
LEED Certification and Student Values

Research Proposal

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Executive Summary

The purpose and interest of this research project was to try and answer the question: How do Dalhousie University students of the academic winter 2016 term value LEED certification compared to other sustainable initiatives on campus?

The Leadership in Energy and Design (LEED), which was introduced to Canada in 2004, is a green building rating system that has become more popular in recent years, and certifies buildings as sustainable at one of four different levels: Standard, Silver, Gold and Platinum (LEED, 2016). Having a LEED audit performed can become costly depending on the physical size of the area being assessed. Dalhousie University has one of few colleges of sustainability across North America, an office of sustainability, and a number of sustainable programs and initiatives on campus, including their LEED Gold building policy.

The population chosen for the purpose of this study is students enrolled in undergraduate, graduate and postgraduate programs at Dalhousie University. The research was conducted on the Studley campus because this campus contains the largest number of LEED certified buildings compared to the other campuses and it is the largest Dalhousie campus. This campus sees a lot of student traffic daily and also a variety of students in different programs.

To conduct the research, non-probabilistic, haphazard sampling was used for selecting participants. A questionnaire was created using a mixture of single response, closed, Likert-scale and ranking style questions, with a total of ten questions. The locations used to conduct the research were: Life Sciences Centre (LSC), Killam library, Student Union Building, Mona Campbell building and LeMarchant Place.

Two major limitations were factors in this study: the statistical representation of 376 students was not reached due to time constraint and student willingness to participate, and the possible inaccurate answers leading to inaccurate data and conclusions.

The most conclusive result found from this study was that 77.6% of students were unaware of what LEED certification was before prior to the survey. The brief explanation of LEED certification given at the top of the survey allowed the students to complete the rest of the survey with an understanding that LEED was a sustainable initiative. 95.1% of students said it was very important, important, or somewhat important that Dalhousie is a leader in sustainability. The majority of students also said it was very important to somewhat important that Dalhousie buildings be LEED certified.

The fact that so many students were unaware of what the LEED certification system was before taking this survey could be due to lack of education on the subject, but also lack of signage in the LEED certified buildings. An overall better understanding of LEED certification from students would better indicate whether or not students truly value LEED compared to the other sustainable initiatives on campus.

1.0 Introduction

In March 2011, Dalhousie University implemented the Sustainable Building Policy which states all new buildings on campus must be built to a minimum LEED Gold standard (Dalhousie University, 2011). This policy was implemented in the hope that these new buildings would have lower utilities costs, and would help to reduce greenhouse gas emissions, as well as other environmental impacts (Dalhousie University, 2011). The policy defines a sustainable building as one which has been created using environmentally friendly resources, will be resource efficient throughout the span of its usage, and will not be any less durable, comfortable, or useful than a structure built to regular standards (Dalhousie University, 2011).

In recent years, The Leadership in Energy and Environmental Design (LEED) Green Building Rating System has become increasingly popular as a system of rating sustainable buildings (LEED, 2016). LEED certifications come in four levels: Standard, Silver, Gold, and Platinum (LEED, 2016). Regardless of the state of a building, an auditor must complete a formal review of the building to complete an assessment, which is then converted into a ranking system. The financial cost of a LEED audit is determined by the physical size of the area being assessed, and in turn can become costly dependent upon the size of the building.

The research question was: How do Dalhousie students of the academic winter 2016 term value LEED certifications compared to other sustainable initiatives on Dalhousie's campus? The question was answered by surveying students in various faculties and programs about the extent to which they value the LEED certification system. The surveying process will be covered more thoroughly in the methods section of this proposal.

While the research question proposed was very focused, both in physical space and intended outcomes, a significant amount of research has been conducted prior to this project with regards to what people think of LEED certifying buildings and its worth in comparison to other sustainable initiatives around the world. Three such articles dealing with the human perception of LEED certification are *Occupant Satisfaction in LEED and non-LEED Certified Buildings* by Sergio Altomonte and Stefano Schiavon, *What's it Worth?* by Breeze Glazer, Robin Guenther, and Gail Vittori, and *To Lead, or Not to LEED* by Jeff Yoders. These three articles are wider in scope than the research question, and in such will provide a strong background to the advantages and disadvantages of LEED certified buildings beyond the scope of Dalhousie's Studley campus. The other aspect of these articles that is not a significant part of the research is the costs and benefits of building campus projects to be 'green' as opposed to LEED certified. This research shows how educated students are about LEED, how they feel about spending time in LEED certified buildings as opposed to non-LEED certified buildings, and what they would rather see that money being put towards. The gap in this research is what it means for Dalhousie University to have LEED certified buildings on campus versus having 'green' buildings that are not certified.

Altemonte and Schiavon's article begins with introducing the reader to indoor environmental quality (IEQ) and its positive correlation to self-estimated job performance and potentially to overall company productivity. IEQ encapsulates "thermal, acoustic, and visual parameters, by air quality, and by...view, furniture layout, amount of privacy, cleanliness, and level of personal control over the internal environment" (Altemonte, 2013). Many have discussed the physical environmental impacts of building a LEED certified building, but rarely is the process of measuring one's personal enjoyment and productivity in a LEED certified building compared to a non-LEED certified building. One of the five common credit categories in the LEED program is indoor environmental quality and therefore personal feelings towards these buildings is a significant aspect of the LEED process (LEED, 2016). To answer the question of occupant satisfaction in LEED and non-LEED certified, the authors measured occupant satisfaction through data from the Built Environment Occupant Indoor Environmental Quality Survey database. Through the database, they were able to research occupant satisfaction data from 144 buildings (65 LEED certified), and 21,477 individual occupant responses (10,129 in LEED buildings) (Altemonte et al.). When reviewing this data, the authors found that "occupants of LEED certified buildings have equal satisfaction with the building overall and with the workspace than occupants of non-LEED rated buildings" (Altemonte et al.). Satisfaction did differ in two areas, as people seemed to prefer air quality in LEED certified buildings, but were slightly dissatisfied with the amount of light in the buildings included in the study. This is an important discovery, as it shows that no matter how environmentally friendly a building may be, people do not enjoy themselves significantly more or significantly less in LEED certified buildings. When evaluating what constitutes an enjoyable building experience, people are still more concerned with aspects like natural lighting, comfortable seating, and air quality, and the same things can be extrapolated to apply to students at Dalhousie and where they chose to spend their time.

