

Final Report: University of Guelph

At the University of Guelph (U of G), world-class research, high-quality teaching, and student engagement all contribute to the University's goal of moving knowledge into action to improve life. Knowledge mobilization (KMb) at the University of Guelph builds on strong traditions of agricultural extension and community engagement to build capacity and skills in knowledge mobilization, both on-campus and with our community and industry partners.

Funding from the Future Skills Centre (FSC) in 2019-2020 allowed our three knowledge mobilization units – located in the Research Innovation Office, Community Engaged Scholarship Institute and the Ontario Agri-Food Innovation Alliance – to collaborate on five separate initiatives aimed at building skills and capacity in knowledge mobilization. These initiatives included:

- (1) Skills for Research Impact Workshops: We launched an 8-session workshop series that provides targeted skills building sessions in knowledge mobilization related topics for faculty, staff and students on campus.
- (2) Guelph/KW Knowledge Translation Community of Practice: We supported the local knowledge mobilization community of practice, the Guelph/KW KT CoP – a group that regularly meets to provide professional development and networking sessions for participants.
- (3) Certificate in Knowledge Mobilization: FSC funding allowed bursaries to be provided for 3 non-profit organizations to take part in one semester of U of G's Certificate in Knowledge Mobilization, an online course that builds KMb skills.
- (4) Facilitation Workshop: We engaged a facilitation expert to provide 'train-the-trainer' training in facilitation for KMb and related staff who regularly facilitate meetings and events at the University.
- (5) The Improve Life Challenge: Hack the Farm: This event brings together community and industry organizations with interdisciplinary groups of students to explore industry challenges and brainstorm and ideate potential solutions. Using FSC funding, we were able to train the students in relevant skills, and support two students to work on projects that evolved out of the event.

More information about each of these initiatives, including more detailed descriptions, reports of the events, and evaluation information pertaining to skills-building, are below.

1. Skills for Research Impact Workshops

Skills for Research Impact is a monthly workshop series for faculty, research staff and graduate students interested in enhancing the impact of their research. Through eight hands-on sessions facilitated by KMb experts, participants learned how to successfully plan, execute and evaluate knowledge mobilization activities.

Throughout the series, participants were invited to apply the workshops' content to their own research contexts and goals, and bring real examples to work on. Workshops were highly participatory and provided practical knowledge, skills and tools to participants.

The 8 sessions included:

- (1) Planning for Research Impact:** October 3, 2019; led by Shannon Brown, Ontario Agri-Food Innovation Alliance and Caroline Duvieusart-Dery, Community Engaged Scholarship Institute.
- (2) Stakeholder Engagement:** October 30, 2019; led by David Phipps, York University.
- (3) Clear Language Writing:** November 13, 2019; led by Kim Garwood, Writing Services at the McLaughlin Library and Caroline Duvieusart-Dery, Community Engaged Scholarship Institute.
- (4) Design Principles: Designing for your Audience:** December 4, 2019; led by Shannon Brown, Ontario Agri-Food Innovation Alliance.
- (5) Website Design and Digital Accessibility:** January 21, 2020; led by Tanya Qureshi and Marinette Fargo, Computing and Communications Services.
- (6) Social Media Engagement:** February 12, 2020; led by Melanie Parlette-Stewart, Digital Media at the McLaughlin Library.
- (7) Event Planning and Facilitation:** March 5, 2020; led by Muriel O'Doherty, Arrell Food Institute.
- (8) Evaluating KTT Activities:** April 15, 2020; led by Anne Bergen, Knowledge to Action Consulting (hosted virtually).

These sessions were extremely popular offerings at the University; for almost all sessions, registrations were at capacity. 75 unique participants attended at least one workshop; many participants attended several workshops (see Appendix 1). For students who attended at least 6 of our 8 workshops, we offered a certificate, attesting that they had taken part in these workshops and gained relevant KMB skills.

An evaluation was sent out to workshop participants after each workshop (see Appendix 2); participants were asked to rate their level of knowledge on the topic area before and after the workshop. For each workshop in the series, we saw that the average self-evaluations of skill level did increase, by at least one rating point (i.e. from good to very good).

Participants were also asked to rate how well they felt the workshop taught them the skill or topic that was the focus of the workshop. Respondents reported that the workshop taught them the skill in question moderately, very or extremely well; 100% of respondents indicated as such in 6/8 workshops evaluated, with 85% and 90% of respondents reporting this in the two remaining workshops.

Similarly, respondents were asked to rate the workshop; at 7/8 of the workshops, all participants reported that it was good, very good or excellent.

