Following the Paper Trail:

An Analysis of the use of Paper and Online Platforms in Classrooms on Dalhousie University's Studley Campus

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Executive Summary

Dalhousie University aims to be a leader in sustainability amongst Canadian universities (Office of Sustainability, 2013). One way that the university is addressing sustainability issues on campus is by decreasing paper use in classrooms. Limited research has been conducted to understand the comparative environmental effects of using paper or electronic resources in classrooms. Likewise, limited research has been conducted regarding instructor and student motivations for choosing electronic resources over paper, or vice versa. Our research project addressed this knowledge gap by conducting surveys and interviews within undergraduate faculties on Dalhousie University's Studley campus. The surveys and interviews attempted to answer the questions, what are professor and instructor motivations for using paper or online platforms such as Blackboard Learn (BBL) in their classes, and what are student preferences regarding the use of paper or BBL in their classes?

We used purposive, non-probabilistic snowball sampling to select undergraduate faculty members and students from the Faculties of Arts and Social Science, Science, Management and Computer Science on Studley campus. We used semi-structured interviews to understand faculty motivations and an online questionnaire to understand student preferences. 12 interviews were conducted with teaching faculty. We found that interviewees who preferred online platforms cited reasons such as reduced paper waste, ease of use of online platforms, and ease of file organization. Interviewees who preferred paper cited reasons such as ease of reading and marking, versatility, and the possibility that students do not always have access to computers for class.

We received 154 completed student questionnaires. The Faculties of Arts and Social Science, Science, and Computer Science each made up roughly 30% of respondents. The Faculty of Management or other, undefined faculties made up the remainder of responses. The questionnaire consisted of 15 questions with a focus on student preferences regarding the use of paper or online platforms, as well as the general level of concern for environmental sustainability. We identified common class materials and activities, and asked respondents to state whether they preferred paper or online methods for each. In general, students prefer paper for quizzes, tests, and exams; they prefer online platforms such as BBL more frequently for syllabi, class handouts, readings, and assignments.

Our research is context specific; it cannot be generalized to other campuses or universities because it is grounded in the specific experiences of our interviewees and questionnaire respondents. However, it is our hope that this project will be a catalyst for further research in this area in order to foster environmental sustainability at Dalhousie University. Furthermore, we hope that this project helped participants to consider the impact of paper use on campus and the motivations behind choosing to use paper materials within the university context.

1. Introduction

1.1 Research Question and Project Definition

Dalhousie University is considered a national leader in sustainability among Canadian universities through its commitments to sustainable initiatives in its operations and class curriculums for the past 30 years (Dalhousie University Office of Sustainability, 2013). The University has adopted a Paper Policy aimed at reducing its "environmental and economic footprint through paper sourcing, reduction, reusing, and recycling efforts" (Dalhousie University Office of Sustainability, 2015). With the implementation of this policy, Dalhousie University has devoted itself to addressing paper waste campus-wide by limiting paper use, reducing the number of single-use printing devices, and moving towards 100% use of post-consumer paper (Dalhousie University Office of Sustainability, 2015).

One facet of the Paper Policy addresses the distribution of printed class materials in Dalhousie University's classrooms. Since 1996 Dalhousie University has incorporated web-based educational resources in its classrooms, from the WebCT and HorizonLive systems through to the current Blackboard Learn (BBL) platform[1] (Blackboard, 2012; PRNewswire, 2003). These online platforms allow class materials such as syllabi, handouts, assignments, and other resources to be posted by professors or instructors (hereafter referred to as "faculty"), and enable students to access them anywhere and anytime an Internet connection is available. Our research aimed to uncover faculty motivations behind printing and distributing course materials if the materials were also available online. It also aimed to understand student preferences regarding the use of paper or online materials. Further, we sought to determine whether printed class materials are being utilized efficiently to support post-secondary academics.

The main focus of this research addressed the following questions: Within Dalhousie University's undergraduate faculties on the Studley campus,

a.) what are faculty motivations for using paper instead of the online BBL platform to communicate information to students (via syllabi, handouts, etc.), and
b.) what are students' preferences regarding the use of paper or the online BBL platform to receive information and to submit coursework for assessment?

Our team addressed these questions by conducting interviews with faculty, distributing questionnaires to students, and collecting information about motivations and preferences regarding the use of paper or online resources from both groups. In addition, a literature review was conducted to explore and

[1] The Faculty of Computer Science at Dalhousie University also supports the Moodle online learning platform.

compare the environmental impacts of paper use with the use of electronic resources in a university environment. The information we collect will be made available to Dalhousie University's Office of Sustainability to inform future discussions regarding environmental policy and decision-making on campus.

1.2 Background and Rationale

There are significant environmental impacts associated with the extensive use of paper-based resources in modern societies. Primary impacts include deforestation and associated habitat loss (Abramovitz & Mattoon, 1999), as well as air pollution from harvesting, transporting, and processing timber into pulp and paper products (USEPA, 1997). Forest degradation also has impacts that spread beyond local ecosystems. While not completely understood, the complex physical, chemical, and biological processes that take place within forests can impact climate change (Bonan, 2008).

Reducing paper use has been shown to support forest and ecosystem conservation efforts through the reduction of wood harvesting and the preservation of both hardwood and softwood forests as important habitats for our biodiversity and as natural carbon sinks (WWF, 2015). In the United States alone, more than 245,000 metric tons of toxic air pollution is emitted each year from pulp and paper mills (USEPA, 1997). These air pollutants include large amounts of volatile organic compounds, which form ground-level ozone in the presence of solar radiation and can cause a variety of cardiovascular health problems (USEPA, 1997).

Paper consumption is declining in many industrialized countries, including Canada, primarily due to advancements in digital technology (Hetemaki, Hanninen & Moiseyev, 2011). The use of electronics, including computers, has been heralded as a way to minimize paper consumption and its associated environmental impacts (Carli, 2010). However, the production and use of these electronics also has environmental impacts. Electricity use is continually increasing as more technology is introduced into our societies (Ellis & Jollands, 2009). Current and future methods of producing electricity will influence this trend and its magnitude. For example, when fossil fuels are used to generate electricity, they release greenhouse gases and contribute to climate change. In 2014, 61% of electricity in Nova Scotia was generated using coal and another 14% was generated using other fossil fuels, namely oil and natural gas (NSP, 2015).

In addition to being powered by electricity, computers have high levels of embodied energy from their production and manufacturing; there is limited literature on the life cycle and environmental impact of microchips and other electronics (Williams, Ayres & Heller, nd). Researchers at the University of Guelph stated that the environmental impacts from the production and disposal of computers are often not considered when addressing environmental sustainability on campus (Adamson et al, 2005). Further, the necessary supportive infrastructure, including the Internet and various information databases, is energy intensive to establish and maintain (Ellis & Jollands, 2009).

The following research is not based on the assumption that reducing paper use and/or increasing the use of digital resources on campus will contribute to a more environmentally sustainable university. Rather, it explores faculty and student preferences regarding the use of paper and digital resources. The aim is to better understand why choices are made to use certain resources over others. Moving forward, this study may inform environment-based policies at Dalhousie University, including the Dalhousie Paper Policy.

1.3 Literature Review

The purpose of our research was to explore the preferences and motivations for faculty and students to use paper, online, or a mixture of media for delivering coursework, when all options are available at Dalhousie University. Although many universities currently have online submission tools such as BBL, few studies have been conducted as to why faculty and students choose to use paper, electronics, or both when given the choice. Nevertheless, studies that have been accomplished helped to inform our research.

An article written by Jones, Cranston, Behrens, and Jameson (2005) demonstrated the ongoing improvements of online systems for coursework. Their research consisted of feedback from staff and students about online course materials, providing insight into the issues and benefits of online programs. This study was done ten years ago, when online submission tools were relatively new. We assumed that since BBL is moderately new (it was initially released in 1997 and has undergone extensive upgrades in functionality and user friendliness since), it could be a contributor to the preferences and motivations that we sought to uncover in our research, and could help us to better understand why individuals may favour or disfavour using BBL.

