

Healthy & Sustainable Snacks

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University of British Columbia

LFS 450

April 5, 2013

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UBC Social Ecological Economic Development Studies (SEEDS) Student Report

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Land, Food, and Community III (LFS 450)
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Abstract

Snack foods are frequently associated with an unhealthy and unsustainable image because they are often highly processed and packaged for convenience. The 2013 Healthy and Sustainable Snacks Food System Project of LFS 450 aims to develop an action plan for implementing healthy and sustainable snacks for the community at University of British Columbia (UBC). It was determined that the UBC food outlets considered the most successful in promoting healthy and sustainable snacks include: the Loop Café, Point Grill, and Place Vanier dining hall. The outlets that require the most improvement include: IRC Snack Bar, Neville's Café and Reboot Café.

By doing a first impressions observational survey, we determined what was successful for promoting healthy and sustainable snacks among the chosen outlets. Areas that were identified include: snack availability, pricing, signage visibility, and ambience. Moreover, we gauged the campus community opinion by performing interviews. Using results from the first impressions survey, it was found that successful outlets had clear signage, well displayed healthy options, and an inviting dining environment. The interviews revealed that the UBC community believes healthy and sustainable options are often more expensive. Furthermore, many expressed that food choices from UBC food outlets are expensive and limited in variety. Therefore, many opted to go to other places on campus.

Through this project, we discovered that healthy and sustainable snack options are abundant at UBC food outlets, but promotion is lacking. To resolve this issue, we present both short and long term solutions. In the short term, outlets can improve by matching the price of healthy and sustainable snack foods with the mainstream alternatives, and ensure all products

have visible signage. Long term suggestions include an outline for the implementation of a yogurt and fresh produce smoothie station as well as a greater variety of fresh fruits.

Introduction

The 2013 Healthy and Sustainable Snacks Food System Project of LFS 450 has the assigned goal of developing an action plan to effectively implement healthy and sustainable snacks for the University of British Columbia (UBC) campus community. In 2012, a baseline inventory healthy food situation assessment was conducted by members of the LFS 450 class. The assessment reported that there is a high demand for healthy snack food options from the UBC community (Ma et al, 2012). Conversely, there is an evident lack of awareness from campus consumers of what snack options are available. Furthermore, the definition of a healthy snack is variable across campus (Ma et al, 2012). In this year's project, we would like to assess the current popularity of healthy and sustainable snacks from UBC food outlets among the UBC campus community. In addition, we will provide short term and long term solutions to improve the availability, accessibility, and popularity of such snacks on campus.

According to Aiking *et al* (2004), sustainability is the capacity of the Earth to be able to meet current and future human needs. One of the ways that we can apply this idea is to think about where we obtain our food from. The local food movement has been advocated to lighten the burden that the food system puts on the environment. The high cost of transport and further dependence on fossil fuels is a result of shipping food from one side of the world to another (Aiking and de Boer, 2004). While transport is one issue when it comes to the challenge of food sustainability, it is not the only problem that needs to be resolved. The larger part of the food

production system, including feed and fertilizers, play a significant role in the effects on climate changes and also need to be considered.

One of the biggest challenges in solving the climate crisis is how we produce our food. According to Garnett (2013), the food supply chain is contributing significantly to greenhouse gas (GHG) emissions. While it is important to consider the effect of the environment on food production, it is also essential to be able to provide people with the nutritional requirements that they need. Clearly, this is a larger issue in the developing world, but it is important to consider how our eating habits can have an effect on the planet's health (Garnett, 2013). One of the largest contributors to GHG emissions are a result of the animal products we consume, such as meat and dairy products (Garnett, 2013). While it can be healthy to consume these products in small amounts, its effect on the health of the planet gets a low score from environmentalists. To be sustainable and healthy, it makes sense to put more of a focus on a mostly plant based diet even when thinking about snacks.

UBC is Canada's first fair trade campus; however, the awareness for sustainable snack foods seems to be low among the UBC campus community. In addition, UBC is home to one of North America's most sustainable buildings (University of British Columbia Food Systems Project, 2013). Thus, as a model for other North American universities also striving to become more sustainable, it is important for UBC to consider the parameters of sustainability and set a precedent. Executing action in improving the availability of healthy and sustainable snacks can be a step towards this goal.

Moreover, it was found that most Canadian adults do not meet the requirement of consuming 7 to 8 servings of fruits and vegetables per day (Health Canada, 2011). Diets have always been an important factor to affecting health risks. Increasing rates of obesity brought

about concerns as it is thought to be a risk factor for many cancers, such as endometrial and colon cancers (Acreman, 2008). Studies have shown that an adequate intake of healthy foods provide adequate amounts of energy and nutrients essential for human function (Theobald, 2004). These nutrients are found in foods that provide benefits to the body, having abilities such as acting as antioxidants and reducing absorption of cholesterol (Albert, 2009). Studies have also found that cognitive function can be related to diet as well. A poor diet can lead to nutrient deficiencies, which in turn lead to cognitive impairments. Thus, healthy snacking is essential to supplementing healthful meals.

Since each member of the research team is a student of the Faculty of Land and Food Systems, we approached the project assuming most of campus community had an idea of what 'healthy' and 'sustainable' meant. Prior to beginning our primary research for this project, the team believed that the UBC campus community had a high demand for snacks, nevertheless, the options lacked variety and affordability, especially with UBC food service outlets. Further, we assumed there is a desire from the campus community for more healthy snacks from UBC food outlets, and that UBC food outlets were a destination spot for the community to attain snack foods. Finally, the team assumed UBC food outlets need further improvement with providing healthy and sustainable snacks because they are currently lacking in this aspect.

