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Deciphering Students' Conceptualizations
of Campus Sustainability between years of
study on Dalhousie's Studley Campus
using the Photovoice Method



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Executive Summary

Education has been recognized as having a significant influence on environmental consciousness and individual behaviour. However, experts emphasize that traditional education is not enough to transform behaviour. Rather, instructors must engage and empower students to develop a vested interest in sustainability so they may become environmentally conscious citizens (Hungerford & York, 1990). The development of the College of Sustainability at Dalhousie University is an incredible example of an innovative and experiential alternative to traditional learning. By incorporating multidisciplinary and multifaceted approaches to environmental education, the College of Sustainability aims to produce leaders capable of instilling sustainable change. Using the Dalhousie Studley campus as a laboratory, our research team employed the photovoice research method to explore how students majoring in Environmental Sustainability and Society (ESS) conceptualize campus sustainability. Our ultimate goal was to decipher whether there was a difference in the conceptualization of the term ‘sustainability’ between students in different years of study.

Our research identified common themes represented by the photo submissions, revealing aspects of sustainability on campus that are important to ESS students. Common themes included community, food, transportation, nature connection and building efficiency. Themes were further coded into tangible and abstract aspects of sustainability. It was found that tangible themes were generally more frequent; interestingly though, the most frequent theme overall was community, an abstract concept. No correlation was identified between year of study and campus sustainability conceptualizations. Based on our findings, we suggest that further research should be conducted to determine themes in conceptualizations among students enrolled in higher education sustainability programs. Themes in conceptualization are vital in confronting the multifaceted, wicked sustainability problems facing our planet.

Introduction

The College of Sustainability at Dalhousie University was established in 2008 (Dalhousie University, 2013). The College features the interdisciplinary Environment, Sustainability and Society (ESS) program, which is the first of its kind in Canada (Dalhousie University, 2013). The aim of the ESS program is to engage students and faculty at Dal in sustainability education and initiatives on campus in a meaningful way (Dalhousie University, 2013). Students enrolled in the sustainability program may combine their ESS major with virtually any other faculty major, contributing to the multi-disciplinary approach of the program. This project's aim was to identify the trends of conceptualizations of campus sustainability across years of study in the College of Sustainability on the Dalhousie Studley Campus through the Photovoice method. Through the collection of demographic information such as year of study and secondary major, the presence or lack of correlation between these factors and how students perceive campus sustainability at Dalhousie could be analyzed through photo submissions and accompanying descriptions. This study provides a heightened understanding of the ideological framework of sustainability present at Dal as understood by its ESS students, which could be a valuable tool for the College.

Background Information

Conceptualizations of Campus

Sustainability: Past Initiatives

Achieving environmental sustainability is the ultimate wicked problem, in which there are many issues and many solutions (Palys & Atchison, 2008). The emerging field of sustainability in academia aims to address complex anthropogenic challenges with research and teaching approaches that are problem driven and solution oriented (Wiek et al, 2011). Sustainability in higher education enables students to analyze and solve large sustainability problems, such as poverty or desertification, that do not have one foreseeable solution, as well as anticipate and prepare for future challenges, and to create and seize opportunities for sustainability (Wiek et al, 2011).

International initiatives, such as the Talloires Declaration in 1990, have provided directions for universities to revise their approach to campus facilities management and curriculum to give emphasis to sustainability issues (Hegarty et al, 2011).

Traditionally, environmental education has been included as one of the major driving forces behind improving environmental sustainability through individual behaviour. However, according to Harold R. Hungerford and Trudi L. Volk, traditional educational models fail to produce a tangible change in student behaviour toward, and engagement in environmental issues. Rather, Hungerford and Volk assert that to be prompted to become responsible and active

citizens "...instruction must go beyond an "awareness" or "knowledge of issues". Students must be given the opportunity to develop the sense of "ownership" and "empowerment" so they are fully invested in an environmental sense" (1990). When developing a sustainability program, it is important to cater teaching styles and projects to the appropriate year level. A study at the University of Prince Edward Island in which students of all undergraduate years participated in a sustainability workshop showed that conceptual knowledge and the theory of sustainability were grasped less fully than learning how to write scientific reports which included data collection and analysis; particularly in 2nd and 3rd year students (Beringer, 2006). This study led to adjustments made with regards to implementing a sustainability program at UPEI, where the need for a stratified, year-level approach to teaching was identified, with lower year levels receiving additional lecture-style instruction and project supervision (Beringer, 2006).

Universities have been integrating sustainability into their curricula in a variety of forms. These include studying environmental and/or social issues in existing courses, developing courses with a primary focus on sustainable development, and offering sustainable development as a specialization in the institution (Lozano & Young, 2012), like the College of Sustainability at Dalhousie University. To assess the sustainable practices and conceptualizations on college campuses, a variety of tools have been employed including: the Association for the

Advancement of Sustainability in Higher Education's (AASHE) Sustainability Tracking, Assessment & Rating System (STARS), Environmental Sustainability Assessment Questionnaires (ESA), the New Ecological Paradigm (NEP) scale, as well as surveys and focus groups on faculty, administrators, and students (Emanuel & Adams, 2011; Lang, 2011; Lozano & Young, 2012). On the AASHE database, Dalhousie University ranks fairly low in comparison to other Canadian post-secondary institutions; however, development of the College of Sustainability set Dalhousie apart as a leader for change.

The Research Tool: Photovoice

The tool employed in this study is the photovoice method. This is a relatively new tool developed in the late 1990s by Carolin Wang which is meant to give a voice to marginalized groups on any given issue (Wang & Burris, 1997). The main goals of the photovoice method include: enabling people to record and reflect their community's strengths and concerns, promoting knowledge about important issues through discussion of photographs, and reaching policymakers (Wang & Burris, 1997). The photovoice method is a creative way in which conceptualizations of sustainability on campus can be qualitatively analysed. Furthermore, by heightening participant freedom in responses, the method allows researchers to identify nuances in the conceptualizations which may otherwise be overlooked (Hergenrather et al., 2006). As sustainability is a multidisciplinary issues, photovoice method is appropriate for this investigation.