However, these evaluation results should be read cautiously, as participation in our evaluations dropped off over the course of the year. Full evaluation results can be found in Appendix 2.

Overall, these workshops were a great success, and were an initiative we plan to continue and refine in future years. Participants indicated that they would be interested in attending future workshops in the series, and suggested several topics on which they would like skills training.

Changing plans due to COVID-19: A 9th workshop on Data Visualization was planned for March 25, 2020, to be led by Wellington-Dufferin-Guelph Public Health. However, with the advent of the COVID-19 virus, the University was in the midst of moving online, and our workshop leaders were directed to focus exclusively on Public Health's response to the virus; thus, the event was cancelled. Our final workshop, Evaluating KTT Activities, was moved to an online format.

2. Guelph Knowledge Translation Community of Practice

The [Guelph and Kitchener/Waterloo Knowledge Translation and Transfer Community of Practice](#) (KTT CoP) is a network of knowledge mobilization professionals, faculty and students seeking to share best practices, develop new skills, and connect with peers.

The Future Skills Centre funding allowed us to support 5 sessions of the CoP this year, with skills-building speakers sharing their insights and knowledge on topics such as social network analysis, evaluation, research communications, KMb best practices, and more. The sessions included:

Date	Topic and speaker	Number of registrations
October 25, 2019	<i>Hackathons: the Evolution of Hacking</i> Presenter: Dan Gillis	21
November 22, 2019	<i>Tools for Research Communications</i> Presenter: Amber Woods	28
December 6, 2019	<i>KTT Best Practices: Building a 'next generation' KTT program</i> Presenter: Shannon Brown	24
January 31, 2020	<i>Capturing the Hidden: Social Network Analysis</i> Presenter: Travis Sztainert	22
February 28, 2020	<i>Open Educational Practices and Knowledge Mobilization</i> Presenter: Ali Versluis	10
April 2, 2020 <i>Cancelled because of COVID-19</i>	<i>Spring Social: Meet, greet & plan with the KTT community</i> Meet & greet event	10 prior to cancellation
April 24, 2020 <i>Cancelled because of COVID-19</i>	<i>You did a thing, now what? Anchors and anvils in evaluating KT projects</i> Presenter: Jess Voll	12 prior to cancellation

Prior to the pandemic, sessions of the KTTCoP took place monthly over lunch and brought together a wide range of KMb professionals for speaker presentations and workshops. We saw participation from practitioners both from the University of Guelph campus (faculty, students and staff) and from many local organizations/independent professionals.

The KTT CoP sessions allowed participants to develop strategic and hands-on skills related to multiple facets of knowledge mobilization, including communications, innovation and design thinking, program planning and development, and open education. Doing so, the sessions contributed to bridging the gap between available KMb evidence and practice by growing the participants' understanding of best practices and tried-and-tested strategies.

The sessions supported the exchange of knowledge and skills among professionals from various sectors in an informal setting that lends itself well to conversation and learning. They also provided space for the creation of new opportunities for collaborative projects.

More generally, the community of practice enabled the growth and strengthening of networks among knowledge mobilization professionals in Guelph, with sessions regularly attracting both new and recurring participants. It allowed for regular interaction between seasoned knowledge mobilization professionals and more junior brokers or students hoping to develop skills or enter careers in this field.

Changing Plans due to COVID-19: Due to the pandemic, we unfortunately had to cancel the last two sessions of the KTT CoP.

3. Certificate in Knowledge Mobilization

The University of Guelph offers the [Certificate in Knowledge Mobilization](#), an online training program aiming to increase professional skills in knowledge mobilization and evidence-based decision-making. Now in its third year, the Certificate attracts professionals from the academic, policy and service delivery sectors. However, the cost of the program can be prohibitive for social service organizations and individuals working in the not-for-profit sector.

A portion of the Future Skills Centre funding was used to subsidize 3 individuals from the not-for-profit and social services organizations to participate in one course of the Certificate for Knowledge Mobilization. This opportunity was promoted widely in networks of not-for-profits locally, provincially, and nationally.

Selected participants

Applicants were evaluated based on their motivation for participating in the course and the potential for use of their new knowledge and skills in their workplace. The three individuals selected represented the following not-for-profit organizations:

1. **Let's Talk Science**, which builds interest and skills in science, technology, engineering and math education through hands-on activities and demonstrations for youth.
2. **Woman Abuse Council of Toronto (WomanACT)**, which conducts research, policy and education work on a variety of projects related to ending violence against women.
3. **Canadian Institute for Health Information**, which provides actionable data and information used to accelerate improvements in health care, health system performance and population health across Canada.

