our project. We would also like to thank our collaborators, the ACCESS Tech volunteers and the SUSTAIN 3S03 student team, who allowed us to share their space at the event, and the SUSTAIN 4S06 instructional team including our research supervisor, Dr. Kate Whalen, and teaching assistant, Madison Mote, for their ongoing support and feedback throughout the year. Finally, we would like to thank the student interview participants, as without them all of this would not have been possible.

Motivations for Donating Used Technology to ACCESS Tech

Student Authors

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Devanshi Patel, Science | **Mehakpreet Sandhu**, Science

Community Project Champions

Emilia Nietresta, ACCESS Tech, McMaster University
Clare Benson, ACCESS Tech, McMaster University



SUSTAIN 4S06 student researchers with donated items-
From left to right: Mehakpreet Sandhu, Devanshi Patel,
Sanjoli Saini, Edward Kang.
Photo credit: Matt Clarke

Overview

The pandemic required us to move online, and access to information technology became, and remains, even more of a necessity. However, many people lack access to adequate technology, creating barriers to education, work, healthcare, and more.^{1,2} ACCESS Tech is a collaborative initiative that collects electronic donations from the McMaster community for refurbishment and donation to Hamiltonians in need through partnership with Empowerment Squared.³ The ability to donate technology to those in need is directly related to the amount of donations ACCESS Tech receives. Thus, the goal of our project was to increase donations by leveraging donor motivations.

Objectives

1. Interview those who donate to ACCESS Tech
2. Transcribe, analyze, and code interviews to understand donor motivations
3. Recommend strategies to increase donations and access to technology

Reporting

To achieve our first objective, we attended the McMaster ACCESS Tech Donation Event on October 27th, 2022. We interviewed 20 McMaster students and staff members about their motivations to donate.

Our second objective was completed by analyzing interview data and identifying reoccurring themes. We identified two key themes -- motivators and facilitators -- and four sub-themes. With respect to motivators, donors experience a benefit to themselves as well as altruism for others and the environment. For example, donors donated to declutter their personal space and to leverage the opportunity for free and reliable hard drive sanitization, and they also donated to help someone in need as well as to protect the environment through recycling and reuse. With respect to facilitators, the aspect that made donations easy for the donors included their awareness of the event and the incentives. For example, a donor mentioned receiving a direct email, so they knew about the event and were incentivized to donate because of the free donuts.

To conclude our project, we presented our findings and recommendations to McMaster's ACCESS Tech working group. We received supportive and encouraging feedback, and our recommendations were incorporated into the ACCESS Tech donation drive as part of Earth Day on April 21st, 2023, which included a [Daily News story](#) summarizing and satisfying our recommendations.

Collaborators

We would like to sincerely thank our professor, Dr. Kate Whalen, whose guidance and expert advice helped with the facilitation of the qualitative research project; our Community Project Champions and sponsors, Clare Benson, Emilia Nietresta, Megan Bieska, Paula Brown-Hackett, Carlos Figueira and Richard Godsmark, for their continuous support; the SUSTAIN 3S03 events⁴ and communication⁵ teams for helping to make the ACCESS Tech donation event run smoothly; the McMaster Campus Store for providing a discount on water bottles we used to thank our interviewees; and to all our interview participants who made this study possible.



Understanding Residence Students' Motivations for Water Bottle Refilling and Reuse

Student Authors

Manal Malik, Science | **Mansi Rathod**, Science | **Milena Vujicic**, Science | **Neha Dhanvanthry**, Science | **Lingxuan Wu**, Science

Community Project Champions

Monica Palkowski, Living Learning Coordinator, Housing and Conference Services

Holly Gibson, Manager, Marketing & Communications



Refilling a reusable water bottle at a refill station
Photo credit: Georgia Kirkos

Overview

Plastic waste, a predominant petroleum product, is a major contributor to fossil fuel usage and global warming.¹ Canada is a large contributor to the global plastic crisis.² In 2018, 34% of plastic products for the consumption of Canadians was packaging materials, which included single-use bottles.³ Many Canadian universities implemented strategies to reduce plastic waste being generated, such as plastic bottle bans.⁴ McMaster University implemented the Bring Your Own Bottle (BYOB) initiative to encourage staff and students to use the refill stations across campus, alongside installing filtered taps in the kitchens of residence buildings.⁵ Given the importance of developing early sustainable habits, the goal of our study was to understand the perspectives of first-year residence students on refilling reusable water bottles following the implementation of the BYOB program and changes to water infrastructure. The findings and recommendations of this study are intended to propel further action to promote sustainable water consumption on campus.