The research team agrees fully with the UBC Food System Project's (UBCFSP) Vision Statement (2011). We hope that through our input into the UBCFSP, the outcomes of this project are able to contribute to bringing this vision statement one step closer to reality.

Methods

Definition of healthy and sustainable snacks

Before the objectives of our project could be approached, we needed to reach a consensus among our research team to define the parameters of what a ‘healthy and sustainable snack’ consisted of. To maintain a consistent characterization of healthy and sustainable snacks, the definition of each of those words were first defined separately, and then combined to create a sensible and appropriate definition. Definitions were based on scientific evidence and reputable health organizations to ensure their validity. Resources specific to Canada and University of British Columbia were used as well to certify the applicability and reliability of healthy and sustainable recommendations. To define healthy snacks, Canadian health organizations such as Health Canada and Dietitians of Canada provided fitting definitions for this project. UBC has also invested greatly into advances of sustainability on campus and have had immense success in initiatives. To maintain consistency among the campus community, the vision and definition of sustainable food was largely kept constant with the definitions offered in the Sustainable Campus Food Guide (2013).

Target UBC food outlets

To better understand the project mandate and its relationship with current UBC food outlet systems, key informant Victoria Wakefield, purchasing manager for Student Housing & Hospitality Services, was able to inform current needs of UBC food outlets and help identify the knowledge gap which this project’s objectives is intended to fulfill. From presentations held during LFS 450 lectures, it was evident that UBC food outlets did have healthy and sustainable snack options. With initiatives taken by both student and staff, the existence of healthy and

sustainable snacks was increasing exponentially. Therefore approach to comparing and contrasting different UBC food outlets began with choosing six food outlets to focus on. Further communication with Wakefield produced identification of the three food outlets that are currently not as successful in providing healthy and sustainable snacks and three food outlets that were successful (personal communication, February 6, 2013). Presentations by Chef Steve Golob from Vanier Dining Hall and Chef Joshua McWilliams from the Point Grill also provided information and aided in the decision of including both Place Vanier Dining Hall and Point Grill as UBC food outlets among the three food outlets that are considered successful. These outlets were to be used as comparison against the less successful UBC food outlets: IRC Snack Bar, Neville's Café, and Reboot Café.

First impressions

To begin our assessment of the six UBC food outlets, a familiarity with the food outlets on hand had to be established. To achieve this, a first impressions observational survey was developed and completed by the research team in order to address what most the UBC community would observe upon first arriving at the food outlet. The team wanted to gauge what kind of experience the food outlet would provide in general, and therefore a "first impressions observational survey" was created (Appendix Fig. A23). The first impression observational surveys were conducted over the period of six days from March 1 to 6, 2013 by various members of the research team with one person each addressing IRC Snack Bar, the Loop, Neville's and Reboot café, with the exception of Place Vanier Dining Hall and The Point Grill where one member completed both locations' first impressions observational surveys. Visits to the specific food outlets were between the hours of 1:00 pm to 4:00 pm. According to Alberta Agriculture

and Rural Development (2011), snacking trends of Canadians in 2009 were identified to be most often between lunch and dinner, during these hours. Observation notes were not only designed so that research team members could be familiarized with the food outlet but also to identify which features were successful, such as visibility of prices and the stock locations of specific food items. Lastly, the observational survey also took into consideration the environment in which the food outlet was located. This was done through observation of surrounding utilities such as washrooms, seating area, and proximity to lecture halls and libraries. Pictures were also taken at each food outlet to illustrate observations (Appendix Fig. A1 - A22).

Community interviews

Through communication with Wakefield it was clear that UBC community opinions, in particular student opinion, were of major interest to UBC food outlets (personal communication, February 2013). It is recognized that inventory lists can only provide information limited to numerical data. The true knowledge gap lies in how UBC food outlets can improve with existing services and products through community feedback. Further, UBC food outlets aim to implement new products that are in demand but currently not offered on campus (personal communication, February, 2013). To achieve this, the research team developed a concise interview with guiding questions for the interviewer to ask the UBC community (Appendix Fig. B1 & B2). We used convenience sampling due to the time constraint imposed on the project. We set a goal of thirty interviews per location (180 interviews completed in total) and ten general non location-specific interviews per team member (50 interviews completed in total).

Two types of interviews were to be conducted to ensure a fair representation of the UBC community. Location specific interviews were conducted at the previously chosen six UBC food

outlets and non-location specific interviews with no specific location associated to them were performed. The non-location specific interviews were used with the intention of eliminating confounding factors and allow the data to be generalized to the UBC population. There was no specific criterion for interviewee selection. They could be interviewed whether they were a student or a staff member. It was recognized that all opinions of the community should be valued. Guiding questions were provided as initiators, as the interviewer would then highly encourage the interviewees to elaborate on their answers and provide further information on their opinions of healthy and sustainable snacks within UBC food outlets.

a) Location specific interviews

A sample of the location specific interviews can be found in Appendix Fig. B1. Location specific interviews would provide opinions of the specific consumers that visit those locations. Therefore, this will reveal the demands and preferences of the current target audience of that specific location. This will help the research team compare and contrast between successful outlets versus the less successful outlets, as well as define which healthy and sustainable snacking aspects of the successful locations are attractive to the community. In turn, the research team will take those aspects and implement them in the other three less successful food outlets. Interviews were done at each of the six chosen UBC food outlets over roughly two weeks starting from March 7 to 22, 2013, between the hours of 11:00 am to 4:00 pm as this was previously determined to be the time between when snacks are most often consumed (Alberta Agriculture and Rural Development, 2011).

b) Non location specific interviews

A sample of the non-location specific interviews can be found in Appendix Fig. B2. Non location specific interviews were intended to gauge the “grab and go” snacking population on

campus. The questions asked were the same as the location specific interviews with the opportunity for interviewees to explain why they choose not to visit any UBC food outlets. Similarly, these interviews were conducted over the same period of time as the location specific interviews, over the span of roughly two weeks starting March 7 to 22, 2013 during hours between 11:00am to 4:00 pm. Interviewers addressed community members in various locations including libraries, the Student Union Building, and various lecture halls.

