The Promotion of a Culture of Sustainability at the University of Toronto Through Campus as a Living Lab Initiatives

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Problem and Intervention

Problem

There has been a global shift among higher education institutions (HEIs) towards more sustainable operations and teachings (Marans and Callewaert 2017). Adams, Martin and Boom (2018) explain that "the sustainable organization will remain elusive until […] sustainability becomes embedded within the culture of the organization". A culture of sustainability involves collective beliefs about environmental issues and practices shared by members of a community (Marans and Callewaert 2017). Promoting sustainability at the University of Toronto (UofT), with more than 90,000 students and 21,000 staff, is no easy task ('Low-Carbon Action Plan 2019-2024' 2019). UofT has not established this culture thus far, as there are no collective sustainability beliefs or practices shared among all members of its community. Thus, the problem that this paper will address is how UofT promotes a culture of sustainability on its campus. While teachers and staff are also involved in cultivating cultures of sustainability, this paper will focus on the promoting such a culture among students.

Intervention

UofT's *Low Carbon Action Plan 2019-2024 is* an overview of their initiatives to reduce greenhouse gas emissions. A section towards the end of the plan outlines a different approach to sustainability: Campus as a Living Lab ('Low-Carbon Action Plan 2019-2024' 2019). Campus as a Living Lab (CLL) initiatives "bring faculty members, students, staff, and, where appropriate, external partners together to collaborate on developing sustainability projects that combine operational and academic activities" ('Low-Carbon Action Plan 2019-2024' 2019). The CLL Subcommittee of the President's Advisory Committee on the Environment, Climate Change, and Sustainability (CECCS) had their first meeting on May 8th, 2017 ('CECCS Annual Report 2017' 2017). In 2019, they finalized six CLL projects to implement on UofT's three campuses ('Low-Carbon Action Plan 2019-2024' 2019). These projects are the intervention

that this paper will assess. Known as the CLL6, they include a Passive House Residence and Campus Farm at UofT Scarborough, an Academic Tower and Physical Geography Building at UofT St. George, as well as a Science Building and Recreation, Athletics and Wellness Centre at UofT Mississauga ('CECCS Annual Report 2019' 2019). By implementing such CLL projects, one of the intervention's goals is to "[p]rovide learning & engagement opportunities for students, staff and faculty" about issues such as sustainability ('Campus as a Living Lab Principles' n.d.). It is worth noting that there are many other CLL projects at UofT; this assessment focuses specifically on the CLL6.

Significance

The Need for Knowledge About Sustainability

Higher education institutions "play a critical role in helping shape new ways for the world, educating global citizens and delivering knowledge and innovation into society" (Purcell, Henriksen, and Spengler 2019). As a result of the climate crisis, sustainability is an area in which knowledge and innovation are essential. Levy and Marans (2012) argue that a key determinant of individuals' likelihood to partake in sustainable practices is their having a strong understanding of environmental issues and their potential solutions. As HEIs that can facilitate such understanding among many people, universities "have a responsibility to drive both [cultural] and scientific responses to the complex and interrelated sustainability challenges humanity faces today" (Rivera and Savage 2020). By promoting such learning, UofT and universities like it "play a critical role [in] bringing about a societal shift toward a more sustainable future" (Marans and Callewaert 2017).

The Necessity of a Culture of Sustainability

Organizations as large as UofT contain many sub-cultures, "each potentially holding different attitudes and orientations toward sustainability" (Adams, Martin, and Boom 2018). This inconsistency is detrimental to the promotion of sustainability as many community

members may not understand or engage in such issues, perpetuating unsustainable practices. A campus-wide culture of sustainability includes members of every group, regardless of sub-culture, by creating shared values, beliefs and practices (Marans and Callewaert 2017). To achieve this, "a more transformative approach is needed to connect the university community across the institution" and engage all community members in sustainable learning (Purcell, Henriksen, and Spengler 2019). Promoting a culture of sustainability is necessary if UofT is to achieve its goal of becoming a "'hub' for sustainable initiatives and information that integrates sustainability into the fabric of the University operations" ('Strategic Plan 2019 – 2024' 2019).

Significance to the Achievement of SDG 15: Life on Land

In brief, the UN's 15th Sustainable Development Goal (SDG) is to "[p]rotect, restore and promote sustainable use of terrestrial ecosystems" ('Goal 15' n.d.). By involving all members of a university in environmentally friendly thinking and practices, a culture of sustainability could contribute to the achievement of this goal. This is because the establishment of such thinking and practices that can be widely adopted helps both students and the communities they influence to live more sustainably (Katehi 2012). This broad reach makes promoting such a culture on campus significant to the creation of more sustainable societies overall and, by extension, the achievement of SDG 15.