Objectives

1. Collect information regarding residence students' experiences of water bottle reuse
2. Identify the barriers and motivations to water bottle refilling
3. Share recommendations to further promote refilling and reuse on campus

Reporting

To achieve our first objective, we conducted 21 individual interviews with first-year residence students. We asked open-ended questions regarding their experiences using reusable water bottles and the water refill stations across campus.

To achieve our second objective, we analyzed interview data and identified themes regarding student motivations and barriers to water bottle refilling and reuse. Students discussed their motivations and rarely mentioned barriers. As such, we identified the theme of 'motivations to refill' with three subthemes: 1) convenience; 2) water quality; 3) sustainability. Regarding convenience, students elaborated that the proximity and quantity of refill stations, and having a reusable water bottle, motivated them to refill. With respect to water quality, students prefer using the refill stations because they offer cold, filtered, and 'safe' water. We identified the third subtheme of sustainability as students described that refilling allows them to save money, practice environmental consciousness, and stay hydrated.

Our final objective was achieved by presenting our findings to the Bring Your Own Bottle Working Group. Previous findings reveal that students mistrusted tap water and lacked sufficient access to filtered water.^{6,7} Following the BYOB Group's work to increase access to and information about filtered water, we see evidence that these are no longer barriers to students. We recommend the BYOB Group to maintain the current infrastructure and continue their robust communication. Continued research over time and with more students will improve our understanding and allow us to continue making data-driven decisions to promote water bottle refilling and reuse on campus.

Collaborators

We would extend our gratitude to our Community Project Champions, Monica Palkowski and Holly Gibson. We also thank Dr. Kate Whalen for her guidance throughout this project. Thank you to the SUSTAIN 3S03 student group for providing us with an opportunity to conduct interviews and the BYOB Working Group for providing us with a platform to share our findings. Finally, we thank all of our participants for sharing their thoughts with us.

Sustainability Internship Program

An opportunity for undergraduate students to receive academic credit and graduate students to receive recognition for their self-directed learning.

McMaster's Sustainability Internship Program was created in 2009 in collaboration with students and faculty members aiming to support students in the practical application of their theoretical knowledge.

PROGRAM OBJECTIVES



Support all Faculties in providing opportunities for students to engage in experiential learning



Foster collaboration between students, faculty, staff, and the broader community



Highlight the achievements of students who have successfully completed their Sustainability Internship



"Being a sustainability intern has enhanced my undergraduate experience immensely. I deeply treasure having had the opportunity to bridge the divide between theory and practice, as well as exercise and apply my passion for sustainability in real world applications."

Skye Earley, Sustainability Intern,
Honours Biology and Environmental
Sciences, Minor in Political Science

Sustainability Internship Program

Year in Review

Reporting

The Sustainability Internship supports the functions of academic departments across campus in their efforts to bolster students' self-directed, experiential learning. Undergraduate students pursuing independent study, capstone, experiential placement, and inquiry courses, to name a few, can obtain additional support from the Academic Sustainability Programs Office. Graduate students engage in supported independent study, produce meaningful work, and receive a letter of reference upon successful completion of their project.

Over the past 13 years, the Sustainability Internship Program has supported more than 61¹ students in their experiential learning at McMaster.

