

# Perceptions of Climate Change

*How Dalhousie students conceptualize climate change and the role of faculty in promoting awareness*



InfoShop Staff, 2018.

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## **Executive Summary**

In an attempt to underline areas within Dalhousie University's schooling that are currently lacking climate change related education, students across multiple faculties were surveyed to identify knowledge gaps in faculty curriculums. The data collection was gathered over the course of two weeks, of which several hours were during peak times at the Student Union Building. 100 surveys were printed for this project but, due to lack of time, only 84 surveys were completed. Surveys were chosen as our main form of data collection due to the amount of diversity that was needed for this study.

Out of the 84 surveys completed the results that we obtained showed that the faculties that hear the least amount of climate change related issues are Business and Management students. These results allow us to gauge which faculties need additional information in regards to climate change awareness in their class curriculum. General Sciences and Environmental Science had the highest percentage of students that have heard about climate change related issues around Dalhousie. With that being said, there is still a need for improvement in regards to how climate change education is implemented across campus.

The faculties with the least amount of climate change integration, according to our data collection, was Business and Management. These faculties had little experience in regards to climate change education in class and around campus. Three out of the four groups found that they did not know where to locate information regarding climate change at Dalhousie. The only group that knew this information came from the Environmental Science and Sustainability students. This is not surprising due to their climate change oriented curriculum. The majority of students surveyed stated that they had never taken a sustainability course at Dalhousie. This shows that if students did not partake in a sustainability course, their chances of being taught about climate change was low. From the results, we also noted that the majority of students believe that it is their educator's role to promote climate change awareness.

## Introduction

Environmentalism has become a mainstream discussion in regards to the overall concern for our planet. As the world's population continues to grow and fossil fuels and trade continue to rise due to economic demands, the earth is in worse condition than ever before. In an effort to highlight areas within Dalhousie University's education that are lacking sufficient climate change related education, students across a number of faculties were surveyed to identify knowledge gaps.

Based on multiple studies that our group reviewed over the course of the term, there were some which addressed the role of education for sustainable development. After reviewing the research, there were few to date which identified students perception of climate change and sustainability outside of the realm of environment and sustainability disciplines. It is important to consider that millennials will be the next generation in policies and decision-making practices, so it is of great importance that they are educated on climate change related issues.

The University of British Columbia (UBC) has a long-term goal of sustainability education across all of its' teaching programs (Marcus, et al. 2015). Having research from a university with goals of teaching climate change related education, within all faculty curriculums, can influence more sustainable measures in policy and decision making (Marcus, et al. 2015). This research can also encourage other universities to develop a similar plan across faculties. A program such as that at UBC can provide students with the education to think and act outside of their field of study in a way which is more environmentally sustainable (Marcus, et al. 2015).

By having the focus of our study be on only students who are affiliated with Sustainability or Environmental Science fields, we lack the majority of the demographics of students who will play large roles in our global future. Students who are in Commerce will have

the opportunity to drive our future economy, engineering and community planners will influence the way we see our cities, and future teachers and other professionals will share in the duty of using their resources to educate future students on the issues of climate change.

By educating students on climate change issues and sustainable development, students from various fields can be equipped with the knowledge to create positive change. Because there is an absence of interdisciplinary studies that currently exist on the perceptions of climate change, the contemporaneous state of the perceptions of university students is difficult to analyze. For this reason, our study is relevant and well timed.

There have been multiple recent studies which have addressed the roles of sustainability and climate change in higher education as conceptualizations of faculty and university presidents (Wright, 2010 & Foster, 2002). Based on this information, it is clear to see the importance of educating students on climate change within higher education institutions (Wright, 2010 & Foster, 2002). With this project, we were able to identify the differences in knowledge gaps and now have a better understanding of students knowledge of climate change related issues at Dalhousie University.

## **Methods**

The information for this study was gathered over a period of two weeks, spending a couple hours multiple times a week at the student union building. We administered 100 hard copy surveys for our research collection in order to get a vast amount of students from different faculties. The decision to hand out hard copies of our survey is due to us getting more participation; higher participation is often more likely during intercept surveys (Palys & Atchison, 2008). The proposal for our assignment had expressed that we were initially planning on doing an online survey to conduct our research. In doing this, the number of participants was anticipated to be too low. By handing out surveys in person we were able to get more participation (Palys & Atchison, 2008).