Outcomes

All three participants successfully completed the course 'Engage: Building capacity to understand and use relevant evidence', offered in Winter 2020.

In a short evaluation sent after the course completion, participants were asked to provide feedback on whether the program enabled them to develop new skills, and whether they anticipated applying their new knowledge in their respective roles and organizations.

All three participants agreed that the program was a very valuable learning opportunity. They appreciated learning about knowledge mobilization frameworks and strategies and found that these increased their capacity to apply KMB principles in their work. In particular, they noted their enhanced ability to effectively engage and communicate with a variety of stakeholders. One individual also

mentioned that the course validated their thinking and boosted their confidence when speaking about KMb.

Two weeks after completing the course, participants had already applied their new knowledge and skills as part of their roles. Two of them shared what they learned with their colleagues, further building capacity for knowledge mobilization in their workplace. In one case, the organization used the course content to develop full knowledge mobilizations plans for two research projects, which they anticipate implementing over the coming year. All three participants also indicated how they are using the new techniques for stakeholder analysis and engagement acquired in the course to evaluate and guide their organizations' practices.

4. Facilitation Workshop

Staff in knowledge mobilization and related positions may need to facilitate complex meetings with internal and external stakeholders or teach others about hosting events and meetings, but some have limited formal training in facilitation. This workshop was meant to address this gap, providing targeted facilitation tools and training to staff in knowledge mobilization related roles or who otherwise facilitate meetings between internal and external stakeholders.

We contacted Dr. Rebecca Sutherns, the founder and CEO of Sage Solutions, to provide this training. She provided staff with access to one of two online courses of their choice, which are intended to provide tools for facilitation and build participants' own facilitation skillsets. The two courses were:

Nimble Facilitation: Off script will happen but off track doesn't have to. Learn to adapt to whatever actually happens in the room.

Core components of the course included tips, tools and techniques to prepare for a meeting (knowing yourself, your space, your script and your client), manage a meeting (practicing mindfulness, developing skills and behaviours to get things back on track, identifying allies and dealing with challenges), and good practices for after the meeting (following up and becoming a reflective practitioner).

Making your Good Stuff Better: You know how to run a basic meeting. This course will help to deepen your facilitation toolbox and will take your ability to use those tools to the next level.

Core components of the course included tips, tools and techniques related to: (1) space, materials and venue, (2) agenda-setting, process design and catering to multiple intelligences, (3) brainstorming, gauging consensus, and priority setting, and (4) documenting results, graphic recording and solidifying commitment.

26 University staff took part in these courses; 17 in Making your Good Stuff Better and 9 in Nimble Facilitation. In addition to the course content, which was 8-10 hours of learning material over a 4-week period in April, Rebecca also facilitated a 90-minute in-person session during the final week of the course, allowing participants to ask questions in real time, learn more about online facilitation (a new reality we may be facing during the summer or beyond), and workshop challenging dilemmas with Rebecca.

Participants were asked to complete an evaluation after the course and interactive sessions were complete (see Appendix 3). They reported a number of skills and lessons that were likely to stick with

them; the most common included overall meeting reminders/tips, catering to multiple intelligences, gauging consensus, process design considerations, and facilitation tools, supplies and materials. All participants reported that the facilitation course improved the effectiveness of their skills at leading meetings to some degree, and offered tools that they were likely to apply in their job.

Changing plans due to COVID-19: This initiative was initially intended to be an in-person workshop, taking place in late March. However, due to COVID-19, this workshop was cancelled. Instead, Rebecca gave us access to one of her two online courses, providing the same training and expertise in a format optimized for remote learning.

5. The Improve Life Challenge: Hack the Farm

On March 6, the University of Guelph hosted the Improve Life Challenge 2020: Hack the Farm. This one-day immersive ‘hackathon’ style event brought together graduate and undergraduate students, academic experts and industry and government partners to create solutions to complex real world problems.

In advance of the event, community partners were recruited and asked to provide an overview of a significant challenge their organization was facing. Students applied for and were assigned to a team of 4 students per community partner.

In advance of the event, we used FSC funding to provide workshops for students (see Appendix 5), training them in skills such as communication, interdisciplinarity and emotional intelligence, and setting expectations for the event.