Identifying three healthy and sustainable snack options to be implemented

As previously mentioned, an objective of this project is to identify three existing healthy and sustainable snack items from any of the chosen successful food outlets and implement them at the less successful locations that were investigated. Through analyzing the interview results and observation of each of the food outlets, three healthy and sustainable snack options were identified according to previously set definitions of healthy and sustainability. To ensure the plausibility of the suggested snack items, consultations with McWilliams, Chef of the Point Grill and Golob, Chef of Place Vanier Dining Hall were held. Their expertise as chefs and food establishment owners at the UBC Point Grey campus would provide advice on foreseeable challenges with implementing the specific snack options this project has identified. The recognized challenges and limitations within this project will also serve as inspirations for future research areas.

Findings and outcomes

Definition of Healthy and Sustainable

The definition of healthy snacks correlates with current diet recommendations made by Health Canada's Food Guide (2007) in order to maintain overall health. They include limiting foods and beverages high in calories, fat, sugar or sodium and eating the recommended servings of the different food groups described in Canada's Food Guide (Health Canada, 2007). Dietitians of Canada (2010) also recommend choosing healthy snacks that are of less than 200 calories.

The UBC Sustainable Campus Food Guide (2013) defined sustainability "as meeting the needs of the present generation without compromising the ability of future generations to meet their needs". In terms of specific products, sustainable was defined as "products...that are more ecologically and socially responsible than their average counterparts."

The combination of the two definitions of healthy and sustainable provided by Health Canada and UBC Sustainable Campus Food Guide will be used in this specific report to define healthy and sustainable snacks.

First impressions observational surveys

The findings from the first impressions surveys have been organized into two tables, separating the "successful outlets" (table 1) and "unsuccessful outlets" (table 2). The categories were based on the aspects we evaluated during the observational surveys, including availability and type of snacks, outlet ambience, and pricing. The raw data can be found in Appendix Figure A24.

Group 2: Healthy & Sustainable Snacks

Table 1: Findings from first impressions observational surveys for the Loop Café, Point Grill, and Place Vanier Dining Hall

	"Successful" Locations		
	The Loop Café	Point Grill	Place Vanier Dining Hall
Outlet Ambience	<ul style="list-style-type: none"> - Very green - Warm and inviting - Quieter than some other food outlets - Nice décor 	<ul style="list-style-type: none"> - Nice décor - Good natural light 	<ul style="list-style-type: none"> - Lots of seating inside - Lots of windows and natural light
Availability and type of snacks	<ul style="list-style-type: none"> - Kale chips, salad bar, baked goods (gluten free, organic), and juice bar with fresh fruit and herbs (self-serve) 	<ul style="list-style-type: none"> - Some grab-and-go options such as sandwiches and salads, but not typically a place someone comes to eat alone 	<ul style="list-style-type: none"> - Small basket of fruits - Baked goods by the counter - Samosas and wraps - Drinks include pop and juice (displayed clearly at the front), and milk, Odwalla smoothie drinks (behind the pop and juice) - No particular spot at the café where healthy options could be found - Yogurt, some milk, soy milk, and Happy Planet drinks were stored together in one refrigerator, but Odwalla smoothies and some milk was also stored with pop and juice
Pricing	<ul style="list-style-type: none"> - Sandwiches: 4-7\$ - Salads: pay by weight - Baked goods: 2.25-3.50\$ - labeled on individual items, but very small 	<ul style="list-style-type: none"> - Higher than other food outlets - Strong stand for quality in sourcing products 	<ul style="list-style-type: none"> - Reasonable pricing even at retail <ul style="list-style-type: none"> o Difference in price for residents and general public - Main lunch items generally no more than 7\$ - Not much signage indicating prices

Table 2: Findings from first impressions observational surveys for IRC Snack bar, Reboot Café, and Neville's Café

	"Unsuccessful Locations"		
	IRC Snackbar	Reboot Café	Neville's Café
Outlet Ambience	<ul style="list-style-type: none"> - Had streamline waste bin at the café - No garbage was seen on the floor or tables - Dimly lit, but had a window on the opposite wall - No unpleasant smell - Fairly quiet - Located beside the men's washroom, close to a few vending machines, and in the same building as the 	<ul style="list-style-type: none"> - Most people at the café were studying - Clean throughout, with different bins for recycling, compost and garbage by the café, but none in the sitting/dining area - Close to a window, allowing for natural light - Internal lighting was dim - Quiet atmosphere - Located near the edge of 	<ul style="list-style-type: none"> - There are seats and tables available outside the library, but it was observed that most people did not stay after purchasing food items <ul style="list-style-type: none"> o a few people entered the library after purchasing - the counters and floors are kept clean, with a good amount of lighting inside, no unpleasant smells, and a relatively quiet atmosphere - café is located opposite to the