The next two articles both take a look at the economics of LEED certification, and more specifically, if LEED certifying a building is justifiably feasible. One of the most important considerations of the costs breakdown of LEED certification is that the majority is a capital cost, that is, a cost that is only incurred once throughout the life of a project. While they may appear insignificant over the entire lifespan of the building, large capital costs can be a burden on a project's balance sheet, and certainly try to be avoided, especially with public projects, such as buildings on Dalhousie's campus, the health care facilities researched by Glazer et al, and Jeff Yoders' article about San Jose's city hall. Yoders' article documents San Jose City Council's decision to not apply for LEED certification when building their new city hall. San Jose is known for its sunny, west-coast climate and for the fact that it is the hub of technology firms. Due to these aforementioned attributes of the city, San Jose is a hotbed of environmental research and activity, and it was desired to have the new City Hall be a reflection of that, just without the LEED certification attached to it (Yoders, 2005). The designers of the building maintain that had council decided to apply for LEED certification, the building would have scored 33 points, earning them a LEED Silver certificate, but without a third party verification it

is difficult for them to declare the building as ‘sustainable’. “...the documentation process required by LEED, more than the cost, was the main factor in not applying for the certification” (Yoders, 2005). This shows that not only are decision makers worried about the cost of application, but the additional costs of the documentation process, be it through materials or human capital. These two types of costs are differentiated in the Glazer et al. article as hard and soft costs. “Hard costs are the components of construction, building systems, technologies and materials. Soft costs include design and construction team fees as well as GBCI (Green Business Certification Inc) certification fees” (Glazer, 2014). While there were some obvious doubters of the process, specifically those who saw the city go through so much effort to have a sustainable, Silver certified level city hall, the council chose to not go through with the most commercially appealing aspect of building a LEED-level certified building. These two articles gave an insight to two different types of sustainable, publically funded building projects, LEED certified, and non-LEED certified, neither of which being a university or college campus. This would indicate that there is room for our research to fill in the gaps in information available from both articles.

2.0 Background

2.1 What is LEED?

LEED stands for Leadership in Energy & Environmental Design, and it is an internationally recognized rating system that “provides building owners and operators with a framework for identifying and implementing practical and measurable green building design, construction, operations, and maintenance solutions” (About LEED). The voluntary, market driven building rating system was developed by the United States Green Building Council and an adapted Canadian version was introduced in December of 2004.

2.2 Rationale of Research Question

In March of 2011, the Dalhousie President’s Advisory Council on Sustainability and the Office of the President approved the Dalhousie Sustainable Building Policy as part of the Dalhousie Sustainability Policy, Statement of Practices, and Plan. The Policy states that it supports the sustainable direction of the University in four ways:

- Reducing operating costs of building utilities;
- Being a leader in sustainable building practices;
- Reducing environmental impacts such as greenhouse gasses; and
- Providing healthy and social spaces for Dalhousie students and employees and community members (Dalhousie Sustainable Building Policy).

The policy states that “Dalhousie University will plan, construct, manage and maintain all Dalhousie properties using principles of sustainable building. All new ‘major building projects’ should be designed, constructed, and certified to meet at least LEED gold standards (Dalhousie Sustainable Building Policy).” The policy defines a “major building project” as any building project larger than 10,000 gross square feet. Dalhousie will also set their own internal sustainability standards for all renovations and retrofits. This is an important distinction in regards to our survey because it shows that already has its own independent sustainable standards, in addition to their LEED commitments.

3.0 Research Methods

We conducted exploratory research to answer the question: How do Dalhousie students of the academic winter 2016 term value LEED certifications compared to other sustainable initiatives on campus? Due to the lack of a sampling frame, we were unable to carry out probabilistic research to answer this question. Instead, our study used non-probabilistic haphazard sampling to select participants to answer a questionnaire. The questionnaires provided quantitative and qualitative data that was analysed using descriptive statistics.

3.1 Study Design

3.1.1 Population

For the purpose of this study we delimited ourselves to Dalhousie University's Studley campus. The Studley campus is the only campus that contains a variety of LEED certified buildings, as well as non-LEED certified buildings. Studley campus is also the hub of Dalhousie University in Halifax. It is the largest Halifax campus both geographically and in student population. It is also home to many other sustainable initiatives other than LEED certification. Students from all Dalhousie University campuses frequent Studley campus and were therefore included all Halifax students in our sample population. Specifically, the population for our study was all students enrolled in undergraduate, graduate, and postgraduate programs at Dalhousie University on any of the three Halifax campuses (Studley, Carleton, or Sexton). We surveyed this population to investigate how students value LEED certified buildings in comparison to other campus sustainable initiatives. Using a sample size calculator with a confidence level of 95% and confidence interval of 5% the requisite sample size was calculated to be 377 ("Sample Size Calculator" n.d.). This sample size was calculated using a sampling population size of 19,831. This is the number of students enrolled at Dalhousie University during the academic winter term of 2016 (Dalhousie University Enrolment, n.d.).

3.1.2 Data Analysis Tool

To survey our sample population and collect our data, we will use a questionnaire. The questionnaire will be a mixture of single response, closed, Likert-scale, and ranking style questions. There will be a total of ten questions on two sides of a single sheet of paper (Appendix A).

3.1.3 Survey Locations and Time

We set out to obtain a sample of the target population that is diverse and as representative as possible (recognizing that statistical representation cannot occur without a sampling frame, and thus the limitation of our research which results in needing to do non-probabilistic research). This includes students from a diverse number of programs and faculties and years of study. To do this we surveyed at an assortment of locations, on different days, and at varying times (Table 1). The Life Sciences Centre, Student Union Building, and Killam Memorial Library were chosen based on the high amount of student traffic they receive. The Mona Campbell Building and LeMarchant Place were chosen based on their LEED Certification. The varying times

allowed us to account for the variance in student schedules. Given that the number of students present on campus is significantly greater on weekdays we excluded Saturdays and Sundays from our sampling events.

Table 1. The date, location, time, and quantity of researchers present for each study survey event.

Date	Location	Time	Number of Researchers Present
Monday 14 th March	Mona Campbell Building	12:00-14:00	2
Tuesday 15 th March	Life Science Centre	09:00-12:00	2
Wednesday 16 th March	Student Union Building	10:00-12:00	2
Thursday 16 th March	LeMarchant Place	13:00-15:00	2
Friday 18 th March	Life Science Centre	14:00-17:00	2
Tuesday 22 nd March	Killam Memorial Library	17:30-19:30	3
Tuesday 22 nd March	Student Union Building	17:30-19:30	2
Tuesday 29 th March	Killam Memorial Library	20:00-22:00	5

3.1.4 Survey Procedures

During sampling events, researchers stood next to a table with signage indicating a study was taking place. Individuals who passed the sampling table were incentivized to take part in the study using chocolate. Chocolate was chosen as an incentive as it is popular among students, particularly during midterm weeks when many of our sampling events occurred. Additionally, researchers verbally invited individuals to take part in the survey, if they were current Dalhousie students. Individuals were notified that the questionnaire would require a two minute time commitment to complete. . They were also informed that they would remain anonymous. Researchers answered any questions the participants or potential participants had about the study or questionnaire appropriately to the extent to which was necessary and so long as doing so did not induce a bias on the participant and the data. This was especially important during completion of surveys. No other verbal or physical communication occurred between researchers and participants. Upon an individual agreeing to participate in the survey, he/she was handed the questionnaire and a pen. The participant was responsible for completing the questionnaire. If a participant had a question or a problem while completing the survey, a researcher answered or advised. Throughout the survey, researchers did not behave in any way that would induce bias onto participants and their responses. After completion, the participant returned the questionnaire

and pen to a researcher and the researcher thanked the participant. Lastly, participants were allowed to take a chocolate, if they wished.