Similar to our research project, Huber and Mowbray (2011) conducted a study at Macquarie University in Australia to compare online submission tools to paper use. Their research focused on how to make online submission tools more efficient and concentrated primarily on student preferences. Appleyard and Bridge (2008) also focused on student perceptions of paper use and online programs for coursework. Central themes of this study included time costs, financial costs, and reliability. Both studies concluded that the majority of students preferred to use online submission tools and found them faster than submitting paper hardcopies.

These two studies provided a helpful overview of student opinions that have been collected on the subject of paper use and online programs. They also provided some insight into the changing rate of use of paper and online programs. There was positive feedback from students on the simplicity and efficiency of submitting assignments via BBL, yet there was still hesitancy to BBL due to the concern that coursework may not properly transferred online (Appleyard & Bridge, 2008). This demonstrates that there are benefits and faults to the use of both paper and online methods for coursework, and that there is not yet a clear

preference for one overall. Our research expanded on the methodology of these two studies by including faculty considerations. We believed that it was essential to include the preferences of Dalhousie faculty members, since they are in a position of authority and set the rules and requirements for individual courses.

Studies that described and analyzed environmentally friendly behaviors gave us prior insight as to why faculty and students may each have their individual preferences and motivations for using paper or online submission tools for coursework.

Sparks (2014) explains that an individual's connectivity with nature, or lack thereof, can contribute to said individual's behaviors in everyday life. Those who have a stronger connection with nature often carry out positive environmental behaviors such as reducing consumption and being conscious of environmental impacts (Sparks, 2014). Gottlieb, Vigoda-Gadot, and Haim (2013) concur and explain the Ecological Value Theory in which individuals who have a positive outlook on the natural world are more likely to act with pro-environmental behaviors. Daily routines and amounts of consumption may also be changed due to motivations that derive from concern for the environment (Barreto, Szostek, Karapanos, Nunes, Pereira, & Quintal, 2014). This notion could suggest that concern or unconcern for the environment may have effects on the preferences and motivations of using paper or electronic methods for course work.

Another study suggests that pro-environmental behaviors are growing because of the widespread knowledge that resources are depleting, and changes in consumption patterns are needed (Gottlieb et al., 2013). Along with the Ecological Value Theory, other behavioral theories can provide insight to environmentally friendly behaviors. The Planned Behavior Theory suggests that intentions are large contributors to behaviors and actions. The Norm-Activation Theory explains that morality plays a role in behaviors. An individual is more likely to act with pro-social and environmental behaviors when they are conscious of the effects their actions may have on others around them (Gottlieb et al., 2013).

Research conducted to examine the motivations for families that portray sustainable behaviors was useful in describing how diversity within a group can put restraints on effectively executing environmentally friendly practices (Barreto et al., 2014). The authors state that when there is more than one person in a household, the decisions that are made within the household affect each member, so negotiations are often made to accommodate all members. It is therefore difficult to put eco-friendly practices into action in an entire household due to various ages, habits, comfort, and other diverse factors amongst house members (Barret et al., 2014). This study provided insight of the hardships Dalhousie may face in effectively implementing eco-friendly practices, such as the paper policy, due to the diverse population that attends its university.

Beckworth (2014) mentions Hungerford & Volk's (1990) model of Environmentally Responsible Behavior. This model suggests that environmental

education will aid to change behavioral patterns. Education about the environment may help to raise consciousness about environmental impacts which can be reduced by individual actions. The author explains how educating members of society will create environmental literacy where individuals will act in pro-environmental ways (Beckworth, 2014). This theory provides a possible solution to the issue with diversity that Barret et al (2014) spoke of. Looking at the scope of our study, environmental education at Dalhousie could change the motivations and preferences of faculty and students on the use of paper and electronic methods, or both, for coursework.

2. Research Methods

2.1 Description of Sample

To address the previously defined research questions and to establish the efficacy of paper use campus-wide we solicited feedback from both the faculty and student populations of Dalhousie University. To do so, we:

- Used purposive, non-probabilistic snowball sampling to select undergraduate faculty and students in the Faculties of Science, Arts and Social Science, Management and Computer Science on Studley campus;
- Interviewed faculty memberes about their motivations behind choosing paper or online platforms to distribute class materials;
- Asked students to fill out a short online questionnaire about their preferences regarding the use of paper and online platforms for receiving class information such as syllabi, assignments, evaluations etc.;
- Analyzed the trends in interview and questionnaire answers in order to better understand faculty and student preferences regarding the use of paper and online programs.

All interview and questionnaire questions were piloted before being used in the field by the research team and non-eligible participants (peers not associated with Dalhousie's College of Sustainability, who were also not contacted during the data collection phase). The team also received feedback from the ENVS 3502 course instructor, Tarah Wright, and ENVS 3502 course mentor, Meggie MacMichael.

2.2 Data Collection Procedure

Eligible participants were identified using non-probabilistic purposive snowball sampling due to their desirable characteristics (in this case, the academic faculty or department(s) that they were associated with), with minimal regard to representativeness of the total population (Creswell, 2013). As a group we decided on a "soft cap" of responses from both interviews and surveys based on the total number of responses we wanted to receive.

The use of purposive sampling allowed us to choose the participants who would best help us understand the problem and the research question (i.e. faculty who distribute paper-based materials in class, and students who have opinions on the distribution of paper- and electronic-based materials). Snowball sampling enabled us to access our population through word-of-mouth. We initially used personal connections to discover participants that would fit our study and then we used those participants to find other potential participants until we reached our pre-determined data saturation limit (when the minimum number of each faculty/department was reached for both faculty and students).

We received funding from the Dalhousie Student Union Sustainability Office (DSUSO) to provide a $25 gift card to one of both the participating faculty and

one participating student. This was communicated to prospective participants as an incentive to participate.

2.2.1 Interviews with Professors and Instructors

A compilation of eligible faculty members (professors, adjunct professors, and assistant professors) associated with Studley Campus was created using the Dalhousie University website and associated departmental pages within the faculties of Arts and Social Studies, Computer Science, Management, and Science (Dalhousie University, 2015a). Using this compilation a weighted distribution was used to determine the ideal number of faculty to be interviewed, given a pre-determined maximum number of interviews (15). Table 1 displays the faculty distribution we sought to contact. This selection gave us a sample that was approximately proportional to the total size of each faculty.

Table 1 - Distribution of faculty to be interviewed for data collection.

Faculty	Interviews
Arts and Social Studies	6
Computer Science	1
Science	5
Management	3
Total	**15**

The purpose of the interviews was to understand faculty motivations for using paper, online platforms, or both in their classes. We selected interviewees based on existing relationships that group members had with faculty members. We minimized the number of individuals from the same department to avoid any bias towards specific departments. We continued to use the snowball method to connect with other faculty until we had 12 completed interviews.

Four of our group's five members conducted semi-structured interviews with faculty. Each interviewer had a preamble script describing the project and gaining verbal consent for participation. The interviewers also each had a list of 15 open ended interview questions. Interviewers took notes during the interviews, which were later coded for data analysis. Interviews were kept confidential, and were numbered for reference during coding and analysis. A copy of the interview is provided in Appendix 1: Interview Questions.

2.2.2 Student Questionnaires

The purpose of the questionnaires was to understand student preferences regarding the use of paper or online platforms to receive and/or submit class materials. Our goal was to receive feedback through the online survey from at least 51 undergraduate students.

Using historical enrollment statistics published by Dalhousie Analytics from 2008 through 2013 and extrapolating for the 2014/2015 academic year, we determined the distribution of students within each of the four Studley Campus

faculties (Dalhousie University, 2015b). Using this data and the pre-determined goal for the number of questionnaire responses (51), we determined the ideal number of students from each faculty to be contacted (Table 2).

Table 2 - Distribution of student questionnaires to be completed by faculty.

Faculty	Interviews
Arts and Social Studies	16
Computer Science	4
Science	21
Management	10
Total	**51**

We were initially planning to distribute the student questionnaire by using both paper and online methods[2]. We found, however, that the most effective distribution method was via the Internet. To distribute the questionnaire, we:

- Emailed department secretaries with a link to pass on to students enrolled in their departments, and
- Emailed the link to peers and colleagues.

