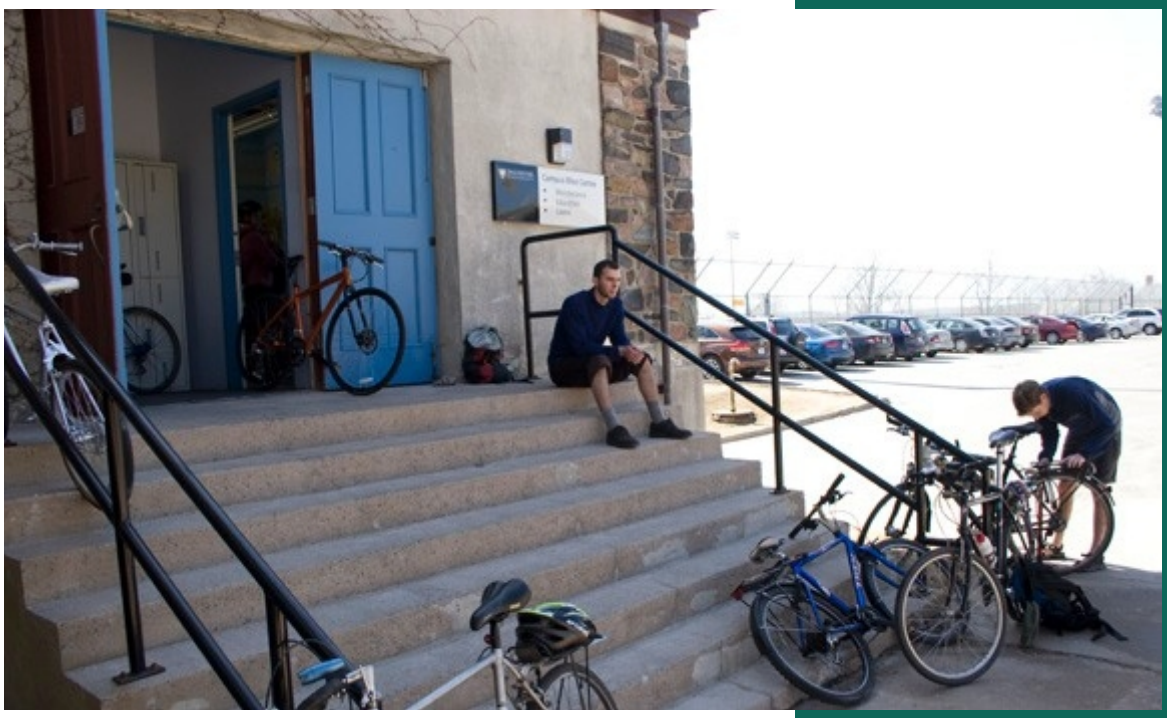
April 13th, 2012

THE DALHOUSIE BIKE CENTRE
DESIGN ALTERNATIVES



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EXECUTIVE SUMMARY

Biking is shown to have economic, environmental, health, and social benefits. This project looks at redesigning the Dalhousie University Bike Centre. The purpose of this study is to create a preliminary design that will best reflect the vision and needs of the Dalhousie biking community and welcome new people to utilize the Bike Centre's services. The goal of this project is to increase the functionality of the Bike Centre. Conclusions were drawn through interviews, a focus group, and Strengths-Weaknesses-Opportunities-Threats (SWOT) Analysis. The Research team found that in regards to design, there was a focus on space and visibility. Community support through communication with different biking organizations around Halifax is important in creating a strong biking community. The goal of marketing the new Dalhousie Bike Center is to promote biking as the most convenient mode of transportation. Renderings and floor plans were produced as a visual reflection of the information gained from the SWOTs, interviews, and the focus group. The new Dalhousie Bike Centre design aims to promote biking as accessible and available to everyone.

"If I can bicycle, I bicycle."

– Sir David Attenborough

INTRODUCTION

IMPORTANCE OF BICYCLING

Bicycling is an important part of sustainability on university campuses. The League of American Cyclists runs "The Bicycle Friendly University program" (BFU) which aims to recognize and aid the creation of bicycle-friendly campuses across the continent. Health, economics, and the environment are three areas in which bicycling can benefit a university campus. (The League of American Cyclists, 2012). In regards to health, biking increases activity, promoting "a more active community, so students can exercise while getting to class" (The League of American Cyclists, 2012). As students, staff, and faculty become engaged in more active lifestyles, health care and parking costs become lower, resulting in economic benefits to the university as well as to the community. There are also numerous environmental benefits, as carbon emissions and car congestion are reduced (The League of American Cyclists, 2012).

The literature shows a clear link between using cycling as a mode of transportation and increased health benefits. Martin Lindström (2007) investigated the relationship between mode of transportation and obesity, where he found that walking or bicycling as a means of transportation may decrease the risk of overweight and obesity. A group of researchers from Nagoya University in Japan examined the effect of low intensity cycling on Type 2 diabetes patients. They found that low intensity cycling for only thirty minutes a day significantly enhanced insulin-induced glucose uptake (Usui et al., 1998). For staff and faculty, a recent study in Australia showed that promoting active transportation is a key to promoting both physical activity and environmental health (Wen et al., 2005).

Rashad (2007) looked at the potential health benefits of cycling and estimated the cost savings of improved health from bicycling. Accounting for both benefits to physical and mental well being, it was estimated that an increase in bicycling could reduce spending on health by six billion dollars in the United States (Rashad, 2007). Barnes (2004) examined the economic benefits of bicycling, through facility-specific and general means. His accounting framework incorporates benefits such as reduced accident risk, time saving, health, and employment. Ultimately, it is estimated that in Minnesota, the average benefits from bicycling are approximately $300 million per year (Barnes, 2004). Buis (2000) performed cost-benefit analyses for four cities: Amsterdam, Bogotá, Delhi, and Morogoro. It was found that bicycling has significant time and cost-savings for individual users.

There has been a growing awareness of the negative impacts of car-centred transportation on the environment. Many campuses are now recognizing how important active transportation alternatives are to reducing their emissions and improving their environmental health. In 1996, Tolley suggested that there must be both a promotion of sustainable transportation modes as well as a simultaneous reduction of non-sustainable modes for the most effective change. In 2011, Hong Joo, Tai-woo, and Hyunsoo found that bicycling as a mode of short distance transportation has great potential in helping to reduce carbon dioxide emissions. They argue that the benefits are twofold. First, that it provides a form of transportation free of emission, and second, that increased use of bicycles takes cars off the road, decreasing congestion (Hong Joo, Tai-Woo, & Hyunsoo, 2011).

According to this research, there are clear correlations between cycling as a transportation choice and health, economic, and environmental benefits. However, research conducted by Nilsson and Kuller (2000) suggests that factual knowledge of benefits in itself is not enough motivation for behaviour change. A transportation study in 2003 showed that increased awareness of choices did not result in behaviour or habitual change (Garvill, Marell, & Nordlund, 2003).

Figure 1. Urban Community Biking. Retrieved from http://vorg.ca/3046-Vancouver-Critical-Mass-Bike-Ride

Policies and programs designed to encourage cycling on campus must not only raise awareness of the multiple benefits of cycling, but must work towards making cycling a more convenient transportation option for students and staff.

In 1995, Noland & Kunrether outlined policies designed to increase bicycle commuting, which focused mainly on changing the perceived convenience of different modes of transportation. They suggest that the most effective policies make cycling more convenient while making driving a car less convenient by providing better cycling infrastructure while restricting or removing car access from certain locations (Noland & Kunrether, 1995). This idea is echoed by Tolley's promotion of sustainable options and simultaneous demotion of unsustainable options (Tolley, 1996). Although shorter commute time is perceived to be a convenience factor in choosing vehicular over active transportation, there is more evidence for an optimal commute length, suggesting that longer commutes are not always a disadvantage (Redmond & Mokhtarian, 2001). Research continues to explore the question of what spurs behaviour change, especially as it relates to sustainable behaviours such as active transportation.

The literature has shown that cycling is a sustainable transportation mode, contributing health, economic, and environmental benefits to campus communities which support this mode. Promoting cycling for commuting will lead to more of the benefits on campus, however, the literature has also shown that awareness of benefits is not enough to change transportation behaviours. Cycling must be planned and promoted as the most convenient transportation mode if it is to be widely-adopted by campus communities.

DALHOUSIE UNIVERSITY'S TRANSPORTATION AND SUSTAINABILITY COMMITMENTS

Dalhousie University is a leading, research-intensive Canadian university located on the Halifax Peninsula. Dalhousie's Office of Sustainability strives to incorporate sustainability concepts and criteria into all major university functions and engage and enhance students, staff and faculty in sustainable living and operation (Dalhousie University, 2010a).

The following describes Dalhousie University's stated commitments to sustainable and active transportation policies and programs. As both a sustainable and active transportation mode, cycling is a key component in the successful execution of these plans.

Dalhousie's "Climate Change Plan" offers strategies to mitigate and adapt to vulnerabilities in three key areas. It recognizes that promoting sustainable transportation is a key action strategy, and aims to accomplish this by "enhanc[ing] cycling end use facilities, cycling confidence, walking and cycling corridors, and cycling share/loan programs" (Dalhousie University, 2010b). Not only is the Dalhousie Bike

Centre the only facility of its kind on campus, it has the potential to increase cycling confidence through community programs, connect to cycling corridors, and provide cycling share/loan programs, such as those stated in the Climate Change Plan.

In its recent "Campus Master Plan" (Dalhousie University, 2010a), Dalhousie University has made active transportation systems a priority for future development and renewal of campus built environment and infrastructure. One of the most important proposals is the plan to link all three campuses with a safe and clear active transportation route for foot and bike traffic. Specifically, this will be done by limiting vehicles to one side of University Avenue and leaving the other side open for active transportation (Dalhousie University, 2010a). Another aspect of the plan is to improve bike parking. The Dalhousie Bike Centre is not mentioned in the plan, perhaps because this plan was conceived before the Bike Centre's new location was decided. However, the Plan does identify, in an appendix, the desire for a bike-share program for students and staff, based on evidence of "increased urban bike use even in cold and inclement weather conditions where bikes are conveniently and inexpensively accessible" (Dalhousie University, 2010a, p. A.1.2). In the "Campus Master Plan", Dalhousie recognizes the need to connect facilities - such as the Bike Centre - with programs and movement networks to increase their effectiveness.

Dalhousie's "Transportation Demand Management Plan" outlines the policies, programs, services, and products that Dalhousie is utilizing to ensure campus transportation is sustainable and efficient. The plan emphasizes active transportation methods including walking and biking as important strategies in achieving this goal. In particular, the plan says that it is important to "support current cycling programs and facilities such as:

the bike centre, including increased programming of promotional events, individualized marketing, and safety education" (Dalhousie University, 2012). As well, the plan states that approximately 10% of Dalhousie students and 5% of staff/faculty bike as their main mode of transportation. This means that there are nearly 2000 people that may potentially use the Bike Centre's services.

DALHOUSIE BIKE CENTRE

Figure 2. Dalhousie Bike Centre. Retrieved from http://www.dal.ca/dept/bike-centre.html

On campuses across North America, there is a growing demand for affordable alternative modes of transportation. Student populations often have lower income levels and live close enough to campus to make active transportation a viable commuting alternative. Many universities, such as Dalhousie, already have bike centres, while others are beginning to consider including them as part of campus transit or sustainability plans. The Association for the Advancement of Sustainability in Higher Education (AASHE) supports the move towards more sustainable transportation systems, listing leading campuses in bike centre services (AASHE, 2005-2012). These centres offer services such as maintenance workshops, bike share programs, mentoring, and free access to tools. These programs aim to increase bike usage, build community, and lessen environmental impacts.