The day had 4 major components (see Appendix 4):

- 1) Problem Identification:** The problem review and discovery phase, where students interviewed their community partner, trying to get to the root of the challenge the community partner was experiencing – learning about and using relevant tools like concept/mind mapping.
- 2) Ideation:** Brainstorming as many solutions as possible to the challenge identified in Phase 1, then mapping the solutions according to their potential impact and resources required to identify practical, high impact solutions.
- 3) Prototyping:** Students and their partner chose one idea that they wanted to bring to life. They were asked to develop a prototype using materials provided. ‘Geniuses’ – industry and academic experts with significant knowledge of the area in question – were brought in to provide feedback on the prototype and refine the ideas in question.
- 4) Pitching:** Students received an introduction to pitching workshop, and then developed a 3 min pitch on their prototype. Pitches were given to a panel of judges, who selected the 3 top pitches.

On March 6, 148 participants came together to make the event a success: 45 students, 16 community partners, 18 faculty, 56 industry experts, and 12 facilitators. The event brought together students from all 7 Colleges at the University of Guelph, who brainstormed 508 ideas over the course of the day – narrowing it down to 11 solutions to real world challenges faced in the agriculture and food industry for 9 organizations.

88% of students who completed an evaluation survey (see Appendix 6) reported that participating in the Improve Life Challenge improved their critical thinking, collaboration and complex problem-solving skills. Other foundational skills (as identified by RBC in their 2018 “Humans Wanted” report) that students felt were improved because of their participation in the event included: openness to other ways of knowing (80% of students), active listening (79%), verbal communication (79%), judgment and decision making (71%), bias recognition (63%), and empathy (59%). 83% of respondents said that the pre-event workshop was useful to some degree.

Community partners also completed a survey about the skills of students who worked on their team; 100% of respondents reported that students met or exceeded expectations in each of the foundational skills (except complex problem solving, at 66%), as compared to other new hires right out of University.

Using FSC funds, we were also able to provide an ‘implementation award’ for organizations to work with a student to implement one of the ideas from Hack the Farm. After the event, organizations were invited to apply for this funding. We were hoping to provide 2 awards to organizations; unfortunately, of the 9 organizations who took part, we only received one application.

This application, from Wellington Brewery (see Appendix 7), requested funding for a student to implement the solution developed during the ILC: testing and diverting wastewater from the brewery into 3 different treatment streams based on strength of the effluent. This solution will improve the environmental impact of the brewery and translate into cost savings as well. The student, a graduate student in biological engineering at the University of Guelph, is working with Wellington Brewery to implement this solution. The placement is designed to develop his skills in measuring and reporting analytics, communication and teamwork, and interdisciplinarity.

A second student was hired with the remainder of the funds to conduct an evaluation and assessment of scaling for the Improve Life Challenge – following up with previous partners in the ILC, conducting a landscape analysis of similar programs and examining the pedagogy of how to scale the program while improving approaches for teaching and learning to maximize skills development for students and partners.

Changing plans due to COVID-19: We believe that COVID-19 and the rapid shift that organizations undertook to either shut down operations or work remotely adversely impacted the ability of organizations to apply for our implementation award. There was verbal interest expressed from several of the organizations on the day of the event; however, we saw a shift to a remote working environment immediately thereafter and a significant decrease in responsiveness from community partners dealing with difficult situations.

Summary

Overall, through these 5 separate initiatives, we were able to create new programs and build on existing programs at the University of Guelph, offering new and unique opportunities for students, staff, faculty, and community partners to build their own capacity and develop/refine skills related to knowledge mobilization.

Many of these initiatives will continue in the future, due to positive feedback from participants and high demand for the programs.

Appendices

Appendix 1: Skills for Research Impact Registration and Participation Data

Appendix 2: Skills for Research Impact Evaluation Data

Appendix 3: Facilitation Workshop Evaluation Data

Appendix 3: Improve Life Challenge Schedule

Appendix 4: Improve Life Challenge Workshop Schedule

Appendix 5: Improve Life Challenge Evaluation Data Summary

Appendix 6: Improve Life Challenge: Wellington Brewery Workplan

Appendix 1: Skills for Research Impact Series: Registration and Participant Data

October 2019-April 2020

Workshop	Number of Registrants	Number of Attendees	Percent of Registrants who Attended	Notes
1	37	19	51.4	
2	38	19	50.0	
3	42	18	42.9	
4	46	18	39.1	
5	39	17	43.6	
6	44	13	29.5	
7	29	3	10.3	
8	61	0	0.0	Workshop cancelled due to COVID-19
9	64	24	37.5	
Total	400	131		
Total number of unique participants who attended workshops: 75				

Appendix 2: Skills for Research Impact Evaluation Data (see attached PDF, entitled 'UGuelph Appendix 2: Skills for Research Impact Evaluations')

Appendix 3: Facilitation Workshop Evaluation Data (see attached PDF, entitled 'UGuelph Appendix 3: Facilitation E-course Survey Summary')