We used a questionnaire to collect student responses for a number of reasons: the questions we wanted to ask students could be easily answered in survey format (mostly closed-ended questions), it was viewed as less resource- and time-consuming to collect responses (students could fill out the questionnaire without members of the research team present, and could do so any time of day or night), and it allowed for a large sample size to be collected quickly. A copy of the student questionnaire is provided in Appendix 2: Student Questionnaire.

2.3 Data Analysis

In order to ensure conformity within our analysis, one individual on our research team coded and analysed all the data collected in interviews. We used a grounded *a posteriori* context-sensitive scheme to look for trends in the data. One group member organized interview notes so they were all in the same format and found common themes from each interview.

The majority of the data collected from the student questionnaires was numerical; as such, it was used to generate a variety of histograms and other charts, and analyzed using Excel.

2.4 Limitations and Delimitations

Our research group identified a number of limitations and delimitations before conducting the data collection process. The limitations of this study identified include:

[2] The irony of surveying the effectiveness of paper use on campus through the use of a paper survey was not lost on our group.

- We had a limited time frame (approximately three weeks) to conduct interviews, distribute questionnaires, and code and analyze the data (approximately one week).
- Winter weather and academic schedules limited our ability to conduct faculty interviews.
- We were unable to control the willingness of potential participants to respond to questionnaires or interviews.
- There was some potential for bias when conducting the interviews. The fact that we were collecting data for a cross-listed environmental science/sustainability class could have made some participants believe that we were against paper use.
- There was potential for questionnaires or interview questions to be answered dishonestly, or simply for the chance of winning the $25 gift certificate for participating.

The delimitations of this study include:

- We focused on faculty and undergraduate students within the Faculties of Arts and Social Science, Science, Computer Science and Management on Dalhousie's Studley campus. We did not include the many other departments and faculties at Dalhousie, including those on the Sexton, Carlton, and Truro campuses.
- We collected data from 12 professors and instructors, and 154 students. Time constraints prevented us from expanding our sample size.
- We conducted our interviews over a three-week time span in March. Again, time constraints prevented us from engaging in a longer data collection period.
- Methodologically, we restricted ourselves to providing questionnaires to students and conducting interviews with faculty.
- Our research methods were not statistically relevant. As a result, we cannot extrapolate out data to the greater population.

3. Results

3.1 Interview Results

12 interviews were conducted with the teaching faculty (professors and instructors)[3]: 6 from the Faculty of Arts and Social Studies, 4 from the Faculty of Science, and 1 each from the Faculties of Management and Computer Science. Of the 12 faculty interviewed, 1 was within their first two years of teaching, 2 were in their third to fourth years, 2 were in their fifth to sixth years, and 4 were in their seventh to tenth years. 2 faculty members had between 11 to 15 years teaching experience, and 1 had more than 15 years experience teaching at the post-secondary level (Figure 1).

Individual departments represented by these faculty members are displayed in Figure 2. In total, 33 individual classes were accounted for, with a total enrolment of approximately 1430 students. A breakdown of class sizes taught is displayed in Figure 3.

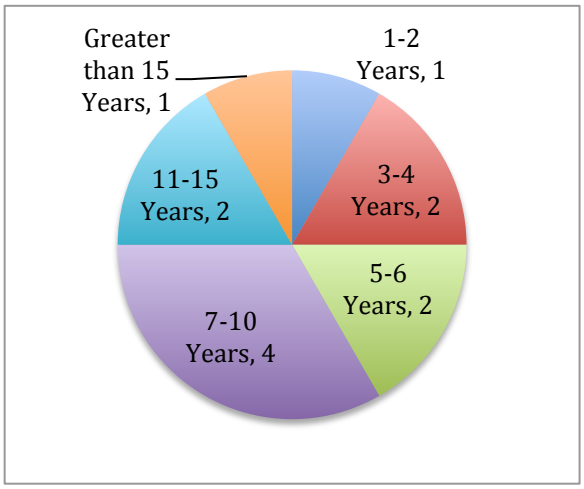

Figure 1 – Years taught by faculty members interviewed.

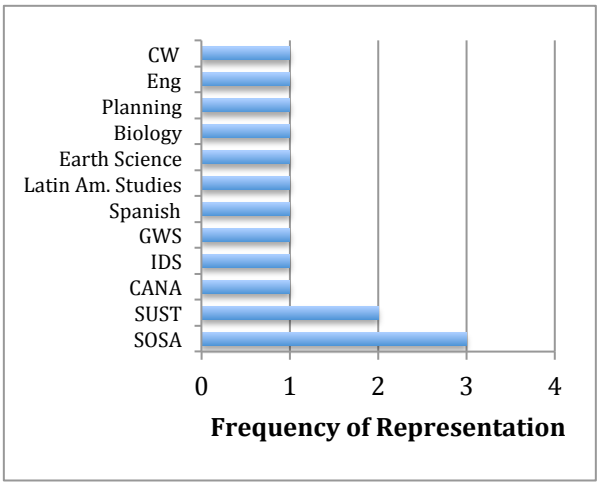

Figure 2 – Frequency of representation of departments within faculty respondents.

Question 4 of the interview asked, *have you ever given out paper copies of class syllabi in your class?* All interviewees stated that they had given out paper copies. Question 5 followed asking, *do you currently give out paper copies of class syllabi?* Only 4 respondents said they do not, and that their material is provided solely online; 8 respondents still give paper copies of their syllabus. The majority of faculty cited paper waste and student accessibility to online materials as major factors for not distributing printed syllabi, while those that do hand out paper copies generally don't like to assume all students have reliable access to online materials for the first day of class, and view the syllabus as a tangible contract or agreement between students and the instructor. All respondents

[3] Weather and scheduling complications limited the number of interviews we could successfully complete to 12.

interviewed have their syllabi posted online (via BBL, Moodle, or on departmental websites), and the syllabus is available before the start of class each semester.

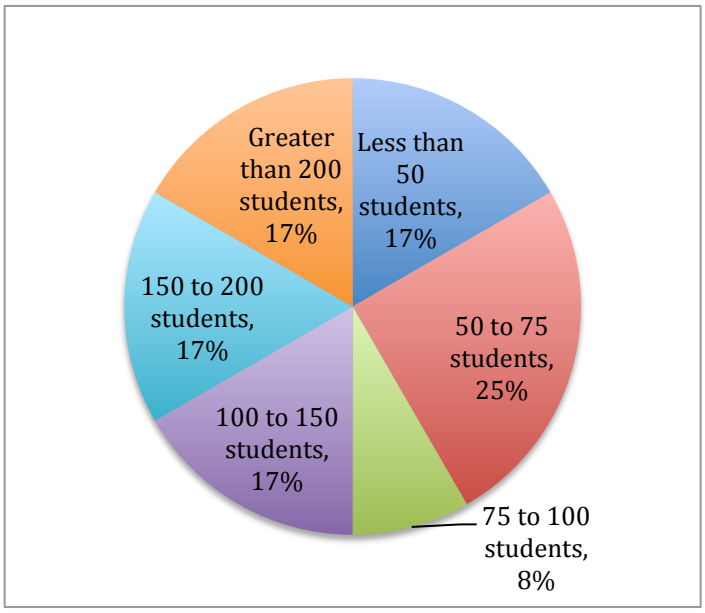

Figure 3 - Class breakdown based on the number of students enrolled.

Questions 7 and 8 related to other classroom resources provided in both paper and online formats. Many of the paper handouts are class-specific (i.e. poems and short-stories for language classes), but the consensus between faculty members was found that quizzes, tests, exams, in-class assignments (ICA) and activities are provided in paper form, while supporting materials (readings, exercises, notes, instructions) are distributed online. Only one respondent does not provide any materials in paper form, and all materials are posted online. All respondents stated that either "everything" (all classroom materials) is posted online, or everything except ICAs are posted online (ICAs are completed and passed in during the class period).

Respondents were then asked, do you believe that having the class syllabus and other resources available online is sufficient to eliminate paper copy handouts? Why or why not? The responses were divided between "definitely yes" (3 responses), "definitely no" (5 responses), and being course-dependent (4 responses). The faculty who feel that paper resources can be eliminated from their classes acknowledge that students are very familiar with accessing online materials, and that the materials online are always available. Half of the interviewees stated that they didn't want to assume that all students had access to technology allowing them 24-hour access to online materials, and so still provide printed copies of materials for at least some of their classes. As well, it was mentioned that many times paper copies are required for ICAs and other class-based exercises, and that these fundamental learning activities would not be possible if paper were eliminated from the course.