Established in 1998, Bike Again is a community bike project that operates out of the Bloomfield Community Centre in Halifax's North End. Inspired by the success of Bike Again, and recognizing the need for such a service for the Dalhousie community, the university began the bike centre

program as a student initiative pilot project in 2008 (Campus Bike Centre, 2011). As part of the Dalhousie University's Office of Sustainability, the Dalhousie Bike Centre provides educational programming while continuing the work of other community-minded cycling organizations building the cycling culture in Halifax. The establishment of the Bike Centre contributes to Dalhousie's larger goal of becoming a community leader in active and sustainable modes of transportation.

In 2009, Scott Macphee was appointed the coordinator of Dalhousie's Bike Centre program. In 2011, the program received funding from Dalhousie's Student Union for tools, bikes and parts. Recently, as part of the "Dalhousie Campus Master Plan", a space up to 2000 square feet has been allocated for the creation of a new bicycle centre. This space will be in one of the new buildings being constructed on campus in the next two to five years (Rochelle Owen, personal communication, March 15, 2012).

In its various transportation and sustainability plans, programs, and policies, Dalhousie University has already recognized the benefits of biking. Measures have been taken to promote biking on campus, such as the provision of bike racks, various promotional challenges, bike loans, and the creation of the Campus Bike Centre. Future proposals include the renewal of University Avenue and creation of new bike routes. By emphasizing the role of the Bike Centre in future planning and programming, Dalhousie University has the opportunity to demonstrate its commitment to sustainable and active transportation. Dalhousie University can participate in supporting the design of the new Bike Centre and can demonstrate its leadership in the field of campus sustainability and biking programs.

"The bicycle is the noblest invention of mankind."

-William Saroyan

PROJECT OBJECTIVE

Dalhousie University's current Bike Centre is small and underutilized. As part of current and future campus construction, the Bike Centre has the opportunity to move to a new space on campus (Rochelle Owen, personal communication, 31 January 2012). The purpose of this study is to create a preliminary design that will best reflect the vision and needs of the Dalhousie biking community, while promoting the goals of the University's Campus Master Plan/Sustainability Plan (Dalhousie, 2010). The goal is ultimately to enhance the functionality of the Bike Centre, which will support biking at Dalhousie and contribute to the overall goal of a sustainable campus. To reach this objective, the research team conducted interviews with local bicycling professionals, a focus group with Bike Centre volunteers, and an analysis of other successful bike centres. This report outlines the research methods, results, a discussion of significant findings, and recommendations for action and future research.

METHODS

DESCRIPTION OF STUDY DESIGN

This research project began with a consultation with the team's client, Scott Macphee, who is the current director of the Dalhousie Bike Centre. He guided the initial scope of the project, suggesting useful deliverables and approving study methods suggested by the research team. After this consultation, the team created a study design that would aid in their understanding of what bicycle centre design attributes are valued by the Dalhousie biking community and professionals who work with bicycle communities throughout Canada. Qualitative data collection was chosen because this project was responsive to the biking community and

therefore it was important to incorporate and understand members of biking communities' experiences. For this purpose, interviews and a focus group were conducted, as well as a Strengths-Weaknesses-Opportunities-Threats (SWOT) Analysis.

The sampling methods used were based on convenience. Potential interview participants were chosen according to both convenience sampling and snowball sampling, where several contacts suggested other professionals for interviews. However, the research team did make an effort to have in the sampling pool participants with a diverse range of backgrounds. The focus group sampling pool included all Bike Centre volunteers, as well as a convenience sample of members of the Dalhousie biking community, who were approached based on pre-existing relationships with researchers or known connections to sustainability or biking projects on campus. For the SWOT Analysis of other bike centres, candidates were chosen based on similarities with some element of the Dalhousie Bike Centre, or else based on the other bike centre's success or leadership in their community.

Table 1. Method Overview

Method	Scope	# Participants	Study Dates
SWOT Analysis	Successful bike centres leading the field	5	March 8-12
Personal Interviews	Professionals in Halifax cycling community	4	March 12-16
Focus Group	Bike centre volunteers and Dal biking community	6	March 19
Thematic Analysis	Focus group and interview responses	-	March 19-April 5

JUSTIFICATION FOR MEASUREMENT CHOICES

Because the research team intended to create a design for a specific community with specific needs, qualitative methods such as interviews and focus groups were considered the most appropriate and informative for the final design alternatives (Hoepfl, 1997). With limited time, interviews with professionals and focus groups with Bike Centre volunteers were deemed more valuable than quantities of data from surveying unknown or unknowing student groups. A SWOT Analysis was also conducted, in order to learn from other successful bike centres in similar communities. This combination of methods allowed the research team to create a final design that was well informed by others' experiences, but also uniquely relevant to the client's needs, as well as those of the Dalhousie community.

After initially considering the use of a survey, the research team decided not to use this approach, due to time constraints and uncertainty about which population to survey. A set of surveys would be more useful after the initial research, to gauge responses to the design alternatives presented in this report. A design charrette was also proposed, however, it was considered not as useful as holding a focus group with guided questions.

The SWOT Analysis is often used in business contexts to examine the relationship between internal strengths and weaknesses of an organization, and the external opportunities and threats which occur in its environment (Barney, 1995). This approach allowed the research team to gain an understanding of the internal and external challenges facing bike centre programs, with the potential to apply these results to the final design alternatives offered to the client.

"Every time I see an adult on a bicycle, I no longer despair for the future of the human race."

-H.G. Wells

In order to gather responses from the Bike Centre's volunteer community, the research team used a focus group. According to the Health Communication Unit's guide, using focus groups provides an opportunity for in-depth discussion with several people at once, leading a greater efficiency in data collection (Health and Communication Unit, 2002). Multiple interviews with individual volunteers would have led to many of the same responses, and would have demanded much more time commitment from the research team. Also, the interaction between focus group participants led to a deeper engagement in the topic, and allowed for the participants to work off of each other's ideas and to share their experiences in support of their needs for a new bike centre.

Personal interviews were deemed a necessary part of the research, as the team had to coordinate with Dalhousie Bike Centre's manager, Scott Macphee, and the Director of the Sustainability Office, Rochelle Owen, who are both involved with advocating on behalf of the new Bike Centre at Dalhousie University. The interview method was chosen because it allowed the research team to ask specific questions of participants, taking advantage of their diverse knowledge based on their individual experiences. Rather than have general questions on a survey to a the entire student body the research team thought it would be more beneficial to our research as the participants selected were drawn from both the the Dalhousie and Halifax cycling communities. The team believed these participants would be better suited to comment on the unique relationships at Dalhousie and in Halifax.

A thematic analysis using coding was chosen as the most appropriate way to analyze results, because it allowed researchers to include new themes introduced by participants even if they were unanticipated. This method

was convenient, given the small amount of interviews and focus group results and it was a good method to communicate our data visually based on the fact that it was a design oriented research project.

PROCEDURES

For the SWOT, the research team chose four other campus bike centres based upon their leadership in providing bike centre program and sustainability initiatives. These four bike centres were the Bike Kitchen at University British Columbia; Berkeley University's BicyCAL; the Bike Chain at University of Toronto; and Michigan State University's Bike Project. Information was gathered using their bike centre websites and blogs, and entered into the SWOT format (see Results).

For the interviews, professionals were asked to identify challenges related to the creation and the continued use of bicycle centres, as well as opportunities for improvement. Twelve professionals were identified as potential interview candidates, from a range of backgrounds, including Dalhousie's Office of Sustainability, Halifax's Ecology Action Centre, the Halifax cycling community, local entrepreneurs, Dalhousie professors, Dalhousie Facilities Management, and a successful bike centre at another university.

Of the twelve professionals that were initially contacted by e-mail, four agreed to participate in the research project. All four professionals were part of the local biking community. Interviews were scheduled for March 12-16th, 2012, with one taking place over Skype, the remaining three were conducted in person. Interviewees were sent a letter of information and consent by email prior to the interview (see Appendix). Personal information obtained during interviews was confidential, however for this

report names of interviewees will not be kept anonymous. Interviewees were made aware that they may reject to answer any question and were allowed to stop the interview if they felt the desire to do so at any time.

All four of the interviews were completed. Interview questions were created for each participant in relation to their experience with cycling communities in Halifax and at Dalhousie University. This method followed the general guide approach, in which questions were intended to ensure that the same general areas of information were collected from each interviewee. Interviews were between 30-45 minutes in length. Two research team members conducted the interviews: one interacted with the interviewee; the other took notes by hand. All interviewees expressed interest in receiving a copy of preliminary results for this research and it was agreed that this would be sent to them by email.

Based on the results from these interviews and the previous SWOT Analysis, the research team drafted two design scenarios for the Dalhousie Bike Centre. The first scenario assumed a limited budget and had the smallest possible allocated space. The second scenario was the visionary scenario, which assumed a limitless budget and a generous amount of space.

An exploratory focus group was held with Dalhousie Bike Centre volunteers and cyclists at Dalhousie to gather information on their needs and to discuss the two design alternatives. Focus group candidates were approached using email and Facebook. The target size for the focus groups was 5-10 members of the biking community.

Of the nine people approached for the focus group, three participants (two volunteers, one member of the cycling community), attended the

"I want to ride my bicycle."

- Queen

focus group. Three other volunteers expressed interest in attending but were unable to attend. The research team revised the focus group script and sent them questions by email, to which all three responded. Considered as a part of the focus group, these participants brought the total size to six participants.

The focus group session was held Monday, March 19th, at 4:00 pm. The focus group lasted one hour. Three members of the research team were present - two to facilitate, and one to take notes. Notes were taken by hand throughout the focus group session. Focus group members were asked to sign a consent form and were given a letter of information and consent (see Appendix). Personal information obtained during the focus group session is confidential. Focus group members were made aware that they could choose not to answer any question and were allowed to leave the group if they felt the desire to do so. All members of the focus group opted to participate.

The team used a focus group script, designed to invite conversation about the current Dalhousie Bike Centre, the Dalhousie Bike Centre design alternatives, and what services the participants would like to see offered by the Dalhousie Bike Centre in the future. Results from the focus group were used to support the final Dalhousie Bike Centre design proposal.

To analyze both focus group and interview results, the research team first organized the results based on general sections, then used an open coding method to find thematic elements or recurring ideas (Health and Communication Unit, 2002, and Brewerton & Millward, 2001). These themes were then organized in several different formats for the final deliverables: a materials list, an attributes checklist, floor plans,

renderings, a new logo and a word cloud was created using the online tool Wordle™.

Wordle™ is a website which allows users to create "word clouds" from a body of text. The size of the word is proportional to the amount of times it appears in the text, and thus it is a useful tool for highlighting key, repeating themes (Wordle™, 2011). The summarized interviews and focus group discussions were used as the body of text for the word cloud.