Literature Review

While relevant literature agrees that sustainability should be promoted at universities, there are many perspectives on how to do so. Making such institutions sustainable is a 'wicked problem' as a result of the varied contributors, actors and solutions involved (Adams, Martin, and Boom 2018; Katehi 2012). Common approaches on campuses such as UofT are through carbon and food waste reduction programs (Marans and Callewaert 2017). Another prevalent way to engage students in sustainability is through the integration of sustainable teachings into coursework (Adams, Martin, and Boom 2018; Katehi 2012; Levy and Marans 2012; Marans

and Callewaert 2017). According to Levy and Marans' article (2012) in the *International Journal of Sustainability in Higher Education*, "individuals are more likely to act in environmentally responsible ways when they understand environmental problems and/or their potential solutions". These writers also point out that, while such learning may be a great start for the involvement of students in sustainability, it alone is not enough to guarantee sustained environmental beliefs and practices over time (Levy and Marans 2012). This suggests that other approaches in addition to sustainable learning may be more beneficial. The literature on this topic indicates that there is no single approach to successfully promoting campus sustainability. A variety of approaches and combinations of such approaches may be used.

In order to become more sustainable, Favaloro, Ball and Lipschutz (2019) argue that students "need more than simple, [disciplinary] education; they should also be prepared to go beyond their specialization and attain holistic and system-level understanding". This suggests that learning about sustainability in a traditional classroom context may not be sufficient for truly understanding sustainability. The literature largely centers experiential learning, or learning through firsthand engagement, as most effective for promoting a culture of sustainability (Brugmann et al. 2019; Favaloro, Ball, and Lipschutz 2019; Katehi 2012; Levy and Marans 2012). While this form of learning may have potential to develop students' understanding of sustainability issues, it also has limitations. Some thinkers in this area bring up concerns that experiential learning will only be beneficial if approached and structured through academic teaching (Perrenet, Bouhuijs, and Smits 2000). The literature thus suggests that engaging students in experiential learning can promote a culture of sustainability, particularly if combined with academic teachings.

Another discussion in relevant literature is whether CLL initiatives effectively promote the learning that contributes to a culture of sustainability (Favaloro, Ball, and Lipschutz 2019; Katehi 2012; Rivera and Savage 2020). Some argue that such projects facilitate more in-depth

learning by "effectively [dissolving] boundaries between the traditionally segregated activities of education, research, external engagement, [and] operational and administrative practice" (Purcell, Henriksen, and Spengler 2019). In doing so, CLL projects help make university campuses "more sustainable while contributing to knowledge and research needed to make an impact beyond their borders" (Rivera and Savage 2020). This knowledge, in turn, contributes to the institution-wide change involved in promoting a culture of sustainability (Purcell, Henriksen, and Spengler 2019). Because of such benefits, CLL projects are also being implemented at HEIs such as the University of British Columbia ('Campus as a Living Laboratory' n.d.). Favaloro, Ball and Lipschutz (2019), however, bring up two caveats about CLL's efficacy: "that student success in CLL projects is predicated on exposure beforehand" and that CLL projects without "a solid classroom-based theoretical and analytical framework" may have more limited academic value. With these conditions met, the literature suggests that CLL projects have potential to promote sustainable learning.

Hypothesis

The hypothesis animating this assessment is: by implementing campus as a living lab projects, the University of Toronto is promoting a culture of sustainability on its campus.

Methods

Operationalization of Variables

The independent variable for this assessment was the number of Campus as a Living Lab projects implemented at UofT. More specifically, this variable referred to the six CLL projects discussed in the university's *Low Carbon Action Plan 2019-2024* ('Low-Carbon Action Plan 2019-2024' 2019). Two dependent variables (DVs) were used to determine the promotion of a culture of sustainability. The first was student involvement, a quantitative variable that was measured using the number of students that UofT engages in CLL initiatives. This was indicative of the promotion of a culture of sustainability as it demonstrated the number

of students who undergo the experiential learning that contributes to such a culture. The second dependent variable was opportunity for engagement, which was measured using the numbers of opportunities for student engagement offered by the CLL6 projects. This was indicative of contributions to a culture of sustainability as it demonstrated the number of ways in which these projects engage students in the learning that fosters such a culture. As discussed, the involvement of teachers and other staff was not measured since this would require many more variables and would likely overcomplicate analysis of the issue.