This study is timely and relevant to the college as its programs have only been in effect in the last four years, and will indicate what major themes are pervading the discourse of ESS students in regards to campus sustainability. In this study, taking photographs involved choosing something meaningful to capture and discuss, and

allowing others to interpret. Since recruitment for participation occurred within the college, the photovoice experience allowed participants to expand and apply their current understanding of campus sustainability at Dalhousie, adding to the catalytic validity of the project.

Methods

Photovoice

Photovoice was the main method applied in this study. This was appropriate to our research purpose because sustainability issues are multidisciplinary, wicked problems. The photovoice method provides an opportunity for participants to contribute personal, creative responses with few restraints regarding content of submissions.

Recruitment

Recruitment strategies included displaying posters, making classroom announcements, sending emails to sustainability students through the blackboard learn server, posting a notice in the Dalhousie SustainabilityNews blog, creating a Facebook group and offering a potential incentive.

To begin, researchers printed and displayed posters advertising for participation (Appendix I). These were initially displayed on March 11th in the Mona Campbell Building on Studley campus, since this is where the College of Sustainability is housed. On March 18th, more posters were displayed in other buildings on the Studley Campus in an effort to acquire more participants. With the permission of the instructor(s), classroom announcements

were also conducted in the week of March 11th in the following classes: SUST1001, SUST2001, SUST3502, and SUST4000. Announcers read the participant information sheet to the class in order to ensure consistent promotion of the study (see Appendix III). Additionally, an email was sent on March 14th to the College of Sustainability (rethink@dal.ca) asking to have the study posted in the Dalhousie SustainabilityNews blog (see Appendix V). The project was initially posted on the blog on March 15th, and was reposted on March 19th (Figure 1). Lastly, participants were entered in a draw to win a \$50 VISA gift card as an incentive.

Sampling

Initially, non-probabilistic, convenience sampling was employed (Palys & Atchison, 2008). Students were responsible for contacting the research team over email if they were interested in participating; the research team's email was included on posters and in all online and verbal announcements.

Insufficient participation changed the sampling technique to become more

purposive (Palys & Atchison, 2008). Researchers directly approached students at the end of their class time in the following courses: SUST 1001, SUST 2001, SUST 3502, and SUST 4000.

Prospective participants were asked to contact the research team by email (photo.voice3502@gmail.com) to organize a time to meet face-to-face. Meetings allowed participants to read the participant information sheet and sign an informed consent form (Appendix III and II, respectively). Once participants signed, they were sent a follow-up email with a document containing a copy of the participant information sheet as well as a questionnaire (Appendix IV).



Figure 1. Photovoice study online posts in the SustainabilityNews blog.

Submissions

Participants were expected to take a minimum of three photographs of places or objects on campus which captured their answer(s) to the following question: What does campus sustainability mean to you? Accompanying the photographs was a questionnaire, which researchers restricted to three questions in order limit participants' time commitment (Appendix IV). The first question was categorical, asking what year of study the participant was in (Palys & Atchison, 2008). The second was a single-

response question to identify the student's other major paired with ESS (Palys & Atchison, 2008). The final question was an open-ended question in which the respondent was asked to describe each photograph in a minimum of three sentences (Palys & Atchison, 2008).

Originally, the research team planned to accept submissions until thematic saturation was reached (Bowen, 2008). Thematic saturation is the point at which no additional data is being accepted for a certain theme so the researcher can develop properties of that coded theme; more generally, the point in data collection and analysis when new information produces little or no change to the codebook (Guest et al., 2006). Thematic saturation proved to be unachievable with this study's temporal scope, and therefore a deadline was set and all submissions of any theme were accepted electronically until April 5th, 2013 (see Appendix IV for questionnaire).

Data Analysis

Wang (1997) states that photovoice projects typically progress in three stages: selecting photos, contextualizing the photos, and codifying the photos. Data analysis in this project was modelled with this approach.

Throughout data collection, a particular researcher separated photographs from the demographic information in the first two questions of the questionnaire (Appendix IV). The four remaining researchers were blind to said demographic information. These researchers coded the photographs along with their descriptions using a

grounded, a posteriori context sensitive scheme. Many photovoice research projects do not begin with pre-conceptualizations of the relevant ideas; research teams allow themes to emerge from the photographs they receive (Wang 1997). This minimizes bias (Wang, 1997). Photographs were categorized and resorted with every submission received. Photographs were often coded with up to three different themes if necessary according to the topics in to participants' descriptions. A word cloud was generated using key terms in the submitted descriptions; this helped researchers identify codes (Figure 4). Once the submission period closed, researchers overlaid the demographic information on the coded photograph data (Appendix VII). The researchers subjected the data to inferential statistical analysis in order to evaluate the significance of the trends between different years of study (Appendix VI).

In the traditional photovoice method, photos are analyzed alongside the respondent (Wang, 1999). Due to the time constraints of this project, however, this was not possible.

Reliability and Validity

This study's reliability was enforced by consistent recruitment techniques such as using the participant information sheet as a script for classroom announcements (Appendix III). The procedures are described sequentially in a replicable manner. The photovoice method is itself variable in terms of the types of data obtained; a study using the photovoice method for a similar purpose at a different

university is likely to obtain different codes and trends.

This study is internally valid because the respondents were asked to capture their conceptualizations of campus sustainability; this question does not suggest a preferred aspect of sustainability for responses to focus on. In addition, this study found what it meant to find; submitted photographs were easy to interpret and clearly portrayed the individuals; conceptualizations of sustainability. Pals and Atchison (2008) explain that studies that rely on opinions and conceptualizations can never be externally valid because the data cannot be exactly replicated. For this reason, this study is not externally valid; its results are only applicable to the studied group of students at Dalhousie.

Trustworthiness

This study is trustworthy because the steps of the procedure, data analysis, and interpretation were supported by relevant literature. The literature is relevant to the study because the peer-reviewed articles focus on the photovoice method and student sustainability conceptualization in higher education. In addition, studies from Atlantic Canada were used whenever possible in order to relate to the scope of this research. Furthermore, all data obtained from questions posed to participants was used in the analysis and interpretation of results. All questionnaire questions were related and

discussed in the results and discussion sections.