The information was analyzed by sorting through each completed survey and dividing each survey into one of four faculty groupings. These groupings were divided by having one group account for Arts, Social Sciences and Professional Programs. There was also a General Science group, Business and Management group and, Environmental Science, Sustainability and Engineering group. Without these groupings, it was difficult to interpret the data due to there being some faculties which we only received one survey from, and surveys from 24 faculties in total. In order to get a better analysis, these groupings combined multiple faculties together to try to get a more accurate representation of students perceptions, on a broader scale.

The information gathered from our research findings will be presented in this report in the results section, showing visual data representations of the participating student's perceptions of climate change. Our overall analysis portion will be focusing on determining where the gaps in climate change knowledge are at Dalhousie University, as well as determining the results based on perceptions by faculty. These results have provided us with a basis of where we can offer recommendations to an assortment of faculties on how to increase their climate change awareness and education strategies. We hope that our findings from this study will be used to strengthen climate change plans across all Dalhousie faculties.

Our surveying needed funding of \$20 in order to provide a Tim Hortons gift card as an incentive to get students to partake in our survey. We were not able to get funding through the Environmental Science Department, however, each member of the group contributed a \$5 purchase towards the gift card for this incentive. In order to get the most diverse group of students, we chose to do our surveying at the Student Union Building. This building is the main hub for food on campus as well as overall student engagement. We surveyed students in the lobby of the Student Union Building during high peak times in the morning hours between 10am and noon to get the most random sampling of students as possible. Our sampling was a bit bias due to the fact that students that we knew were much more approachable and willing

to partake in our survey, rather than students we did not know.

Some limitations that occurred from our surveying was that we were not able to get 100 completed surveys, as we had hoped. We only managed to survey 84 Dalhousie students. If we would have been able to survey for one more week, there would have been a higher chance of us reaching our target of getting 100 surveys completed. Since it is such a large topic and it focuses on so many different faculties, 84 students does not depict an accurate representation of the entire student population at Dalhousie.

## Results

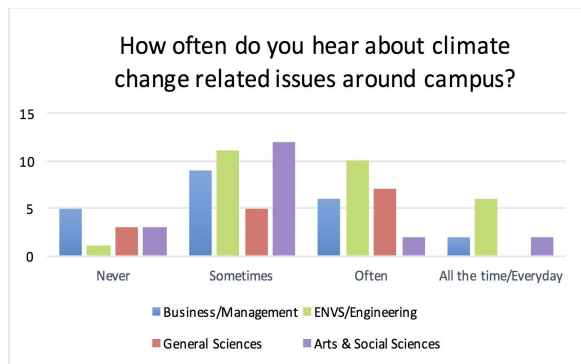


Figure 1. Survey Question 3.

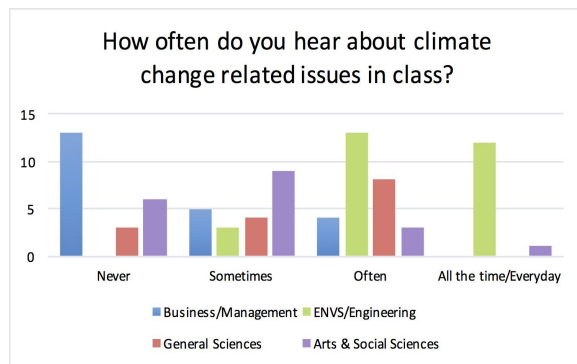


Figure 2. Survey Question 4.

Figure 1 shows the results for the data collected for the survey question which asks students of various faculties how often they hear about climate change related issues around Dalhousie Studley Campus. The information is displayed by faculty. The results vary greatly, even within faculties. The most common response for three out of four faculty groups is students “sometimes” hear about climate change related issues around campus; the most

common response for the fourth group which is General Sciences is that students “often” hear about climate change related issues around campus. There were some students who responded “never” to this question, most of whom belonged to the faculties of Business and Management. Few students responded with the option of “all the time or everyday”.

Figure 2 shows the data collected for the survey question “How often do you hear about climate change related issues in class?” The information is displayed by faculty. These results show that students in the faculties of Environmental Science & Engineering hear about climate change related issues on the most frequent basis of “all the time/everyday”, followed by the faculties in the General Sciences category which hear of climate change related issues “often” in their classes. The faculties which hear of climate change related issues the least, according to this data, amount are Business and Management.