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	Woodward library and lecture halls - Has some seating area	campus, across from Tim Hortons at Forestry building	library, next to a lecture hall, with a few long tables nearby for dining/sitting
Availability and type of snacks	<ul style="list-style-type: none"> - Small basket of fruits - Baked goods by the counter - Samosas and wraps - Drinks include pop and juice (displayed clearly at the front), and milk, Odwalla smoothie drinks (behind the pop and juice) - No particular spot where healthy options could be found - Yogurt, some milk, soy milk, and Happy Planet drinks were stored together in one refrigerator, but Odwalla smoothies and some milk was also stored with pop and juice 	<ul style="list-style-type: none"> - Baked goods - Fruits - Wraps & vegetable snacks in cooler - Yogurt, milk and juice stored in cooler with wraps - Cooler is located beside the cashier 	<ul style="list-style-type: none"> - On left side of the counter: baked goods such as croissants, muffins, scones, cinnamon buns - Middle of the counter: sandwiches, Panini, milk, coconut water, chocolate almond milk, a small basket of fruits (apples and bananas) - On right side of the counter next to the cashier: Dorito chips, Miss Vickie's chips, and a basket of pastries such as chocolate oat bar, banana loaf, and lemon loaf
Pricing	<ul style="list-style-type: none"> - No prices on actual items - Through observations for about 10 minutes, most customers had to ask about individual items they were interested in buying - Fruits were 99cents each, but there was no price displayed or indication on overhead menu - Prices were not on the actual item, but on an overhead menu where some prices were indicated 	<ul style="list-style-type: none"> - Healthy options were more expensive - Unhealthy options were not cheap (rice crispy was over 2\$) - Prices were not on the actual item, but on an overhead menu - Some prices were not clear – some foods had 2 prices 	<ul style="list-style-type: none"> - Some healthy snack prices are not listed on the menu, such as coconut water, chocolate almond milk, and fruits - Two price menus are placed on top of the baked food shelf, one for drinks and the other for baked goods - Healthy drinks (coconut water, milk, Odwella juice, soy milk) are placed in the refrigerator (in the middle) - Healthy snacks (fruits) are stored next to the cashier

Individual interviews

In the individual interviews, we asked interviewees to rank the provided reasons for visiting a UBC food outlet by importance. Overall, it was found that the majority of the UBC community believes that convenience is the most important when visiting a food outlet, whereas hours of operation and prices are relatively less important. Through conducting the interviews, we also gained a better understanding of the definitions of “healthy” and “sustainable” in the

view of the general UBC community. The results were synthesized into tables shown above (Table 1 & 2), and will be further interpreted in the discussions section.

The gathered opinions have been categorized into different groups based on keywords, including keywords addressing the content characteristics of the food, requirements a food must have, keyword descriptions in general, and specific examples. It was expressed that the ideal healthy content of a food product had characteristics including “low fat, no trans-fat, and contains whole wheat”. Some also suggest healthy snack food requirements include organic, fresh and minimally processed foods. The most used keyword description is “vegetables”, “fruits”, and “nutritious”. Lastly, students also provided examples of healthy foods such as fruits, granola bar, salad, and kale products.

To synthesize the information regarding the definition of sustainability, we created four categories based on keywords provided by the interviewee: ingredient sourcing, food production, packaging, and waste system. Words such as “fair trade, non-GMO and local” were used to define sustainability in the sense of ingredient sourcing. Under food production, “ethically grown”, and “minimizing carbon footprint” were frequently mentioned. Under packaging, compostable and recyclable packaging was expressed to be an important factor in sustainability. Finally, an adequate waste and disposal system is another factor that contributes to sustainability in the opinions we found.

In the individual interviews, we also asked interviewees think that healthy snacks are available on campus. Most opinions expressed that healthy and sustainable snacks are available on campus, but have a limited selection, and availability is inconsistent among different food outlets. It was also expressed that such healthy and sustainable snack food options are often more expensive compared to their less healthy counterparts.

Finally, the last interview question found that salads, yogurt, greater variety of fresh fruits, and fresh smoothies were the most desirable snacks on campus.

Discussion

Our main objective for conducting first impression observational surveys of the food outlets was to record our first reaction was to the food availability, prices and displays at the outlet. One of the key points that many of our team members noted while undertaking these first impressions surveys was that many of the food items did not have clear prices. Several items, such as baked goods, would only have a range of what the prices were. In addition, many of the fruits that were being sold did not have clear pricing adjacent to them. While the fruits could have been local, this was not always clear in all food outlets, even though this is a very attractive selling point. Another issue was how items were displayed in the food outlets. For the items that are located in the refrigerators, they often did not have prices clearly displayed on or near them. Our team found that consumers may want to purchase these items but are often discouraged from doing so because they do not know how much they are going to be spending. Furthermore, healthy and sustainable options currently exclusively available through the Loop, such as kale chips, should be available at every UBC food outlet. This action may help the campus community realize that UBC food services consider the importance of sourcing products that coincide with the definition of healthy and sustainable.

Through one-on-one key informant interviews, we were able to gain valuable community feedback regarding food options on campus. Three outlets were identified as being more “healthy and sustainable” by our definition (The Loop, Point Grill and Vanier) while the other

three (Reboot, Woodward and Neville's) were identified as the less successful locations on UBC campus in this sense.