Limitations and Delimitations

The delimitations of the spatial scope of this study were that submissions were only accepted from students majoring (or intending to major) in the ESS program at Dalhousie University. Participants were sought only on Studley campus as this is where the College of Sustainability is housed. The temporal delimitation was restricted to the Winter 2013 academic semester at Dalhousie. Furthermore, the submission deadline limited participants to respond between March 11th and April 5th, 2013.

Limitations of our study in the data included the number of participants, and how genuine or honest the responses are; some students may not have invested time and effort to fully exploring and explaining their conceptualizations of campus sustainability, and researchers could not control this. Limitations of the study due to budget constraints included the amount of posters printed, and the value of the gift card incentive.

composed 46% of participants (Figure 1).

Results

The greatest proportion of submissions was received from students in their second year of study at Dalhousie University; this

Only one participant was in their first year of study, and this composed 9% of total participants (Figure 1).

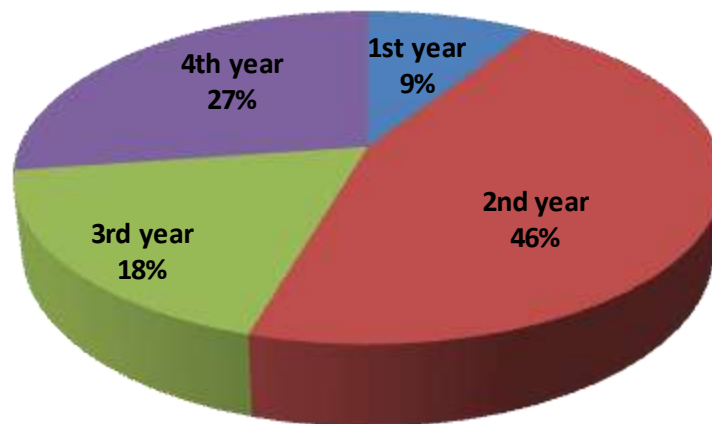


Figure 1. Proportion of participants in Photovoice study by year of study in the College of Sustainability at Dalhousie University (n = 11).

There were seven different majors paired with ESS among participants (Figure 2). International Development Studies (IDS) was the most common second major and comprised 28% of total participants (Figure

2). In contrast, the least common second major among participants was shared between Canadian Studies, Biology, History, and German; each comprised 9% of respondents (Figure 2).

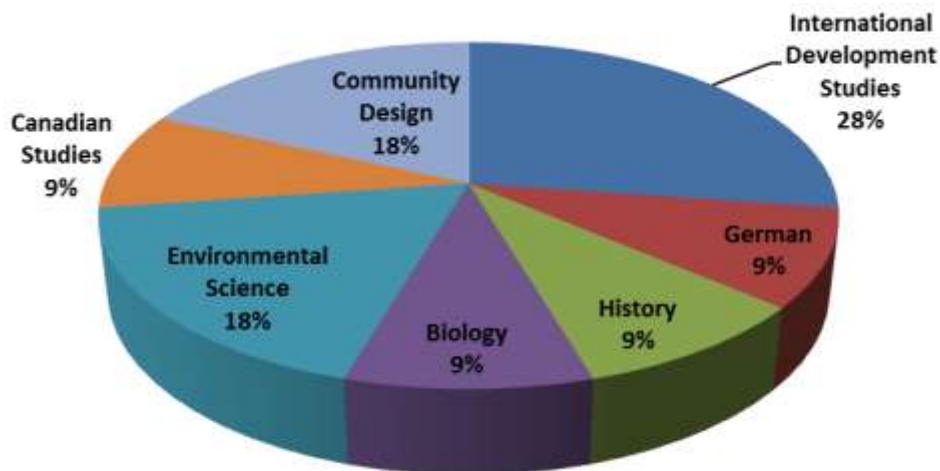


Figure 2. Proportion of majors combined with ESS among all participants in Photovoice study at Dalhousie University (n = 11).

Ten thematic codes were identified in the photographs according to their accompanying descriptions. The modes, overall and according to year, were found for these categorical data.

Generally, community was the most frequently coded theme among all years (the mode) with twelve photographs featuring some aspect of this theme (Figure 3). Least frequently mentioned was equity, with one photograph (Figure 3). As divided by year, the thematic modes (M) were as follows: first year, M = community (2 photographs); second year, M = food and activism (5 photographs each); third year, M =

community and nature connection (3 photographs each); fourth year, M = energy efficiency (4 photographs). A two-way ANOVA with 95% confidence indicated that a participant's year of study did not have a statistically significant effect on the themes of the photographs; $p\text{-value} > 0.05$ (Appendix VI). Additionally, a Tukey's post-hoc test found that the difference in distribution of themes was not statistically significant across the years of study (Appendix VI). This indicates that the data deviations in the distribution of themes across the years were likely caused by chance alone.

A word cloud was generated using Wordle.com (Figure 4) based on common adjectives and nouns found in the photo descriptions submitted with the participants' photos. Descriptors presented in larger font sizes were more commonly used, whereas those presented in smaller font sizes were least mentioned (Figure 4). The most common descriptors were sustainability, Dalhousie, campus, students, food, and environmental issues, and the least common were gender, rights, mutual, perspectives, feminist, actions, and understanding.

Discussion

This study's purpose was to discover if students in different years of the Environment, Sustainability and Society (ESS) program at Dalhousie University conceptualize campus sustainability differently. The results of this study suggest that these students do not conceptualize sustainability differently based on their year of study. According to Walshe (2008), there is a lack of research on conceptualizations of sustainability. Related studies have investigated staff and facilities management perceptions of campus sustainability, or ways to assess and change course content (Savelyeva & McKenna, 2010; Wright, 2010; Wright & Defields, 2012). A few studies evaluated student attitudes towards sustainability generally through quantitative methods such as NEP, but they did not evaluate students' conceptualizations of campus sustainability in particular (Lang, 2011). The research team was unable to find any studies that assessed students'

conceptualizations of sustainability within an environmental program, or those that compared this conceptualization between years of study. However, the findings of this study are not supported by the most similar studies that assessed attitudes and knowledge of environmental issues and behaviours. Most studies in this area found that knowledge of environmental issues increased and changed throughout years of study, and that fourth year students are usually more knowledgeable than second or third year students (Beringer, 2006; Lang, 2011).