DISCUSSION OF RELIABILITY AND VALIDITY

In qualitative analysis, it is difficult to test results for reliability and validity. Unlike a quantitative experiment, interviews and focus groups are subject to changeable personal attitudes or opinions, and it is not possible to recreate the same setting to test the repeatability of study results. The use of a focus group, for example, can lead participants to influence each other's opinions, and skew the results towards the strongest voices or ideas. Also, focus group results are sometimes limited by the skills of the moderator leading the group (Health and Communication Unit, 2002). In the Bike Centre focus group, discussion was not dominated by a single voice, but the participants were motivated to agree with one another by their mutual interest in the final project. Another validity test is whether a question measures what it was intended to measure (Haggard, 1998). Both focus group and interview questions were run by a project mentor, to test for content and relation to project scope.

Interview responses are value-bound and subjective, as all of the participants in this study of the Dalhousie Bike Centre had a personal connection to the biking community (Hoepfl, 1997). This is partially due to

the self-selection process, where people who had a stake in the success of the new Bike Centre were more likely to take the time to do an interview. Also, the final design choices depended upon the research team's ability to analyze results in depth and keep a balanced perspective. Hoepfl (1997) suggests that for qualitative research, a reliable study should show a clear trail of methods, data, analysis and process notes, to confirm the approach and conclusions. This report is supported by several appendices outlining methods in detail. Due to the method of sampling, it is impossible to say whether these responses reflect the opinion of Dalhousie's population as a whole. However, these results are valid as far as they reflect the opinions of a certain group of interested members of the local biking community.

LIMITATIONS

There were several limitations to the study that the research team did not anticipate or could not control. The focus group method yielded a smaller number of participants than was expected. Focus group size should be a minimum of four participants (Fern, 1982). Due to lack of participants the research method had to be adapted to supplement and enhance focus group findings. Three other volunteers expressed interest in attending but were unable to make the date specified. The research team decided that using a short interview method to obtain more responses would yield similar results to a focus group but could better accommodate individual participants' schedules. The focus group material was revised and administered by email to those who could not attend the focus group. These responses brought the technical participants in the focus group up to six, and removed the need for holding a second focus group. The word cloud was also subject to limitation in that it was generated from interview notes. This means that the conversation was first filtered

through the interviews. Thus, the word cloud could not be truly representative of the dialogue.

DELIMITATIONS

Literature suggested that researchers should hold a minimum of two focus groups to ensure that all themes have been covered (Health and Communication Unit, 1997). Due to time constraints, and choice on the part of the research team, only one focus group was held. There was no ideal number for interview participants, but again the research team chose to only approach ten potential participants, due to time and feasibility. Only one professional from outside the Dalhousie/Halifax community was approached for an interview, as the focus of this study was the specific needs of the local cycling community.

RESULTS

SWOTS

SWOT analyses were performed on four different campus bike centers to gain an understanding of the most common features of a successful bike center.

Table 2: SWOT Analysis: University of British Columbia Bike Kitchen

	Helpful	Harmful
Internal Origin	- Well designed website, easy to use - Inviting, approachable, has a theme that appeals to students. - Regular Hours - Large staff, including staff bios on the website - Has a variety of programs (including workshops and events) - Do not charge for their services - Sells some parts (helmets, cables and housing, inner tubes) and are looking to expand, selling more parts - Blog for BicyCAL is in development - Weekly meetings for the community	-Two different locations, could cause confusion - Described on their website as "mobile", could cause problems - Has an ambiguous bike share program, mysteriously went under - Isn't able to sell larger bike parts currently - Multiple Biking committees on campus that do not work together - Odd name, difficult to pronounce
External Origin	- Large student population for BicyCAL to serve - Southern California has moderate to warm temperatures year round, ideal for biking	- Multiple Bike Shops in the area that repair bikes for a low cost (may be more appealing to people with less time) - The city of Berkley California requires that cyclists have a bike license, the fee and hassle of obtaining this certification could be a deterrent to prospective cyclist

Figure 3. Bike Kitchen. Retrieved from http://thebikekitchen.com/

Table 3: SWOT Analysis: University of Toronto's Bike Chain

	Helpful	Harmful
Internal Origin	-Organized, accessible website - News page that updates students on events and daily activity at the Bike Chain - Large variety of bike parts available for sale - Regular Hours - Mixed staff of professional mechanics, cyclists, and volunteers -Bike Lending program -Free of charge - Has a work study program - Helpful facts on Bike Chain's website regarding winter cycling and other challenges - Has a large biking network (U of T cycling club, U of T Mountain Biking Team, etc.) - Receives a 1 dollar student levy every year	- Very busy, could compromise their quality of service - Small space
External Origin	- U of T is a large campus with a large student population to serve - Larger student population could generate more and larger donations - Larger students population also means more room to grow	- Weather in Toronto is often not optimal - Great public transit system, people could opt to take the transit instead of bike

Figure4. The Bike Chain. Retrieved from http://environmentandsustainability.utoronto.ca/get-involved/

an State

	Helpful	Harmful
Internal Origin	- Comprehensive, informative website - Bike Share program with a variety of options (different lease lengths and bikes) - Sells bikes - Sells biking accessories as well (helmets, reflectors, etc.) -Large space - Regular Hours - Offers classes on bike safety, maintenance, and commuting	- Charge for their services - Services are open to all (not directly focused on the students) - Informative classes are not offered regularly
External Origin	- Large student population (~40,000) - Large number of potential customers and supporters	- Bike theft is an issue at Michigan State University - Poor weather conditions in the winter months

Figure5. The Bike Project. Retrieved from http://www.bikes.msu.edu/

Table 5: SWOT Analysis: Berkley's BicyCAL

	Helpful	Harmful
Internal Origin	- Well designed website, easy to use - Inviting, approachable, has a theme that appeals to students. - Regular Hours - Large staff, including staff bios on the website - Has a variety of programs (including workshops and events) - Do not charge for their services - Sells some parts (helmets, cables and housing, inner tubes) and are looking to expand, selling more parts - Blog for BicyCAL is in development - Weekly meetings for the community	-Two different locations, could cause confusion - Described on their website as "mobile", could cause problems - Has an ambiguous bike share program, mysteriously went under - Isn't able to sell larger bike parts currently - Multiple Biking committees on campus that do not work together - Odd name, difficult to pronounce
External Origin	- Large student population for BicyCAL to serve - Southern California has moderate to warm temperatures year round, ideal for biking	- Multiple Bike Shops in the area that repair bikes for a low cost (may be more appealing to people with less time) - The city of Berkley California requires that cyclists have a bike license, the fee and hassle of obtaining this certification could be a deterrent to prospective cyclist

Figure6. BicyCAL. Retrieved from http://newscenter.berkeley.edu/2010/11/23/bicycal/

INTERVIEWS AND FOCUS GROUP

The following are the themes arising from the analysis of the interviews and focus group. The researchers identified the three major ideas from each interview, both as specific strategies.

Table 6. Interview with Scott MacPhee

Scott MacPhee: Febraury 2 2012	
Objective	Strategy
Design	The new centre provides the opportunity to improve the environmental conditions of the space - more welcoming, better functioning
Accessibility	Need better accessibility/visibility: low-cost, high-impact strategies
Community Support	Outreach to the community must be about providing opportunities for people to improve not just their biking knowledge and skills, but their entire lifestyles

Table 7. Interview with Rochelle Owen

Rochelle Owen: March 15 2012	
Objective	Strategy
Design	Design the space for the programs first, then build the space around that
Sustainability	Important for sustainability, only Bike Centre in Atlantic Canada, promotes active transportation, leadership as a sustainability school
Community Support	Funding and support were big conversation pieces, possible requirement of a levy would help ensure bike centre size and space

Table 8. Interview with Jenn McGowan

Jen McGowan: March 16 2012	
Objective	Strategy
Community Support	Talked about the different groups in the city and how biking is gaining momentum in Halifax
Marketing	Promoting Biking through incentives and adapting some type of Bike Week Event
Accessibility	Bike safety, EAC has a program, part of her current work

Table 9. Interview with Sarah Craig

Sarah Craig: March 19 2012	
Objective	Strategy
Marketing	Appealing to people who don't ride bikes is important. Try to remove biking from an entrenched subculture.
Accessibility	Make the Bike Centre friendly, clean and welcoming. Make sure there is a reception area
Marketing	Don't sell the what, sell the why; people who are cyclists are already going to go to the bike centre, show people why they should come to the Bike Centre

Table 10. Focus Group

Focus Group: March 19 2012	
Current Important Features	Free and Drop-in friendly, Mentorship experience, Tuesday Night Repair Class, Promotes sustainble living
Necessary Features in New Design	SINK, Buy/have parts the break frequently in the house, Easy access (ground level preferably), More visibility (large windows, etc.), Better organization (not sure if we should address this, but it was brought up multiple times), Outdoor space: bike racks, possible patio area?, Better, more consistent hours

WORD CLOUD

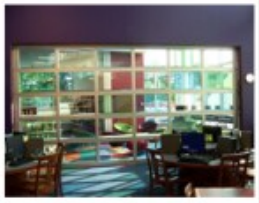
The word cloud generated by Wordle™ was based off of the interviews and focus group. It provides a visual representation of key themes and recurring elements from these discussions.

Figure 7. Word Cloud of interview and focus group notes.

MATERIALS LIST

The materials list is a compilation of the technical elements of a new bike center. It was informed by interviews, focus groups, and SWOT analysis. It provides a real world, visual examples of useful elements.

Table 11. Materials List

Material	Materials List		
	Inspiration	Use	Image
Glass Garage Door	Kalkin House	A flexible entrance that provides natural light and open space/ air in the warmer months	
Cement Floor	Mechanic Garages/Other Bike Centre Designs	Provides a hygienic work space that is easy to clean and not easily damaged	
Metal Shelving	Mechanic Garages/Other Bike Centre Designs	Provides a clean and efficient method of storage with high storage capacity and extremely durable	
Tool Storage/Mobile Unites	Mechanic Garages/Other Bike Centre Designs	Can be used throughout the bike centre space, moveable	
Peg Boards	Mechanic Garages/Other Bike Centre Designs	A method of optimizing space, makes it easier for new comers to know where tools are located and quick clean up	
Bike Storage	Bike Centre Designs	Quick, easy accessible storage for the bike share program, storage of bike being fixed and potential to offer an indoor bike parking service	

FLOOR PLANS/RENDERING

Two alternate floor plans and two renderings were devised. They were informed by the interviews, focus group, and SWOT analyses.