3.2 Data Analysis

Quantitative data gathered from the survey was analyzed to assess the awareness of LEED certification among students of Dalhousie University and how this population values LEED Certification compared to other sustainable initiatives on campus. The questions included in the questionnaire led to categorical and ordinal levels of measurement. Our data analysis involved descriptive statistics, frequency distributions, and measures of central tendency.

3.3 Limitations and Delimitations

A limitation of this study was that we did not have a sampling frame. Due to this, our sample population is not statistically representative; however, using the various survey tools discussed previously, we obtained a sample that was as representative as possible. Nonetheless, we were unable to reach our target sample size of 376, which is a major limitation of our study. We obtained a sample size of 356. This was due to time constraints, as well as having no control over students' willingness to participate and other external variables.

Another limitation of the study is the possibility that participants gave inaccurate responses in their questionnaire. A delimitation of this study is that participants had to be students enrolled in a class at one of Dalhousie University's Halifax campuses (Studley, Carlton, and Sexton).

3.4 Ethics

Due to the nature of this study, which involves human subjects answering questions in a questionnaire, it must first be approved by ethics review. As such, an ethics application has been submitted (Appendix C).

4.0 Results

To determine how students value LEED certification among other campus sustainable initiatives, participants were asked to rank a set of five initiatives, one of which being LEED certification, in order of their benefit. We found that mode ranking of LEED certification was third. The next most common ranking was second followed by fourth (Figure 1). Therefore, students most often ranked LEED certification in the intermediate range second-fourth, indicating that students value LEED certification as a moderately beneficial sustainable initiative in comparison to other initiatives.

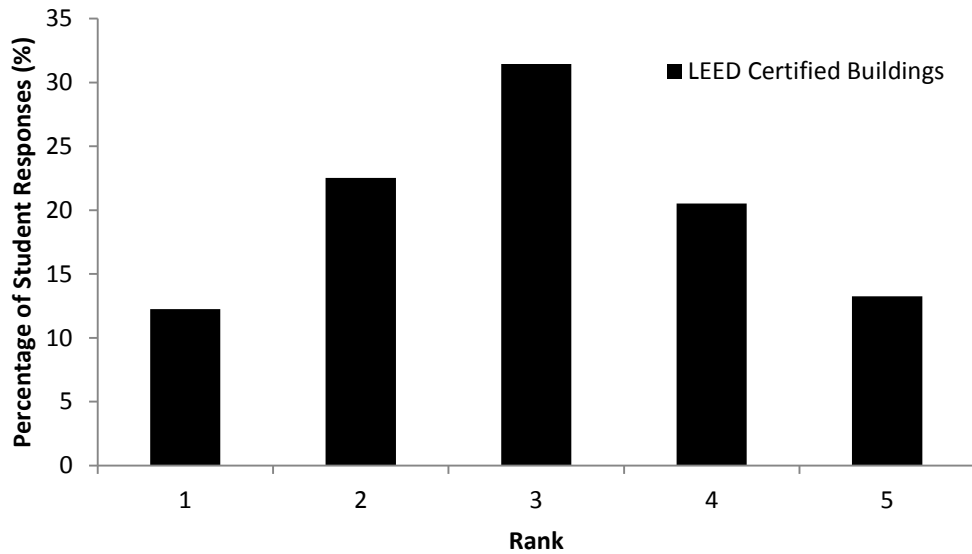


Figure 1. The distribution of Dalhousie University student responses when ranking LEED certified buildings as beneficial to improving sustainability on campus (1= most beneficial, 5= least beneficial). Data collected from 14/03/2016 to 29/03/2016 at Dalhousie University.

The sustainable initiative that students most valued was increasing the amount of energy use from renewable sources. A fair-trade campus showed a similar response to LEED certified buildings, being ranked most commonly in the intermediate range of second to fourth. A mandatory environmental class for all programs and tuition waivers for environmental courses were the least valued sustainable initiatives (Figure 2).

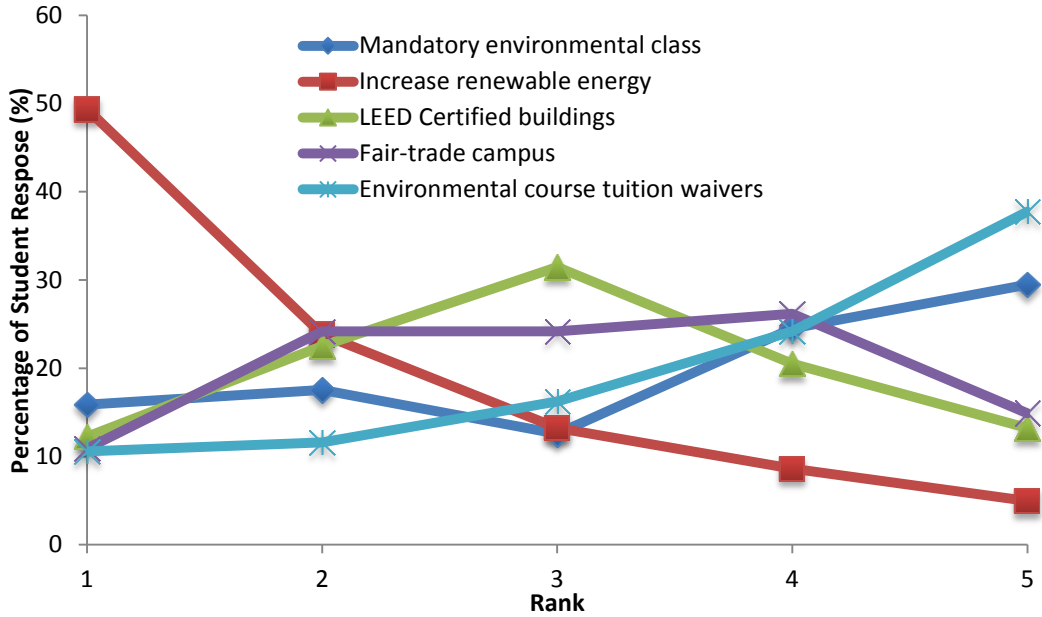


Figure 2. The distribution of Dalhousie University students responses when ranking five sustainable initiatives as beneficial to improving sustainability on campus (1=most beneficial, 5=least beneficial). Data collected from 14/03/2016 to 29/03/2016 at Dalhousie University.

For the purpose of obtaining the most accurate representation of the general Dalhousie University student population view on LEED certification, we set out to survey a diverse group of students from multiple majors, departments, and years of study. Figure 3 shows the proportion of students from the ten most common majors and all other majors. Figure 4 shows the proportion of students in different years of study.

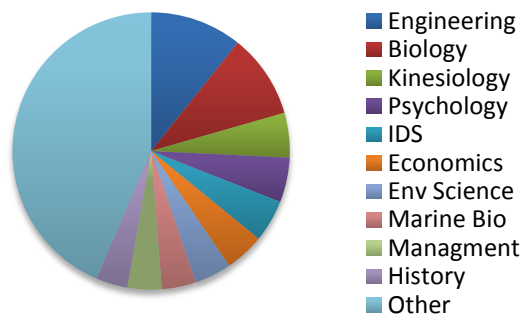


Figure 3. The proportional representation for the top ten university majors and all others represented in the study sample. Data collected from 14/03/2016 to 29/03/2016 at Dalhousie University.