Faculty preferences for distribution (given out to students) or reception (passed in by students) of materials were asked: 7 respondents stated that they preferred to distribute the majority of their course materials via online resources, while 4 respondents stated they preferred to receive student materials online; 3 respondents said they enjoyed both paper and online formats for both the distribution and acceptance of material; 1 respondent preferred to distribute materials in paper form, while 5 respondents preferred to receive paper submissions from students (Figure 4).

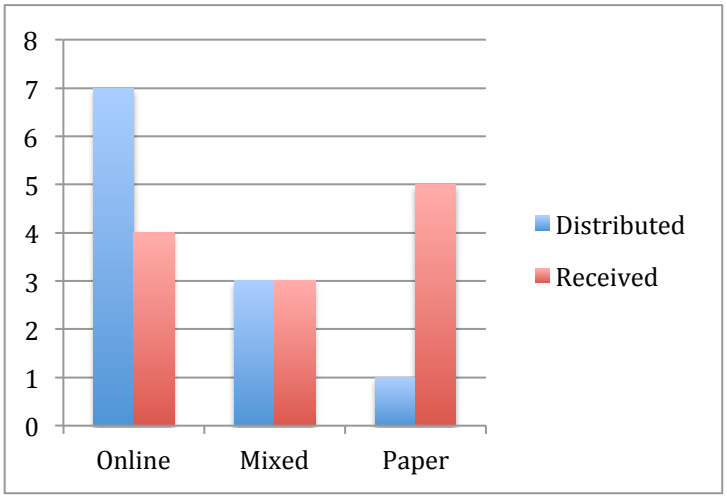

Figure 4 - Faculty preferences for distribution and acceptance of materials.

The last three interview questions dealt with faculty familiarity with Dalhousie University's Paper Policy, their perceptions regarding the impact of paper waste as an environmental issue, and their personal feelings on the reduction of paper use in classrooms as a long-term environmental impact.

With respect to Dalhousie's Paper Policy, 9 respondents were found to be unaware of the policy and its impact on campus. Within those 9 respondents, all stated that their ignorance of the policy precludes them from making comments about its effectiveness. The other 3 respondents stated that they were aware of the policy and felt that it was effective at reducing paper use.

All but one respondent stated directly that paper waste is an important environmental issue. 3 respondents stated that recycling efforts should be increased to help reduce the impact of paper waste, and 3 others cited limited resources as being the main reason for the issue. Four others (including the one respondent who said "no" to paper waste being an important environmental issue) stated that the issue of paper use is overrated or that it is a "cosmetic" issue, and our society should be more focused on addressing larger or broader environmental issues. One respondent also stated that tree harvesting will continue to happen whether paper waste is addressed at Dalhousie University or not, and that we should be more focused on sustainability rather than waste elimination.

Half of the respondents stated that the reduction of paper within their classrooms stated that they are unsure what the reduction of paper use in classrooms would be as a long-term environmental impact, while 4 respondents stated that it would have a small impact. 2 respondents stated that reducing paper in classrooms would have a big impact.

3.2 Questionnaire Results

154 students completed the questionnaire and agreed for their responses to be used for data analysis: 58 from Arts and Social Science, 46 from Science, 52 from Computer Science, 7 from Management, and 9 others (Figure 5). An additional 7 individuals filled out the questionnaire, but did not agree for their responses to be used (these responses were not used in data analysis or reporting); in total, 161 students completed the survey. This exceeded our goal of 51 survey responses. Our intention was to gain a sample that is roughly proportional to the total size of the student body associated with each faculty. However, the Computer Science sample ended up larger than the other faculties, and disproportionate to its weighted distribution.

46 respondents identified as being in their first year of their undergraduate degree, 35 in their second year, 24 in their third year, 39 in their fourth year and 10 in their fifth year or higher. The majority of respondents identified as full-time students (Figure 6).

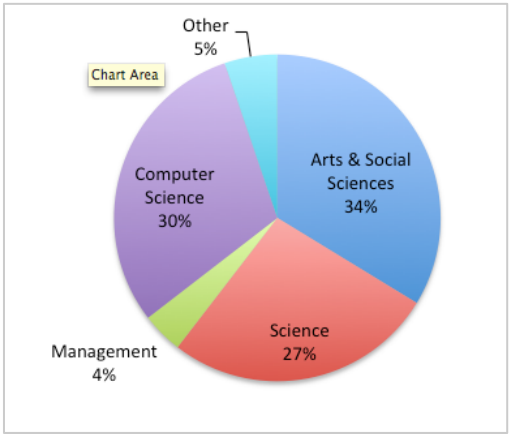

Figure 5 - Student survey responses per faculty.

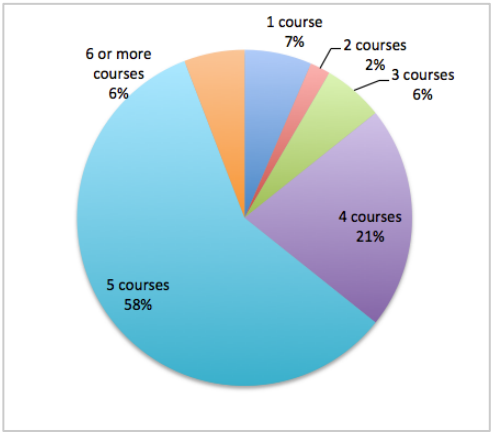

Figure 6 - Distribution of course load among respondents.

Question 6 of the questionnaire asked, *what is your preference between using printed class materials or accessing class materials online through BBL? Choose one*. Respondents preferred paper for quizzes, tests and exams, and online platforms such as BBL for syllabi, communications, and assignments (Figure 7).

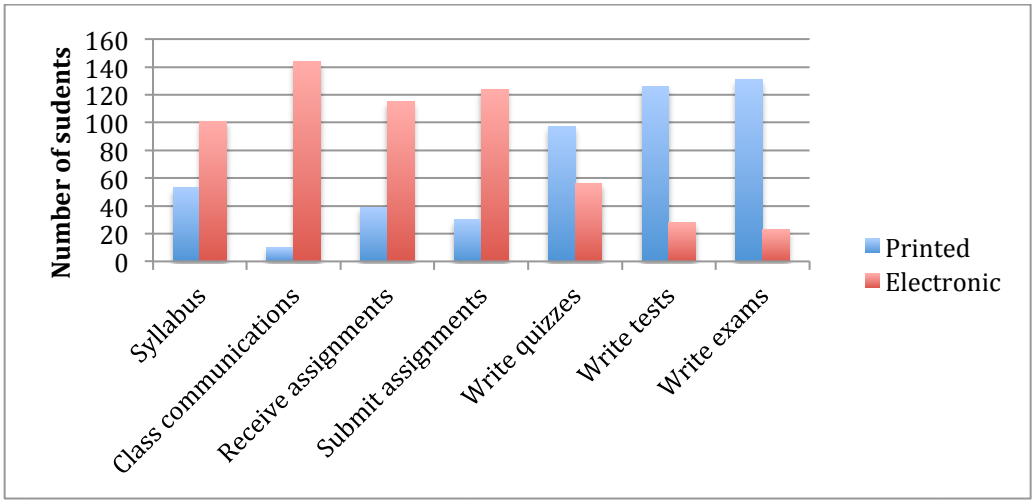

Figure 7 - Student preferences regarding paper or BBL use for course materials or activities.

This question was similar to questions 12 and 13, which asked, *do you prefer the use of paper hardcopies or BBL for any of the following? Check all that apply*. In response to questions 12 and 13, the majority of students again stated that they preferred BBL for everything except quizzes, tests, and exams. 17 respondents said they did not prefer BBL for any of the options, and 20 said they did not prefer paper for any of the options (Figure 8).