Figure 5. Submission #11 coded for nature connection and education.

This study identified major themes across ESS students' conceptualization of sustainability at Dalhousie. All photos were sorted into ten themes, while five main themes (community, food, activism, nature connection, and energy efficiency) were identified as most frequent and significant in the 11 participants (Figure 3). Interestingly, participants had a diversity of second majors (Figure 2) and similar ideas of sustainability were discussed. The theme of community

included the need for inclusive spaces, such as the Student Union Building, The Grad House (a university pub), and the College of Sustainability to foster discussions about sustainability on campus, and the creation of comradery and friend groups that entice others to learn about sustainability issues. Food submissions mostly referenced the campus food co-op The Loaded Ladle, and included descriptions of local, healthy, affordable food that contrasts the corporatized food system. The code of activism included descriptions of student protests and rallies, bike demonstrations, and the actions of the Dalhousie Student Union Sustainability Office (DSUSO) and other student societies. Nature connection descriptions outlined the need for indoor and outdoor spaces on campus filled with local wildlife, and the limiting of impermeable surfaces. Finally, energy efficiency was discussed from negative (the Henry Hicks building) and positive (the Mona Campbell building) viewpoints.



Figure 6. Photo submission #1, coded for food.

As mentioned, little research has been done to categorize student perceptions of

sustainability on campus. However, general themes of sustainability conceptualization support the findings of this study. Shriberg (2002) lists the “maintenance of systems...interdependence...and – to a lesser degree – equity” (p. 13) as important conceptualizations. The maintenance of systems can be seen to encompass ideas of waste, water, and fossil fuels found in this study, while interdependence could include the concept of community. Interestingly, equity was also found as a striking, yet uncommon theme in this study. The themes found in this study mirror those identified by Emmanuel and Adams in their introduction to a similar study on campus sustainability. These themes were subdivided into four categories that included food and recycling, green building, transportation, student involvement, energy efficiency, and conservation (Emmanuel & Adams, 2011). These themes are very similar to the codes identified by this study.

These five themes can be considered a step towards the identification of sustainability values that are important to ESS students at Dalhousie University, and potentially students studying similar programs at other universities and colleges.

It is interesting to note that all years had a different mode for the codes their photos displayed, with the exception of first year and third year sharing the code of ‘community’. Despite the differences, these themes cannot be presented as statistically significant; they are most likely due to chance. They cannot be identified to represent evolution through the ESS program at Dalhousie, or differences in

conceptualization between years in this small sample size. It cannot be identified, through a scientifically valid method, that energy efficiency (the mode for fourth year photos) is conceptually different than food or activism (the modes for second year photos). Community was the only theme identified by all years, however, and can be seen as a value that is important to many students studying sustainability at Dalhousie.

“Our wellbeing is intimately tied to our ability to access nature and natural spaces in our daily lives.”-Participant #9

Many second year students mentioned creativity and hands-on learning in education. Two of the photographs from second year students that were coded as ‘education’ were taken in SUST 2001, an ESS class. It is likely that these students focused on this aspect of sustainability because they were influenced by the simulated United Nations conference that occurs in this class as an example of hands-on learning. The findings of Hungerford and Yolk (1990) support this observation. Traditional education, in which students gain knowledge through lecture format, has been seen as suitable in the education of the past, but Hungerford and Yolk argue that interactive learning is much more successful in the context of environmental education. They comment that environmental education needs to be empowering and encourage participation in working towards the resolution of environmental issues

(Hungerford & Yolk, 1990). These second year students were likely empowered and excited by the hands-on activity, and thus included these photos.



Figure 7. Photo submission #11, coded for community and activism.

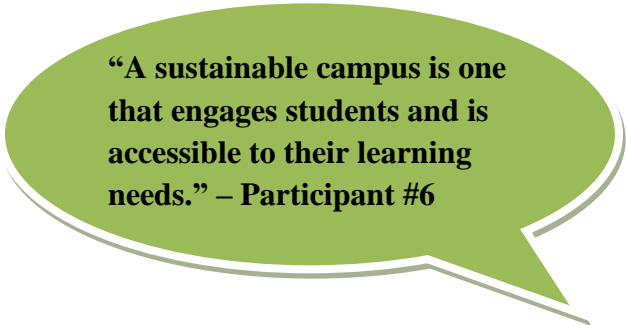
More participants emphasized tangible or concrete representations of campus sustainability than theoretical or abstract conceptualizations. Tangible conceptualizations of sustainability are seen by the researchers as the operations and materials of campus sustainability such as water, fossil fuels, electricity, plants, waste, etc. Abstract submissions represent ideas that build the theory of the sustainability movement on campus. These submissions involve people and the systemic problems that have been created as barriers to sustainability. This division is supported by other studies that discuss social sustainability. Tangible aspects of sustainability include food, water, and housing, while abstract concepts include education, equity, and justice (Vallance, Perkins, & Dixon, 2011). Tangible conceptualizations found in this study include transportation, connection to nature, energy efficiency, waste, and food. The themes of community, activism, and human

equity and gender were considered conceptual. If a photo description discussed a variety of ideas, such as an entry that described the Mona Campbell as a community meeting place and an energy efficient building, the photo was coded as both tangible and conceptual. A tangible submission could be connected to a more conceptual issue, such as a food entry that discussed problems with the corporate food system. It was determined, through informal observation and discussion among the researchers that 18 photos discussed tangible themes and 14 photos discussed conceptual themes, while 6 photos discussed both tangible and conceptual themes (Appendix VII). These differences cannot be considered statistically significant, however.