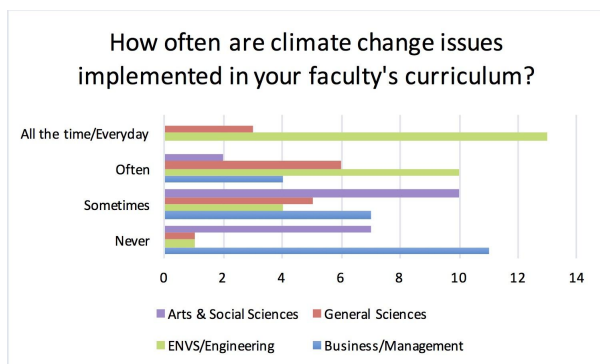


Figure 3. Survey Question 7.

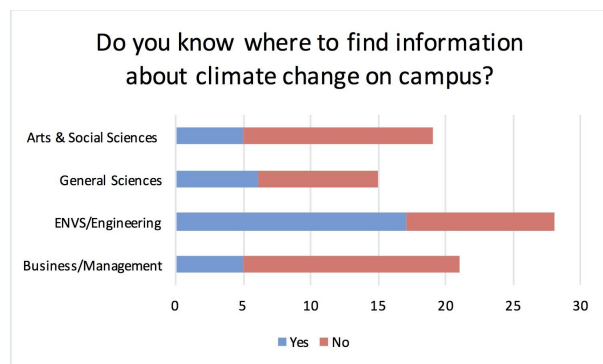


Figure 4. Survey Question 5.

Figure 3 shows the data collected for the survey question which asked students how often climate change related issues are integrated into their faculties curriculum. According to the information gathered, the faculty with the most integration of climate change related issues and topics is Environmental Science and Engineering; with the highest number of students from this group choosing the response “all the time/everyday.” The faculty with the least amount of climate change integration, according to this data, is the faculty of Business and Management,



followed by Arts and Social Sciences, both faculty groups had a high number of “never” responses to this survey question.

Figure 4 shows the information collected for the survey question which asked students of various faculties if they know where to find information about climate change on Studley Campus. Overall, more students responded “no” to this question than “yes”. In three out of four faculty groups the majority of students surveyed did not know where to find information about climate change at Dalhousie. The only faculty group with more respondents replying “yes” to this question was Environmental Science and Engineering.

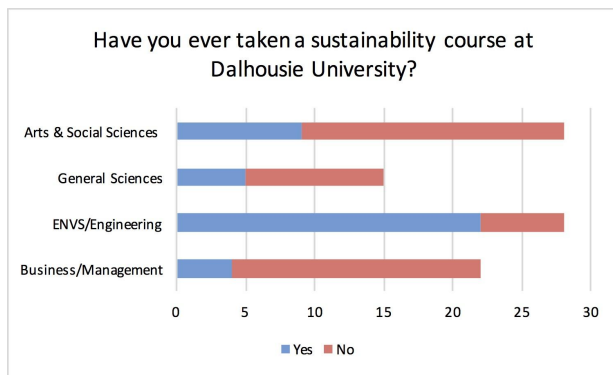


Figure 5. Survey Question 8.

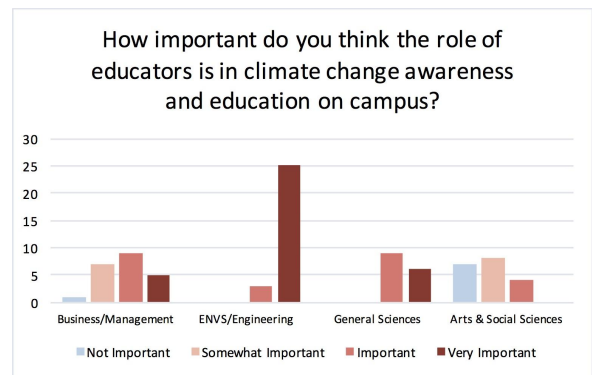


Figure 6. Survey Question 6.

Figure 5 shows the summarized results for the survey question which asked students if they had ever taken a sustainability course at Dalhousie University. The results show that the majority of students surveyed in three out of four faculty groups have never taken a sustainability course at Dalhousie. The only faculty group with more respondents saying that they have taken a sustainability course is the Environmental Science and Engineering group. Although the majority of faculty groups had more students who responded “no” to this question, there was at least one student who responded “yes”, that they have completed a sustainability course, from each faculty group.