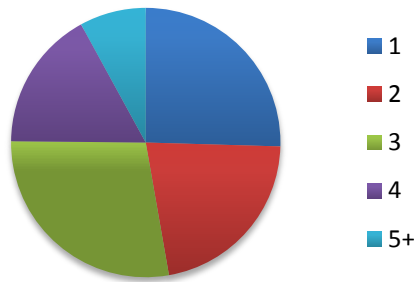


Figure 4. The proportion of years of study represented in the study sample (1= one year of study, 2= two years of study, 3=three years of study, 4= four years of study, 5+= five or more years of study. Data collected from 14/03/2016 to 29/03/2016 at Dalhousie University.

Most interestingly, the majority of students were unaware of LEED certification. Specifically, 77.6% of the students surveyed were not previously familiar with LEED certification before completing the questionnaire. Of the students who indicated that they were aware of LEED certification, 97% could properly identify a minimum of one LEED certified building on the Dalhousie campus. The most commonly correctly identified LEED Certified building was the Mona Campbell building, identified by 92% of students who indicated they were previously aware of LEED certification. The next most commonly identified LEED Certified building was LeMarchant Place, followed by the Ocean Sciences Building, and the Life Sciences Research Institute. This indicates that all four LEED Certified buildings were identified in the survey, though the building that was considerably the most recognizable as LEED certified was the Mona Campbell building.

To establish how student values of LEED certification reflected their value of sustainability, we also asked a number of broader questions. We found that it was important for students that Dalhousie University was a leader in sustainability. For 76.9% students it was either ‘very important’ or ‘important’. Less than 5% of students responded that it was ‘somewhat not important’, ‘not important’, or ‘not important at all’. Another interesting finding was that 91.4% of students responded that it was ‘very important’, ‘important’, or ‘somewhat important’ that Dalhousie University buildings are LEED certified. This is particularly interesting given the majority of these students were previously unaware of LEED certification before completing the survey. Furthermore, 83.4% of students agreed that LEED certified buildings are better for the health of the environment and 78.2% agreed that LEED certified buildings are better for the health of the people who use such buildings. Finally, we found that 92.3% of students believe that the quality of the building affects the quality of their experience in the building.

5.0 Discussion

This project aimed to answer the question: How do Dalhousie students of the 2016 winter term value LEED certification compared to other sustainable initiatives on campus? Because it is quite an expensive process to have a building LEED certified, the researchers' hope was to determine whether Dalhousie students would rather see money that would have otherwise been spent on obtaining a LEED certification spent on alternative sustainable initiatives that may have a more direct impact on the campus as a whole. Additionally, we wanted to find out whether or not students at Dalhousie know what LEED certification is, and how they view sustainability at Dalhousie University. Although there has been a lot of research done on the cost versus the benefit of having a building LEED certified, there has been minimal data collected that involves university or college students' values when it comes to the matter of LEED certification on campus.

After surveying 356 students, only 22.4% of the students surveyed were familiar with LEED certification prior to taking the questionnaire. Despite 77.6% of students being unfamiliar with LEED certification and what it entails, 91.4% of students surveyed indicated that they believe it is very important, important, or somewhat important that Dalhousie University buildings be LEED certified. This could be attributed to the brief explanation of LEED given at the top of the questionnaire, which identified LEED certification as "an internationally recognized way of acknowledging a building for its excellence in sustainability."

Of the students surveyed, 95.1% indicated that it is very important, important, or somewhat important that Dalhousie be a leader in sustainability. This would indicate that they would deem LEED certification something of importance, which would indicate that their limited knowledge of LEED associates it as a sustainable initiative.

One of the questions we used on the survey asked students to rank sustainable initiatives that they believe would be beneficial to the university campus from 1-5, 1 being the most beneficial, and 5 being the least. The initiative that garnered the most support from students was to increase reliance on renewable energy sources, which was the first choice for 49.1% of all students surveyed. This was followed by, in the order presented: having a fair-trade campus, LEED certified buildings, a mandatory environmental class for all programs, and tuition waivers for environmental courses. The fact that increasing reliance on renewable energy was the first choice for the majority of students can likely be justified as renewable energy is one of the most commonly discussed solutions to climate change, and because sustainability is a priority for 95.1% of students.

Students who completed the survey were asked a number of questions about LEED certification. One of them was to identify any buildings on campus that they may have thought to be LEED certified. Of the 22.4% of students who indicated that they had previous knowledge of LEED certifications, 97% of them were able to correctly identify one or more LEED building on campus. The most identified building was the Mona Campbell building which was named by

92% of those students. The Mona Campbell was followed by LeMarchant Place, the Ocean Sciences Building, and finally, the Life Sciences Research Institute, in that order. The most plausible reason for the Mona Campbell to be the most correctly identified LEED building is the fact that it has signage indicating its LEED features and status as a LEED certified building. As well, the Mona Campbell building is located on the Studley campus and is frequented by several students throughout the year. Although LeMarchant Place is also located on Studley campus, home to health services as well as serving as a residence building, the lack of signage or information about LEED present in the building may be the cause for its lower identification rate among those surveyed.

The most evident data that the research presented was the number of students who had been unaware of LEED certification prior to taking part in our survey. It is difficult to say what the reason for this may be, but it is an issue that could be solved through increased education, and probably by increasing signage in buildings that are LEED certified. Because 95.1% of students surveyed indicated that sustainability at Dalhousie is important to them, it is unlikely that this would be a difficult thing to implement. Because we chose to collect data via a survey, it was difficult to gain true understanding of a student's responses.

6.0 Conclusion

The main question this research was aiming to answer was: How do Dalhousie students of the academic winter 2016 term value LEED certification compared to other sustainable initiatives?

The researchers used non-probabilistic, haphazard sampling techniques to gather data from the sampling population. The research was collected by creating a questionnaire consisting of a variety of single response, open, Likert-scale, and ranking questions, with a total of ten questions. After having undergraduate, graduate, and postgraduate students complete the questionnaire at a variety of locations on the Dalhousie Studley campus, the main conclusion that was assessed by this research is that the majority of Dalhousie University students of the 2016 winter academic term are not educated on the LEED certification system, specifically, 77.6% of respondents were unaware of the system. After a brief explanation of what LEED certification represented before completing the survey, the majority said it was very important to somewhat important that Dalhousie buildings were LEED certified. Overall, from the data collected, Dalhousie students in the sampling population think it is important that the university is a leader in sustainability and that LEED certification is pursued.

From question 10 on the questionnaire, a ranking question, students thought it was most important that Dalhousie increase their use of renewable energy sources on campus which correlated with the result that sustainability was important to students. Although students seem to value LEED as important, they are also open to other sustainable initiatives occurring on campus, such as more renewable energy sources. Other well accepted sustainable initiatives included, but were not limited to a fair trade campus, and having LEED certified buildings. The two answers with the least amount of support were tuition waivers for environmental courses and a mandatory environmental course for every program. This question identifies that students may value other sustainable initiatives more or less than LEED certification.