Possible Sources of Error

With only 11 participants and a total of 38 photos, 45% of the participants from second year, and only one first year participant, this study's sample cannot be seen to represent the population of ESS students at Dalhousie University. As discussed in the methods section, multiple tools were used for recruitment, including class emails, class announcements, posters, and a Facebook group. However, after recruitment strategies were unsuccessful, sampling became purposive. The final participants are mostly comprised of individuals that the researchers know directly. This has the potential to cause several problems. The participants may have heard about the study from others who know the researchers, or from the researchers directly. The research question was not revealed to participants so as to prevent bias. Participants were not told that

different years of study in the ESS program were to be compared, only that students within the ESS program were being asked about their conceptualizations of sustainability. If participants heard about the full research question, this could have influenced the results.



“A sustainable campus is one that engages students and is accessible to their learning needs.” – Participant #6

The researchers hypothesize that participants were difficult to find because students feel they have enough work to do already. The research team received several emails of interest from participants who, when presented with the involvement of full participation, did not respond further. A few emails of apology were received afterwards, stating that the individuals felt they were too busy to invest their time in the study. In addition, the photovoice method is more successful in marginalized communities that are not encouraged or able to voice their opinions. Usually, these opinions concern human rights violations and very personal issues, such as health, that promote their participation (Wang & Burris, 1997). Despite the fact that some students wanted their voices heard, this desire did not overpower other activities of importance, such as homework. Photovoice studies are also longitudinal, and usually involve more interaction between the participants and researchers than was possible for the scope of this study. Interaction often occurs in the

form of focus groups that are conducted over several months (Wang & Burris, 1997; Hergenrather et al. 2006). The research team did not believe that students would be willing to dedicate the time necessary to a study structured this way, nor was the amount of time allotted for the study appropriate for this style of research. Additionally, focus groups require even fewer participants than this study had. Photovoice focus groups usually have less than ten participants, and a smaller number of participants would have only further delegitimized results in this study (Wang, 1999). Participants are often given guaranteed financial reimbursement for their time, such as \$10 per session, where reimbursement was only potential in this study (Hergenrather, Rhodes & Clark, 2006).

It should also be noted that some of the codes, for the sake of consistency and grouping, simplified the descriptions of some photos. Thus, these codes could be considered an incorrect interpretation of the commentary of participants, or nuances may have been missed. For example, the term 'equity' was used as a code for one photo. This photo was of the Women's Centre on Dalhousie campus, and the description highlighted the concept of equity is necessary in the pursuit of sustainability on campus and the importance of gender in relation to environmental and political-economic change. Another example of the misrepresentation of nuance is illustrated by the first year photo coded as 'waste'. The photo was of a napkin that has the phrase "Save the environment, one napkin at a

time" printed on its surface (Figure 8). This slogan illustrates that the napkin is made with recycled paper. However, the participant discussed that we should not only advertise for the sustainability of products but also promote sustainable usage of these products. The code of 'waste' clearly does not encapsulate all of these themes, but was considered most suitable.



Figure 8. Submission #10, coded for waste.

Entire codes could be interpreted to miss nuance. The code of 'food' had nuances that were not recognized by the coding system. A fourth year student, in their description of The Loaded Ladle, referenced the rejection of the corporate food system, whereas a second year student took a photo of The Loaded Ladle and discussed the importance of food accessibility and local food. These two conceptualizations are different, however they were both included in the 'food' code. Such differences were represented by the categories of 'tangible' and 'conceptual', as described above. It is important to note that the code of 'food' is dominated by second year students because one second year student submitted three photos of the same object that represented 'food security' to that student.

Conclusion

Due to the inconclusive nature of the results generated by the photovoice project, in conjunction with a small, under-representative sample size, and the possibility of subjective bias imposed upon results, the contributions of the Photovoice project to sustainability at Dalhousie are limited. The Photovoice project offered some insights into the College of Sustainability. Though our results did not prove any differentiation in conceptualizations of sustainability between ESS students in different years of study, analysis of submitted photos revealed a few dominant conceptualizations of sustainability among ESS students. By identifying these conceptualizations we can infer some of the sustainability issues that are important to ESS students on campus. While it is important to recognize what students know, it is also important to identify what they do not know, and to try to expand their knowledge.

Recommendations for Action


Though community, food, activism, nature connection, and energy efficiency were the themes most identified by researchers, and though these issues are inarguably essential to the Greening the Campus movement, we suggest that the College of Sustainability explore other issues in their programming. Although our results failed to identify differentiation between years, they did illustrate commonalities in the conceptualizations of all participants, and it is clear that ESS students, whether in first

year or fourth, have a firm grasp on the aforementioned five themes. We suggest that the College—as the first program of its kind in Canada—continue their movement towards innovative learning, and consider the teaching of more abstract conceptualizations, thus, extending beyond conventional ideals of what it means to “be sustainable”.

Recommendations for Future Research

Despite the lack of suggestive results, the results offered interesting insight into overall conceptualizations of sustainability in mainstream society. In a society based on growth and development, people often push sustainability to the wayside due to the inconvenience perceived to be associated with employing environmentally sustainable behaviors. According to the World Wildlife Foundation’s 2012 Living Planet Report, Canada has the world’s eighth largest ecological footprint (CBC News, 2012), and according to Dr. Tarah Wright, highly educated people tend to live less sustainable lifestyles due to their increased income which typically results in increased consumption patterns (personal communication, Tarah Wright, 8 January 2013).

Canadian culture is dominated by the comfort of convenience and our Photovoice results reflect this inconvenient truth. Due to the hectic schedule experienced by our target participant sample, the time required to participate in our project was not considered feasible in light of the plethora of other commitments.



“Communities where all members are involved and supportive of one another, and their community, will enable them to move forward as a whole with less issues.”- Participant 10

However, had potential participants been offered a guaranteed reward for the time required to document their conceptualizations of campus sustainability, our project likely would have generated much more interest (Entwistle, 2008). This provides insight into overall global attitudes toward sustainability and society at large. We recommend that the College of Sustainability and other research bodies explore this hypothesis further.