Interviews

To gain insight beyond what one can find through secondary sources such as internet research, five half-hour interviews were undertaken as a primary form of data collection for this assessment. Two interviews were with people involved directly in sustainability initiatives at UofT. The first was Ron Saporta, the Chief Operating officer for Property Services and Sustainability at UofT ('Low-Carbon Action Plan 2019-2024' 2019). The second was John Robinson, the Presidential Advisor on the Environment, Climate Change and Sustainability at UofT ('John Robinson' n.d.) and teacher of ENV461/1103 *The UofT Campus as a Living Lab of Sustainability* at the university ('CECCS Annual Report 2018' 2018). They provided an insider perspective into the implementation of projects such as the CLL6 at the university. Additionally, three executives or primary contacts for environmental student organizations at UofT were interviewed. They were Rivka Goetz, the Primary Contact for Leap Chapter UofT ('Leap Chapter UofT' n.d.); Naomi Butterfield, an executive for University of Toronto Environmental Action (UTEA) ('UTEA: Our Team' n.d.); and a third executive of an environmental student organization who wished to remain anonymous. They provided an external perspective as students who are engaged in environmental issues and who might provide new insights into how sustainability can be promoted at UofT.

CECCS Reports

The CLL6 projects are the product of work done by the CLL Subcommittee of the President's Advisory Committee on the Environment, Climate Change, and Sustainability (CECCS) at the University of Toronto ('CECCS Annual Report 2019' 2019). John Robinson, one of the people interviewed for this assessment, is the chair of this committee ('CECCS Annual Report 2019' 2019). The CECCS releases annual reports detailing the progress and future plans of their projects, including the CLL6, on the UofT campus ('CECCS Annual Report 2019' 2019). These reports, which can be found online, were used to provide data regarding the logistics of the CLL6 and their implementation. Such information was of value to this assessment as it demonstrated more clearly some of the ways in which the CLL6 could promote a culture of sustainability on UofT's campus.

Findings

Dependent Variable One: Student Involvement

The *CECCS Annual Report 2019* (2019) indicates that the Campus as a Living Lab Subcommittee hopes to engage 1,000 students annually in such projects. While UofT has a far greater number of students, involving this many in CLL6 projects each year would nevertheless make a significant contribution to the culture of sustainability. In an email exchange following his interview, John Robinson (2020b) estimated that the number of students actually involved in CLL6 thus far is "under 50". One possible cause for this outcome is the fact that some of the CLL6 projects are not in a phase where students can be involved in such experiential learning ('CECCS Annual Report 2019' 2019). Robinson and others involved in CLL "hope to vastly increase the number of students doing living lab projects on campus" (Robinson 2020a). As previously stated, it is worth noting that the CLL6 are not the only CLL projects at UofT. For example, Ron Saporta (2020) brought up the King's College Circle geothermal project, a UofT sustainability initiative that "has probably had 20 if not 30 student projects looking at it from

different angles". That being said, the number of students specifically involved in the CLL6 projects to present is far lower than the CLL Subcommittee's goal.

Dependent Variable Two: Opportunity for Engagement

The second dependent variable is the number of opportunities for student engagement offered by the CLL6 projects. There are four forms of engagement that students can undertake: "Shadow Design, Monitoring and Performance, Design Charrettes, and Study of Process" ('CECCS Annual Report 2019' 2019). Each engages students with a different aspect of sustainability initiatives, meaning that there are many forms of learning that can come from any given CLL project. This is one of the ways in which, according to Robinson (2020a), projects such as the CLL6 "integrate operational academics" into learning. Within each of these four, there are various opportunities for engagement: the CECCS identified at least thirteen such opportunities across all six projects ('CECCS Annual Report 2019' 2019). For example, the "Passive House Residence" at UTSC offers three: "a monitoring process in the Summer or Fall", "recommending points of connection with occupants" and "a post-occupancy survey to gauge the occupants['] experience with a passive house residence" ('CECCS Annual Report 2019' 2019). Furthermore, Robinson (2020b) indicated that the appearance of multiple new CLL opportunities since the original six were established mean that the CLL program is "embracing any U of T projects or activities that involve some student engagement".