This past year, four students took part in the Sustainability Internship Program:

- **Adrianna Diab** focused her fourth-year Integrated Science thesis on understanding how sustainability leaders understand and approach their work in tackling complex sustainability challenges.
- **Skye Earley** focused her undergraduate thesis in the School of Earth, Environment & Society on understanding barriers to composting on campus, implementing solutions, and measuring the change in perception by students, faculty, and staff.
- **Emilia Nitresta** focused her fourth-year Engineering & Society Inquiry study on investigating current practices of Canadian post-secondary institutions in managing their e-waste and how information sharing might improve practices.
- **Maria Treash** focused her fourth-year Arts & Science thesis on assessing the City of Hamilton's wastewater policies with a lens of intersectionality to identify areas for improvement.

A full report on each of the internship studies above can be found at asp.mcmaster.ca, and a one-page summary of each of Skye and Emilia's study can be found in the pages to follow.

Collaborators

The Sustainability Internship Program is made possible through collaboration with Faculties from across campus, and with support from faculty, staff, community members, and especially the students who devote their time and energy into self-directed, community-based, and experiential learning about sustainability.

The individual student interns designed, developed, and created exceptional work through their self-directed learning. Integral support was provided by their respective academic departments, as well as the students' academic supervisors, community project champions, and project mentors.

Specific project collaborators are recognized as part of the students' project reporting in the pages to follow.



Brighter World banner located on campus along Scholars Rd
Photo credit: Scholars Road

The Real Reasons Composting on Campus is So Hard

Student Author

Skye Earley, Science

Course

ENVIRSC 4MT6: Senior Thesis

Supervisors

Dr. Luc Bernier, Assistant Professor, School of Earth Environment & Society

Dr. Kate Whalen, Associate Director, Academic Sustainability Programs Office



Compost initiative team standing with compost and waste bins on campus. From Left: Carlos Figueira, Skye Earley, and Dr. Luc Bernier
Photo credit: Matt Clarke



Overview

When organic waste decomposes in landfill, it produces methane gas, which has a global warming potential ~25 times greater than carbon dioxide.¹ Composting significantly reduces the associated emissions compared to the same organic material placed in landfill.² Composting also avoids overburdening landfills, which have been shown to negatively affect biodiversity³ and human health⁴ locally and globally. McMaster University employs over 16,000 faculty and staff members and supports over 35,000 students.⁵ There are over 20 eateries on campus and 13 public facing compost bins.⁶ In 2022, more than 45 metric tonnes of organic waste from McMaster was improperly put into the garbage, instead of being composted.⁷ The goal of this project was to use data-driven decisions to improve composting on campus.

Objectives

1. Understand the barriers to composting on campus
2. Implement changes to remove stated barriers to composting
3. Evaluate the effectiveness of the implemented changes

Reporting

To accomplish my first objective, I surveyed 200 participants, including students, faculty, and staff members. Participants suggested that more compost bins in high traffic areas such as dining areas, libraries, and residence buildings would help alleviate the main barriers of inadequate number and location of bins. Additionally, participants recommended implementing visible and consistent signage, along with information about where bins are located. Some participants requested new bins where bins already existed. Upon investigation, I saw that many existing bins lacked any form of signage.

In carrying out my second objective, I worked with campus experts and stakeholders to:

- Re-install three composting bins that were decommissioned during the COVID lockdown
- Add composting bins to washrooms in MDCL as a pilot for paper towel composting
- Create an interactive map displaying compost bin locations throughout campus
- Improve the clarity and consistency of signage, complete with a link to the interactive map
- Ensure all bins were outfitted with the new and accurate signage

To achieve my final goal of evaluating the effectiveness of these changes, I re-surveyed the original participants to gauge their perception. Within one week following the improvements, 30% of participants noticed the changes, and 30% encouraged continued improvements. In addition to adding more bins across campus, future studies should investigate the reasons for and how to reduce contamination of waste being disposed of in the composting bins, which would ensure the effectiveness of the program.