Employing the Photovoice method to decipher student conceptualizations of sustainability offers a unique perspective into campus sustainability efforts and personal interpretations of the definition of sustainability. Had we the time required to

conduct focus groups as is suggested by the creators of the Photovoice method (C. Wang & M.A. Burris 1997), and if we had attracted a larger, more representative sample, the results produced would likely have been more conclusive. We recommend further research to be conducted in this area, specifically by the College of Sustainability to determine improvements to the program and to ensure that in a perpetually changing world, sustainability efforts are evolving to keep up. Furthermore, throughout our literature review, minimal resources were found to explore student’s conceptualizations of sustainability as most studies focused on tangible sustainability concepts as opposed to focusing on individual perceptions and more abstract themes. Therefore, we encourage more research to be conducted regarding conceptual notions of sustainability and the personal meaningfulness of such notions.

We believe that by gaining insight into personal conceptualizations, the manifestations of sustainable behaviour will be better understood, providing a multifaceted insight into the meaning of sustainability not only on campus but in society at large.

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**ENVIRONMENTAL SCIENCE PROGRAM
FACULTY OF SCIENCE
DALHOUSIE UNIVERSITY
(version 2010)**

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

GENERAL INFORMATION

1. Title of Project: SUST 3502 Photovoice Research Project

2. Faculty Supervisor(s):

| Name | Department | Email | Phone |
|----------------|-----------------------|-----------------------|--------------|
| Tarah Wright | Environmental Science | tarah.wright@dal.ca | 902-494-3683 |
| Paul Sylvestre | | paulosylvestre@dal.ca | |

3. Student Investigator(s):

| Name | Department | E-mail | Phone |
|-------------------|------------------------|---------------------|--------------|
| Emma Buchanan | Arts & Social Sciences | em478965@dal.ca | 902-880-6441 |
| Shauna Doll | Arts & Social Sciences | sh955789@dal.ca | 902-817-7023 |
| Madeline Jehnself | Science | madsself@gmail.com | 902-448-2120 |
| Jordan MacHattie | Computer Science | jwmhattie@gmail.com | |
| Siobhan Moore | Science | s.moore@dal.ca | 902-219-2345 |

4. Level of Project: Non-thesis Course Project [] Undergraduate [] Graduate []

Specify course and number: 3502 ENVS/SUST Campus as a Living Lab

5. a. Indicate the anticipated commencement date for this project: March 11, 2013

b. Indicate the anticipated completion date for this project: April 13, 2013

SUMMARY OF PROPOSED RESEARCH

1. Purpose and Rationale for Proposed Research:

Research Question: How do students across different years of study in the College of Sustainability conceptualize campus sustainability at Dalhousie University?

The aim of this project is to highlight thematic trends in conceptualization of campus sustainability as students advance through the Environment, Sustainability and Society (ESS) undergraduate degree program at Dalhousie. The rationale for our study comes from the literature. There are various past studies which have shown that students enrolled in environmentally focussed classes have a different understanding of sustainability after the course than they had before taking it. These studies, however,

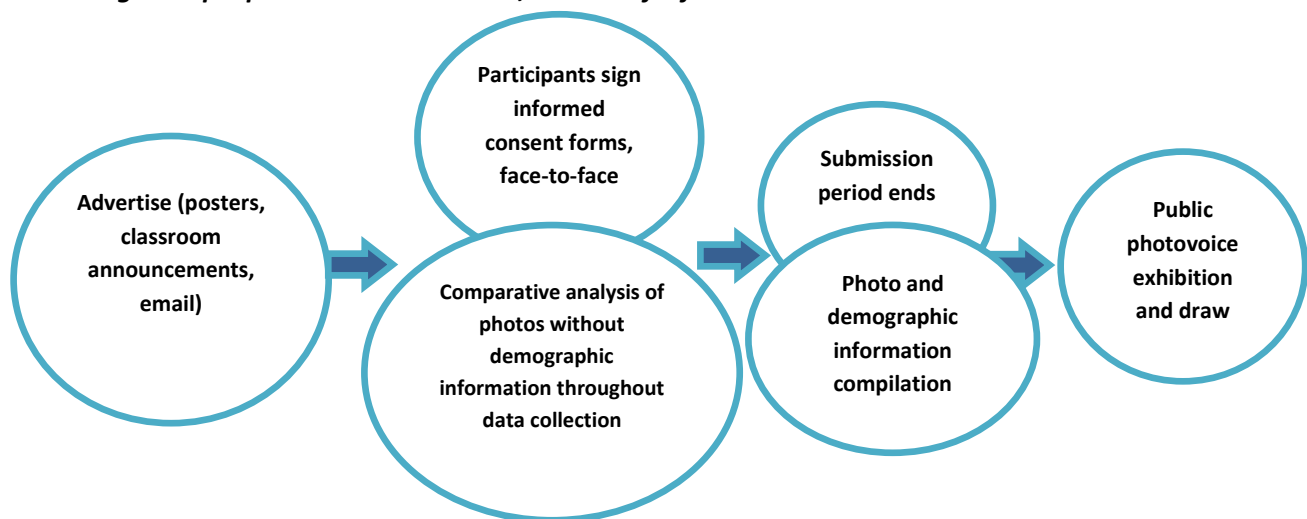
tend to quantitatively measure these changes in conceptualization using various methods such as the New Ecological Paradigm (NEP) test. This proposed research will add a qualitative aspect to the literature by inductively evaluating photographs taken by students which capture their understanding of campus sustainability. In addition, this study will provide insight into the changes or consistencies in conceptualization across different years of study in sustainability.

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: Photovoice (photo collection, electronically, from student participants)

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.



To begin, researchers will print and display posters advertising for participation (Appendix i). These will be displayed in the Mona Campbell Building on Studley campus, since this is where the College of Sustainability is housed. With the permission of the instructor(s), classroom announcements will also be conducted in the following classes: SUST1001, SUST2001, SUST3502, and SUST4000. Lastly, an email will be sent to the College of Sustainability promoting the study (Appendix v). Prospective participants will be asked to contact the research team by email (photo.voice3502@gmail.com) to set up a time to meet face-to-face. Meetings will allow participants to read the participant information sheet and sign an informed consent form (Appendix iii and ii, respectively). Once the participants have signed, they will

receive a follow-up email with a document containing a copy of the participant information sheet as well as a questionnaire (Appendix iv). Participants will then be expected to take a minimum of three photographs of places or things on campus which capture their answer(s) to the following question: What does campus sustainability mean to you? Submission of photographs and the questionnaire will be accepted electronically up until March 26th, 2013, or until theoretical saturation is reached (see Appendix iv for questionnaire). Throughout data collection, researchers will separate photographs from demographic information and will inductively code as a team. Once the submission period ends, researchers will overlay the demographic information onto the coded photograph data. Researchers will then arrange the final images and coded themes in an aesthetically pleasing manner. The final product will be presented at the public exhibition at the College of Sustainability. Participants and public will be welcome to attend, and there will be a draw for a VISA gift card valued at \$50.