Appendix 4: Improve Life Challenge Schedule

IMPROVE LIFE CHALLENGE 2020

	EVENT
8:00am	Welcome
8:30am	Ice Breaking Activities
9:05am	PROBLEM IDENTIFICATION
9:00am	Problem Review and Discovery Phase - Interview your community partner - Giving out three tools to map the system (Concept Map)
10:00am	IDEATION
10:15am	Intro to Ideation
10:30am	Within group: Brainstorm all possible solutions to YOUR business challenge.
11:00am	Consolidating ideas: FIRST - let's make this fun and creative (5min) There will be a prize at lunch.
11:30am	IMPLEMENTATION
11:30am	Prototyping - Bringing your idea to life
12:00pm	Lunch
1:00pm	Introduce the Geniuses - Geniuses give feedback!
2:00pm	Iterations to the prototype
2:30pm	Light Snack
2:45pm	Pitch Workshop
3:00pm	Develop your pitch
4:00pm	Submit your pitch // Pitch order is revealed
4:10pm	PITCH SHOWCASE
5:25pm	Pitches are done! Time to celebrate and reflect!
5:30pm	Hot appetizers - Let's have this half of the room, and then the later half
5:30pm	Escort judges to deliberation room
5:50pm	Escort judges back to event room
6:00pm	The winners are announced:
7:00pm	Thank you and closing remarks
7:00pm	Winner pictures

Appendix 5: Improve Life Challenge Workshop Schedule

Hack the Farm: Pre-Event Workshops

Learning Outcomes

By the end of this workshop, students will be able to:

- (1) **Effective communication:** Understand various communication styles and practice clear language to improve effective communication between students from different disciplines and partners.
- (2) **Empathy:** Gain ability to understand and evaluate your own and other people's emotional responses
- (3) **Conflict Resolution:** Be aware of conflict resolution skills and tools that will help them address any arising interpersonal issues at the event.
- (4) **Interpersonal dynamics:** identify their leadership/participation style and learn about how to maximize the benefits they, and others, receive from the event.
- (5) Additional foundational skills include active listening, communication, critical thinking, team work, etc.

Timeline

Monday, March 2, 5:30-7 pm

Tuesday, March 3, 5:30-7 pm

Teams will be assigned to one workshop time to encourage team-building, but if they are unavailable may attend the other time. It will be mandatory for all participants to attend a workshop unless they gain permission from the organizers.

Agenda

Topic
<i>Welcome – setting expectations</i> <ul style="list-style-type: none">- Icebreaker: Count to three (active listening)- Overview of the Improve Life Challenge – setting expectations<ul style="list-style-type: none">o Brief overview of what the day will look likeo What do we hope students will get out of it?o What do partners hope to get out of it?o Mention the internship
<i>LO1: Effective communication</i>

From ideas to action – impactful knowledge

- How is this different from traditional academic training?
 - o Brief introduction to KMb/the knowledge-to-action gap
 - o Co-creation of knowledge (importance of crossing disciplinary silos + academic/business/community lines)
 - o Potential for tangible, real-life impact

Approaches for effective communication

- Communication challenges in multi-sector work
- What is clear language? Reducing jargon and using explicit messages
 - o Exercise: **clear language alternatives**
- Being aware and open to diverse styles of communication and evidence – and their respective benefits
 - o Storytelling vs. data vs. visual supports
 - o Information structure: inverted triangle
 - o Made to Stick - messages
- Exercise: **Sticky messages**

LO1: Effective communication

+ Openness, bias recognition, social perception, monitoring

Interpersonal Dynamics – getting the most out of the day for yourself

- Skilled and unskilled reactions
 - o Conflict resolution
 - o **Brain poker exercise**
 - o **Reflection – focus on empathy for teammates**
- Phases of innovation – problem solving
- Professionalism
- Do something uncomfortable – why?
 - o Stretching yourself and gaining new skills
- Being open to all ideas – why is it important and how do you do it?
 - o **‘Yes And’ exercise**