Collaborators

I extend my deepest gratitude to my exceptional supervisor, Dr. Kate Whalen, who played a pivotal role in facilitating collaborations and enriching my learning experience. Her expertise and guidance not only broadened the scope of the project but also led to crucial enhancement of its outcomes. I also wish to thank Dr. Luc Bernier for his supervision and support. I would also like to thank Carlos Figueira and Ryan Rexworthy from Facility Services for their thoughtful insights and willingness to actively participate in implementing change. I wish to also thank Megan Bieksa and Matt Clarke for their role in spreading the word about this project through McMaster Daily News. I would also like to thank MSU President, Simranjeet Singh, for his help in facilitating change in MUSC. I would like to also thank Nathaniel Vanderwoude for his timely aid in designing our new and improved compost signs. Thank you as well to all participants who took the survey in contributing to a more sustainable McMaster.

Enhancing E-waste Management in Canadian Post-secondary Institutions

Student Author

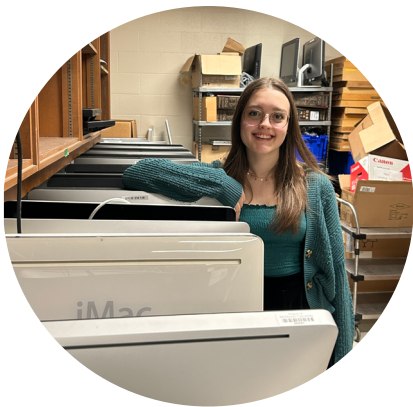
Emilia Nietresta, Engineering

Course

ENGSOCTY 4X03 – Inquiry in an Engineering Context III

Supervisor

Dr. Kate Whalen, Associate Director, Academic Sustainability Programs Office



Emilia Nietresta in the ACCESS Tech lab with donated items
Photo credit: Kate Whalen

4 QUALITY EDUCATION

10 REDUCED INEQUALITIES

11 SUSTAINABLE CITIES AND COMMUNITIES

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

16 PEACE, JUSTICE AND STRONG INSTITUTIONS

17 PARTNERSHIPS FOR THE GOALS

Overview

Effective e-waste management strategies are one of the most important challenges societies will have to overcome to meet the overwhelming increase of end-of-life electronics.¹ E-waste management at the post-secondary scale in Canada is severely lacking in public availability of information and diversity of strategies.² The goal of my inquiry project was to explore current practices and successes of Canadian post-secondary schools in management of their e-waste and to propose pathways to for enhancement of such programs.

Objectives

1. Assess e-waste management practices of Canadian post-secondary schools
2. Analyze lessons and successes from McMaster's ACCESS Tech program
3. Develop a framework to support knowledge sharing and program enhancement

Reporting

Through assessment of 55 post-secondary school e-waste management programs, sourced mainly through the STARS (Sustainability Tracking Assessment and Rating System) database, I compared and assessed various e-waste management practices. I found that there is great opportunity for campuses across the country to improve their e-waste management practices including a focus on reduction and reuse.

Recognizing that information sharing about the lessons learned and successes of McMaster's ACCESS Tech program could benefit other institutions, I focused on understanding the history of the program development as well as current perceptions. In addition to reviewing all published literature on the program's development, I also collaborated with two research teams from the SUSTAIN 4S06 course to analyze data about donor perceptions and upcycler experiences.

Based on my knowledge of the ACCESS Tech program at McMaster, along with the new information I discovered through my research, I created a prototype for the McMaster E-waste Management Framework. My framework is a six-level approach to improving post-secondary e-waste management with each level setting new responsibility goals. As an institution works their way up the pyramid they will diversify their available streams for e-waste collection, reuse, and donation to filter out as much material as possible before recycling is necessary.



Figure: Levels of the McMaster E-Waste Management Framework for Post-Secondary Institutions

Collaborators

I would like to express my sincerest thanks to the following people: Dr. Kate Whalen for all her unwavering support, feedback, and guidance throughout my inquiry writing process; the two SUSTAIN 4S06 student teams who generously shared their excellent data with me, this includes Edward Kang, Devanshi Patel, Mehakpreet Sandhu, Sanjoli Saini, Alison Laurie, Carmen Huynh, Derek Zhang, Shanathan Selliah, and Summer Akhtar; everyone who has volunteered, supervised, and worked alongside me on the ACCESS Tech initiative; and Anna Sciascetti, along with everyone in the Engineering & Society office, for their continued support throughout my undergraduate career.