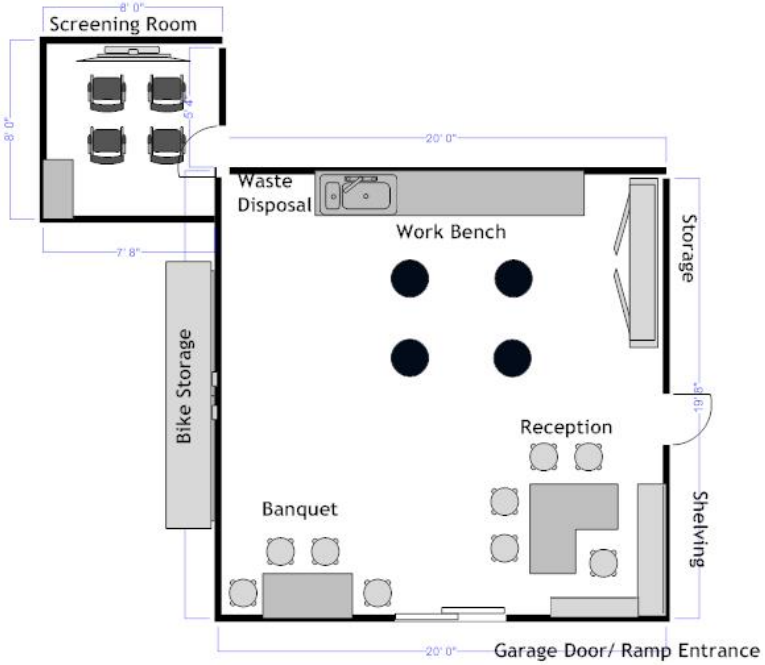


Figure 8. Integrated Floor Plan

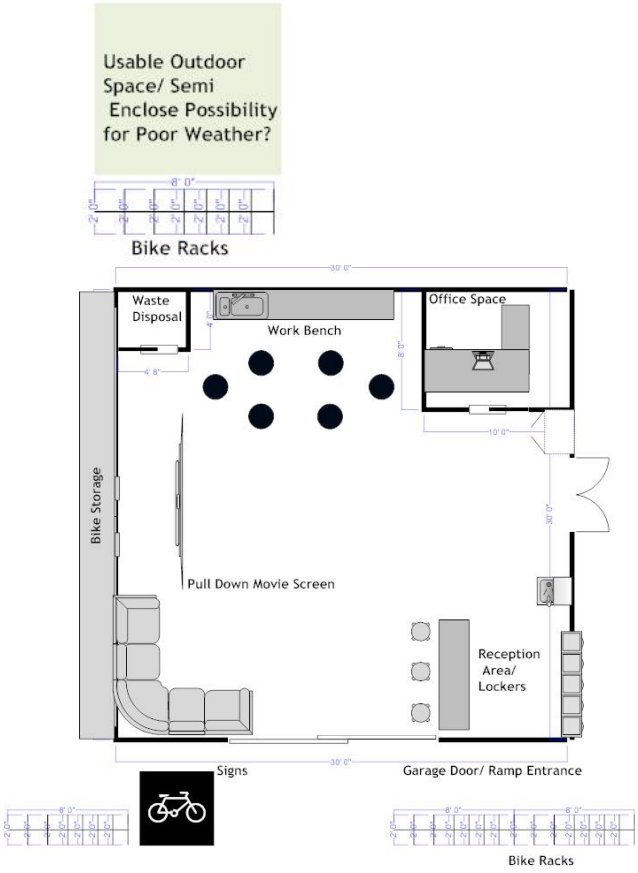


Figure 9. Open Concept Floor Plan

Figure 10. Outdoor Rendering

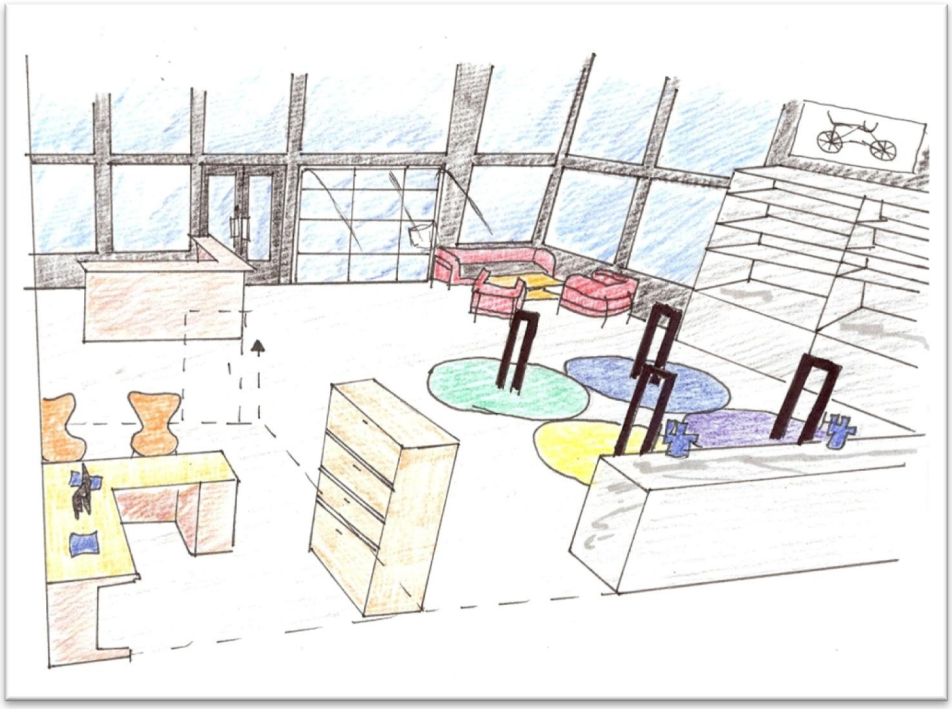


Figure 11. Open Concept Interior Rendering

POSTER

The research team designed a poster to easily disseminate information and promote the Bike Centre. It also provided a channel for people to show support and provide feedback for the new Bike Centre.

Figure 12. Promotional Poster

LOGO

A logo was created to give a fresh identity and capture the spirit of what the new Bike Centre aims to embody.

Figure 13. New Bike Centre Logo

DISCUSSION

The purpose of this study was to incorporate the needs of the Dalhousie biking community into the preliminary design of the new Dalhousie Bike Centre. This would include a larger space and technical elements that would enhance the functionality of the Bike Centre and help to promote biking at Dalhousie.

OVERVIEW OF SIGNIFICANT FINDINGS

Interviews and Focus Group

Tables 6 through 10 demonstrate the trends that were extracted from the interviews conducted with members of the biking community. The most prominent themes from the interviews were design, accessibility, sustainability and community support. All of those interviewed focused in on several aspects of design such as interior space allocation and visibility. It was important to all of them to ensure that the new bike centre is a clean and welcoming space for all members of the Dalhousie community.

The interviewees and focus group both thought the new Dalhousie Bike Centre should be placed in a location with high visibility and built in a way that would be attractive to students and staff. A large space was also recommended to allow maximum functionality for a variety of programs and services. The focus group was very adamant that several technical aspects be included in the design such as a sink, good lighting, interior and exterior bike racks and outdoor programing space.

Community support was another prominent theme within the interviews. Some of the interviewees highlighted biking as a growing trend in Halifax with support from many different community groups. Outreach was mentioned as a key component in the Bike Centre that would help attract more people to biking and encourage them to use the Bike Centre serivices.

It was recognized that biking is an important part of creating a sustainable community and supporting sustainable lifestyles. Dalhousie is on the path to becoming a leader in sustainability by promoting active transportation and is the only university in Atlantic Canada that has a bike centre.

Marketing was seen as a strategy to help encourage use of the Bike Centre and to cultivate a new interest around biking. The goal of marketing is to portray biking as the most convenient mode of transportation. Sarah Craig summarizes this by saying, “I bike because it is convenient and easy.” Promoting biking can also be done through various biking events around Halifax.

The significance of Bike Centre programs was stressed by several interviewees and the focus group. Programs mentioned were the mentorship program, Tuesday night repair class, and bike safety seminars. As well, they expressed a desire for future programs to be

established. These could include movie nights, a bigger bike share program, and an introductory Frosh Week tour. These programs aim to support an active biking community and help integrate the Bike Centre into the wider Dalhousie community.

Word Cloud

The word cloud (Figure 7) is a visual way of illustrating the recurring words and themes from the interview and focus group notes. The words that were the most prominent were bike, people, community, space, and need. This shows the consensus of the interviewees and focus group on the importance of community outreach and space. The word cloud has also been used in the poster because it is a visually stimulating and informative method of presenting information on the bike center.

Material List

The materials list (Table 11) included a range of technical features that help create a more efficient and effective bike center. This was based on the research team's interpretation of interviews, focus group, and SWOT. The assets that were found to be most important, as well as aesthetically pleasing, were... A large glass garage door would provide natural light, visibility, and the option of expanding outdoors in warmer weather. The Bike Center often has to use harsh chemicals, and thus a cement floor would be the ideal surface due to its resilient qualities. It is impermeable, difficult to damage and be easy to clean. Other technical elements consisted of equipment that would create a more efficient and organized space. This included metal shelving, tool storage/ mobile units, and peg board. As well, bike storage is necessary for ensuring organization and easy accessibility. All of these materials would aid in creating a more efficient and clean space.

"For the better part of a century, people all over the planet rode bicycles because they were quick, easy, convenient and enjoyable."

- Mikael Coville-Andersen

Floor Plans and Rendering

There were two floor plans (Figure 8 & 9) created. One was an open concept, and the other was an integrated design that shared functions with the rest of the building. The open concept floor plan (Figure 9) is the research team's interpretation of the ideal envisioned space because it allows the bike centre to function in one area. The single space is the most effective way to organize the bike centre. The two renderings (Figure 10 & 11) created represented visions of both inside and outside space for the open concept. It includes a communal space, an area to show films, a reception desk, office for staff, workspace, and visibility. The research team learned that the proposed location for the Bike Centre is on Alumni Crescent, beside Wickwire Field (Rochelle Owen, personal communication, 15 March 2012). However, the research team believes that the ideal location for the Centre is on the corner of LeMerchant Street and University Avenue. This central location would improve accessibility and visibility. It would also make a statement that biking and sustainability is a priority for Dalhousie.

Poster

A poster (Figure 12) was the most effective to inform and attract new visitors to the Bike Centre. The poster included the word cloud as it was an aesthetically interesting and informative graphic. The poster also included the question "Have you used your Bike Centre lately?" which reaches out directly to the viewer. The new logo is then included along with contact information. The contact information is preceded by a call to action, "Make it yours".

Logo

The researchers created a new name for the Bike Centre, the Bike-ER. From the SWOT analyses, other bike centres had creative, marketable names which made them seem more accessible and appealing. The name Bike-ER is a play on the word "biker" and suggests that the Bike Centre is a place to place to fix a broken or damaged bike.

The logo (Figure 13) was designed to be clean and bold so that its message was clear. The use green emphasizes the Bike Centre's role in campus sustainability.

"Get a bicycle. You will certainly not regret it, if you live."

- Mark Twain

CONCLUSION

The new Bike Centre design was informed by interviews with bike professionals, a focus group with Bike Centre volunteers, and SWOT analyses of other campus bike centres. These research methods indicated that the Bike Centre requires an overhaul of technical aspects in order to effectively support biking programs and the biking community at Dalhousie.

The study could have benefitted from additional time and interview/ focus group respondents. This would have allowed for greater range and richness of data, which would have strengthened the overall design and conclusions.

RECOMMENDATIONS FOR ACTION

Dalhousie University could greatly benefit from the implementation of this new design. Biking is an important solution in creating a socially, economically, and environmentally sustainable campus. This new design

would increase the exposure of the Bike Centre and help make biking the most convenient method of transportation on campus. It is imperative that the redesign includes technical renovations including more space, improved organization, and increased visibility. As well, it must focus on improving the Bike Centre's ability to offer programs and its further integration into the Dalhousie community.

Awareness surrounding the Bike Centre and biking must also be a priority. This can be done through the use of posters, social networking, word of mouth, incentives, and promotional events. This an integral component in ensuring the longevity of the Bike Centre.

FUTURE RESEARCH

The implementation of the new Bike Centre must be supported by future research into practical elements and feasibility. Research into the budget must be conducted to optimize the allocation of resources. As well, further research into marketing should explore the best way to reach students and staff and to make connections with other biking societies in Halifax.