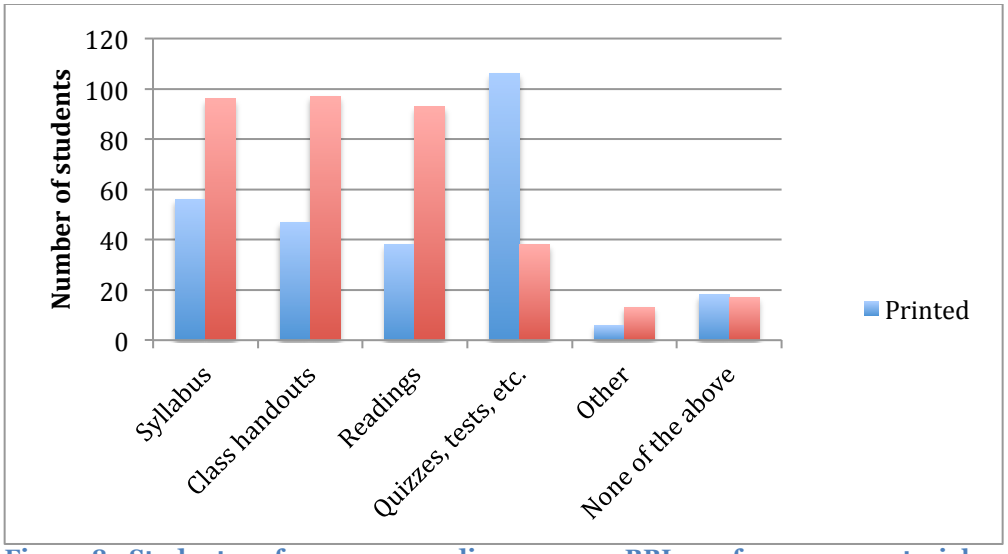

Figure 8 - Student preferences regarding paper or BBL use for course materials or activities.

Questions 9 and 10 asked, *for which of the following have you received paper hardcopies* and *did you use BBL in at least one of your classes this semester at Dalhousie University? Check all that apply*. Paper use was most prevalent for syllabi, as well as quizzes, test and exams. BBL use was most prevalent for class handouts, readings and other course-related activities (Figure 9).

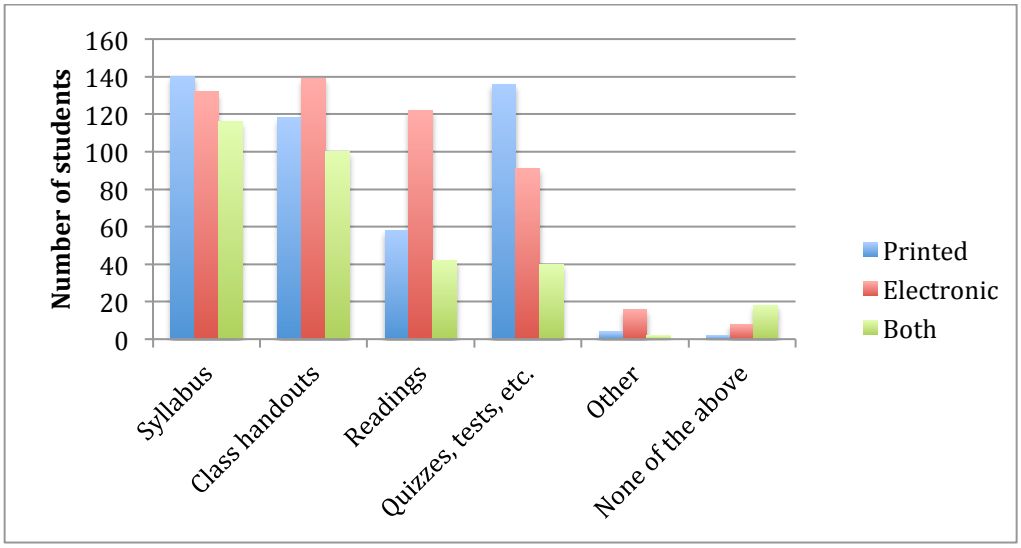

Figure 9 - Number of students who have used paper, BBL, or a mixture of both for at least one course in the current semester.

In the questionnaires, the group also attempted to address respondent knowledge regarding Dalhousie University's Paper Policy, as well as their general thoughts on environmental sustainability in relation to paper use.

The majority of respondents (116 in total) were not aware that Dalhousie University has a Paper Policy (Figure 11). The majority of respondents (88 in total) believe that electronic resources such as BBL are the most environmentally sustainable choice for course-related activities and resources (Figure 10). Finally, the majority of respondents (89 in total) stated that their beliefs or concerns regarding environmental sustainability influenced their preference between the use of paper or electronics in the classroom (Figure).

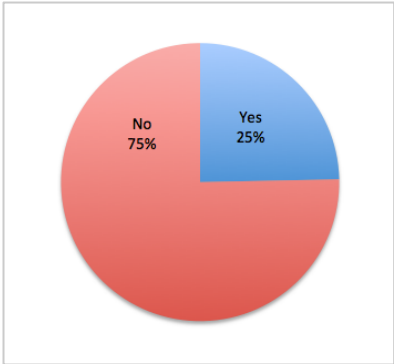

Figure 11 – Respondent awareness of Dalhousie University's Paper Policy.

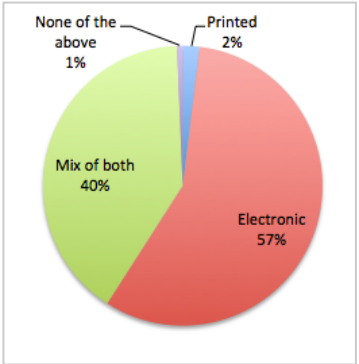

Figure 10 - Respondent beliefs regarding the most environmentally sustainable course-related tools.

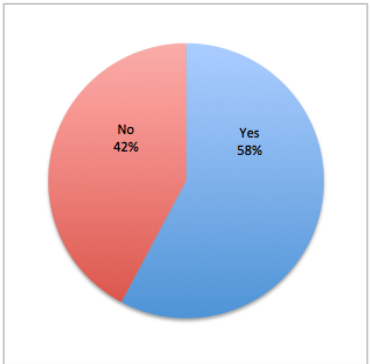

Figure 12 - Respondent preferences between paper and BBL use are influenced by their beliefs about environmental sustainability.

Due to the large number of survey respondents from the Faculty of Computer Science, the team decided to analyze questionnaire responses again without the addition of any responses from that faculty. This was inspired by two concerns: that with the large number of Computer Science students the sample was not representative of demographics among Dalhousie undergraduate students, and that due to their computer-related field of study their responses would skew overall results. In fact, results with and without Computer Science respondents were quite similar (Figures Figure 12 & Figure 13). The primary difference was that there was a lower preference for electronic syllabi and readings, in proportion to the other responses, when Computer Science respondents were excluded. In addition, when Computer Science students were excluded, a slightly higher proportion of respondents stated that they did not prefer electronic resources for any course-related materials or activities.

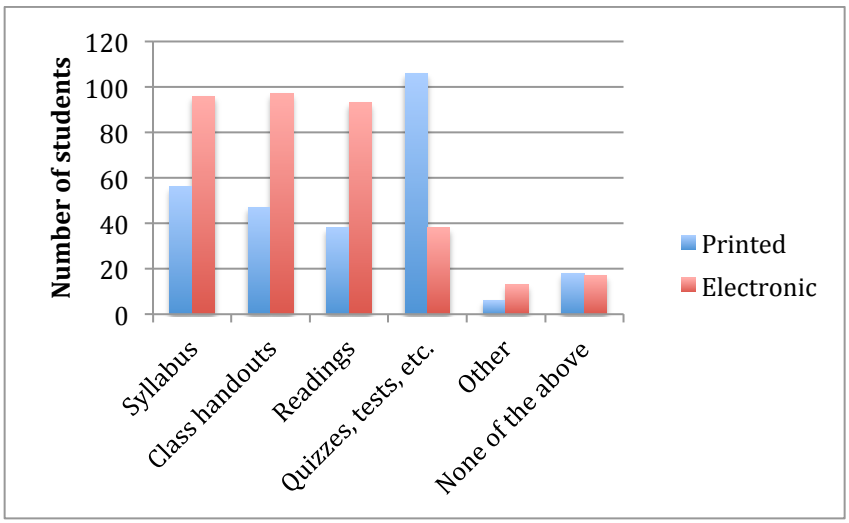

Figure 12 - Results for survey questions 12 and 13 with all responses, including those from the Faculty of Computer Science.