7.0 Recommendations

To advance further with this research, recommendations include, but are not limited to:

Educate students, and the public, on the LEED certification system and how it is being implemented at Dalhousie University. Potential options to achieve this include: professors speaking about LEED certification in lectures, having guest speakers from industry offer a brief talk to a class, include information in a welcome package, create more student involvement throughout the implementation of new buildings, or having more information about LEED certification on the Dalhousie University website.

Implement more signage in the LEED certified buildings located on Dalhousie campuses, including details of attributes that earned the building LEED points during the certification process. This option would have minimal capital cost and would not only reach students, but any public that enters into the LEED certified building.

Carrying forward with the research, it would be beneficial to re-gather data after education has occurred on LEED certification. With initial questionnaire data, a focus group could be created to gather more in depth data. This would permit discussion to gain a broader comprehension of a student's thoughts of LEED certification and campus sustainability.

In addition, it would be beneficial to see linked results of multiple questions of the same surveyed individual to better determine patterns with regard to a student's major, their year of study at Dalhousie, and how they value sustainability on campus rather than the independent question analysis undertaken for this research.

Furthermore, a proper cost-benefit analysis would be required before any alterations were adequately provided to Dalhousie University.

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Appendices

Appendix A – Questionnaire

The following questionnaire is part of a study for an undergraduate research methods class. For the purpose of this questionnaire LEED Certification is an internationally recognized way of acknowledging a building for its excellence in sustainability.

1. What is your major? _____
2. How many years have you studied at Dalhousie? _____
3. Before today, were you previously familiar with LEED certification?
 - i. Yes
 - ii. No
4. Are you aware of any LEED certified buildings on Dalhousie campus?
 - i. Yes
 - ii. No

If yes, please tell me which buildings you think are LEED certified on campus:

-
5. How important is it to you for Dalhousie University to be a leader in sustainability (circle 1)

Very important

Important

Somewhat important

Somewhat not important

Not important

Not Important at all

6. How important to you is it that buildings at Dalhousie University are LEED certified (circle 1)?

Very important

Important

Somewhat important

Somewhat not important

Not important

Not Important at all

7. To what extent do you agree with this statement: LEED certified buildings are better for the health of the environment? (circle 1)

Fully agree

Somewhat agree

Somewhat disagree

Disagree

Don't know

8. To what extent do you agree with this statement: LEED certified buildings are better for the health of the people who use the buildings? (circle 1)

Fully agree

Somewhat agree

Somewhat disagree

Disagree

Don't know

9. Do you believe that the quality of your building affects the quality of your experience in the building?

i. Yes ii. No

10. Rank the following initiatives in order of what you think are most beneficial to improving sustainability on campus (1=most beneficial 5=least beneficial):

- Mandatory environmental class for all programs
- Increase the amount of energy usage from renewable sources
- LEED Certified buildings
- Fair-trade campus
- Tuition waivers for environmental courses
- Other: _____

Appendix B – DSUSO Funding Application



DSUSO Funding Application A

Applications from Individuals Totalling \$50 or Less

The DSUSO Green Initiatives fund is designed to empower Dalhousie students who pay DSU levy fees to pursue projects and opportunities that benefit the greater Dalhousie Community. While the DSUSO seeks to fund as many projects as possible, priority will be given to applications that prove the greatest overall benefit to the applicant. These benefits include, but are not limited to: personal growth; inclusion of others; environmental and social benefits; and community engagement. Please ensure you have completed the grant application checklist before submitting your application.

1. Name of DSU member applying for grant:

Please Note: DSUSO Funding Applications must be submitted by current DSU members without outstanding DSU member fees.

Hannah Turner

2. Student Number:

B00617070

3. Mailing Address:

2029 Parker Street, Halifax NS B3K 4T6

4. Phone Number:

(867) 332-7267

5. E-mail Address:

hn414089@dal.ca

6. Total Amount Requested:

Please attach a detailed budget of the project, trip, or event. This budget should include the total cost, how DSUSO funding will be spent, in-kind donations requires, and all other funding expected from other sources (confirmed or outstanding).

\$50.00

Funding received will be spent on printing our paper surveys. The cost of printing one 8.5x11 black and white sheet at Dalhousie's Print Centre is \$0.10. To complete this project we will require 650 surveys, which at \$0.10 per sheet totals \$65.00. We will only be accessing DSUSO funding, if approved. All other costs will be covered by the members of the group through in-kind of their time, resources, and personal funds.

7. Describe your project, event or trip, and outline how the objectives of your project coincide with DSUSO's mission to promote environmental, social, and economic sustainability:

This project aims to answer the question "How do Dalhousie students located on the Studley campus of the academic winter 2016 term value LEED certifications compared to other sustainable initiatives on campus?". The goal of this project is to better understand whether or not students value having all campus buildings certified as LEED Gold, or if they would prefer to see Dalhousie allocate the certification fee (but continue to build to a LEED Gold standard as per the current policy) on different sustainable initiatives around Dalhousie's Studley campus.

8. Please describe any additional benefits to others, the university, community, or beyond that will result from your application:

The insight gained through this project will be assessed and analysed, and if any valuable and conclusive data is determined, there is the potential of multiple thousands of dollars allocated to sustainable initiatives across all Dalhousie campuses.

Appendix C – Ethics Application

Revised January 1, 2005

ENVIRONMENTAL PROGRAMMES
FACULTY OF SCIENCE
DALHOUSIE UNIVERSITY

APPLICATION FOR ETHICS REVIEW OF RESEARCH INVOLVING HUMAN PARTICIPANTS
UNDERGRADUATE THESES AND IN NON-THESIS COURSE PROJECTS

GENERAL INFORMATION

1. **Title of Project:** LEED Certification and Student Values

2. Faculty Supervisor(s)	Department	Ext:	e-mail:
Tarah Wright	Environmental Science		Tarah.Wright@dal.ca
Eliza Jackson	Environmental Science		Eliza.Jackson@dal.ca

3. Student Investigator(s)	Department	e-mail:	Local Telephone Number:
Hannah	Environmental Science	hn414089@dal.ca	(867) 332-7267
Sabrina Hiefer	Engineering	sabrina.hiefer@dal.ca	N/A
Angus Docherty	Political Science	angus.docherty@dal.ca	(519) 577-2006
Ryan Bates	Environmental Science	ry655761@dal.ca	(902) 719-6793
Kristi-Lyn Smith	Environmental Science	kr853833@dal.ca	(902) 219-8876

4. **Level of Project:**
Non-thesis Course Project Undergraduate Graduate Specify course and number:

ENVS 3502

5. a. **Indicate the anticipated commencement date for this project:** March 14, 2016

b. **Indicate the anticipated completion date for this project:** April 11, 2016

SUMMARY OF PROPOSED RESEARCH

1. Purposes and Rationale for Proposed Research

Briefly describe the purpose (objectives) and rationale of the proposed project and include any hypothesis(es)/research questions to be investigated.

The goal of this project is to better understand whether or not students value having all campus buildings certified as LEED Gold, or if they would prefer to see Dalhousie allocate the certification fee (but continue to build to a LEED Gold standard as per the current policy) on different sustainable initiatives around Dalhousie's Studley campus.