Sidewalk Murals: Moving Towards Active School Travel

Student Author

Sandra Alexander, Master of Science

Course

ENGSCTY 4X03 – Inquiry in an Engineering Context III

Supervisor

Dr. Kate Whalen, Associate Director, Academic Sustainability Programs Office



Emilia Nietresta in the ACCESS Tech lab with donated items

Photo credit: Kate Whalen

Overview

Only 35% of children between the ages of five to 17 years old meet the daily 60-minute physical activity recommendation set by the Canadian 24-hour Movement Guidelines.^{1,2} This statistic is concerning as sedentary behaviour is a catalyst for developing several chronic diseases.³ In Hamilton, Canada, the Daily School Route (DSR) is aspiring to motivate 100% of students to actively travel to and from school by implementing an active transportation system for children.⁴ Active travel could involve walking, cycling, or pushing a wheelchair.

In February 2023, the DSR embarked on an initiative to support social change through parent and student engagement complemented by a street activation project. Most notably, sidewalk murals were identified as the primary street activation method given their consistent success across the world. The goal of my project was to highlight how sidewalk murals can increase active school travel in Hamilton to positively influence child physical, cognitive, and social development.^{5,6,7}

Objectives

1. Understand the diverse benefits of active school travel for children
2. Highlight how sidewalk murals lead successful behavioural changes within communities
3. Identify the next steps to help advance DSR's initiative

Reporting

To understand the benefits of active school travel for children, I consolidated literature from various academic disciplines like physiology, psychology, urban sociology, and from public policies. Key findings highlight that the mitigation of chronic illnesses through aerobic activity can further influence a child's self-efficacy and can lead to policy changes. Therefore, one seamless way to integrate aerobic activity within a child's lifestyle is to formally support the practice of active travel to school. If a student walks or cycles to/from school for 15 minutes each day, it facilitates meeting 30 minutes out of the recommended 60-minute physical activity guideline during the academic year.²

To explore tangible solutions to drive this social change within Western countries, I highlighted how sidewalk murals support successful behavioural changes in communities. When analyzing their implementation across Europe, USA, and Canada, successful initiatives focused upon improving perceived and actual road safety. Mitigating the barriers related to the built environment, implementing social support networks, decreasing commute distance, and monitoring road traffic are key factors that allow active school travel to thrive in a community.

To support the progression of DSR's initiative, I synthesized the key literature findings and wrote an evidence-based report to advise their next steps. I collaborated with community members and city stakeholders to begin implementing sidewalk murals around schools in Hamilton. Following their implementation, the impact can be measured by observing driving behaviour around the sidewalk mural, the number of students walking or cycling to school, and collecting survey data about perceived safety while commuting to school.

Collaborators

Thank you to Dr. Kate Whalen for her guidance and unwavering support throughout the exploration of my research question, and to Daniel Chong for sharing his expertise about Daily School Route's impact within the community.



Student Sustainability Ambassadors Program (SSAP)

A co-curricular program and community hub for sustainability-minded undergraduate and graduate students and clubs aimed to foster collaboration.

Created in 2020, SSAP is a co-curricular program led by students in collaboration with the Academic Sustainability Programs Office and Hospitality Services to provide a platform to facilitate connections between sustainability-focused students and clubs at McMaster.

PROGRAM OBJECTIVES



Generate student awareness of and engagement in sustainability



Foster student leadership in sustainability through collaborative and active learning



Support students in their pursuit of sustainable action



“Local sustainability initiatives, both at McMaster and in the greater Hamilton community, often work in silos. SSAP aims to provide an accessible platform that helps foster meaningful connections between the sustainability-focused students and clubs of our McMaster community. The SSAP leadership team is full of passionate and driven individuals who share this one common goal.”