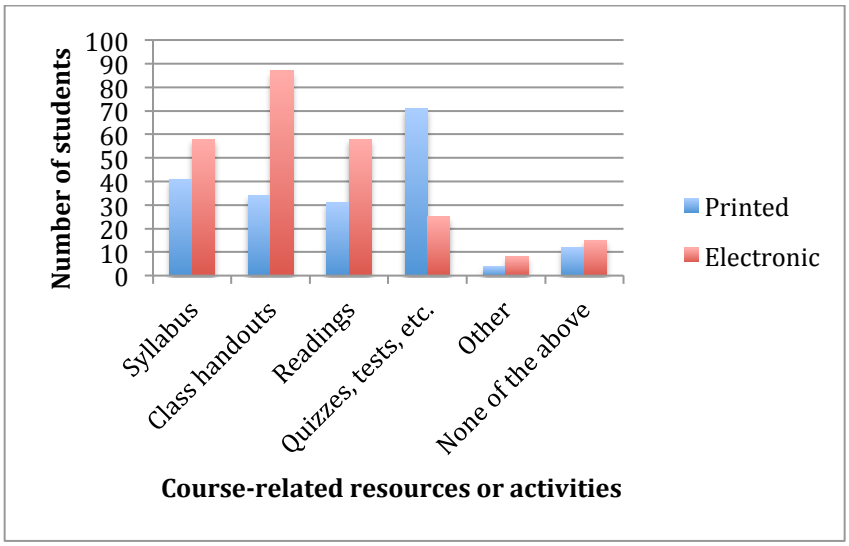

Figure 13 - Results for survey questions 12 and 13 excluding responses from the Faculty of Computer Science.

4. Discussion

The purpose of our survey and interviews was to explore the motivations and preferences of students and faculty regarding the use of paper and online methods for coursework. We wanted to find out whether there were similarities in preferences amongst the various faculties and departments, as well as between professors or instructors and students in the same faculties. We also thought it would be interesting to explore whether perceptions and beliefs surrounding environmental sustainability had influence on the motivations and preferences of students, instructors, and professors.

The survey responses helped us gain insight of the specific activities which students prefer to use online or paper methods for. One general trend that we found from the survey results was that overall, paper is preferred more frequently than BBL for evaluation (including tests, quizzes, exams, etc.) and that BBL is preferred for everything else. We found, however, that this trend varies among faculties. For example, in the Faculty of Art, paper is preferred more frequently for syllabi, but in the Faculty of Science, BBL is preferred more frequently for syllabi. We can assume that differences in preferences among the various faculties may be due to the content and requirements of each academic program. A student's faculty may also influence their preferences for online or paper course materials if materials have been given to them in a specific method for a long enough time to become habitual and familiar.

Responses from the interviews showed the motivational attributes as to why faculty use online or paper methods for course materials. A general trend amongst faculty was that class size has influence over which method is chosen to hand out course materials. Our interview results show that the larger the class size, the less likely only paper materials will be handed out. We may presume that professors do not solely use paper handouts in large classrooms because of associated costs, time, and inefficiency due to the volume of students.

Another interesting trend that came from our interview results was that past habits, and habits in the home contribute to faculty motivations to use either online or paper methods for coursework. Some interviewees explained that they perform environmentally-friendly behaviors in the home and that these behaviors are brought into their daily working life as well. Other interview participants stated that they have carried on traditional teaching methods from when they attended school and that is why they may or may not use paper or electronic methods for the distribution and reception of course materials. These trends that we found in results from both the survey and the interviews are similar to many of the findings from the studies referenced in the literature review.

Since we used non-statistical data collection methods, we do not have a representative research sample. Therefore, our results are not necessarily representative of the true preferences amongst students, instructors, and

professors at Dalhousie University. We have made the assumption that our results represent general trends within the student body and among faculty members, but in order to confirm this assumption, our research would have to be repeated by using random sampling methods.

5. Conclusion

We received mixed results pertaining from the use of paper versus online resources for course materials. This was mainly due to variations in preferences for various types of course material. Students preferred the use of online tools such as BBL for course material like class syllabi and for submitting and receiving assignments. However, student preferences altered when it came to tests, quizzes, and exams, where the overwhelming majority preferred the use of paper. This demonstrates that there is not a significant advantage to either resource and therefore a conclusion cannot be made arguing the better alternative.

Faculty preferences also varied based on distributing and receiving course materials. The majority found it more efficient to distribute course materials online, while receiving student submissions in paper form. There was no majority of faculty favoring the use of paper or online resources, which again led to no conclusion being made arguing the better alternative.

Many students and faculty did believe paper waste is an important environmental issue and many are aware of Dalhousie's Paper Policy, but preferences and motivations still favored the use of paper in many different facets. Further research should encompass a wider proportion of Dalhousie undergraduate and graduate students from more than one campus. It should include more faculties, programs, and student experiences to obtain a broader perspective and more comprehensive data. Other research could survey student preferences of electronic tools such as in-class clickers, which could be potentially useful when looking at in-class assignment preferences. Extended research on the effectiveness of Dalhousie's Paper Policy would also be beneficial.

6. Acknowledgements

We would like to thank our instructor Dr. Tarah Wright and our mentor Meggie MacMichael for providing us with support, guidance, and feedback throughout this project. We would like to thank DSUSO for providing us with funding for our project, and to Dalhousie University for allowing us to conduct research on campus. Finally, we would like to thank the faculty and students whose participation made our project possible.

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Appendices

Appendix 1: Interview Questions

Faculty Questionnaire and Interview Questions

ENVS 3502 – Campus as a Living Lab Research Project

Questionnaire Topic: what are your opinions printed class materials vs. the use of electronic submissions sites (such as Blackboard Learn?).

1. **How many years have you been a faculty member at Dalhousie University?**

2. **What faculty/faculties are you currently involved with? What department?**

3. **How many courses do you currently teach? What is the approximate class size of each?**

4. **Have you ever given out paper copies of class syllabi in your class?**

5. **Do you currently give out paper copies of class syllabi?**

6. **If you answered the same for both 4 and 5, why? If you answered yes to one and no to the other, why the change?**

7. **Is the class syllabus available online via BBL?**

8. **If it is, how long has it been online?**

9. **Do you give class resources (assignment descriptions, rubrics, assignment feedback, in class activities, etc.) in paper form? What kind of resources? Why do you choose to give out paper copies?**

10. **Are class resources (assignment descriptions, rubrics, assignment feedback, in class activities, etc.) available online via BBL? What kind of resources?**

11. **Do you believe that having the class syllabus and other resources available online is sufficient to eliminate paper copy handouts? Why or why not?**

12. **Do you have a preference between the use of paper hardcopies and BBL? State your reasons.**

13. **Do you believe paper waste is an important environmental issue?**

14. **Dalhousie has a Paper Policy that aims to reduce the University's environmental and economic footprint through paper sourcing, reduction, reusing and recycling efforts; did you know about the Policy? Do you think this is an effective tool for reducing paper use on campus? Why or why not?**

15. **To what extent do you think that reducing paper use in classrooms will have an environmental impact in the long term?**

Appendix 2: Student Questionnaire

Student Questionnaire

ENVS 3502 – Campus as a Living Lab Research Project

In compliance with Dalhousie University's Policy on the Ethical Conduct of Research Involving Humans (link) an Application for Ethics Review of Research Involving Human Participants form was filled out for this research project. The completed form can be reviewed here.

Additionally, an Informed Consent to Participate in Research form was created for all survey participants to review before beginning the survey. Please review the Consent form for this survey. It is provided here.

After reviewing the Informed Consent form, do you consent to taking part in this survey?

Yes **No**

If you answer "Yes", please continue the survey below.

If you answer "No", please stop the survey now and do not answer any further questions.

Section 1 – Please write your answer below the question in the space provided.