Our Research question is "How do Dalhousie students located on the Studley campus [of the academic winter 2016 term] value LEED certifications compared to other sustainable initiatives on campus?"

2. Methodology/Procedures

a. *Which of the following procedures will be used? Provide a copy of all materials to be used in this study..*

- Survey(s) or questionnaire(s) (mail-back)
- Survey(s) or questionnaire(s) (in person)
- Computer-administered task(s) or survey(s)
- Interview(s) (in person)
- Interview(s) (by telephone)
- Focus group(s)
- Audio taping
- Videotaping
- Analysis of secondary data (no involvement with human participants)
- Unobtrusive observations
- Other, specify _____

b. *Provide a brief, sequential description of the procedures to be used in this study. For studies involving multiple procedures or sessions, the use of a flow chart is recommended.*

We will begin our study by distributing 376 of our questionnaires at various locations around Dalhousie's Studley campus. These locations will include: the Killam Memorial Library, Student Union Building, Wallace McCain Learning Commons, Life Sciences Centre, and two LEED Gold Certified buildings, which are LeMarchant Place and the Mona Campbell Building. After the completion of these surveys, we will analyse the data that we have received and create a final report.

3. Participants Involved in the Study

a. *Indicate who will be recruited as potential participants in this study.*

- Dalhousie Participants: Undergraduate students
 Graduate students
 Faculty and/or staff
- Non-Dal Participants: Children
 Adolescents
 Adults
 Seniors
 Persons in Institutional Settings (e.g. Nursing Homes, Correctional Facilities)
- Other (specify) _____

b. *Describe the potential participants in this study including group affiliation, gender, age range and any other special characteristics. If only one gender is to be recruited, provide a justification for this.*

The survey will be distributed to students on Dalhousie's Studley campus with no regard given to gender, age range, or any other special characteristics.

c. *How many participants are expected to be involved in this study?*

We are hoping to involve 376 participants in this study.

4. Recruitment Process and Study Location

a. *From what source(s) will the potential participants be recruited?*

- Dalhousie University undergraduate and/or graduate classes
 Other Dalhousie sources (specify) Students who
 Local School Boards
 Halifax Community
 Agencies
 Businesses, Industries, Professions
 Health care settings, nursing homes, correctional facilities, etc.
 Other, specify (e.g. mailing lists) _____

b. *Identify who will recruit potential participants and describe the recruitment process.*

Provide a copy of any materials to be used for recruitment (e.g. posters(s), flyers, advertisement(s), letter(s), telephone and other verbal scripts).

Researchers will stand next to a table that has signage indicating the conduction of a study survey. It is anticipated that the signage will attract participants. Additionally, researchers will invite passers-by to take part in the survey. Individuals will be notified that the questionnaire will require a three to five minute time commitment to complete it. They will also be notified that they will remain anonymous and other questions they have will be answered. Upon an individual agreeing to participate in the survey they will be handed the questionnaire and a pen. The participant will be responsible for completing the questionnaire. If a participant has a question or a problem while completing the survey a researcher will answer or advise appropriately to the extent to which is necessary and so long as doing so will not induce a bias on the

participant and the data. Throughout the survey researchers will not behave in anyway that will induce bias onto participants and their responses. After completion the participant will return the questionnaire and pen to a researcher and the researcher will thank the participant. The participant will also be informed where to seek the findings of the study.

5. Compensation of Participants

Will participants receive compensation (financial or otherwise) for participation? Yes [] No [X]

If Yes, provide details:

6. Feedback to Participants

Briefly describe the plans for provision of feedback and attach a copy of the feedback letter to be used. Wherever possible, written feedback should be provided to study participants including a statement of appreciation, details about the purpose and predictions of the study, contact information for the researchers, and the ethics review and clearance statement.

Note: When available, a copy of an executive summary of the study outcomes also should be provided to participants.

Upon completion of our final report, a copy will be submitted to Dalhousie University, as well as to DSUSO. We will inform the participants that if they are so inclined they will be able to access our data from one of these two sources. Additionally, they may leave their contact information should they wish to receive a copy of the final report.

POTENTIAL BENEFITS FROM THE STUDY

1. **Identify and describe any known or anticipated direct benefits to the participants from their involvement in the project.**

Although there is no immediate benefit to the participants as an individual, they can take pride in the fact that they have contributed to a valuable study of Dalhousie's community.

2. **Identify and describe any known or anticipated benefits to society from this study.**

The insight gained through this project will be assessed and analyzed, and if any valuable and conclusive data is determined, there is the potential of multiple thousands of dollars allocated to sustainable initiatives across all Dalhousie campuses.

POTENTIAL RISKS TO PARTICIPANTS FROM THE STUDY

1. **For each procedure used in this study, provide a description of any known or anticipated risks/stressors to the participants. Consider physiological, psychological, emotional, social, economic, legal, etc. risks/stressors**

No known or anticipated risks
Explain why no risks are anticipated:

Minimal risk
Description of risks:

Greater than minimal risk
Description of risks:

2. **Describe the procedures or safeguards in place to protect the physical and psychological health of the participants in light of the risks/stresses identified in Question 1.**

Participants will complete the questionnaire on an entirely voluntary basis, and as such will have the option to stop should they feel any risks to their psychological well being. That being said, we do not foresee any risks to health associated with our methods.

INFORMED CONSENT PROCESS

Refer to: <http://pre.ethics.gc.ca/english/policystatement/section2.cfm>

1. What process will be used to inform the potential participants about the study details and to obtain their consent for participation?

- Information letter with written consent form; provide a copy
- Information letter with verbal consent; provide a copy
- Information/cover letter; provide a copy

Other (specify):

The researchers will ask participants if they wish to participate in our study. They will then be given a brief overview of what is involved and how the obtained data will be utilised.

2. If written consent cannot be obtained from the potential participants, provide a justification.

Written consent from the participants will not be required because the data collected is anonymous and participation is purely voluntary.

ANONYMITY OF PARTICIPANTS AND CONFIDENTIALITY OF DATA

1. Explain the procedures to be used to ensure anonymity of participants and confidentiality of data both during the research and in the release of the findings.

Anonymity of participants will be maintained the entire way through the study. The names of participants will not be collected, nor will any other form of data that could be used for identification.

2. Describe the procedures for securing written records, questionnaires, video/audio tapes and electronic data, etc.

Completed questionnaires will be kept by one member of the team and destroyed after our final report has been completed.

3. Indicate how long the data will be securely stored, the storage location, and the method to be used for final disposition of the data.

- Paper Records
 - Confidential shredding after 0.3 years
 - Data will be retained indefinitely in a secure location
 - Data will be retained until completion of specific course.
- Audio/Video Recordings
 - Erasing of audio/video tapes after _____ years
 - Data will be retained indefinitely in a secure location
 - Data will be retained until completion of specific course.
- Electronic Data
 - Erasing of electronic data after _____ years
 - Data will be retained indefinitely in a secure location
 - Data will be retained until completion of specific course.