Through interviewing UBC community members at various locations on campus, it became clear to our team that most people came up with similar definitions for "healthy and sustainable". What our group inferred from this is that even though campus members are coming from various faculties, professions and lifestyles, most people have been exposed to the idea of healthy and sustainability in terms of food. The overall definitions that campus members came up with were similar to our original definition of what it means for a food to be healthy and sustainable. Some of the common phrases that stood out to us were: "ethical", "local", "fair trade", "organic", "less waste", "no animal products". After concluding the interviews it is obvious that campus members have what we deem to be a good grasp on how to make healthy and sustainable food choices.

In the next part of interviews, we asked campus members to rank why they chose the particular UBC food outlet that they did. We ranked the answers by convenience, prices, specific food choices at outlets, and hours of operation. As expected, convenience was the number one reason that campus members were choosing the UBC food outlet for that point in time. This was not surprising to our team as we understand that for students (who make up the largest portion of the campus population); time is a factor when deciding where food will be purchased on campus. When discussing this in further detail with campus members, it was clear that unless they had an extended break in the day (students specifically) it was unlikely that they would make a trip to a specific location to get a specific food item that was only offered in one place, such as kale chips at the Loop Cafe. In addition, we asked campus members if they felt that there was any location on campus that was lacking healthy and sustainable snack options. The top two that stood out

through all the interviews were the Student Union Building and the Koerner Library. While our group did not ask the frequency of campus members visiting either of these locations, we believe that these are two of some of the busiest parts of campus, if not the busiest overall. Since it is clear that most students visit locations based on convenience, it would be worthwhile at looking at the choices that UBC food services is offering at these locations, and whether they feel it meets the definition of healthy and sustainable.

Finally, when asking campus members what their utopian idea of a healthy and sustainable snack option was, we obtained many varied but reasonable responses. Some examples were, “fresh fruit”, “fresh vegetables”, “yogurt”, “granola”, “kale chips”, “salads”, “granola bars”, “energy bars”, and “smoothies”. It was clear to our team that many of these items were already offered in several of the food outlets. However there appears to be a disconnection with what campus members perceive to be available and what actually is. This common perception was also observed through our first impression surveys.

Recommendations

Combining results gathered from UBC community member interviews with our definitions obtained by literature review allowed the research team to provide three specific snack options as recommendations for implementation. As previously stated as an objective of this project, three existing healthy and sustainable snacks from select UBC food outlets would be identified and suggested to be implemented at the other target UBC food outlets. The snack options recommended include: fresh fruit and vegetable smoothies, a greater variety of fresh whole fruits and yogurt with choice of toppings. Both short term goals and long term goals will be identified and presented according to the SMART (specific, measurable, achievable, result-oriented, and time-bound) approach. Short term goal recommendations will include immediate

actions items that are intended to contribute to the ultimate long term goal of creating healthy and sustainable food systems at UBC through increasing availability of such snacks. Long term recommended actions will include the implementation of the three suggested snack options, which will require further research and interdisciplinary coordination.

Short Term Goals

Short term goals target the improvement of the current status of all UBC food outlets in promoting and marketing of existing healthy and sustainable snacks. Recommendations of short term goals are largely based on information gathered from the first impressions observational surveys conducted by the research team. An evident issue experienced in all UBC food outlets we visited was the lack of effective and convenient item pricing. Often customers would be required to specifically inquire about each individual item for their pricing. As seen in Appendix Fig. A4, A5, and A16, food items of different pricing and variety would be placed in the same location with no indication of specific item pricing. Observations also revealed that healthy snacks in general, such as kale chips, fresh fruits, prepackaged salads, milk, pre-made smoothies and individual to-go yogurt cups are often stocked away from each other, making it difficult to locate all of the healthy options. To further illustrate this point, it can be observed in Appendix Fig. A2i and A2ii that milk, soy drinks, fruit juices and pre made smoothies were merchandised in different refrigeration units. As frequent consumers, the research team recognizes that such separation of the food items can significantly hinder consumer purchasing choices.

Therefore, our short term goal is to resolve the issues discussed above. Solutions include providing convenient visual pricing and reorganizing the merchandizing of healthy and sustainable food choices into more congruent locations. Considering the variety offered at the

UBC food outlets, it is recognized that menus with a complete list of all the food products and their corresponding prices may not be realistic or beneficial. Therefore, we suggest the use of labeling stickers to mark each individual product with price. Examples of effective pricing were seen at The Point Grill's "grab and go" section (Appendix Fig. A9). Not only was the price listed, but the main ingredients of the food item were also displayed on a convenient sticker label. We believe this will encourage sales in general, but in particular of fresh fruits. It was revealed in the interviews that a common assumption that consumers have is that fresh fruits are expensive and unaffordable. Having all the prices properly displayed may be able to provide a comparison for customers who are deciding between a healthy or a less unhealthy snack. Results and effectiveness of implementation are measurable through comparing and contrasting sales and inventory reports before and after the implementation of labeling stickers with price and possibility list of main ingredients over a period of time.

To resolve the disconnection between the merchandising locations of healthy snacks, healthy snack options can easily be placed in a single spot. It will allow students to see all of the available healthy snacks more easily and conveniently compare with the less healthy and sustainable options. Again, the effectiveness of the categorization location system can be measurable through sales and inventory reports to see whether healthy and sustainable snacks are being purchased more often as a result. We also recommend the location of the healthy and sustainable options to be in a high traffic, visible area. An example of this could be near the cashier area or shelving areas at eye level. Images of specific locations in the food outlets where this could be implemented can be seen in Appendix Fig. A3, A6, and A16.