ACKNOWLEDGEMENTS

We would like to thank our client Scott Macphee, Manager of Dalhousie Bike Centre, for his guidance and helpful input. We would like to acknowledge Paul Sylvestre for his mentorship of our research team, and especially for his help with reserving a space for our focus group. Thank you also to Rochelle Owen, Course Instructor, for allowing use to interview her and providing constant support for this project.

We would like to thank all the professionals who participated in the interview process and all the bike centre volunteers and cycling community members who participated in the focus group process. We hope that through their generous participation, they have contributed to the Bike Centre's vision for community well-being.

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APPENDIX A — NOTES FROM INTERVIEWS

INTERVIEW WITH ROCHELLE OWEN: MARCH 15 2012

What do you know about the current plans for the new centre?

- Ideally 2000 sq ft
- Divided space: new fitness centre for showers, athletics staff for front desk/reception, multi- purpose room for booking movie screenings and social events, outdoor storage area
- COST - goal to reduce cost per square foot (do this by double-use with partners in other programs/facilities)
- Reducing/optimizing staff, based on "opportunistic" approach
- High ceilings are more likely if there's a fitness centre in the building, but otherwise it is difficult to control if we get these

Two approaches: create a box and fill it, OR (and this is the more "elegant and flexible" approach, the one that Rochelle prefers) outline the programs first and then figure out what kind of space we need for the programs, so we can pursue a variety of strategies for getting the space we need

What do you consider the main role of the bike centre to be?

- Support active transportation and commuting on campus, especially by building confidence among riders and equipping them to be better (improving infrastructure belongs to the institutions/city)
- This is the only Bike Centre at an Atlantic University campus!
- Leadership as a sustainable school
- Health and wellness initiative - connected to broader sustainability movement

Rochelle's "Dream Bike Centre" Elements

- Storage for bike rentals
- Reception/outreach area
- No sales (too complicated) but maybe the bookstore could sell some equipment?
- Workshop space - is 2000 sq ft enough for 20 people?
- Associated outdoor area - a "route" for test riding/bike lanes
- Ride-in off street
- VISIBILITY
- Sink and drain, dirty rag disposal
- Back area for storage, disposal
- Connected and hub-like
- Access to washroom, shower facilities (fitness centre?)

Future goals:

- Funding or revenues would help ensure bike centre size and space (would a bike share generate revenues?)
- Support among students - get DSU more on board, perhaps require levy
- Support at University - prove the importance of cycling on campus, recognize as a fundamental program

- What about the now defunct SBAD (Society for Bicycling Advocacy at Dal)?

Report:

- NO MATTER WHAT, we need a new bike centre
- Need to outline space required for program
- Need to work with existing, prioritized uses
- Support from survey data (the annual survey at Dal - find this for final report?)
- Remind readers (university leadership) of the relevancy of this project: 10% of students ride a bike, which is much higher than the average for the whole population - that's 2000 people potentially served by the bike centre! (Not including employees...)

Check out:

The survey (environmental attitudes?)
Institutional bike plan - campus pathways plan

INTERVIEW WITH JEN MCGOWAN: MARCH 16 2012

Halifax cycling community:

- Cycling gaining momentum in the city: Halifax cycling coalition, Cities and Environment Unit (through School of Planning), Copenhagenize lecture, people in the city
- Infrastructure slow to improve, but demand/support is growing
- Jennifer Watts is a key councilor in support

Current work:

Active and Safe Routes to School: travel planning for elementary schools

- Identify barriers, then create an action plan
- Get the community involved (kids, parents, teachers, other residents)
- Habit-forming amongst community
- Improving safety

Marketing:

- Adapt to Bike Week programming: Jen does a "Bike to School Day" with prizes from MEC and Bike shops in HRM
- Local cycle shop involvement - building ties to city's cycling community
- Promoting and incentives - telling good stories from 'real people'
- Get out in website, or Dal Gazette

Programs and Services:

- Workshop space (learning)
- Repair services (for a fee) - not everyone is interested in learning/has time to fix their bike
- Secure sheltered storage - membership? Gets you a 'parking spot'
- Selling gear/equipment? - Small things, necessities
- Clinics - short informative series, maybe members get free, others small fee
- Bike parking! - As easy as possible

- A lot of this stuff (programming or promotion) doesn't have to be expensive; it can be free, easy, through donations, working with established community
- Safety training program like "Making Tracks" at the EAC - active transportation training
- Courses for first year students, or a special bike team during Frosh week

INTERVIEW WITH SARAH CRAIG: MARCH 19

Interview with Sarah Craig

Have you ever used the bike centre?

- Never used the Bike Centre
- Appeal to people, look for people who don't ride a bike
- Bikes are practical part of everyday life
- To appeal to huge market make it stylish

How to branch out?

- Don't sell the what, sell the why
- Fun, accessible, bright, colorful, welcoming
- Not sub-culturist opens up the closed knit - community
- Having somebody welcoming there - grow the community
- New members get all the information they need
- Visual clutter, clean (visually clean)
- Simplified diagrams make it bright
- Chalkboard, light board garden
- Places the help people live
- Providing info that are complementary to the bike centre, providing programs that overlap (fashion, urban issues) ART
- Have talks in the bike centre (speaker series)
    - Not a judgment thing

How to reach out?

- Really good logo
- Colorful and happy
- Have a contest maybe?
- Make it "bike 2.0"
- Make it friendlier (possibly urban landscape)
- Soft friendly feel
- Bike is the what, need to sell the why
- Check out TED talk about the why
- The question is how to appeal to urbanites
- Not an entrenched subculture

How to spread the word of the Bike Centre

- A really nice sign
- Social media

- Be a conversation starter

What are the features that will help the Bike Centre reach out?

- A welcoming desk open space
- Make it clean!
- Green roof on bike rack
- Look at books at library about green roofs
- Architect Kim Thompson natural architecture

Be focused in what you offer - know what your purpose is

APPENDIX B — NOTES FROM FOCUS GROUP

FOCUS GROUP NOTES: MARCH 12 2012

Why do you think the Bike Centre is important for DAL?

- Good way to promote sustainable living
- Do it because it is fun
- Good way to meet people new to DAL and the city
- Introduce a sense of community to people who are new
- Free - good for people who are trying to save money
- Ability to go in and learn a skill for free - promotes sustainability in the community

Most important thing the Bike Centre offers

-Tuesday night repair class
- A little bit of mentorship and training
- Pair up with members
- Keeping it open and having useful, regular hours

How did you hear about the Bike Centre?

- A Fix your own Bike Centre at Kings
- More marketing and people in the space?

Best Features

- The mural!
- The volunteers (1 on 1 working relationship)
- Helps you to do your own fixing (learning mentorship)
- Easy to contract Scott
- Well stocked
- Good working area for two people

Things they want

- Sink
- Have ability to buy parts
- Would be nice to have bike storage (short term)
- More effective paperwork system
- Organization, computer
- Coordinate all of the volunteers
- Integrate with other Biking communities in Halifax

Ideal Bike Centre

- Easy access (not having to carry in the bike)

Programs most important to the Bike Centre

- Winter riding (used to have rides)

-How biking fits into broader sustainability
- Central part = repairing
- Drop in part essential

How to make the Bike Centre more appealing to a wider audience
- A Sink!
- Make it more visible
- Have more space

Reactions to the floor plan
- The workstations too far away from the workbench
- Lots of shelving
- Have a counter not dedicated to bike stuff
- Lockers
- 2 sinks (chemical sink possibly, a regular sink)
- Big space all together good
- Don't forget about King's

Question about whether we should gear the Bike Centre towards people or cyclists
- Would be great if you could do it
    - Sound ambitious
    - Might be more effective if partnered with other biking coalitions

Closing Remarks
- More tools
- More parts on hand (things that tend to break more often)
- Organizational - bike lending - some kind of system of organizing
- Some way of charging people
- As little as possible down time between when it closes and when it opens
- Keeping it free for drop-ins
- Make people aware of what it is
- Proposal for funding!

Reply from Dylan Hayward: Focus Group E-mail Submission

1. Why do you think the Bike Centre is important for DAL?
- Fosters sense of community;
- Promotion of green transportation reduces dependence on fossil fuels;
- Helps to develop skills/knowledge;
- Increases bike safety (lots of unsafe bikes out there.)

2. What do you think is the most important feature the Bike Centre offers?
- Probably access to the bike pumps (which is sort of sad, but they do get used a lot - people need to keep their tires inflated.)

3. How did you hear about the Bike Centre?

- Can't recall; likely something in newsletter or similar. Might have seen sign on door while walking by.

4. What are the current Bike Centre's best features?

The friendly mechanics;
Access to tools;
It's not the best mural in the world, but it's colorful and I like it;
Bikes available for borrowing would be if they were better utilized.

5. What are things you would like to see in the new Bike Centre?

No more MotoMaster Orange Hand Cleaner - some environmental and health concerns - the science is still developing but some research suggests that methylisothiazolinone (one of the ingredients) is a potentially hazard chemical [see below for a quick overview of the relevant research from the past few years.] I think we have a strong obligation to reduce risk of harm to our volunteers and clients. To be fair, this chemical is in a lot of cosmetic products, but there are alternative hand cleaners on the market, which are organic and environmentally friendly.

Increased visibility - Obviously we're limited by university regulations in terms of signage, but people have to know where we are. The vast majority of people I speak to have no idea that the Bike Centre exists. Windows would help with this.

Patio area - need to get outside, have the stands and bike pumps available for people passing by on warm days.

Better hours - 2-4 hours per day Monday to Friday is sub-par (especially when people don't show up for shifts - which seems to be happening recently somewhat often from what I can tell.) I feel this deters some people from visiting.

Web development centre perhaps? We're under-utilizing our potential reach - could be creating informational videos or instructional guides which would reach a larger number of people.

Better use of financial resources - According to the best info I have available (http://unews.ca/story/item/winter-wheeling-among-bike-centre-programs/), we receive $5k per year and service 200 bikes a year for free. I'm not sure how accurate these numbers are, but assuming that's correct it would work out to $25 for every bike serviced. Considering that the majority of our repairs are minor and wouldn't cost much at a bike shop, and considering that we don't make any profit and that we don't pay our volunteers and to the best of my knowledge we don't pay rent, we're performing way below where I think we ought to be. I think we need to either take less money from the DSU or (more preferably) service more bikes. There needs to be a much stronger marketing strategy - we need to have volunteers out in front of Killam during peak times of the day with a bike pump, a stand and basic tools to promote awareness about the centre.

Reply from Justin Hall: Focus Group Email Submission

1. Why do you think the Bike Centre is important for DAL?

The Bike Centre is important for Dal because it helps to promote an environmentally friendly means of transportation that has significant benefit on individual health. The Centre is beneficial to the student community connecting cyclists with others who share the same passion. It offers something to a wide range of students from bike rentals for those who do not own a bike-to-bike maintenance and repair for any Dal student regardless of their abilities.

2. What do you think is the most important feature the Bike Centre offers?

The most important feature is, assistance with bike maintenance and repair. The Bike Centre also is a social facilitator connecting cyclists with others who share the same passion.

3. How did you hear about the Bike Centre?

I heard about the Bike Centre through word of mouth and additional information from the website

4. What are the current Bike Centre's best features?

The Bike Centre has a great collection of tools and spare parts with a helpful group of volunteers who can help you take everything apart and put it all back together again.