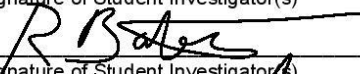
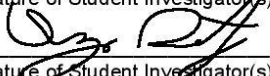
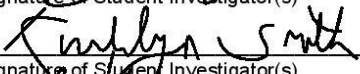
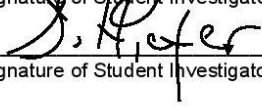
[] Other _____
(Provide details on type, retention period and final disposition, if applicable)

Specify storage location: Folder in the possession of one member of the group

ATTACHMENTS

Please check below all appendices that are attached as part of your application package:

- [] **Recruitment Materials:** A copy of any poster(s), flyer(s), advertisement(s), letter(s), telephone or other verbal script(s) used to recruit/gain access to participants.
- [] **Information Letter and Consent Form(s).** Used in studies involving interaction with participants (e.g. interviews, testing, etc.)
- [] **Information/Cover Letter(s).** Used in studies involving surveys or questionnaires.
- [] **Parent Information Letter and Permission Form** for studies involving minors.
- [X] **Materials:** A copy of all survey(s), questionnaire(s), interview questions, interview themes/sample questions for open-ended interviews, focus group questions, or any standardized tests used to collect data.

SIGNATURES OF RESEARCHERS	
	March 3, 2016
Signature of Student Investigator(s)	Date
	March 3, 2016
Signature of Student Investigator(s)	Date
	March 3, 2016
Signature of Student Investigator(s)	Date
	March 3, 2016
Signature of Student Investigator(s)	Date
	March 3, 2016
Signature of Student Investigator(s)	Date
Signature of Student Investigator(s)	Date
Signature of Student Investigator(s)	Date

FOR ENVIRONMENTAL PROGRAMMES USE ONLY:

Ethics proposal been checked for eligibility according to the Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans

Signature

Date

Appendix D – Proposal

LEED Certification and Student Values

Research Proposal

Dr. Tarah Wright

Mentor: Eliza Jackson

Authors

Ryan Bates

Angus Docherty

Sabrina Hiefer

Kristi-Lyn Smith

Hannah Turner

ENVS 3502: Campus as a Living Lab

Dalhousie University

March 3rd, 2016

Author Information

Ryan Bates

A fourth year BSc Environmental Science student, Ryan's research interests span across conservation biology, the human-environment relationship, and grassroots sustainability.

Angus Docherty

Angus Docherty is a third year political science and sustainability student at Dalhousie University. His research interests lie in the field of environmental policy, international climate relations, and the politics of coastal management.

Sabrina Hiefer

Sabrina is a fourth year environmental engineering student who holds a Bachelor of Applied Science from Acadia University. Her research interests cover a large range, but are currently focused in the water industry. In the past, she has worked with power utilities, as well as energy data, and in such is very interested to see the results of this study to see the human perspective of LEED rather than pure energy and financial calculations.

Kristi-Lyn Smith

Kristi-Lyn is a third year environmental science student at Dalhousie University. Her main interests are climate change but when she's not focusing on her environmental science major she is minoring in mathematics. She has not done any previous research projects but is interested to see how students here at Dalhousie value LEED over other sustainable initiatives.

Hannah Turner

Hannah is a third year environmental science and sustainability student. Her research interests include the arctic climate, fisheries, and environmental education. She is very much looking forward to seeing the results of this study.

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Sabrina Hiefer	1
Kristi-Lyn Smith	1
Hannah Turner.....	1
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1.0 Introduction

As of March 2011, Dalhousie University implemented the Sustainable Building Policy which states all new buildings on campus must be built to a minimum LEED Gold standard (Dalhousie University, 2011). This policy was implemented in the hopes that these new buildings would have lower utilities costs, and would help to reduce greenhouse gas emissions, as well as other environmental impacts (Dalhousie University, 2011). The policy defines a sustainable building as one which has been created using environmentally friendly resources, will be resource efficient throughout the span of its usage, and will not be any less durable, comfortable, or useful than a structure built to regular standards (Dalhousie University, 2011).

In recent years, The Leadership in Energy and Environmental Design (LEED) Green Building Rating System has become increasingly popular as a system of rating sustainable buildings (LEED, 2016). LEED certifications come in four levels: Standard, Silver, Gold, and Platinum (LEED, 2016). Regardless of the state of a building, an auditor must complete a formal review of the building to complete an assessment, which is then converted into a ranking system. The financial cost of a LEED audit is determined by the graphical size of the area being assessed, and in turn can become costly dependent upon the size of the building.

Our question is: How do Dalhousie students of the academic winter 2016 term value LEED certifications compared to other sustainable initiatives on Dalhousie's Studley campus? We will answer this question by surveying students in various faculties and programs about what they value and where they might like to see these funds allocated in place of LEED certifications. The surveying process will be covered more thoroughly in the methods section of this proposal.

2.0 Background

2.1 What is LEED?

LEED stands for Leadership in Energy & Environmental Design, and it is an internationally recognized rating system that “provides building owners and operators with a framework for identifying and implementing practical and measurable green building design, construction, operations, and maintenance solutions” (About LEED). The voluntary, market driven building rating system was developed by the United States Green Building Council and an adapted Canadian version was introduced in December of 2004.

2.2 Rationale of Research Question

Dalhousie University is an incredibly forward thinking school when it comes to environmental sustainability and green development. For instance, Dalhousie has one of the only colleges of sustainability in North America, their own office of sustainability, the Dalhousie Student Union Sustainability Office, and countless sustainable programs and initiatives, including their LEED Gold sustainable building policy. With all of the importance being put on diverse sustainable initiatives on campus, and the knowledge that the process of LEED certifying a building is an expensive one, our group was curious to see if Dalhousie students enjoy having LEED certified buildings on campus, or if they would rather see the money spent on the certification process being allocated on other sustainable initiatives that may be more impactful for the entire campus.

In March of 2011, the Dalhousie President’s Advisory Council on Sustainability and the Office of the President approved the Dalhousie Sustainable Building Policy as part of the Dalhousie Sustainability Policy, Statement of Practices, and Plan. The Policy states that it supports the sustainable direction of the University in four ways:

- Reducing operating costs of building utilities;
- Being a leader in sustainable building practices;
- Reducing environmental impacts such as greenhouse gasses; and
- Providing healthy and social spaces for Dalhousie students and employees and community members (Dalhousie Sustainable Building Policy).

The policy states that “Dalhousie University will plan, construct, manage and maintain all Dalhousie properties using principles of sustainable building. All new ‘major building projects’ should be designed, constructed, and certified to meet at least LEED gold standards (Dalhousie Sustainable Building Policy).” The policy defines a “major building project” as any building project larger than 10,000 gross square feet. Dalhousie will also set their own internal sustainability standards for all renovations and retrofits. This is an

important distinction in regards to our survey because it shows that Dalhousie is already doing its own independent sustainable standards, in addition to their LEED commitments.