Based on our first impression observational surveys and community interviews, improving the price signage and placement of healthy snacks can be considered the short-term

action plan. They are quick and low-cost solutions to inform that community that UBC food outlets do offer healthy food and to attract the community to practice healthy eating.

Long term goals

As a direct result of our research project, three specific healthy and sustainable snack options have been identified for implementation at target UBC food outlets, including Reboot Café, IRC Snack Bar and Neville's Café. The specific snack choices were: yogurt with choice of toppings, fresh fruit and vegetable smoothies, and a greater variety of fresh fruits. The decision to recommend these three snack options came from several important factors, including interview results, compliance with this project's definition of healthy and sustainable, the ability of the raw ingredients required for all three snacks to be interchangeable, and therefore maximizing the resources available, and lastly the available local resources that can be used for raw materials.

According to community interviews, smoothies were the most requested healthy and sustainable snack item. Although smoothies are offered at Jugo Juice, Booster Juice, University Village, Wesbrook Village and Place Vanier Dining Hall, they are located relatively far away from the central campus. As represented in the community interviews, convenience was the most important factor when choosing which food outlets to visit. Therefore, the student population travelling across campus for a smoothie may not be feasible and warrants the development of smoothies in central campus UBC food outlets.

Fresh fruits were also in high demand according to our community interview results. Although most of the food outlets provide fresh fruits, variety is limited to bananas and apples. Many interviewees also commented on the pricing of fresh fruits, claiming that fresh fruits that

are currently sold in UBC food outlets are too expensive and unaffordable. Place Vanier Dining Hall is a good example of a food outlet that provides a greater variety of fresh fruits, including apples, bananas, grapefruits, and avocados (Appendix Fig. A14i, A14ii, and A14iii). In addition, fruit cups without any added sweeteners are also a good alternative to providing whole fresh fruit. As part of the reason why we chose these specific snack options is their ability to interchange raw materials. The shelf life of whole fresh fruit is obviously a concern, and when approaching the over ripening of these fruits, they can be processed into smoothie options or made available as yogurt toppings. This can effectively maximize the resources available and minimize waste.

Yogurt with choice of topping was also selected as a new healthy and sustainable snack to be implemented due to its evident demand demonstrated through UBC community interviews. Our recommendation envisions a semi-self-serve yogurt station where staff would assist consumers in weighing the final product and the consumer would pay by weight, similar to the system implemented at Place Vanier Dining Hall (Appendix Fig. A12i. and A12ii.). This system has also proven to be extremely successful in frozen yogurt chain stores such as QoolaTM, Pinkberry^(R), and Menchies^(R). Yogurt was also chosen due to the demand for healthy and sustainable protein snack options. Many interviewees revealed that they felt a sincere lack of knowledge in what constitutes healthy protein options and would like to see more of such in campus food outlets. Therefore, the research team believes a Greek yogurt option where protein levels are higher compared to their average counterparts is suitable. The various toppings available can also contribute to the protein demand as nuts can provide additional protein. Frozen fruits can also be provided as topping choices along with granola.

Group 2: Healthy & Sustainable Snacks

To align the choices mentioned above with our goal of providing healthy and sustainable snack foods, the raw materials purchased and used should come from local sources and of seasonal harvest. Through literature research, it was found that an organization called FarmFolkCityFolk have not only produced a very useful seasonal chart (FarmFolkCityFolk, 2012) for the general southwest BC area, but has also compiled a directory of businesses that sell local foods in the Lower Mainland (FarmFolkCityFolk, 2011). Though it may not be exhaustive of all local food providers in the Lower Mainland, it provides possible businesses that may be interested in building a relationship with UBC. The use of local and seasonal ingredients will also expose the UBC community to experience the food systems native to their location. This will enrich their health and the environment as well as educate the community of local and seasonal foods available in their own hometown. Though smoothie ingredient necessities, such as bananas, may have to be imported, feature seasonal and local ingredients can be used as a promotional tactic as well for educational purposes. As well, popular fruits and vegetables that are season can be bought in bulk when in season and then frozen till needed for time of use, creating a supply year-round.

This leads to our last long term goal recommendation which involves the improvement of signage across all UBC food outlets. As expressed multiple times during community interviews, the UBC population had trouble defining what is healthy and sustainable in terms of food choices. Signage can help educate the community as well as promote the current healthy and sustainable food choices available at UBC food outlets. As Chef Golob mentioned during his presentation for the LFS 450 class, proper signage stating the local and organic origin of the apples can influence consumer choice, even though they were more expensive. We also recommend creating signage that is cohesive with the newly developed UBC Sustainable

Group 2: Healthy & Sustainable Snacks

Campus Food Guide, which will act to further promote the guide as well as provide a uniform message across UBC campus. By consulting Jackie Ehlert, a registered dietitian that works closely with UBC Food Services as well as the UBC community, nutritional information signage can be developed to promote the seasonal and local ingredients used for yogurt toppings and smoothie components. The interchangeable ingredients of the suggested snacks will further contribute to increasing sustainability by reducing number of shipments by local transportation. This will reduce emissions released by trucks and other methods of transportation if fewer trips are taken to supply UBC food outlets with raw ingredients. As well, since the research team has taken existing healthy and sustainable snack options available at UBC food outlets as recommendations, possible sourcing collaboration between unsuccessful UBC food outlets and successful outlet stakeholders such as Chef McWilliams and Chef Golob are suggested.