Figure 6 shows the results from the survey question which asks students to rank how important they think the role of educators is in climate change awareness and education on campus. The results show that the majority of the students responded that they think the role of educators is “very important” or “important” in climate change awareness and education. Very few respondents said they think the role of educators is “not important”, the students who responded this way were from the Arts and Social Sciences faculty group and the Business and Management faculty group. In general, these results show that the majority of students believe that the role of educators is quite important for climate change awareness and education purposes.

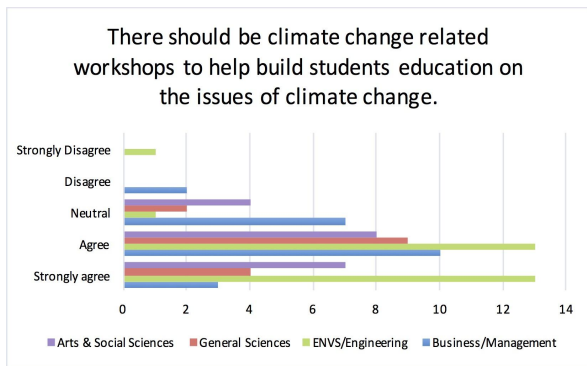


Figure 7. Survey Question 9.

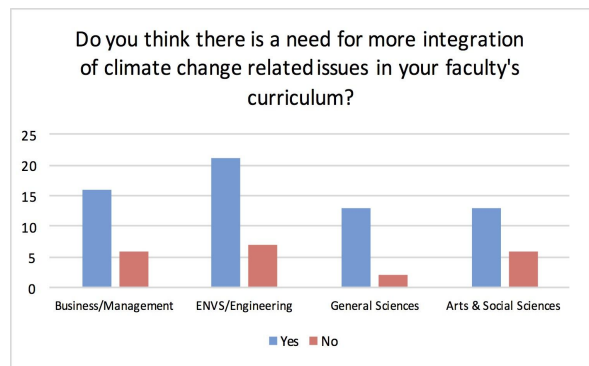


Figure 8. Survey Question 10.

Figure 7 shows the survey information collected for the question which asked students if they believe that there should be climate change related workshops at Dalhousie to help build students education on the issues of climate change. The question asked students to rank how strongly they agreed or disagreed that there should be climate change related workshops. The graph shows that there was a wide range of responses for this question, even within the same faculty group. The faculty group for Environmental Science and Engineering has the most respondents saying that they “strongly agree”, however, one student amongst this faculty

group “strongly disagreed” with the statement. In general, most students across all faculties surveyed “agreed” that there should be climate change related workshops at Dalhousie, with fewer students responding with “neutral” or that they “disagree”.

Figure 8 shows the data collected for the survey question which asked students if they think there is a need for more integration of climate change related issues in their faculty’s curriculum. The results show that the majority of students in all faculties surveyed responded “yes” to this question. The highest number of students responding “no” to this question belonged to the Environmental Science and Engineering faculty group.

**Survey Results for all faculties:**

In addition to the graphs above, we have combined the data collected from all faculties to produce graphs for the survey questions that we believe are most important for this study.

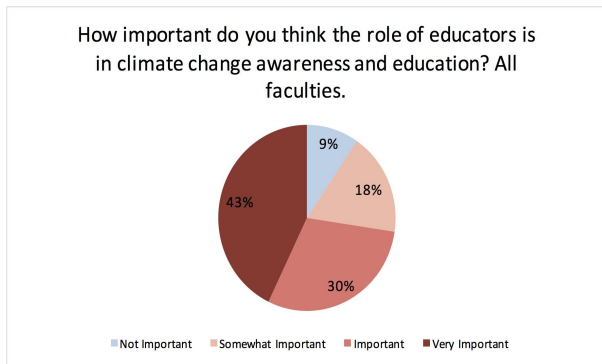


Figure 9. Survey Question 6.

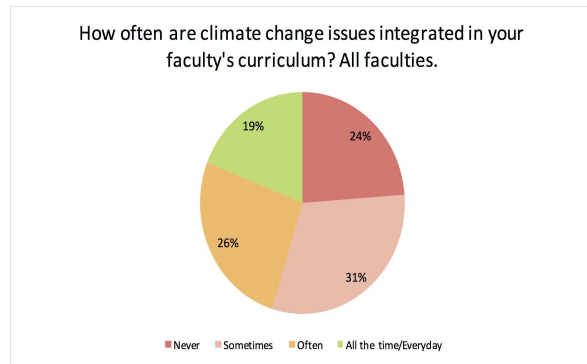


Figure 10. Survey Question 7.