LO2: Conflict resolution

LO3: Interpersonal dynamics

+ Social perception, monitoring

Close

- Questions
- Wrap up

Appendix 6: Improve Life Challenge Evaluation Data Summary

IMPROVE LIFE CHALLENGE 2020

HACK THE FARM IN A CLIMATE OF CHANGE

- ❖ 56 Industry Experts
- ❖ 45 Students
- ❖ 18 Faculty
- ❖ 12 community partners

COMMUNITY PARTNER FEEDBACK

- 4 Students per group – 100% said that was just the right number of students.
- Did you find this event valuable – 100% said yes.
 - Framing of the exercise in a design thinking style was very helpful, since I had very few experiences with working like that in group setting.
 - Diversity of backgrounds of students in my group was helpful in two ways - first it reassured me that some of the issues we are working through are universal enough that they clearly appear the same to psychology student and to someone doing research in soil health, and it was a very good reminder not to focus too narrowly on background during hiring.
 - It helped me with a more structured approach to design thinking.
 - I had some personal takeaways in terms of problem solving, brain-storming and how to approach finding a solution.
 - I strengthened my abilities to work in a group with people of differing expertise.
 - It was great to see the perspectives of students from the different colleges come together to try to tackle the same problem.
 - I loved participating in a "new" way of problem solving.
 - I learned a new method of problem solving through the hack a thon. I would love to bring that (method) back to my workplace.
 - I loved being able to witness the collaborative nature of the students and working towards an actual tangible solution to a real problem.

COMMUNITY PARTNER SURVEY FEEDBACK

FOUNDATIONAL SKILLS

	Exceed Expectations	Met Expectations	Didn't Meet Expectations
	Percent of community partners that felt University of Guelph students exceeded, met or didn't meet expectations compared to other new hires right out of University on the following foundational skills.		
Active listening	66	33	0
Verbal communication	33	66	0
Critical thinking	33	66	0
Empathy	33	66	0
Judgement & decision making	33	66	0
Complex problem solving	33	33	33
Bias recognition	0	100	0
Openness to other ways of knowing	66	33	0
Mathematics	0	33	0
	66% of community partners identified this skills as N/A.		
Collaboration & group work	33	66	0

STUDENT FEEDBACK

Summary:

53% of Student Participants responded to the ILC Survey (24 of the 45 students)

Question 4:

Considering the size of your team, do you feel that there was a sufficient number of students to complete the work in a meaningful way?

Percentage of Respondents	Answer
96% (23/24)	There were just the right amount of students involved
0%	There were too many students involved
0%	There were not enough students involved
4% (1/24)	Other response: Better mix of backgrounds would have been nice

Question 6:

What do you feel were the key benefits of taking part in the Improve Life Challenge?

- 83% (20/24) responded to this question
- 38% (9/24) self-identified that a key benefit to the ILC was its interdisciplinary nature
- 63% (15/24) self-identified one of our previously identified foundational skills as a key benefit to participating in the ILC
- Of the 63% of respondents who identified a foundational skills as a key benefit – the highest identified skills was collaboration and group work
- 38% (9/24) self-identified working with a community partner a key benefit to taking part in the ILC

Raw Responses	Key Benefit - Coded
Working with people in various degrees (working on PhD, masters etc) which made the amount of knowledge in the room extend	Interdisciplinary
It taught me how to collaborate with others in solving a real world problem. The respect and tolerance of other people's views. How to manage stress and not get carried away by it.	Foundational Skill – Collaboration, Openness to other ways of knowing
It was an exciting event and made me feel re-invigorated about doing research. It was an	

interesting problem-solving exercise, and also forced us out of our comfort zone.	
Working through a real life problem with individuals from interdisciplinary backgrounds, and also getting to collaborate with a community partner who helped us understand the logistics to working out a problem. Evaluating feasibility was a great aspect of the problem solving process. We also got to work under pressure and pitch with little preparation time.	Interdisciplinary Foundational Skill – Collaboration Working with community partner
<p>I feel the event was a success and there are many key benefits of taking part in the ILC2020:</p> <ol style="list-style-type: none"> 1. I feel more empathetic towards my collaborators and respect everyone and am very open to ideas of others. 2. ILC2020 had a very inclusive environment, and it taught me many subtle lessons of converting mere ideas into working prototypes while considering industrial viewpoint. 3. I was able to introspect and identify my shortcomings in a performance intensive setting and have started efforts to improve. 4. Networking with amazing students and faculty experts across all departments of the university. 5. Connection with the industry partner for future collaborations. 	Interdisciplinary Foundational Skill – Empathy Foundational Skill – Bias Recognition Working with community partner
It allowed me to gain insights in the industry and got to improve on essential skills.	Working with Community Partner
Learning about the challenges facing onion growers to change their method of packaging onions.	Working with Community Partner
The benefits that come out of the ILC are many and varied. Networking with industry partners and peers, learning about different aspects of a specific	Foundational Skill – Collaboration and Group Work, Verbal Communication Working with Community Partner