Connection to Hypothesis

The previous section indicates that the CLL6 initiatives offer many opportunities for student engagement in experiential learning. This type of learning, as discussed in the literature review, is important for the promotion of a culture of sustainability. The number of students involved in the experiential learning of CLL projects can be viewed as indicative of how much UofT is contributing to its culture of sustainability. Put simply: the more UofT engages students in such learning, the more they contribute to a culture of sustainability. As a reminder, the

hypothesis animating this assessment was: by implementing campus as a living lab projects, the University of Toronto is promoting a culture of sustainability on its campus. The data gathered supports this hypothesis: by including any number of students in sustainable experiential learning, the CLL6 projects are promoting a culture of sustainability on the UofT campus. While the CLL6 projects do promote such a culture, they would have a greater impact if they were to achieve the CLL Subcommittee's goal of annual student involvement. In other words, involving more students in the CLL6 projects would make even stronger contributions to the school's culture of sustainability.

Recommendations

To promote a culture of sustainability more than they already do, it could be recommended that online outreach and awareness building are used to engage more students in the CLL6. According to the Anonymous UofT Environmental Organization Executive (2020), all contributions to a culture of sustainability must be "actively promoted" to be effective. Furthermore, Naomi Butterfield (2020) pointed out in her interview that greater accessibility to these projects may be needed: as "soon as [one makes] things more accessible, people are more likely to become engaged with [them]". This could be achieved through social media and the school's website. On the website, for example, UofT could include a campus map outlining all sustainability features such as CLL projects to raise awareness about them (Favaloro, Ball, and Lipschutz 2019). No matter the approach, more students should be included in the CLL6 to promote a culture of sustainability.

Assessment Limitations and Future Opportunities for Research

The CLL6 projects are just one of the many ways in which UofT is fostering a more sustainable culture on its campus. There are other initiatives relevant to this intervention that address the same issue, so it is important to remember that the scope of this assessment's findings is limited to the CLL6 projects. They should not be extrapolated to other CLL or

sustainability initiatives on the UofT campus. Furthermore, the variables used in this assessment demonstrated how much and in which ways UofT students are involved in the CLL6 projects. They do not capture other relevant factors such as the involvement of teachers and other staff. An interesting area of future research would, therefore, be looking more closely at how such projects work to integrate staff and other faculty into sustainable learning, as well as how that integration impacts students' learning.

Conclusion

In the current climate crisis, every contribution to sustainable living is essential. To this effect, the author asked whether the CLL6 initiatives contribute to the creation of a culture of sustainability on UofT's campus. Forming such a culture is one of the many ways in which UofT can contribute to a more sustainable world. Based on a preliminary literature review, the author hypothesized that by implementing campus as a living lab projects, the University of Toronto is promoting a culture of sustainability on its campus.

Data collection involving interviews and reports found that the six CLL projects do promote such a culture by engaging students in sustainable experiential learning. They would be more impactful, however, if they were to reach the CLL subcommittee's goal of annual student involvement. To address this shortcoming, the author recommends increased outreach initiatives aimed at raising awareness about and engaging more students in the CLL6 projects. These findings are significant to the issue of promoting a culture of sustainability since they help demonstrate how UofT fostering such a culture on its campus. Furthermore, they are significant as they help demonstrate what could be implemented to promote it more effectively. These findings apply to all members of the UofT community, as well as other major HEIs who may be looking to promote sustainability on their campuses. More broadly, since climate change is such a consequential and pressing issue, interventions like this that help address it are of global significance.

Bibliography

Adams, Richard, Stephen Martin, and Katy Boom. 2018. 'University Culture and Sustainability: Designing and Implementing an Enabling Framework'. *Journal of Cleaner Production* 171: 434–45. https://doi.org/10.1016/j.jclepro.2017.10.032.

Anonymous UofT Environmental Organization Executive. 2020. Jonathan Angell Interview with Anonymous UofT Environmental Organization Executive.

Brugmann, Rashad, Nicolas Côté, Nathan Postma, Emily A. Shaw, Danielle Pal, and John B. Robinson. 2019. 'Expanding Student Engagement in Sustainability: Using SDG- and CEL-Focused Inventories to Transform Curriculum at the University of Toronto'. *Sustainability* 11. https://doi.org/10.3390/su11020530.

Butterfield, Naomi. 2020. Jonathan Angell Interview with Naomi Butterfield.

'Campus as a Living Lab Principles'. n.d. University of Toronto. Accessed 23 November 2020. https://sustainability.utoronto.ca/home/ceccs/campus-as-a-living-lab/campus-as-a-living-lab-principles/.

'Campus as a Living Laboratory'. n.d. UBC Sustainability. Accessed 30 November 2020. https://sustain.ubc.ca/campus-living-laboratory.