Figure 11. Survey Question 9.

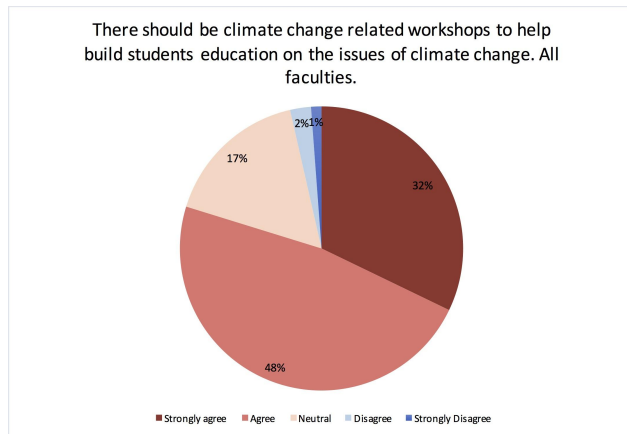


Figure 9 shows the results of all faculties surveyed for the question which asked students how important they believe the role of educators is in climate change awareness and education. The combined results show that 73% of students believe that the role of educators is “very important” or “important” for climate change awareness and education. 18% of students think that the role of educators is “somewhat important”, and only 9% of students believe that the role of educators is “not important” at all for this purpose.

Figure 10 shows the results of all faculties surveyed for the question which asked students how often climate change related topics are discussed in their faculty’s curriculum. There were a wide range of responses for this question as shown by the pie chart above. The most frequent response however was “sometimes” with a total of 31% of students. The least common response to this question was that climate change related issues are integrated “all the time/everyday” with a total of 19% of students surveyed.

Figure 11 shows the results of all faculties surveyed for the question which asked students to rank how strongly they agree or disagree that there should be climate change related workshops to help build students education on the issues of climate change. The combined results show that 80% of students “agreed” or “strongly agreed” with the statement. Only 2% of students “disagreed” and only 1% of students said that they “strongly disagreed” that there should be climate change related workshops at Dalhousie.

To summarize these results, the majority of students do often hear about climate change issues around campus (figure 1). While students may hear about these issues, the majority of them do not know where to find information on climate change around campus (figure 4). Students are not often hearing about climate change issues in the classroom, unless they are in Environmental Science or Engineering (figure 2). Most students in General Sciences do hear about climate change issues, however, they do not hear about it regularly. Additionally, the majority of the students surveyed felt that educators play a crucial role in the education and integration of climate change awareness on campus (figure 6).

## Discussion

From the results collected we were able to make the following assumptions about students' perceptions of climate change and the role of educators. Firstly, students in the faculty group of Environmental Science and Engineering have the highest integration of climate change related issues into their faculty and classes on a regular basis. Students from this faculty group are also the most familiar with where to access information about climate change around Studley Campus and have the highest number of students who have completed a sustainability course at Dalhousie. Secondly, the results for a few of the questions related to climate change education around campus and in faculties were quite skewed, even within the same faculty group which could be due to the amount of time spent around the Studley campus, as this likely varies greatly depending on the student. Thirdly, after analyzing the data for the question which asks how important students believe the role of educators is in climate change awareness and education for all faculties combined, it was clear that the majority of students thought that the role of educators was either important or very important for climate change education.

During the early stages of forming our hypothesis we discussed which faculty's we thought would have the highest and lowest integration of climate change in their curriculums at present. We found that the curriculums that we thought would have the highest integration of climate change in their program were correct. However, some of the majors that we did not think would want more integration did. The majority of majors want to see more integration of climate change, which is not what we anticipated.

As was mentioned in the introduction of this report, during our research process we were unable to find many studies completed by other universities which related to students' perceptions of climate change based on faculty. We did however find literature related to climate change education practices in the curriculums of 100 Universities in the United States (Hess & Collins, 2018). This study looked at "general curriculum" rather than faculty specific but

shows how a study like this could be done on a much larger scale (Hess & Collins, 2018). This research involved reviewing the curriculums of 100 universities then coding the information collected from these curriculums to create “general education models” (Hess & Collins, 2018, p. 1454). These models were used to answer a number of analysis questions based on the amount of climate change education in each curriculum (Hess & Collins, 2018). Their findings ultimately showed that there is a gap in climate change education in University curriculums, and that the majority of students are not being properly informed of climate change related issues (Hess & Collins, 2018).