3. Participants Involved in the Study: *Indicate who will be recruited as potential participants in this study.*

Dalhousie Participants:

- Undergraduate students
- Graduate students
- Faculty and/or staff

Non-Dal Participants:

- Adolescents
- Adults
- Seniors
- Vulnerable population* (e.g. Nursing Homes, Correctional Facilities)

** Applicant will be required to submit ethics application to appropriate Dalhousie Research Ethics Board*

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.*

Potential participants include any student in the College of Sustainability. Participants will be considered a part of the college if ESS is one of their declared or intended majors of their current undergraduate degree. No other special characteristics will apply.

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

There will be no imposed limit on the number of participants. However, in the literature, previous photovoice researchers have desired a minimum of seven participants. Therefore, a minimum of seven participants are expected.

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 (posters on bulletin boards around campus, Faculty e-mail lists)
- Local School Boards*
- Halifax Community
- Agencies

Businesses, Industries, Professions

Health care settings*

Other (advertising on Dalhousie Society Facebook pages, and Tiger Society website)

* Applicant may also require ethics approval from relevant authority, e.g. school board, hospital administration, etc.

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

All researchers will be responsible for the recruitment of participants. Researchers will print and display posters advertising for participation (Appendix i). These will be displayed in the Mona Campbell Building on Studley campus, since this is where the College of Sustainability is housed. With the permission of the instructor(s), classroom announcements will also be conducted in the following classes: SUST1001, SUST2001, SUST3502, and SUST4000.

5. Compensation of Participants: Will participants receive compensation (financial or otherwise) for participation?

Yes No If Yes, provide details:

An incentive will be provided and the recipient of the incentive will be determined in a name draw at the final photovoice exhibition at the College of Sustainability. The incentive will be a VISA gift card worth \$50.

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.

At the end of the study the research team will compile and present the research results in an exhibition which will be accessible to the public. Prior to the exhibition, participants will receive invitations to the exhibition and final presentation so they are able to view the final product that they helped to create.

POTENTIAL BENEFITS FROM THE STUDY

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

There are a few direct benefits to the participants from their involvement with this study. These include:

- The opportunity to have their voice heard and express their ideas and values regarding campus sustainability
- The chance to contribute to the conversation about the sustainability challenges and strengths on campus—their ideas could potentially be very helpful in making recommendations to the university about how to make campus more sustainable
- The chance to win a \$50.00 VISA gift card
- The opportunity to have their photographs shown in the public exhibit

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

The results of this study will help to determine student conceptualization of sustainability on campus at Dalhousie University. By analysing student perceptions and understandings of sustainability we can determine what is important to students and how sustainability initiatives on campus may improve. Additionally, by analyzing student conceptualizations by year of study, we may be able to assess how sustainability education influences sustainability conceptualization. This will contribute to the current discussion in academia regarding the importance and relevance of sustainability education.

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 and burdens.

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

Minimal risk * Description of risks: There are no real risks anticipated with the participation in the photovoice research project. There is no more risk involved than that associated with everyday life.

Greater than minimal risk** Description of risks:

** This is the level of risk associated with everyday life. ** This level of risk will require ethics review by appropriate Dalhousie Research Ethics Board*

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.

At the time of indicated interest in the project the participants will receive a consent form and an information sheet outlining all the expectations for participation in the study. The information sheet will include information about where participants can rent a camera on campus if needed as well as contact information of the principal investigators in case of any questions or concerns.

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) _____

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

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.

Confidentiality in the photovoice study will be assured. Participants will have the option to check a box on the informed consent form indicating that they are comfortable providing their name to the researchers. If this is the case, these participants will be eligible to win the \$50 gift card at the final

exhibition, since names will be required for submission into the draw.

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

All electronic data will be compiled and stored on a password protected computer. Written materials will be kept under lock in the College of Sustainability.

4. Indicate how long the data will be securely stored as well as the storage location over the duration of the study. Also indicate the method to be used for final disposition of the data.

- Paper Records
- Confidential shredding after _____
- Data will be retained until completion of specific course.
- Audio/Video Recordings
- Erasing of audio/video tapes after _____
- Data will be retained until completion of specific course.
- Electronic
- Erasing of electronic data after _____
- Data will be retained until completion of specific course.
- Other _____

(Provide details on type, retention period and final disposition, if applicable)

Specify storage location: All electronic data will be compiled and stored on a password protected computer. Written materials will be kept under lock in the College of Sustainability.

Appendices: 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.
- 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.

Signature of Student Investigator(s) Date

Madeleine Johnson 04/03/13

Signature of Student Investigator(s) Date

Emma Bell 04/03/13

Signature of Student Investigator(s) Date

Robert Sturges 04/03/13

Signature of Student Investigator(s) Date

Signature of Student Investigator(s) Date _____

Signature of Student Investigator(s) Date

FOR ENVIRONMENTAL SCIENCE PROGRAM USE ONLY: Ethics proposal been checked for eligibility according to the Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans

Date

Signature

Date

Signature

We are looking for students in the
College of Sustainability to
participate in a
research study regarding the
conceptualization of sustainability on
campus

**What does campus
Sustainability mean to you?**



Capture **your**
answer as a
photo and you
could
win a **\$50**
VISA gift card!

Interested? Contact us for details at:

photo.voice3502@gmail.com



Appendix II – Informed Consent Form

Consent for Participation in Sustainability Conceptualization Photovoice Research (Modeled after the sample informed consent form from the National Center for Postsecondary Improvement at the Stanford Institute for Higher Education Research)

I volunteer to participate in a research project conducted by the photovoice project research team of students from the SUST3502 class at Dalhousie University. I understand that the project is designed to gather information about sustainability conceptualizations on campus. My submission will be one of many voluntary responses from the College of Sustainability.