1. **What is your sex?**
   - **Male**
   - **Female**
   - **Intersex/Other**

2. **Within your academic program at Dalhousie University, what year of your study are you in?**
   - **First Year**
   - **Second Year**
   - **Third Year**
   - **Fourth Year**
   - **Other _____**

3. **What is your age range?**
   - ☐ **18 or under**
   - ☐ **19-20**
   - ☐ **21-22**
   - ☐ **23-24**
   - ☐ **Older than 24**

4. **What undergraduate faculty/faculties at Dalhousie University are you currently enrolled in?**
   - ☐ **Arts and Social Sciences**
   - ☐ **Computer Science**
   - ☐ **Management**
   - ☐ **Science**
   - ☐ **Other _____**

5. **How many courses are you currently enrolled in at Dalhousie University?**
   - ☐ **1 course**
   - ☐ **2 courses**
   - ☐ **3 courses**
   - ☐ **4 courses**
   - ☐ **5 courses**
   - ☐ **6 or more courses**

6. **What is your preference between using printed class materials or accessing class materials online through BBL? Choose one.**

   a) I would rather receive my class syllabus via …
   - ☐ **Printed**
   - ☐ **Electronic via BBL**

   b) I would rather receive class communications via …
   - ☐ **Printed**
   - ☐ **Electronic via BBL**

   c) I would rather receive class assignments via …
   - ☐ **Printed**
   - ☐ **Electronic via BBL**

   d) I would rather submit assignments via …
   - ☐ **Printed**
   - ☐ **Electronic via BBL**

   e) I would rather write quizzes via …
   - ☐ **Printed**
   - ☐ **Electronic via BBL**

   f) I would rather write tests via …
   - ☐ **Printed**
   - ☐ **Electronic via BBL**

   g) I would rather write exams via …

- Printed
- Electronic via BBL

7. **What are your reasons for preferring either paper or electronic copies of each of the choices in Question 3?**
   Receiving class syllabus –

   Receiving class communications -

   Receiving assignments –

   Submitting assignments –

   Writing quizzes –

   Writing tests –

   Writing exams –

8. **Are you aware Dalhousie University has a paper policy?**
   - **Yes**
   - **No**

Section 2 – Please fill in the answer below.

9. **For which of the following have you received paper hardcopies in at least one of your classes this semester at Dalhousie University? Check all that apply.**
   - **Class syllabus**
   - **Class handouts (assignments, etc.)**
   - **Class readings**
   - **Quizzes, tests and other evaluations**
   - **Other _____**
   - **None of the above**

10. **For which of the following do you use BBL in at least one of your classes at Dalhousie University? Check all that apply.**
    - **Class syllabus**
    - **Class handouts (assignments, etc.)**
    - **Class readings**
    - **Quizzes, tests and other evaluations**
    - **Other _____**
    - **None of the above**

11. **Do you use BBL AND receive paper hardcopies for any of the following in any of your classes this semester at Dalhousie University? Check all that apply.**
    - **Class syllabus**

- ☐ Class handouts (assignments, etc.)
- ☐ Class readings
- ☐ Quizzes, tests and other evaluations
- ☐ Other _____
- ☐ None of the above

12. Do you prefer the use of paper hardcopies for any of the following? Check all that apply.
    - ☐ Class syllabus
    - ☐ Class handouts (assignments, etc.)
    - ☐ Class readings
    - ☐ Quizzes, tests and other evaluations
    - ☐ Other _____
    - ☐ None of the above

13. Do you prefer the use of BBL for any of the following at Dalhousie University? Check all that apply.
    - ☐ Class syllabus
    - ☐ Class handouts (assignments, etc.)
    - ☐ Class readings
    - ☐ Quizzes, tests and other evaluations
    - ☐ Other _____
    - ☐ None of the above

14. Which do you believe is the more sustainable route for coursework at Dalhousie University?
    - ☐ Printed coursework
    - ☐ Electronic submissions
    - ☐ Both printed and electronic coursework
    - ☐ None of the above

15. Does your answer from the last question influence your preference of using paper or electronics within your courses at Dalhousie University?
    - ☐ Yes
    - ☐ No

Thank you for participating

If you would like the chance to win a $25 gift certificate of your choice, please enter your e-mail address below.

Appendix 3: Participant Feedback Form

Participant Feedback Form

ENVS 3502 – Campus as a Living Lab Research Project

We would like to thank-you for participating in our ENVS 3502 – Campus as a Living Lab research project. We appreciate the time you took in participating in our research project and we value the critical information you have provided us. As a token of our appreciation, your name has been entered in our prize draw that will be drawn on March 30, 2015. Winners will be contacted by email immediately following the draw.

The purpose of this study is to evaluate the benefits and consequences of printing class materials when they are available online on Blackboard Learn. This study is also aimed to look at the different motivations behind printing course materials and how they compare to student needs. The goal of this research is to find out if availability to course materials online is adequate enough to reduce or eliminate printed course materials in Dalhousie University classrooms at the Studley Campus.

Due to a large portion of students owning or having access to a computer or computing device today, we predict that having course materials available on the Blackboard Learn website will be sufficient enough to reduce and perhaps, eliminate printed course materials in Dalhousie University classrooms at the Studley Campus.

The information you have provided us will be kept confidential and will only be used for the duration of this research. Only the research members and the research supervisor will have access to your information. If you wish to revoke your information, you can at any time by sending an email clearly stating that you wish to withdraw your authorization to use of your information in the research.

Contact information for research members:

Bryan Bendle – bbendle@dal.ca

Scott Holmgren – Scott.Holmgren@dal.ca

Victoria Kayal – Victoria.Kayal@dal.ca

Zoë Robinson – zz995642@dal.ca

Hilary Thomson – Hilary.Thomson@dal.ca

Contact information for research supervisor:

Tarah Wright – tarah.wright@dal.ca

Appendix 4: Consent Form

Informed Consent to Participate in Research;
Information to Consider before Taking Part in this Research Study

ENVS 3502 – Campus as a Living Lab Research Project

You are being asked to take part in a research study for the ENVS 3502 Campus as a Living Lab class. This document is called an informed consent form. Please read this information carefully and ask the researchers any questions you may have during the questionnaire.

Purpose of the Study

The purpose of this study is to evaluate the benefits and consequences of printing class materials when they are available online on Blackboard Learn.

Study Procedure

If you take part in this study, you will be asked a series of questions about your experiences giving (faculty) and receiving (students) printed class materials. You will also be asked for your name and email address for this project.

Compensation

Participants will have their names entered in a draw for 1 of 2 prizes ($25 value) that will be drawn on **March 30, 2015.**

Risks or Discomfort

This research is considered to be minimal risk. That means that the risks associated with this study are the same as what you face every day. There are no known additional risks to those who take part in this study.

Authorization to Use and Disclose Protected Information

Who will see my information?

Your information will only be seen by the five researchers conducting the study and the research supervisor. Your information will be used for this comprehensive analysis only, which will remain confidential throughout the entire study. We know that this information is private and it will not be shared beyond the scope of this project.

How will my information be used?

In this research study, we will use your information to aid our research in paper use in Dalhousie University classrooms on Studley Campus. A comprehensive study will be conducted based on

information you have provided. By signing this form, you are giving us your permission to use your information as described in this document for all study/research related purposes. Your authorization for our use of your information will expire after the project is completed on **March 30, 2015.**

Your Rights:

You can refuse to sign this form. If you do not sign this form, you will not be able to take part in this research study and therefore will not be entered into the prize draw.

How Do I Withdraw Permission to Use My Information?

You can revoke this form at any time by sending an email clearly stating that you wish to withdraw your authorization to use of your information in the research. If you revoke your permission:

- You will no longer be a participant in this research study;
- You will no longer be eligible to be entered into the prize draw.

Privacy and Confidentiality

We will keep your information private and confidential. Certain people, such our supervisor, may need to see your information. By law, anyone who looks at your records must keep them completely confidential. The only people who will be allowed to see these records are:

- The five members conducting the research;
- The research supervisor.

Authorization to Collect and Use Your Information

Consent to Take Part in this Research Study

It is up to you to decide whether you want to take part in this study. If you wish to take part, please sign the form, if the following statements are true.

I freely give my consent to take part in this study and authorize that my information as agreed above, be collected/disclosed in this study. I understand that by signing this form I am agreeing to take part in research.