Although our sample size was much smaller and our study was quite different than that completed by David Hess and Brandi Collins, the results from our study do show that there may be a gap in climate change education in faculties of Dalhousie University. We were unable to find any studies like this done on Canadian Universities, however it may be beneficial as a next step to the research we have undertaken, but on a much larger scale.

Another study we found which correlated to our research topic was completed in 2005 at San Jose State University in California (Cordero, Todd & Abellera, 2008). This study looked at students knowledge of climate change issues by surveying 400 students, all of whom were taking meteorology classes at the time of the study (Cordero, et al. 2008). This survey was quite detailed and was to test students general knowledge of climate change and global warming (Cordero, et al. 2008). The survey results showed that most students had a general knowledge of climate change issues but there was some misunderstanding of the causes of climate change and global warming (Cordero, et al. 2008). This study was similar to ours as it was university specific and related to climate change education, however, it was different from ours in many ways. The purpose of the study completed in California was to research climate change education in students who were enrolled in classes which were related to the environmental sciences (Cordero, et al. 2008). Whereas the purpose of our study was to research general climate change perceptions and awareness of students of all majors.

If there is "attention-catching and emotionally engaging information" portrayed in regards to climate change, there will be heightened responses to climate change issues (Weber, 2010, p.337). If climate change information is integrated into student's majors, then they will likely care more about climate change in the context of their major. However, if they care about climate change in the context of their major, they will also realize that it is a larger issue and may react through creating social responsibility to "rectify problems caused by human action" (Weber, 2010, p.338). Social responsibility will come from educators cultivating awareness of climate change issues with students in their respective disciplines. This social responsibility will not occur rapidly, it will take the integration of climate change issues into every faculty in order for students to ultimately care about climate change in respect to their faculty and then care about climate change in their everyday life as well.

With the majority of participants, from the study we conducted, wanting more climate change integration in their respective majors, we must develop new courses and curriculums to deliver this. We cannot expect educators who may not have a background in climate change to create these curriculums. Therefore, studies such as this one may be beneficial for change making across faculties, however, climate change education is something that may be needed for all faculty members and not only students. Otherwise, creating changes across all faculties to require students to partake in some sort of climate change education workshops or class could increase the general amount of climate change awareness at Dalhousie University.

## **Conclusion**

In general, there were common themes that arose amongst survey responses. It was evident that Engineering and Environmental Science/Sustainability fields receive the highest amount of exposure to climate change related issues within their faculties curriculums. It is also important to note the wide range of variance within answers in other faculties as students

within the same program had highly contradictory responses. This may be due to individual perception to what issues are climate change related or to course selection within a faculty.

This study offers insight into key issues that Dalhousie currently faces in terms of climate change education to students across varying disciplines on it's Halifax Campus. The findings reveal that the vast majority of students felt that, whether they felt that there was currently enough climate change education within their program, that the school could benefit from having more climate change related information within either their current studies or within workshops available on campus.

The main aim of this study was to address the lack of research that deals with the importance of climate change education across varying university faculties. The surveys distributed were directly observing the quantity of current climate change education within university faculties and the desire for further climate information on campus. The main contribution of this research is to create a platform for discussion and possible change within the institution and amongst educators at Dalhousie University's Halifax campus.

One difficulty that was faced during this study was the response rates from participants. Low response rate (N=84) may indicate results that are not representative of the entire population. There was also some bias involved as students who were friends with the researchers were more likely to stop and engage and participate in the survey. Although this research may fall short of creating a fully comprehensive overview of the current state of climate change education across faculties at Dalhousie, it has served as a catalyst to begin dialogue within the campus community and has identified potential recommendations.

A recommendation for action based on the findings of this study is the implementation of climate change related workshops on Dalhousie's campus. Throughout this study it was made clear that most students either saw a need for more climate change education within their program itself or available to students on campus.



Future research in this area could address specific disciplines at Dalhousie and look more comprehensively at curriculum in each program. There is also a potential for more research to be done by comparing different Universities across the country.

## **Acknowledgements**

We would like to thank our project supervisor Shauna Doll for her feedback and guidance throughout this research as well as the course instructor Dr. Amy Mui. We are extremely grateful for their knowledge and feedback throughout this experience. We would also like to show our gratitude for all participants from Dalhousie and their willingness to participate in this study.