5. What are things you would like to see in the new Bike Centre?

I would like to see the operation expanded so that it can accommodate more people and bikes. I would also like to see an expanded bike donation and rental operation. I would happily donate my bike if and when I have to leave Halifax so other students could use it.

Reply from Dana Lipnicki: Focus Group Email Submission

1. Why do you think the Bike Centre is important for DAL?

- It's important to promote a biking community and sustainable lifestyle at Dal

2. What do you think is the most important feature the Bike Centre offers?

- Volunteers that can teach you more about your bike and help you fix it up

3. How did you hear about the Bike Centre?

- I required its services one day

4. What are the current Bike Centre's best features?

- Have a lot of tools and bike paraphernalia to work with

APPENDIX C — FOCUS GROUP SCRIPT

Welcome and thank you for participating in your focus group. As you know we are here today is to talk about the Dalhousie Bike Centre. We want to get as much information as we can from you, the volunteers, regarding the current Dalhousie Bike Centre. What works? What doesn't work? What do you want to see for a new facility? The ideas recorded will be and then used to help inform and guide the design that we will be creating for a new Dalhousie Bike Centre.

We have planned two parts to today's focus group. The first is just a discussion around your thoughts and ideas for the current centre. The second part will be a little more hands on. We have brought some material for you all to use to draw, or write down your ideas for a dream bike centre for Dalhousie.

Let's start with introductions:

1. ***Name?***
2. ***How did you come to be involved in the bike centre?***
3. ***What do you do at the bike centre?***

These next questions are meant to be more of a discussion:

4. ***Why do you feel a bike centre is important for Dalhousie?***
5. ***What do you feel is the most important service provided by the bike centre?***
6. ***What are the best features of the current bike centre?***
7. ***What features do you think need improving?***
8. ***What sort of programs would a new bike centre run?***
9. ***How do we make it appeal to as many students and employees as possible?***

Guided discussion of design mock-ups:

What appeals to you about this design? What would you improve?

Thank you all for participating today. We appreciate you taking the time to help us out with our project and we really hope all of this work leads to a great new bike centre for Dalhousie.

APPENDIX D – ETHICS FORM

ENVIRONMENTAL SCIENCE PROGRAM
FACULTY OF SCIENCE
DALHOUSIE UNIVERSITY
(version 2012)

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

GENERAL INFORMATION

1. Title of Project: **Bike Centre ReDesign**

2. Faculty Supervisor(s)	**Department**	**e-mail/ph:**
Rochelle Owen	**Dal Office of Sustainability**	**rjowen@dal.ca /902.494.7448**
Paul Sylvester	**ENVS/SUST 3502 Mentor**	**paulosylvestre@gmail.com**
Scott MacPhee	**Dalhousie Bike Centre**	**scott.macphee@bellaliant.net**

3. Student Investigator(s)	**Department**	**e-mail:**
Caroline King	**Planning**	**caroline_king@ymail.com**
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Stephanie Gerrits	**Planning/Sust**	**slgerrits@gmail.com**

4. Level of Project: Non-thesis Course Project [x] 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 3, 2012
b. Indicate the anticipated completion date for this project: April 3, 2012

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

In 2008, Dalhousie created a campus bike centre. As part of the Dalhousie University's Office of Sustainability the Dalhousie Bike Centre offers a safe place for the community by providing educational programming and continuing the work of other community minded cycling organizations in building the cycling culture in the city of Halifax. The establishment of the Bike Centre contributes to Dalhousie's larger goal of becoming a community leader in active and sustainable modes of transportation. Scott Macphee, as a Program coordinator with Clean Nova Scotia, was instrumental in working with Dalhousie to establish the Dalhousie Bike Centre. In 2011, the program received funding from Dalhousie's Student Union for tools, bikes and parts. Recently, between 500-1000 sq/ft has been outlined in a new buildings design on campus for the creation of a new bicycle centre. With the availability of new space questions have arisen about the best design for the centre.

Dalhousie University's Bike Centre is currently too small and underutilized. The University has an opportunity to create a new space for the centre on campus, and broaden its outreach and impact in the community. This research project will examine what preliminary design will reflect the vision/needs/ideas of Bike Centre staff, and incorporate input from professionals at other successful bike centres. The methods will include a design charrette to be performed at a focus group with Bike Centre staff, and interviews held with professionals at other successful bike centres. The final design will be completed by the team members, based on feedback from both interviews and focus group.

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)]
[X] Interview(s) (in person)
[X] Interview(s) (by email)
[X] Focus group(s)
[ ] Audio taping
[ ] Videotaping
[X] 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.*

Project Development

- write survey questions/interview questions
- write focus group script
- submit research proposal, ethics form
- review proposal with project mentor, make revisions as necessary
- research other successful bike centres
- conduct literature review/grey literature review on non-profit bike centres design and operation

Data Collection

- recruit interview and focus group participants

- email cover letter and interview questions to professionals at other successful bike centres

- conduct email interviews with professionals at other successful bike centres

- conduct personal interviews with key decision-makers in Dalhousie Bike Centre's new location

- lead focus group with Dalhousie Bike Centre Staff

Data Analysis

- analyze focus group and interview results to find themes and important features

- analyze feedback from professional interviews for themes and important features

- draft several designs of new bike centre

Design Review
- review designs with Scott MacPhee and project mentor
- make any revisions as necessary

Presentation at Pecha Kucha Night

Final Submission to Course Supervisor and Project Client

3. Participants Involved in the Study: ***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:

[ ] Adolescents

[X] 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.*

Within Dalhousie, this study will only involve participants who work at the Bike Centre on a staff or volunteer basis. Most of the volunteers will be students at Dalhousie, although some might come from the community. Their participation will be contingent upon their consent to take part in the project.

Also, the Bike Centre director Scott MacPhee and Director of the Sustainability Office Rochelle Owen will be consulted for their input on the design, again by consent only and with the knowledge that the information that they give will be collected and used in the final design process.

The professional participants will be chosen based upon their willingness to take part in the project, aided by referrals from contacts or internet searches. It is hoped that these leaders will represent a variety of ages and backgrounds, although the primary criterion for eligibility is the relevance of their experience in a bike centre.

c. *How many participants are expected to be involved in this study?* 15-20

6-8 – Bike Centre staff/volunteers

2 – Staff involved with Bike Centre new location (Scott MacPhee and Rochelle Owen)

8+ – professionals at other bike centres

4. Recruitment Process and Study Location

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

[ ] Dalhousie University undergraduate and/or graduate classes

[X] Other Dalhousie sources (specify) Bike Centre Staff

[ ] Local School Boards*

[ ] Halifax Community

[ ] Agencies

[ ] Businesses, Industries, Professions

[ ] Health care settings*

[X] Other, specify (e.g. mailing lists) local community contacts in bike centres, mailing lists with bike centre contacts, internet searches for bike centres of similar design or service

** 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.* *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 in the appendices section.*

All participants will be recruited by a member of the research team.

Dalhousie Bike Centre staff/volunteers will be recruited by an information letter in a general email sent through Scott MacPhee, and a notice hung up at the Bike Centre (Appendix A).

Scott MacPhee and Rochelle Owen will be contacted by email to arrange meeting or interview times.

All other professional participants will be recruited by an information letter

sent by email (Appendix B). Those wishing to participate will be asked to reply to the interview questions in a follow-up email.

5. Compensation of Participants*:* Will participants receive compensation (financial or otherwise) for participation?
Yes [ ] No [X] If **Yes**, provide details:
There will be no compensation (financial or otherwise) for participants.

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 project 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.**

Participants will be asked to indicate during the focus group or at the end of the email interview whether they would like to receive a copy of the project outcomes and final design. Their email addresses will be retained by the research team for this purpose until after the design is complete. After the study is completed, the participants will be sent the poster resulting from the project.
Feedback letter is found in Appendix C.

POTENTIAL BENEFITS FROM THE STUDY

1. Identify and describe any known or anticipated direct benefits to the participants from their involvement in the project.
For Bike Centre staff and volunteers, this information will directly influence the design of the new bike centre, and participating in this project will give them an opportunity include their vision and ideas in the design process.
For professionals at other bike centres, there will be no direct benefits, except the benefit of having contributed to improving the Bike Centre's service to the greater Dalhousie community.

2. Identify and describe any known or anticipated benefits to society from this study.
This study will directly benefit the Dalhousie community by informing a great design for the new Bike Centre, which will serve students, faculty and staff, as well as promote connections with the wider Halifax community. This project can also benefit other campus and non-profit bike centres across the country and internationally, who might look to Dalhousie's Bike Centre to inform their own designs or programs.

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:

[X] Minimal risk * Description of risks:

The risks involved in participating in this project are no more than the level of risk 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.

The focus group will be held in a comfortable study room in the Mona Campbell Building, with clear instructions given to the participants in advance about what to expect from the session. They will be free to leave at any point should they wish to withdraw from the study. All participants in the focus group will be referred to in the final project by "Focus Group Participant", and not their real names, to protect their privacy.

Email interview participation will be voluntary, and participants will be free to withdraw from the project at any point, with no negative repercussions. The professional participants will be told that unless they indicate otherwise, their full name and position at their respective bike centre will be used in the final project.

All participants will also be given a contact person, email and phone number to use in case of any concerns or questions, or to indicate at any time that they would like to withdraw from the project.

Every additional effort will be made to protect the psychological and physical health of the participants should an unforeseen risk/stress arise.

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

[X] Information/cover letter (Appendix A/B)

[X] Other (specify) Information sheet for Focus Group (Appendix D)

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

For the email interview questions, we are not going to require written consent from the participants, due to the electronic nature of the correspondence. If individuals reply to the initial recruitment email cover

letter, we will take this to mean that they have consented to participate in the project.
For the focus group, we will include a cover letter in our initial recruitment email, and read a short statement before their participation on how we are going to protect their privacy, and how they can hear about our project. After this, we will ask them all to fill out a short information sheet giving us written consent to use their feedback in our 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.

All participants in the focus group will give the team their full name and email address, which will be retained in a secure location by a team member until the end of the project. However, the focus group participants will not be referred to their names to protect their anonymity in the final project. When the project is finished, team members will destroy the personal information to do with focus group participants.
For the email interview participants, they will be informed that their full name and position will be used in the final report. However, any emails of the professional participants will not be used in the final report.

2. **Describe the procedures for securing written records, questionnaires, video/audio tapes and electronic data, etc.**
   Written copies of the focus group information will be stored in a secure location by Stephanie Gerrits, at her private home, and all personal information will be destroyed after the project is done, by April 20, 2012, by shredding the documents.

3. **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.**

[X] Paper Records
[X] Confidential shredding after project completion
[ ] 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.
[X] Electronic
[ ] Erasing of electronic data after _____
[X] Data will be retained until completion of specific course.
[ ] Other
_____
_____
(Provide details on type, retention period and final disposition, if applicable)

Specify storage location: Information will be stored either on a secure personal laptop of team members or in secure file storage in the personal

home of a team member.

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

[X] **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.

[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

_____ _____

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

_____

_____ Signature Date

_____

_____ Signature Date

APPENDIX E

Information Letter for Focus Group

Hello!
We are a student research team working on a new design for the Dalhousie Bike Centre. This work is being done through the Campus as a Living Laboratory class, ENVS/SUST 3502.

As current staff/volunteers at the Bike Centre, your experience and vision is extremely important to us and has the poetential to have an impact on the final design. We will be holding a focus group with volunteers and Dalhousie biking community during the week of March 19-23, 2012. This will be a 1-2 hour long session in the Mona Campbell Building, with snacks provided and plenty of inspirtation.