1. My participation in this project is voluntary. I understand that I will not be paid for my participation. I may withdraw and discontinue participation at any time without penalty. If I decline to participate or withdraw from the study, no one will be told.
2. Participation involves submitting a minimum of three photographs and a completed questionnaire to the email photo.voice3502@gmail.com.
3. I understand that no identifying information which I provide to the research team will be revealed in any reports. My confidentiality as a participant in this study will remain secure and my identity will only be revealed, with my permission, if my name is drawn at the final photography exhibition.
4. I understand that any identity data provided will be protected either with a password on a computer or under lock at the College of Sustainability. This data will be destroyed at the end of the winter 2013 academic semester.
5. I understand that this research study has been reviewed and approved by the Department of Environmental Sciences at Dalhousie University using the TriCouncil Policy Statement regarding research ethics. If I have questions regarding research methods or ethics I may contact the instructor of ENV5/SUST 3502, Dr. Tarah Wright (tarah.wright@dal.ca, 902-494-3683).
6. I have read and understand the explanation provided to me. I have had all my questions answered to my satisfaction, and I voluntarily agree to participate in this study.
7. I have been given a copy of this consent form.

I agree to submit my name into the draw to win a \$50 VISA gift card.

| | | |
|-----------------|----------------------|----------------------|
| _____ | _____ | _____ |
| My Printed Name | Witness Printed Name | Date |
| _____ | _____ | _____ |
| My Signature | Witness Signature | Researcher Signature |

Appendix III – Participation Information Sheet

Participation Information Sheet:

Sustainability Conceptualization Photovoice Research 2013

Research Team Email: photo.voice3502@gmail.com

Description:

We invite you to take part in a research study regarding the conceptualization of campus sustainability at Dalhousie University. This study is being conducted by a student research team from the ENVS/SUST3502 class using the photovoice research method. Participating in the photovoice study may not benefit you directly, however, your participation will provide insight into how to improve campus sustainability practices and improve student understanding of sustainability. In addition, data from this study will be submitted to the College of Sustainability and will aid in the enhancement of sustainability education and initiatives at Dalhousie University. There are no real risks involved with participating in this study and the time commitment is minimal. There is no guaranteed compensation for participating in this study. If you wish, however, your name may be entered into a draw to win a \$50.00 VISA gift card.

Participation involves:

In your own time, take a minimum of three photographs of three objects or places on any Dalhousie campus which you believe answers the question: ‘What does campus sustainability mean to you?’. Additionally, you are expected to complete a brief questionnaire which will be provided over email. This must be submitted electronically to the research team email which is: photo.voice3502@gmail.com. On March 29th at 6:00pm, there will be a public Photovoice Exhibition held at the College of Sustainability (1459 LeMarchant Street, Halifax, NS). Submitted photographs will be displayed and the findings of the study, trends of conceptualization, will be presented. Participants are encouraged to attend the exhibition, as it lends to the community involvement and discussion of sustainability. The draw for the \$50.00 VISA gift card will be also take place at the Photovoice Exhibition.

Note: If you require access to a camera, you may contact AV services at 494-6471 to reserve a camera.

Appendix IV - Questionnaire

Please complete the following questionnaire:

1. Circle your year of study:

a. 1 b. 2 c. 3 d. 4+

2. What is your intended or declared major combined with Sustainability?

Please complete question 3 for each of the photographs you intend to submit:

3. How do you believe your photograph captures campus sustainability?

Appendix V – Recruitment Email

From: photo.voice3502@gmail.com

To: College of Sustainability <sustain@dal.ca>

Subject: ESS Participants needed – photovoice sustainability study

Dear Dr. Mannell,

We are a group of five students in the SUST3502 class who are conducting a study regarding the conceptualizations of campus sustainability at Dalhousie. We would greatly appreciate if you could forward the following research study information to anyone you think may be interested in participating.

Thank you for your time,

Madeline Jehnself

Photovoice Study Researcher

Research Study Information:

What does campus Sustainability mean to you?

A research team of five students from ENV5/SUST3502 are conducting a study regarding the conceptualizations of campus sustainability at Dalhousie. The aim of this project is to highlight thematic trends in conceptualization of campus sustainability as students advance through the Environment, Sustainability and Society (ESS) undergraduate degree program at the College of Sustainability. The team is using the photovoice method, whereby participants submit photographs which answer the question posed and these photographs are the main data for analysis.

The researchers are currently looking to recruit participants who are currently enrolled in the ESS program. If you are interested in participating, please email the research team for more details.

Participation involves:

Taking a minimum of three photographs of three objects or places on any Dalhousie campus which answer the question: ‘What does campus sustainability mean to you?’. Additionally, participants are expected to complete a brief questionnaire will be provided to them over email. Submissions will be accepted up to, and including, **March 26th** electronically to the research team’s email which is: **photo.voice3502@gmail.com**.

Participants will be entered into a draw to win a \$50 VISA gift card!

Appendix VI- Inferential Statistics

One-way ANOVA: Code versus Year

| Source | DF | SS | MS | F | P |
|--------|----|--------|-------|------|-------|
| Year | 3 | 32.33 | 10.78 | 1.32 | 0.279 |
| Error | 51 | 417.60 | 8.19 | | |
| Total | 54 | 449.93 | | | |

S = 2.861 R-Sq = 7.19% R-Sq(adj) = 1.73%

Grouping Information Using Tukey Method

| Year | N | Mean | Grouping |
|------|----|-------|----------|
| 4 | 18 | 4.556 | A |
| 2 | 22 | 3.909 | A |
| 3 | 12 | 2.667 | A |
| 1 | 3 | 2.333 | A |

Means that do not share a letter are significantly different.

Appendix VII – Colour coded photos per year of study

(Blue-first year, Red-second year, Green-third year, Purple-fourth year)

Community



Transportation



Activism



Nature Connection



Education



Financial



Energy Efficiency



Waste



Equity



Food