Limitations & recommendations for future projects

To ensure the recommended plan of implementing yogurt and smoothie stations and fresh whole fruits is a realistic one, consultation with Chef Golob and Chef McWilliams were conducted to investigate any foreseeable challenges (personal communication, March 20 – 21, 2013). As not only experienced chefs but also key stakeholders of UBC food outlets, they were able to provide essential insights for the recommendations. Some foreseeable challenges identified involved the floor plan of the UBC food outlets in which the three options were to be implemented. The food outlets would have to have enough space for counters if new ones were to be installed or determine whether a rearrangement of the current established applications would be sufficient. Next, an available power source must be available for appliances, such as blenders and refrigeration units. Storage of all the ingredients may also pose as an issue, as

Group 2: Healthy & Sustainable Snacks

previously frozen fruits and vegetables must be kept in the freezer until time of use. As well, new baskets or appliances to display the fresh whole fruits would be needed. Due to the limited time available, the research team was unable to resolve all the issues presented by the chefs.

Therefore, we recommend that future LFS 450 SEEDS projects target the areas that have identified as potentially problematic.

The research team have spent ample time, thought, and research to support the recommendations to ensure they are of demand from the UBC community and pose as realistic goals for UBC food services. The implementation of any of all of the recommended snack options will require further research. Therefore, they can be used as potential future SEEDS projects. Specific areas needing future research include: defining specific seasonal and local fruits and vegetables that can be used as both yogurt topping and for smoothies. Research teams would need to create a realistic ingredient cycle that matches the seasonal and local production system and ensure attractive yogurt topping and smoothie recipes can be developed from the ingredients chosen. This would require key stakeholders such as Wakefield, purchasing manager of UBC food services; Chef McWilliams who has an extensive experience working with local and season ingredients; and dietitian Ehlert as consultation to create nutritional education material to promote the products.

Due to the time constraint, we are unable to provide a more detailed plan for our long-term goals. However, the long-term goals can be used as references and starting points for next year's LFS450 students. If observational surveys were to be conducted in future research, it is recommended that students record what consumers purchase in queue to see if particular snacks are frequently purchased.

Evaluation

Many literature reviews indicate the significance of a healthy and sustainable diet for a better lifestyle and environment. From the pre-consultation with our key informant, we identified the top three and bottom three locations to visit for our investigation, as well as ideas of the outcomes she visualized. Through these ideas, several key informant interviews at each food outlet were performed to understand the definition of healthy and sustainable from UBC consumers. The interviews revealed that smoothies, yogurt and a greater variety of fresh fruits were high in demand on campus. With this demand, we came up with the idea of having smoothie and yogurt stations at different food outlets.

The team consulted our other stakeholders, McWilliams and Golob, with our findings. The chefs commented that the results are feasible, but a few points needed to be considered. As the yogurt station and smoothie stations require usage of specific equipment, research is needed to evaluate the costs and space at the food outlets for installation. From our visits at the food outlets, it would seem feasible for the stations to be implemented at Reboot, Neville, and IRC Snack bar. Fruit pricing was also a concern, as it varies seasonally. The team decided that pricing can be adjusted accordingly with labels displayed stating where the fruits were sourced from to justify its prices. Overall, the campus interviews helped to obtain campus opinion in healthy and sustainable snacks. However, we had experienced some confusion from interviewees when asking the questions. Therefore, future interview questions should be phrased more clearly. Also, further research is recommended to better implement such snacks as a long term solution.

Reflections

The research team's reflection can be categorized into two areas. First, reflections gained from conducting primary research and second, reflections of the LFS450 course support in the progress of working on the UBC Food Systems project.

Conducting primary research has allowed the team to be exposed to various opinions of the UBC community. Many of these opinions were in conflict with our own and therefore resulted in several realizations. An overwhelming portion of the UBC community members that were interviewed had trouble defining the terms healthy and sustainability. As well, many of the snacks suggested by the UBC community were snacks that are presently offered in certain locations. These signs of misinformation combined with knowledge gained from UBC food service key informants, provided the research team with the realization that there is a clear miscommunication between the efforts taken by UBC food services to create available healthy and sustainable snack options and the understanding of the UBC community of what is available to them. As the research team is comprised of current UBC students, many misconceptions expressed by students were shared with the research team. If the team had not conducted the research necessary to follow through with this project, the research team would not be able to appreciate the efforts made by the UBC food services to provide healthy and sustainable snacks. However, as members of the Faculty of Land and Food Systems at UBC, the research team has been exposed to many complicated and diverse aspects of healthy and sustainable food systems, leading to a deeper and more personal understanding of the concept. Therefore, it was a challenging and surprising realization to conclude that the majority of the community members at our university had difficulty defining these concepts.

Group 2: Healthy & Sustainable Snacks

On the administrative aspect of the project itself, core course LFS450 instructors, teaching assistants, and the SEEDS Project Coordinator each held a role in providing as resources and guides to the project initiative. Upon reflection on the course in relation to the project at hand, the research team had several comments. This project was an exciting opportunity for all members of the research team, and we were thrilled to be able to contribute to the healthy and sustainable food initiative on campus. However, the project was difficult to get off the ground at first, as stakeholder objectives did not completely align with the objectives set out by the course instructor and SEEDS Project Coordinator. As well, with two research teams assigned to the same project description, a significant amount of time was spent in determining boundaries where each project would be unique but cohesive at the same time. The research team reflects that due to the lack of structure and guidance, it was difficult to execute the project in the time period provided. As a result, we feel we did not achieve as much as we had anticipated at the start of the project. However, we hope that our research has contributed even a small part in this meaningful project in evolving UBC for the better.