Please reply by email if you are interested, and we will arrange a time that is based on what is best for everyone.

In the event of a strike on campus, we will still attempt to hold this focus group, in an off-campus location if need be. There will still be snacks!

Thanks so much for helping us out!!

Thanks,

Caroline King	caroline_king@ymail.com
Jonathan Lampier	jonathan@lampier.ca
Meghan Gallagher	mgallagher31@gmail.com
Serin Remedios	serin.remedios@gmail.com
Joseph Glesta	JGlesta@gmail.com
Stephanie Gerrits	slgerrits@gmail.com

The Bike Centre ReDesign Team
ENVS/SUST 3502

APPENDIX F

Information Letter for Professional Interview

Hello!
We are a student research team working on a new design for the Dalhousie Bike Centre. This work is being done through the Campus as a Living Laboratory class, ENVS/SUST 3502.

Dalhousie University is currently considering building a new Campus Bike Centre, and our project is to create preliminary designs based on a study of other successful centres. As a leader in the biking community, we would value your experience and input on what makes a successful bike centre. If you are interested in participating, please reply with your availability for a half hour interview and a phone number at which we can reach you during the week of March 12-18.

By replying to this email you are giving consent to participate in our research, as outlined in the attached consent form.

Thanks again,

Caroline King caroline_king@ymail.com
Jonathan Lampier jonathan@lampier.ca
Meghan Gallagher mgallagher31@gmail.com
Serin Remedios serin.remedios@gmail.com
Joseph Glesta JGlesta@gmail.com
Stephanie Gerrits slgerrits@gmail.com

The Bike Centre ReDesign Team
ENVS/SUST 3502

Faculty Supervisor:
Rochelle Owen
Director, Office of Sustainability
Dalhousie
(902) 494-7448
email: rjowen@dal.ca

Attached consent form:
Letter of Information/Consent

Student Investigators:
Caroline King Planning
caroline_king@ymail.com
Jonathan Lampier Science
jonathan@lampier.ca
Meghan Gallagher English/ENVS

mgallagher31@gmail.com
Serin Remedios Env. Science
serin.remedios@gmail.com
Joseph Glesta Sustainability JGlesta@gmail.com
Stephanie Gerrits Planning/Sust slgerrits@gmail.com

Faculty Supervisor:
Rochelle Owen
Director, Office of Sustainability
Dalhousie
(902) 494-7448
email: rjowen@dal.ca

Purpose of this study:
Welcome to the new Dalhousie Bike Centre Design focus group.

This is a student project to create preliminary designs for the new Dalhousie Bike Centre, guided by input from volunteers at the current Centre, and bike professionals on and off campus.

In your interview, we will ask you about your experience in the biking community, and your advice for a new bike centre being designed at Dalhousie University. We will use this feedback to refine our designs. Your input might also be used in our final report to the university, as quotes to support the designs.

Confidentiality
We will undertake to safeguard the confidentiality of our discussion, however we will use your name in the final project to support our conclusions, unless you specifically request us not to. Information kept on a computer will be protected by a password. Once the study has been completed, the data from your interview participation will be destroyed, by April 20, 2012.

If you change your mind at any point during this project, please contact one of the investigators and we will withdraw the information you provide from our project.

APPENDIX G

Feedback Letter to Participants

Thank you for your participation in our Bike Centre ReDesign Project. We'd like to share the final design with you, and ask for your support of the new Bike Centre at Dal.
Please find the poster attached. If you want more information, contact Scott MacPhee at scott.macphee@bellaliant.net

Thanks again,
The Bike Centre ReDesign Team
ENVS/SUST 3502

APPENDIX H

Information Sheet for Focus Group

Letter of Information/Consent

Student Investigators:
Caroline King Planning
caroline_king@ymail.com
Jonathan Lampier Science
jonathan@lampier.ca
Meghan Gallagher English/ENVS
mgallagher31@gmail.com
Serin Remedios Env. Science
serin.remedios@gmail.com
Joseph Glesta Sustainability JGlesta@gmail.com
Stephanie Gerrits Planning/Sust slgerrits@gmail.com

Faculty Supervisor:
Rochelle Owen
Director, Office of Sustainability
Dalhousie
(902) 494-7448
email: rjowen@dal.ca

Purpose of this study:
Welcome to the new Dalhousie Bike Centre Design focus group.

This is a student project to create preliminary designs for the new Dalhousie Bike Centre, guided by input from volunteers and bike professionals on and off campus.

Today, we will have a short, guided discussion about your experience at the current Dalhousie Bike Centre. Then, we will bring out several proposed plans for the new Bike Centre, and discuss your reaction to them, and any other visions you might have for the Centre. We will use this feedback to refine our designs. Your input might also be used in our final report to the university, as quotes to support the designs.

Confidentiality
We will undertake to safeguard the confidentiality of the discussion. We ask the other members of the focus group to keep what you say confidential, but we cannot guarantee that they will do so. Also, since your group (community) is small, others may be able to identify you on the basis of references you make. Please keep this in mind in deciding what to tell us.

If you change your mind at any point during this project, please contact one of the investigators and we will withdraw the information you provide from our project.

Consent

I have read the information presented in the information letter about a study being conducted by the Bike Centre Design Group in ENVS/SUST 3502, of Dalhousie University.

I have had the opportunity to ask questions about my involvement in this study and to receive additional details I requested.

I understand that if I agree to participate in this study, I may withdraw from the study at any time. I have been given a copy of this form. I agree to participate in the study.

Signature: _____

Name of Participant (please print):

_____

If you would like to see our final design, please leave your email here:

_____

Faculty:

Year of study (first, etc.):

What is your primary mode of transportation (bike, walk, etc.)?

How long have you been volunteering at the Bike Centre?

APPENDIX I — RESEARCH PROPOSAL

Definition

Globally, rising gas and land prices have resulted in a growing demand for affordable alternative modes of transportation (DeMaio, 2009). This demand is even stronger in student populations which have lower income levels and often live close enough to campus that they can choose to use active transportation or transit without hindering travel time (Harms, n.d.). For this reason, the use of bicycle centres is also on the rise. Bicycle centres offer services such as bike-sharing, bicycle maintenance tutorials and free access to tools (Campus Bike Centre , 2011). These programs have received attention in recent years with initiatives to increase bike usage, better meet the demand of a more mobile public and lessen the environmental impacts of transport activities (Office of Sustainability , 2011). Bike centre services are now being subsidized by universities providing the service free to students and faculty as a benefit. For this reason it is important to research the affects of Bicycle Centre presence on university and cycling communities, establish the most valuable attributes and create a list of best practices so future bicycle centres meet their maximum potential.

Common programs and services offered by bicycle centres are bike auctions, bicycle maintenance courses, group bike rides, bike sharing, and one-on-one time with volunteers (Campus Bike Centre, 2011; Harms, n.d.). These places should feel safe and operate as a centre for the community. Bike centres require a large space that can be accessed by a bicycle. The large space provides room for maintenance classes and for users to spread out and work on their bicycles. Easy access, located on ground floor with a ramp entry enables all types of users to access the space. Adequate shelving and bike parking space is essential for keeping these spaces user friendly and maximizing the use of the space.

Bicycle centres aim to promote cycling as an alternative mode of transportation and as a form of recreation (Campus Bike Centre , 2011). They are leading figures in cycling communities. Bicycle centres promote the use of bicycles as a viable, economical and desirable mode of transportation. Bicycle centres may also support planning strategies such as climate action plans and transportation demand management plans that include bicycle initiatives to reduce emissions and support healthier options.

Dalhousie University's bicycle centre is currently too small and underutilized. An opportunity for the creation of a new space for the centre on campus has been presented. This research project will examine what preliminary design best reflects the vision and needs of Bike Centre staff,

incorporating input from professionals at other successful bike centres, both Canadian and international. The methods will include a focus group with Bike Centre staff, and telephone interviews held with professionals at other successful bike centres and cycling communities. This project on a local scale will address the needs of the Dalhousie community and create a space that will contribute to the cycling culture of Halifax and help achieve the goals outlined in Dalhousie University's Climate Action Plan, Sustainability Plan and Transportation Demand Management Plan. Sub goals include determining an appropriate size for a new bike centre at Dalhousie University and shifting students and faculty perception of cycling on campus. On a global scale this research will provide a set of guidelines for the establishment of a community bike centre that can be applied in any situation.

Background

Dalhousie University is a leading, research-intensive Canadian university located on the Halifax Peninsula. Dalhousie's Office of Sustainability strives to incorporate sustainability concepts and criteria into all major university functions and engage and enhance students, staff and faculty in sustainable living and operation (Dalhousie University). In 1998, Bike Again was established in the city of Halifax. Bike Again is a community bike project that operates in the North End of Halifax out of the Bloomfield Community Centre. This service provided inspiration to the Dalhousie Community and influenced the introduction of its own bicycle centre program. In 2008, Dalhousie created a student initiative bike centre. As part of the Dalhousie University's Office of Sustainability the Dalhousie Bike Centre offers a safe place for the community by providing educational programming and continuing the work of other community minded cycling organizations in building the cycling culture in the city of Halifax. The establishment of the Bike Centre contributes to Dalhousie's larger goal of becoming a community leader in active and sustainable modes of transportation. In 2009, Scott Macphee was appointed the coordinator of the Dal Bike Centre program. In 2011, the program received funding from Dalhousie's Student Union for tools, bikes and parts.

Recently, up to 2000 sq/ft have been allocated in one of several new buildings on campus for the creation of a new bicycle centre. With the availability of new space questions have arisen about the best design for the centre.

Literature Review

Bicycling is an important part of sustainability on university campuses. The League of American Cyclists runs "The Bicycle Friendly University program" (BFU) which aims to recognize and aid the creation of bicycle friendly campuses. The BFU website FAQ addresses the question of why universities should be bicycle friendly. Several benefits of bicycling on campus are provided including ones related to health, economics, and the environment. In regards to health, biking increases activity: "increased bicycle accommodations will promote a more active community, so students can exercise while getting to class" (The League of American Cyclists, 2012). As a result, BFU argues that health care and parking costs are lower. In addition, the environment benefits because carbon emissions and car congestion are reduced (The League of American Cyclists, 2012).

The benefits of cycling purported by BFU are supported by other studies. In an effort to explore the health benefits of bicycling, Martin Lindström investigated the relationship between mode of transportation and obesity. In his paper, *Means of transportation to work and overweight and obesity: A population-based study in southern Sweden*, a public health survey was used to gather information about the population. A negative correlation between active transport (walking or bicycling) and overweight and obesity was found. Thus, it is argued, walking or bicycling as a means of transportation may decrease the risk of overweight and obesity (Lindström, 2007).

A study by Gary Barnes examined the *Economic benefits of bicycling in Minnesota*. The report uses a combination of surveys and data analysis to initially determine the amount of bicycling, and then uses an accounting framework for the analysis of the economic benefits. Two types of benefits were identified: facility-specific and general. The first looks at the benefits created facilities/programs that improve bicycling conditions. The second looks at benefits people get from bicycling itself. Thus the accounting

framework incorporates benefits such as reduced accident risk, time saving, health, and employment. Ultimately, it is estimated that in Minnesota, the average benefits from bicycling are approximately $300 million per year (Barnes, 2004).