Armaan Kotadia, SSAP Treasurer
Honours Health Sciences

Photo location: Rocky Shore, British Columbia, Canada

Photo credit: James Wheeler, Pexels

Student Sustainability Ambassador Program (SSAP)

Year in Review



Authors and this year's SSAP Coordinators: Helena Teng (Health Sciences), Nicole Rob (Arts & Science), Ashravi Vora (Health Sciences), Ashley Low (Health Sciences), Armaan Kotadia (Health Sciences), and Kimia Kermanchi (Health Sciences)

Reporting

Throughout the summer of 2022, Co-advisors Abbie Little and Liana Bontempo worked with two former SSAP members to update SSAP for the 2022/2023 year. Through this process, they created six coordinator positions and descriptions, interviewed and hired six Coordinators, and created a training and onboarding module on Avenue2Learn. We, the authors of this report, were fortunate to each obtain one of these coordinator roles: treasurer, clubs liaison, communications, events, and two organizers. To ensure that SSAP is student-led, we created goals for the year, updated communication methods with the SSAP community, and created a budget proposal.

To generate student awareness and engagement in sustainability, we facilitated four events, which engaged 484 attendees and six clubs. In addition to the annual [Sustainability Bonfire](#), which engaged 90 attendees, the largest event was the [Sustainability Fair](#) in March, which engaged 300 attendees and had representation from five McMaster groups, four local Hamilton organizations, and two local vendors. During the event, we facilitated a giveaway wheel game to foster engagement among attendees.

To foster student leadership, we coordinated a [Sustainability Clubs Night](#) at The Grind in February, which engaged 75 students and five McMaster clubs. During this event, each McMaster club facilitated an interactive sustainability activity for event attendees that was educational and fun. Examples of activities include a waste sorting game, creating DIY keychains from recycled material, and making DIY eco-cleaning products.

To support students in their pursuit of sustainable action, we promoted the work of 14 sustainability clubs through social media, events, and our private Teams channel. This helped to increase visibility of the work these clubs were doing and encouraged more students to get involved.

Looking forward, we encourage the 2023/2024 SSAP Coordinators to focus their efforts on increasing the number of clubs affiliated with SSAP and amplifying their message to McMaster students.



2022/2023 SSAP Coordinators

Left to right: Helena Teng (Organizer), Kimia Kermanchi (Events Coordinator), Armaan Kotadia (Treasurer), Ashley Low (Communications Coordinator), Nicole Rob (Clubs Liaison), and Ashravi Vora (Organizer)

Collaborators

The growth of SSAP this year has been incredibly rewarding. The successes of the program would not be possible without the engagement of our student members and campus stakeholders. We thank the faculty and staff members for supporting SSAP as well as for supporting continuous program development. Thank you to the students who have contributed by joining the community and providing feedback for continuous improvement. Our sincerest appreciation extends to our SSAP Advisors, Abbie Little and Liana Bontempo, who have provided us guidance and continuous support.

SSAP Governance Structure

The revised governance structure and communication strategy consists of layers, which provide students the opportunity to participate at the degree of commitment they are able to.

SSAP Advisors

Abbie Little, the Community Engagement Coordinator at McMaster's Academic Sustainability Programs Office and Liana Bontempo, the Wellness and Sustainability Manager at Hospitality Services, founded the program, mentor the SSAP Coordinators, and report quarterly to the McMaster Sustainability Advisory Committee.

SSAP Coordinators

Six students who volunteer to take on the additional responsibilities of coordinating SSAP over the course of a two-semester school term.

SSAP-Affiliated Club

A sustainability-focused club (e.g., MacClimate Advocates and Zero Waste McMaster) with representatives who engage and liaise with SSAP Coordinators.

SSAP Members

Any student who wants to join the SSAP community [Facebook group](#) or the monthly email list.

SSAP Events

**Sustainability
Bonfire Social**



**Pot Painting
to Save the Bees**



**Sustainability
Clubs Night**



**Sustainability
Fair**





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Photo location: Chedoke Park, Hamilton, Ontario, Canada

Photo credit: James Wheeler, Unsplash

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2. Includes graduate and undergraduate students

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SUSTAIN 3S03

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