2.3 Literature Review

In June of 2013, Sergio Altomonte and Stefano Schiavon wrote an article titled Occupant Satisfaction in LEED and non-LEED Certified Buildings. As the article states, “occupant satisfaction with indoor environmental quality (IEQ) in office buildings has been positively correlated to self-estimated job performance, and potentially, to overall company productivity” (Altomonte et al.). The aim of the paper was to establish if LEED certified buildings positively contributed to indoor environmental quality and overall satisfaction. The way the two authors answered this question was by measuring occupant satisfaction through the Center for the Built Environment Occupant Indoor Environmental Quality Survey database, which holds information on 144 buildings (65 LEED certified), and 21,477 individual occupant responses (10,129 in LEED buildings). When reviewing this data, the authors found that “occupants of LEED certified buildings have equal satisfaction with the building overall and with the workspace than occupants of non-LEED rated buildings.” Specifically, Altomonte et al found that “occupants of LEED buildings tend to be slightly more satisfied with air quality, and slightly more dissatisfied with amount of light” (Altomonte et al.).

This study was done focusing on office buildings, while our group is focusing on how students feel about the buildings they frequent for academia purposes. Our survey will determine if students interact with buildings differently than office employees do, and if that correlates to different feelings on LEED buildings on the Dalhousie Studley Campus. It is important to look at literature such as this so that we are not investing time and resources researching a question that is already answered , and to see how our findings compare to similar studies.

3.0 Proposed Research Methods

We, the researchers, will conduct exploratory research to answer the question: How do Dalhousie students of the academic winter 2016 term value LEED certifications compared to other sustainable initiatives on Dalhousie's Studley campus? Our study will use non-probabilistic haphazard sampling to select participants to answer a questionnaire. From the questionnaires we will gather quantitative data that we will analyse using descriptive statistics.

3.1 Study Design

3.1.1 Population

The sampling frame for our study is all students enrolled in undergraduate, graduate, and postgraduate programs on Dalhousie University's Studley campus. We are surveying this population to investigate how students value LEED certified buildings in comparison to other campus sustainable initiatives. The Studley campus is the only campus that contains a variety of LEED certified buildings, as well as non-LEED certified buildings. For this reason students from other campuses are excluded from our study, unless they attend courses on the Studley campus.

3.1.2 Data Analysis Tool

To survey our sample population and collect our data we will use a questionnaire. The questionnaire will be a mixture of single response, closed, and ranking style questions. There will be a total of eight questions on one side of a single sheet of paper (Appendix A). Using a sample size calculator with a confidence level of 95% and confidence interval of 5% the requisite sample size was calculated to be 376 ("Sample Size Calculator" n.d.). This sample size was calculated using a sampling population size of 18,500. This is the number of students enrolled at Dalhousie University ("Dal at a Glance," n.d.). The researchers acknowledge that this includes all campuses and our actual sampling population would be less than this number; however, due to lack of data on intercampus enrolment we will use the aforementioned number and thus a sample size of 376 for our study.

3.1.3 Survey Locations and Time

We aim to obtain a sample of the target population that is diverse and representative. This includes students from of a diverse number of programs and faculties and years of study. To do this we will survey at an assortment of locations: the Killam Memorial Library, Student Union Building, Wallace McCain Learning Commons, Life Sciences Centre, and two LEED Gold Certified buildings, which are LeMarchant Place and the Mona Campbell Building.

Given that the number of students present on campus is significantly greater on weekdays and the schedules of students vary, the survey will be carried out across multiple weekdays and at different times during these days so as to increase the number of possible participants. On each occasion researchers will survey for two hours at a time. Up to five researchers will conduct surveys during a survey event, but a minimum of two researchers will be present at each survey event. Survey events will be conducted until the required sample size of 376 is obtained.

3.1.4 Survey Procedures

Researchers will stand next to a table that has signage indicating the conduction of a study survey. It is anticipated that the signage will attract participants. Additionally, researchers will invite passers-by to take part in the survey. Individuals will be notified that the questionnaire will require a three to five minute time commitment to complete it. They will also be notified that they will remain anonymous and other questions they have will be answered. Upon an individual agreeing to participate in the survey they will be handed the questionnaire and a pen. The participant will be responsible for completing the questionnaire. If a participant has a question or a problem while completing the survey, a researcher will answer or advise appropriately to the extent to which is necessary and so long as doing so will not induce a bias on the participant and the data. Throughout the survey, researchers will not behave in any way that will induce bias onto participants and their responses. After completion, the participant will return the questionnaire and pen to a researcher and the researcher will thank the participant. The participant will also be informed where to seek the findings of the study.

3.2 Data Analysis

Quantitative data gathered from the survey will be analyzed to assess the awareness of LEED Certification among students on Dalhousie University's Studley campus and how this population values LEED Certification compared to other sustainable initiatives on campus. The questions included in the questionnaire lead to categorical and ordinal levels of measurement. Our data analysis will involve descriptive statistics. There will be multiple frequency distributions produced from the data according to the different variables that were included. Measures of central tendency will also be performed. The results of these will be depicted graphically. The types of coding that will be used to show our findings will be decided during data analysis. The types of coding used will be what are most suitable for the data gathered.

3.3 Limitations and Delimitations

A limitation of this study is the possibility that the required sample size of 376 is not reached. This could occur for various reasons such as the closure of survey locations, closure of the university, weather during survey events, illness among researchers, and other unexpected events. Another limitation of the study is the possibility of participants giving inaccurate responses in their questionnaire. A delimitation of this study is that participants must be students enrolled in a class on Dalhousie University's Studley campus.

3.4 Ethics

Due to the nature of this study, which involves human subjects answering questions in a questionnaire, it must first be approved by ethics review. In such, an ethics application has been submitted (Appendix C).

4.0 Timeline

Table 2. Gantt Chart of Distribution of the Workload Throughout the Academic Term

	Week													
	3	4	5	6	7	8	9	10	11	12	13	14	15	
Task														
Topic Brainstorm	█	█	█											
Each summarize 3 articles				█										
Lab 3 Pilot testing questions							█							
Divide/Contribute to Proposal				█	█	█	█							
Proposal Due								█						
Making Survey						█	█							
Distributing Survey/Collecting Data								█	█					
Data Analysis									█	█	█			
Combine findings into final report										█	█			
Writing final report/creating Pecha Kucha										█	█	█		
Pecha Kucha Presentation													█	
Submitting final report														█
Peer evaluation														█

5.0 Budget

The only foreseeable cost requirement of our research project is printing our survey. A preliminary calculation of the amount of student surveys required to meet statistical significance of the Studley campus population yielded slightly less than 650. The cost of printing one 8.5x11 black and white sheet at Dalhousie's Print Centre is \$0.10. In such, to print the surveys will cost \$65.00. We will only be accessing DSUSO funding, if approved. All other costs will be covered by the members of the group through in-kind of their time, resources, and personal funds.

6.0 Deliverables and Communication Plan

The principal deliverables of this study will include a final report and a Pecha Kucha presentation. Additionally, the researchers of this study will provide a copy of the report to the Dalhousie Student Union Sustainability Office and the rights to pass the report on to other entities. The purpose of this study is to investigate how students value LEED Certification and LEED Certified buildings of Dalhousie University, particularly in comparison to other sustainable initiatives. Where possible, we will use our findings to make recommendations regarding this subject with the potential to inform future decisions concerning LEED Certification and the Sustainable Building Policy at Dalhousie University.

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