# Appendices

## Perceptions of Climate Change - Survey

### Students of Dalhousie University

Survey conducted for Sustainability 3502, Dalhousie University.

1. Please state the program you are in: \_\_\_\_\_

2. What year of study are you currently in? Please circle the answer that applies.

1            2            3            4            5    **Higher**

3. How often do you hear about climate change related issues around campus? Please circle the answer that best applies.

**Never**                      **Sometimes**                      **Often**                      **All the time/Everyday**

4. How often do you hear about climate change related issues in class? Please circle the answer that best applies.

**Never**                      **Sometimes**                      **Often**                      **All the time/Everyday**

5. Do you know where to find information about climate change on campus? Circle the answer that applies

**Yes**                      **No**

6. How important do you think the role of educators is in climate change awareness and education on campus? Please circle the answer that best applies.

**Not Important**                      **Somewhat Important**                      **Important**                      **Very Important**

7. How often are climate change related issues implemented in your faculty's curriculum? Please circle the answer that applies.

**Never**                      **Sometimes**                      **Often**                      **All the time/Everyday**

8. Have

you ever taken a sustainability course at Dalhousie University? Circle the answer that applies.

**Yes**                      **No**

9. Do you feel that there should be climate change related workshops to help build students education on the issue of climate change? Circle the answer that applies

**Strongly Agree**                      **Agree**                      **Neutral**                      **Disagree**                      **Strongly Disagree**

10. Do you think there is a need for more integration of climate change related issues in your faculty's curriculum? Please circle the answer that applies.

**Yes**                      **No**

## Consent Form

### Perceptions of Climate Change by Dalhousie Students

#### Survey for Sustainability 3502, Dalhousie University.

You are invited to participate in a study conducted by our research group. We (Eat, Sleep, Recycle) are an undergraduate research group, currently in Sustainability/Environmental Science 3502 at Dalhousie University. The purpose of this survey is to better understand perceptions of climate change by students and staff of various faculties and years of study at Dalhousie University. We will be composing a written document from the results of this research as well as sharing the information with the Sustainability/Environmental Science 3502 class, *Campus as a Living Lab*. This study is under the supervision of Professor, Amy Mui.

If you are a student of any faculty on the Studley Campus at Dalhousie University, in any year of study, you are eligible to participate in this research study. In choosing to participate in this research, you will be required to answer ten questions related to general climate change awareness and education practices on campus. Completion of this survey should only take approximately five minutes.

The information collected from individual surveys will be accessible only to the four members of our research group as well as our supervisor, Amy Mui. A summary of the results will be available for public review. No personal information will be collected such as your name or any identifying information (please see below for optional email information). We will be keeping the information gathered from the surveys as it may also be used as a basis for future climate change initiatives at Dalhousie University. This research survey is completely voluntary; it is your decision to participate, or not to participate. During the survey if you wish to stop and not submit a response, you may do so; we will not include any incomplete surveys in our final summary and analysis. Please note: If you choose to complete the survey and later on wish to have your responses removed, we will not be able to remove your responses due to the fact that the survey is anonymous and therefore we would not be able to find and discard your survey after it has been submitted. There are very low risks associated with this survey, however, if you feel uncomfortable with sharing any information regarding your current degree and year of study, please do not feel obligated to complete this survey, as it is entirely voluntary. We hope that this survey will get students thinking more about climate change as well as the role of their professors and faculty in educating on climate change issues.

By completing this survey, you have the option to be entered into a draw to win a Tim Horton's gift card, valued at twenty dollars. Please note: In order to be entered to win a gift card, we require that you provide an email address, by which we can contact you regarding the gift card if you should win.

If you have any questions regarding this survey please do not hesitate to ask one of the members of Eat, Sleep, Recycle while completing the survey, or you may contact one of us via email. You may also contact our supervisor, Amy Mui at amy.mui@dal.ca. You can contact the group members of Eat, Sleep, Recycle at the following email addresses: hl564689@dal.ca, chelsey.harrington@dal.ca, frankiemartin@dal.ca, [ch914437@dal.ca](mailto:ch914437@dal.ca) After reviewing this form, if you have any ethical concerns about your participation in this research survey, you may contact Research Ethics, Dalhousie University at (902) 494-1462, or email ethics@dal.ca (and reference REB file # 20XX-XXXX)."

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## **Photos / Graph Credits**

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Survey Result Graphs, Figures 1-11 by: Blackmore, H. (2018, April).