_____ _____

Signature of Person Taking Part in Study Date

_____

Printed Name of Person Taking Part in Study

Appendix 5: Ethics Form

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:** Following the Paper Trail: An Analysis of Paper Use for Class Materials in Dalhousie University Classrooms on Studley Campus

2.	Faculty Supervisor(s)	Department:	Ext:	e-mail:
	Tarah Wright	Department of Environmental Science	(902) 494-3683	tarah.wright@dal.ca
	Meggie MacMichael	-	-	mfmacmichael@dal.ca

3.	Student Investigator(s)	Department:	e-mail:	Local Telephone Number:
	Bryan Bendle	Department of Engineering	bbendle@dal.ca	(902) 497-5517
	Scott Holmgren	Department of Environmental Science & Sustainability	Scott.Holmgren@dal.ca	(902) 292-2089
	Victoria Kayal	Department of Sustainability & International Development Studies	Victoria.Kayal@dal.ca	(902) 439-6848
	Zoë Robinson	Department of Sustainability & Sociology	zz995642@dal.ca	(902) 880-8819
	Hilary Thomson	Department of Environmental Science & Sustainability	Hilary.Thomson@dal.ca	(902) 818-8965

4. **Level of Project:**
Non-thesis Course Project [X] Undergraduate [ ] Graduate Specify course and number: **ENVS 3502**

5. a. **Indicate the anticipated commencement date for this project:** **March 10, 2015**

b. **Indicate the anticipated completion date for this project:** **March 28, 2015**

SUMMARY OF PROPOSED RESEARCH

1. Purpose 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 purpose of this project is to develop an understanding behind the motivations underlining Dalhousie University faculty and paper usage. The objective is to research and survey Dalhousie University faculty and students to determine whether paper is being efficiently utilized in the forms of class syllabi, handouts, and worksheets when they are available online [via Blackboard Learn (BBL)]. This practice is being researched because of the large environmental impacts associated with paper development and processing, which perhaps could be moderated with effective paper use. Since most class materials and syllabi are available, this project aims to investigate whether paper use for class handouts and syllabi can be reduced or eliminated by online (BBL) availability.

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)
[X] Survey(s) or questionnaire(s) (in person)
[X] Computer-administered task(s) or survey(s)
[X] 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.***

The procedures used in this study will be based on student and faculty questionnaires and interviews. There will be two questionnaires one for faculty and one for students. The faculty member's questionnaire will contain questions about their experiences using paper copies for class materials and if those materials are available online on the BBL website. It will be very brief, but hopefully followed by a 5-10 minute interview in person or on the phone. The student's questionnaire will contain questions about their experiences receiving paper copies of class materials and if those materials are available online on the BBL website. It will also be very brief and hopefully followed by a 5-10 minute in person interview. This project will be incorporating a non-probabilistic purposive snowball sampling technique where hope to find more students and faculty members who have experiences with receiving and giving paper copies of class materials at Dalhousie University, Studley Campus.

3. Participants Involved in the Study

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

Dalhousie Participants:
[X] Undergraduate students
[ ] Graduate students
[X] 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 potential participants in this study are current Dalhousie University undergraduate students and faculty at the Studley Campus. There will be no criteria based on group affiliation, race, gender, or age.

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

50 – 100 individuals

- *≥ 50 students*
  - *Science - 20*
  - *Management - 5*
  - *Arts & SS - 20*
  - *Computer Science - 5*
- *≥ 10 faculty members*
  - *Science - 4*
  - *Management - 1*
  - *Arts & SS - 4*
  - *Computer Science - 1*

4. Recruitment Process and Study Location

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

[X] Dalhousie University undergraduate and/or graduate classes
[X] Other Dalhousie sources (specify) **Varsity Athletics and Social Cubs**
[ ] 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).

Participant recruitment for this study will be executed by all five members of the group. Random questionnaires will be conducted on Dalhousie University property (Student Union Building, Howe Hall, etc.) and online in order to receive undergraduate student input. Faculty members will be contacted by email or phone, provided by the Dalhousie University website. Faculty members will be surveyed or interviewed during a scheduled appointment or during their appointed office hours. This research's non-probabilistic purposive snowball sampling recruitment procedure asks for recommendations from the interviewed students and faculty members about future potential subjects, which aids in the recruitment process.

5. Compensation of Participants

Will participants receive compensation (financial or otherwise) for participation? Yes [X] No [ ]
If **Yes**, provide details:

Participants will receive compensation in the form of one free entry into our draw (the prize is yet TBD). There will be two prizes; one for student participants and one for faculty participants, each prize will approximately be $25 (provided by the DSUSO). The prizes will be drawn after the completion of the project and the winners will be contacted by email.

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.

Feedback for the participants involved in this project will receive a letter of appreciation for their participation. The letter will contain a brief overview of the project followed by the goals of the project. The letter will briefly describe some of the challenges with paper waste and the environmental impacts arising from it. The letter will contain a reminder about the draw they have entered upon completion of the questionnaire, which will include the draw and announcement date of the winners. All five group members names and emails will be provided on the feedback letter in case any issues or problems arise; the project supervisor's contact information will also be provided. One group member will be illustrated as the main contact, if a participant wishes to withdraw their information from the project. The letter will contain a brief outline of the ethics form, which will state that their information (name, faculty, and email) will be kept confidential and if they wish to remove their questionnaire and contact information from the project, they can simply email the designated group member.

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 will be no real direct benefit to the participants from their involvement in the project; there will be compensation with entry to our prize draw. A direct benefit could be achieved to the faculty members who may choose to reduce their paper use, providing a boost of morality. An anticipated direct benefit would be that participants become aware of paper waste issues in Dalhousie University classrooms on Studley Campus and how they can be involved in reducing associated environmental impacts.

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

If this project is successful, the anticipated benefits to society may be improved environmental standards around paper use. Reducing paper use could eliminate unnecessary deforestation and help improve air quality by preserving natural carbon sinks.

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**

[X] No known or anticipated risks
Explain why no risks are anticipated:

There will be no risks associated with this project because participants will only be involved in the student and faculty questionnaires. They will be asked for their names, faculties and emails, which will be kept confidential during and after the project's duration. Names and emails will only be asked if participants wish to enter the prize draw. Participants will also be given a feedback sheet containing group contact information if they wish to withdraw their questionnaire and identity. There will be no anticipated risks or stressors in this project.

[ ] 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 be given a feedback sheet after completion of the questionnaire, which will contain group contact information. If they wish to withdraw their questionnaire and/or identity from the project due to an associated risk/stressor, they can contact the group member in charge of confidentiality and their questionnaire and contact information will be deleted. During the course of the project, all contact information will be kept confidential.

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?**

   [X] Information letter with written consent form; provide a copy
   [X] 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.**

If written consent cannot be obtained from the participants, their questionnaire and personal information will not be used or collected during this project.

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.**

To ensure anonymity of the project's participants, only names and emails will be collected. Confidentiality will be ensured during the course of the project because participant's information will not be used in the final report or in any captions, figures, or any other data sources. Participant names and emails will only be collected if they are interested in the prize draw. Written consent forms will not be shared amongst the group, but will only be kept to ensure legal consent of participation. If participants have any issues about confidentiality during the project, they can email the group member in charge and their information will be deleted from the project.

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

Written consent forms will be collected by one of the group members and stored in a binder. The binder will be stored at that group member's residence for the duration of the project. The binder will not be shared with any other members, participants, or outside individuals.

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.**

   [X] Paper Records
   [ ] Confidential shredding after _____ years
   [ ] Data will be retained indefinitely in a secure location
   [X] 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.

   [X] Electronic Data
   [X] Erasing of electronic data after __1__ 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: **1569 Walnut Street, in room B, filing cabinet A.**

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.
[X] **Information Letter and Consent Form(s)**. Used in studies involving interaction with participants (e.g. interviews, testing, etc.)
[X] **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

_____ Signature of Student Investigator(s)	_____ Date
_____ Signature of Student Investigator(s)	_____ Date
_____ Signature of Student Investigator(s)	_____ Date
_____ Signature of Student Investigator(s)	_____ Date
_____ 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