industry, improving presentation and powerpoint skills, and working with individuals you have not met before are all incredible skills that are honed through this event.	
They key benefit were the ability to interact with the community partners and gain a deeper understanding of not only the challenge problem, but the types of problems in industry.	Interdisciplinary Foundational Skill – Complex Problem Solving Working with Community Partner
One key benefit was gaining experience with rapid, complex problem-solving; this is something we are rarely required to do in undergraduate courses. Another benefit was the intellectual stimulation that came from working with students from other disciplines (I sometimes feel bored of only meeting students in my own major). Last, I felt like the Challenge was an efficient way to gain skills in a variety of areas - design thinking, teamwork, presenting, problem-solving - that I was interested in, and I really appreciated the expertise of the facilitators, who helped us learn in these areas throughout the day.	Foundational Skill – Complex Problem Solving, Collaboration and Group Work, Verbal Communication
Building confidence for your own expertise, understanding what your academic and social blind spots are, and appreciating/depending on the expertise of others. Other key benefits include: taking risks, free thinking, critical thinking, and having fun.	Interdisciplinary Foundational Skill – Critical Thinking
Definitely working with such an interdisciplinary group! It really forced me to think from others' perspectives.	Interdisciplinary Foundational Skill - Empathy
Getting to the bottom of what the problem truly is, by asking meaningful questions.	Foundational Skill – Solving Complex Problems
Experience with the innovation process and with working in groups of people with different perspectives.	Interdisciplinary Foundational Skill – Openness to other ways of knowing
Meeting representatives from the agricultural industry. Public speaking and presentation Working in a team	Foundational Skill – Collaboration and Group Work, Verbal Communication Working with Community Partner
Teamwork and collaboration!	Foundational Skill – Collaboration and Group Work
Understanding how to approach a problem from a variety of different perspectives	Interdisciplinary Foundational Skill – Complex Problem Solving
The ability to be exposed to various expertise & collaborating to solve an existing problem.	Foundational Skill – Collaboration and Group Work, Solving a complex problem

The challenge itself was innovative- bringing students from various disciplines and stakeholders together.	Interdisciplinary Working with Community Partner
The ability to connect and network with growers (and students) and learning the inside of the industry. There are things that you can learn in a classroom but it is very different than what the growers are actually going through. Having the ability to talk with them about the issue at hand and see their perspective was very insightful. I also was able to practice my presentation skills and learn how to give a proper pitch.	Foundational Skill – Verbal Communication, Openness to other ways of knowing Working with Community Partner

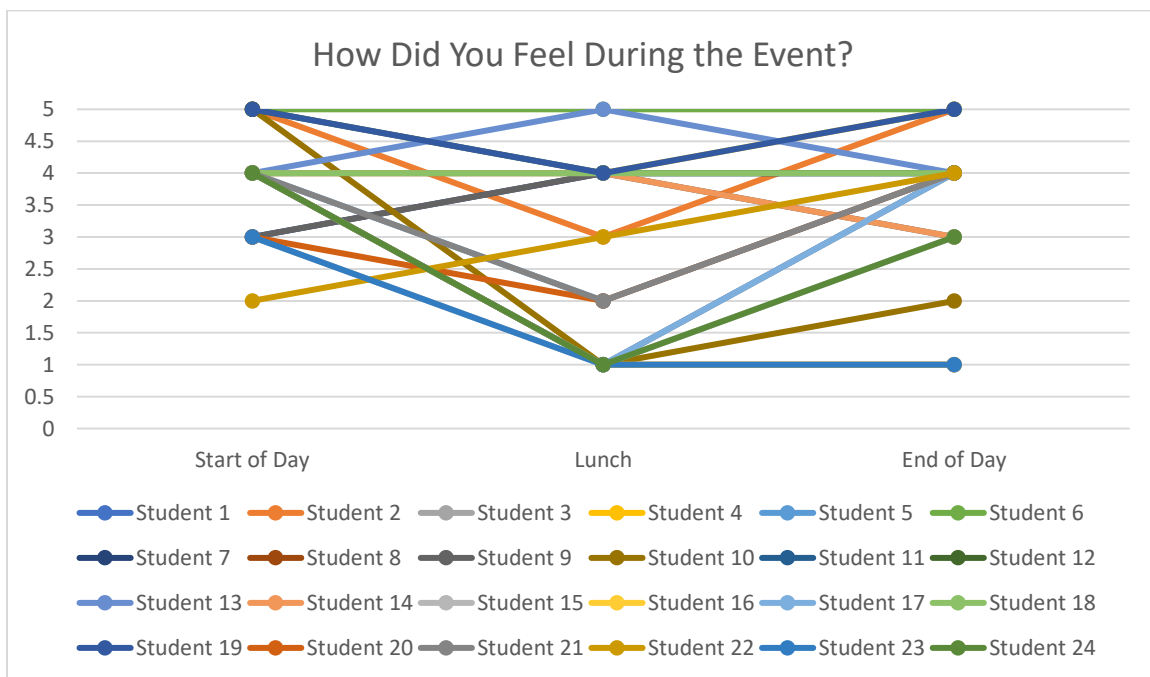
Question 7:

How useful was the pre-event workshop to your experience at the Improve Life Challenge?