'CECCS Annual Report 2017'. 2017. University of Toronto. https://www.president.utoronto.ca/secure-content/uploads/2017/09/2017-ECCS-annual_report.pdf.

'CECCS Annual Report 2018'. 2018. University of Toronto. https://www.president.utoronto.ca/secure-content/uploads/2018/12/CECCS%202018%20annual%20report-FINAL-wPM.pdf.

'CECCS Annual Report 2019'. 2019. University of Toronto. http://www.president.utoronto.ca/secure-content/uploads/2019/07/CECCS-Annual-Report-2019-smaller.pdf.

Favaloro, Tela, Tamara Ball, and Ronnie D. Lipschutz. 2019. ‘Mind the Gap! Developing the Campus as a Living Lab for Student Experiential Learning in Sustainability’. In *Sustainability on University Campuses: Learning, Skills Building and Best Practices*, 91–113. World Sustainability. Springer Nature Switzerland. https://link.springer.com/chapter/10.1007/978-3-030-15864-4_7.

‘Goal 15’. n.d. United Nations Department of Economic and Social Affairs. Accessed 3 December 2020. https://sdgs.un.org/goals/goal15.

‘John Robinson’. n.d. Munk School of Global Affairs and Public Policy. Accessed 26 October 2020. https://munkschool.utoronto.ca/profile/robinson-john/.

Katehi, Linda P. B. 2012. ‘Chapter 10: A University Culture of Sustainability: Principle, Practice and Economic Driver’. In *Global Sustainability and the Responsibilities of Universities*, 117–27. Paris, France: Economica Ltd. https://homepage.univie.ac.at/martin.fieder/publications/22.%20Winckler,%20Georg,%20Fieder,%20Martin%20(2012).%20The%20contribution%20of%20research%20universities%20in%20solving%20grand%20challenges.%20Global%20Sustainability%20and%20the%20Responsibilities,%20179,%20.pdf#page=142.

‘Leap Chapter UofT’. n.d. University of Toronto - Ulife. Accessed 2 December 2020. https://www.ulife.utoronto.ca/organizations/view/id/127156.

Levy, Brett L.M., and Robert W. Marans. 2012. ‘Towards a Campus Culture of Environmental Sustainability: Recommendations for a Large University’. *International Journal of Sustainability in Higher Education* 13 (4): 365–77. https://doi.org/10.1108/14676371211262317.

‘Low-Carbon Action Plan 2019-2024’. 2019. University of Toronto. https://www.fs.utoronto.ca/wp-content/uploads/2019/10/2019-10-04_LowCarbonActionPlan_V22_Spread_Web.pdf.

Marans, Robert W., and John Callewaert. 2017. ‘Evaluating Sustainability Initiatives on University Campuses: A Case Study from the University of Michigan’s Sustainability Cultural Indicators Program’. In *Handbook of Theory and Practice of Sustainable Development in Higher Education*, 189–99. World Sustainability Series. Cham: Springer International Publishing. https://doi.org/10.1007/978-3-319-47889-0_14.

Perrenet, Jacob, P. A. J. Bouhuijs, and J. G. M. M. Smits. 2000. ‘The Suitability of Problem-Based Learning for Engineering Education: Theory and Practice’. *Teaching in Higher Education* 5 (3): 345–58. https://doi.org/10.1080/713699144.

Purcell, Wendy Maria, Heather Henriksen, and John D. Spengler. 2019. ‘Universities as the Engine of Transformational Sustainability toward Delivering the Sustainable Development Goals: “Living Labs” for Sustainability’. *International Journal of Sustainability in Higher Education* 20 (8): 1343–57. https://doi.org/10.1108/IJSHE-02-2019-0103.

Rivera, Christian J., and Caroline Savage. 2020. ‘Campuses as Living Labs for Sustainability Problem-Solving: Trends, Triumphs, and Traps’. *Journal of Environmental Studies and Sciences*, May. https://doi.org/10.1007/s13412-020-00620-x.

Robinson, John. 2020a. Jonathan Angell Interview with John Robinson.

Robinson, John. 2020b. ‘Student Involvement in CLL6 Projects Email’, 22 November 2020.

Saporta, Ron. 2020. Jonathan Angell Interview with Ron Saporta.

‘Strategic Plan 2019 – 2024’. 2019. University of Toronto. https://www.fs.utoronto.ca/wp-content/uploads/2019/11/strategicplan.pdf.

‘UTEA: Our Team’. n.d. University of Toronto Environmental Action. Accessed 2 December 2020. https://uteautoronto.wixsite.com/utea.