A study from Department of Industrial Management Engineering at Kyonggi University in the Republic of Korea researched ways to reduce carbon dioxide emissions. The authors found that bicycling as a mode of short distance transportation had great potential in aiding the reduction of carbon dioxide emission. They argue that the benefits are two-fold. The first is that it provides a form of transportation free of emission. Secondly, increased use of bicycles takes cars off the road, and thus decreases congestion (Hong Joo, Tai-Woo & Hyunsoo, 2011).

Dalhousie University has recognized these benefits of bicycling, and as a result has incorporated promotion of bicycling into their plans for sustainability. In the Transportation Demand Management Plan for Dalhousie University, associated with the Sustainability Plan, identifies bicycling as a key tool for sustainable transport. According to the plan, 7% of students and staff arrive at Dalhousie by bike. Measures have been taken to promote bicycling such as provision of bike racks, various promotional challenges, bike loans, and the creation of the Campus Bike Centre. Future proposals include the renewal of University Avenue and creation of new bike routes. However, the proposals do not address the role of the Campus Bike Center in improving bicycling at Dalhousie in the future (Dalhousie University, 2011).

Through an analysis of multiple bike centres across North American universities, we have concluded that multiple aspects of each schools bicycle facilities share similar themes. These are: educational programs, bike share programs, access to showers and bike routes that flow from the campus into the bike centre.

Each bike centre on numerous campuses' employed the use of planners so that they could visualize safe corridors for bicyclists on campus. From this analysis we conclude that any bike centre built on any university campus, must be a focal point for all bike lanes to connect. This is shown in universities such as Michigan State, Ohio State, UCLA, Berkley and the University of Oregon. (AASHE, 2005-2012) Because many bicycle centres

have programs that allow mass multiple people to rent bicycles it made more sense for the centres to act as cyclist hubs.

Bike share programs allow students or faculty to rent bicycles for a very low or no cost. They can use these bicycles for several hours or several days before returning them to the centre. Multiple universities have installed bike share programs in their campus bike centres, such as McGill, University of Toronto, University of South Carolina, University of California, Berkley and UCLA. (AASHE, 2005-2012)

These schools have ensured that their bike centres include the space and facilities to house bicycle rental and share programs so that students may easily have access to clean forms of transportation. In almost all cases, these universities have aligned their bike centre programs with their campus sustainability plans, as a primary means of lessening reliance on cars for transportation.

Another theme that is consistent among multiple universities who have campus bicycle centres is the educational programs that reach out to cyclists on campus. These programs address serious safety issues and allow beginner and experienced bicyclists to understand the bylaws that are present in each area. Through these educational programs the bicycle centers also act as a classroom for those who wish to comprehend the limitations that may or may not restrict their cycling habits.

Another recurring design need is showers for cyclists with long commutes to campus.. This is intended to allow for cyclists to clean themselves after having long rides which usually results in perspiration. Bike centres on campuses such as Ohio State and Michigan both positioned their bike centres close to Gym facilities so that cyclists could then easily use those facilities rather than house a shower within the bike centre.

Through the collection of information through master plans and school sponsored studies, we have found that these factors are all part of creating a functional bicycle centre that helps spread educational awareness, provides bicycle lanes that create better access to the centre, showers for

long commutes and Bike share programs that allow more students to access clean forms of transportation from their bike centres.

Methods

The research team will employ telephone interviews and a focus group in order to understand what attributes of bicycle centre design are valued by the Dalhousie cycling community and professionals who work with bicycle communities throughout Canada. Because it is important to incorporate and understand members of cycling communities' experiences, the research team has chosen to collect qualitative data as a means to influence and inform their final design.

First, structured in depth personal interviews will be conducted with professionals who work with bicycle communities throughout Canada. A telephone interview was chosen to pursue in-depth information about bicycle centre design and to get the story behind participant's experiences. Professionals will be asked to identify challenges related to the creation and the continued use of Bicycle Centres and opportunities for improvement. Six professionals have been identified as potential interview candidates.

Professionals will initially be approached by e-mail and if they agree to participate in the project telephone interviews will be scheduled for March 12-16th, 2012. Interviewees will be asked to read an information letter (see Appendices) and will be told that replying with their phone number as a means of participating in the interview will be taken as consenting to participating in the project. Personal information obtained during interviews will be kept confidential however the interviewees will not be anonymous. Interviewees will be made aware that they may reject to answer any question and are allowed to stop the interview when they feel the desire to do so. Interviews will be conducted by phone at a time that suits the interviewee. Interviews will be approximately 30 minutes in length. Notes will be taken by hand throughout the interview. If interviewees express interest a copy of preliminary results of this research will be sent to them by e-mail. Interview questions have been created for each participant that relate to their experience with bicycle communities. This method follows the general guide approach in which questions are intended to ensure that the same general areas of information are collected from each interviewee.

After this step, results from these interviews will be used to establish what bicycle centre attributes are most valued by the professionals. Based on these attributes, the research team will create three different Dalhousie Bicycle Centre Design scenarios. Scenario one will be designed assuming there is a limited budget and has the smallest possible allocated space. Scenario two will be designed assuming there is a medium size budget and a moderate amount of space allocated to the project. Scenario three will be the "go big or go home" scenario with assumes a limitless budget and a generous amount of space allocated.

In the third step of this research project, the team will seek to establish which of the three Dalhousie Bike Centre design scenarios the Dalhousie cycling community prefers. An exploratory focus group will be held, with cyclists from the Dalhousie community and Dalhousie Bike Centre Volunteers. The research team has chosen to use an exploratory focus group to provide broader insight and understanding of the cycling community's needs and expectations of the Dalhousie Bike Centre through interaction between participants. Following some discussion of the current Bike Centre's best and worst features, focus group participants will be asked to identify which proposed Bike Centre Design they most prefer, what attributes of the design they liked the most, and other attributes that had not been considered in the designs.

Focus group candidates will be approached using e-mail, Facebook and other social media tools using the email script provided in the Appendices. All Bike Centre Volunteers will be approached to participate in the focus group, and the target size for the focus group is 8-10 members. The session will be held during March 26th-30th and will be scheduled to run for an hour and a half, with two hours being the maximum time spent, if needed, and only with the permission of participants. Focus group members will be asked to sign a consent form and be given a letter of consent (see Appendix), briefly explaining the project and providing contact information. Personal information obtained during the focus group session will be kept confidential. Focus group members will be made aware that they may choose not to answer any question and are allowed to leave the session should they wish to at any point. Notes will be taken by hand throughout the focus group session. If focus group members express interest the research

team will send them an email with a copy of the design poster after the project is complete.

A set of questions has been created to spur conversation through the focus group, these questions pertain to association with the Dalhousie Bike Centre, awareness of the Dalhousie Bike Centre, preference of the Dalhousie Bike Centre Designs and what services why would like to see offered by the Dalhousie Bike Centre in the future. Results from the focus group will be used to support the final Dalhousie Bike Centre Design proposal.

A thematic analysis of interview and focus group results will be used to create a list of bike centre attribute that are most valued by professionals and members of cycling communities. This checklist can be used by other communities when establishing a bike centre to aide in the creation of the centre design.

With this research in place, the team will focus on completing one single design proposal for the new Dalhousie Bike Centre, incorporating the vision of both cycling community professionals and members of the Dalhousie cycling community, including Bike Centre volunteers. This design will be reviewed in its final stages with Scott Macphee and class mentors Paul Sylvester and Rochelle Owen as the team refines the design.

Schedule

Dates	Task
March 3	Project Proposal Due
March 12-	Conduct interviews with professionals in the

15	biking community.
March 16	Prospective meeting with client Scott
March 19-23	Possible dates for focus groups
March 24-31	Data Analysis
March 30	Prospective meeting with client Scott (last meeting)
April 1	Pecha Kucha slides due
April 3	Pecha Kucha at The Company House
April 13	Final Project due at midnight

*** In the event of a strike,all meetings will be held off campus and all Tasks will continue as planned with exception of the Pecha Kucha upon instruction from Rochelle Owen.**

Dates	Task	Time Spent (as a collective)

Budget

January	Project Conception and Preparation	5 Hours
February	Project Conception and Preparation	10 Hours
March 3	Project Proposal Due	20 hours
March 12-15	Possible dates for focus groups	3-4 Hours
March 16	Prospective meeting with client Scott	1-2 Hours
March 19-23	Conduct interviews with managers of successful Bike Centres	4-5 Hours
March 24-31	Data Analysis	20 Hours
March 30	Prospective meeting with client Scott (last meeting)	1-2 Hours
April 1	Pecha Kucha slides due	4-5 Hours
April 3	Pecha Kucha at The Company House	1 hour approx (Total)
April 13	Final Project due at midnight*	30+ Hours

* Monetary Funding was applied for to cover test printing (10 dollars) and final printing (30 dollars)

Deliverables

The following items will be included in the final project:

Design

The top priority for this project is to create a design for a new Dalhousie Bike Centre. This will include but may not be limited to:

- Floor Plans
- Renderings – interior and exterior
- Recommendations on material and furnishings
- Recommendations on signage and branding
- Recommendations on location
- Estimated Budget

Report

The report will focus on the rationale behind the presented design. It will examine in detail the results from our research through literary review, stakeholders' consultation and our volunteer focus group. It will focus in on all of the design issues that have been encountered. The report will take a brief look at marketing for the new Dalhousie Bike Centre in the hopes of attracting new clientele. The report will also examine other university Bike Centres as case studies that will be used to inform the design of the new Dalhousie Bike Centre.

Presentation

The presentation for the project will be in the form of a Pecha Kucha presentation. It will have 20 slides with images that relate to our new bike

centre design and the process from which we have obtained the design. At this point in time we are thinking of using a somewhat abstract theme that will make the presentation both enjoyable and informative.

Poster

The poster will be created to help promote the idea of a new bike centre on campus and raise awareness to help it move forward through the approval process. It will include information on our design and what a new bike centre will mean for students and staff at Dalhousie. The poster will include a feedback mechanism to show support for a new bike centre.

Communication Plan

In order to disseminate the results of this report and increase the visibility of the Bike Center, the following actions will be taken:

1. The report, design and poster will be given to the client, Scott Macphee and the Director of the Office of Sustainability, Rochelle Owen. They can use these deliverables to gain support for a new bicycle center and provide a tangible vision for the center's future.
2. The report, design, and poster will also be given to the Student Union to both create awareness for the Bike Center and generate support for the new center.
3. Finally, the poster will be posted in locations of high visibility around the Dalhousie campus. This will allow the vision and information from the report to be communicated to the student populace in an eye-catching, accessible manner. The goal is again twofold: raise

awareness of the Bike Center and generate support for the new center.

	Action 1	Action 2	Action 3	Action 4
Target Audience	Scott Macphee	Rochelle Owen	Student Union	Dalhousie Student Populace
Communication objectives	Provide results to the client to help create a tangible vision for the center's future. Gain support for a new bicycle center	Provide results to the client to help create a tangible vision for the center's future. Gain support for a new bicycle center	Create awareness for the Bike Center and generate support for a new center.	Raise awareness of the Bike Center and generate support for the new center.
Deliverables used	Report and design.	Report, Presentation, and design.	Report, design, poster.	Poster.
Evaluation	Feedback from marking.	Feedback from marking.	The amount of feedback received from the poster.	The amount of feedback received from the poster.
Timeline	Completion of	Completion of project	End of semester	End of semester

	project			

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