83% (20/24) of respondents said that the pre-event workshop was useful to some degree

Percentage of Respondents	Usefulness Scale
4% (1/24)	Not at all useful
33% (8/24)	Slightly useful
21% (5/24)	Moderately useful
16% (3/24)	Very useful
17% (4/24)	Extremely useful
13% (3/24)	I did not attend a pre-event workshop

Question 8



STUDENT SURVEY FEEDBACK

FOUNDATIONAL SKILLS

	My skills have significantly improved	My skills have improved	My skills have not improved
	Percent of student survey respondents that felt their foundational skills significantly improved, improved or stayed the same.		
Active listening	25%	54%	21%
Verbal communication	29%	50%	21%
Critical thinking	46%	42%	13%
Empathy	17%	42%	13%
Judgement & decision making	29%	42%	25%
Complex problem solving	38%	50%	13%
Bias recognition	13%	50%	33%
Openness to other ways of knowing	42%	38%	21%
Collaboration & group work	46%	42%	13%

Appendix 7: Improve Life Challenge: Wellington Brewery Workplan

1. Organization, Challenge and Proposed Solution

Briefly summarize the mandate of your organization, the challenge you brought to the Improve Life Challenge on March 6, and the proposed solution that you would be implementing.

The mandate of Wellington Brewery is to be a company devoted to community, quality, consistency and creativity in the context of sustainability. As such our challenge we brought forward was around wastewater. Being part of the community, this is a direct problem with the city of Guelph's wastewater plant, and we want to improve our effluent outflow not only to avoid punitive surcharges but also to be better stewards of the environment. The solution that was hatched during our hack-a-thon was one involving streaming of our waste flow into 3 different sections. A low strength that can be discharged, a medium strength that would be processed into low strength and then a high strength that would be concentrated and shipped off-site to a 3rd party that would hopefully be able to use it in a circular food economy context.

2. Anticipated Impact

What is the impact or benefit of the proposed solution to your organization or the sector as a whole? How does the proposed solution build on existing knowledge (academic or experiential) to address the challenge expressed above? How will you use or build on the proposed work, once complete, to maximize its impact?

The proposed solution would have a profound impact on our organization and other breweries by gaining data and setting parameters around the low, medium and high strength wastewater and then how to treat each stream. This will have both an economic and environmental impact to all related parties. There is some existing data, but it is very variable dependent and there is not a lot of concrete numbers and testing that has occurred over this timeframe in this context. We propose that we do a case study with a student dedicated to daily testing of waste streams and working to divert and concentrate streams. The resulting study could then be used to extrapolate for instance the impact of the whirlpool on wastewater as a percentage and then how many resources to divert there and how much of an impact investing in that area would have as opposed to a low-impact location where discharging would be the best option.

3. Proposed Activities

Please provide a detailed description of the tasks and activities that will be undertaken as part of this internship, and describe who will be responsible for each task.

The student would be responsible for:

- Daily testing of the wastewater strength from different areas in the plant.
- Analysis of the efficacy of the existing settling tank
- Breakdown of brewery departments and contribution to wastewater
- Literature review of existing reports, solutions and their feasibility
- Daily touchpoint with VP of Brewing and Quality and weekly check-in meetings
- Sourcing equipment (ie BOD testing equipment and Mag-meter to measure wastewater flow)
- Participate in meetings with the city and other consultants surrounding wastewater

4. Student Learning

How will participation in this project benefit the student(s) involved? What skills (technical and non-technical) will they learn or practice during this internship, including skills such as communication, critical thinking, teamwork, active listening, etc.? How might they be able to use their academic expertise?

The student should expect to develop skills around measuring and reporting analytics, reporting, analyzing and summarizing data. There will be critical thinking skills as we try to take the egg of an idea and hatch it into a fully functioning solution. Communication skills will be exercised on a daily basis and the teamwork environment will be highly functioning as they utilize many of the skillsets that are taught in the University of Guelph. Especially skills such as are emphasized in the interdisciplinary program ICON. The rigorous disciplines needed to be successful at the university level will be needed and developed through this internship.