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UBC Social Ecological Economic Development Studies (SEEDS) Student Report

Healthy & Sustainable Snacks: Appendix

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University of British Columbia
Land, Food, and Community III (LFS 450)
April 2013

Disclaimer: "UBC SEEDS provides students with the opportunity to share the findings of their studies, as well as their opinions, conclusions and recommendations with the UBC community. The reader should bear in mind that this is a student project/report and is not an official document of UBC. Furthermore readers should bear in mind that these reports may not reflect the current status of activities at UBC. We urge you to contact the research persons mentioned in a report or the SEEDS Coordinator about the current status of the subject matter of a project/report".

Section A – First Impressions Data

IRC Snack Bar

Date of photos taken below: March 1, 2013



Fig. A1: Overall view of IRC Snack Bar



Fig. A2i (left) & A2ii (right): Refrigerated sections of IRC Snack Bar



Fig. A3: Cashier area of IRC Snack Bar



Fig. A4: Assorted fruits available for purchase at IRC Snack Bar



Fig. A5: Assorted baked goods available for purchase at IRC Snack Bar

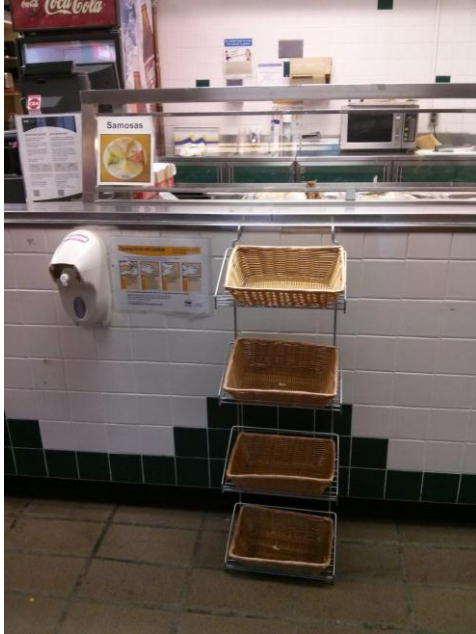
Group 2: Healthy & Sustainable Snacks

Fig. A6: Baskets by cashier area, potential area to display fresh whole fruits



Fig. A7: Potential area for yogurt station

Point Grill

Date of photos taken below: March 15, 2013



Fig. A8: Entrance overview of The Point Grill



Fig. A9: Grab & Go area of the Point Grill



Fig. A10: Grab & Go beverage area of the Point Grill

Place Vanier Dining Hall

Date of photos taken below: March 15, 2013



Fig.A11: Overall view of Vanier Dining Hall

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Fig. A12i



Fig. A12ii

Fig. A12i & A12ii: The self-serve yogurt station at Vanier Dining Hall



Fig. A13i



Fig. A13ii

Fig. A13i. and A13ii: Healthy beverage options at Place Vanier Dining Hall

Group 2: Healthy & Sustainable Snacks



Fig. A14i



Fig. A14ii



Fig. A14iii

Fig. A14i, A14ii, and A14iii: Assorted whole fresh fruits available for purchase at Place Vanier Dining Hall

Reboot Café

Date of photos taken below: March 27, 2013



Fig. A15: Overall view of Reboot Café



Fig. A16: Available food options for purchase at Reboot Café, also a possible area where a yogurt station could be implemented.

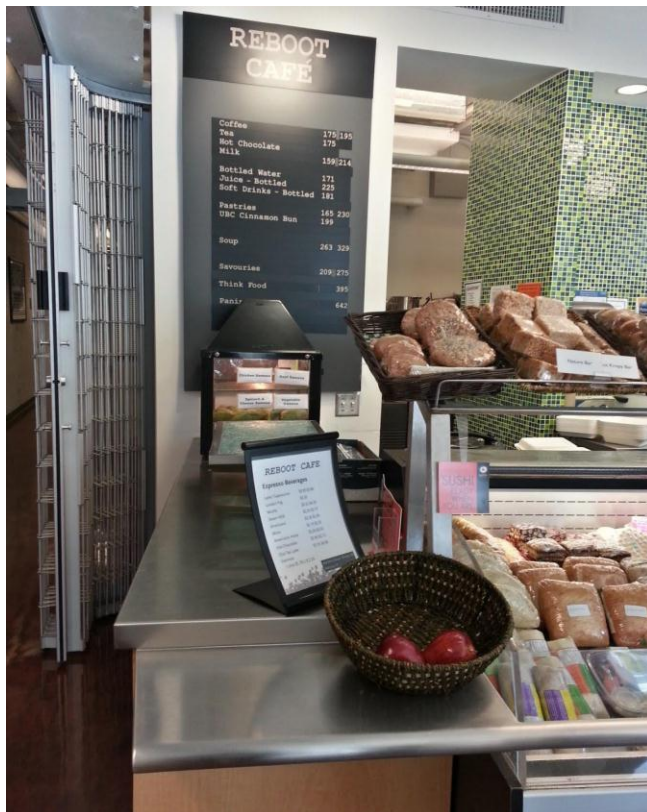


Fig. A17: The limited fresh fruit available at Reboot Café



Fig. A18: Refrigerated beverage section of Reboot Café, with milk and healthy smoothie options located on the lowest shelf of the refrigerator

The Loop Café

Date of photos taken below: March 6-12, 2013



Fig. A19: Overall view of the Loop Café



Fig. A20: Layout of the Loop Café



Fig. A21: Streamline waste management

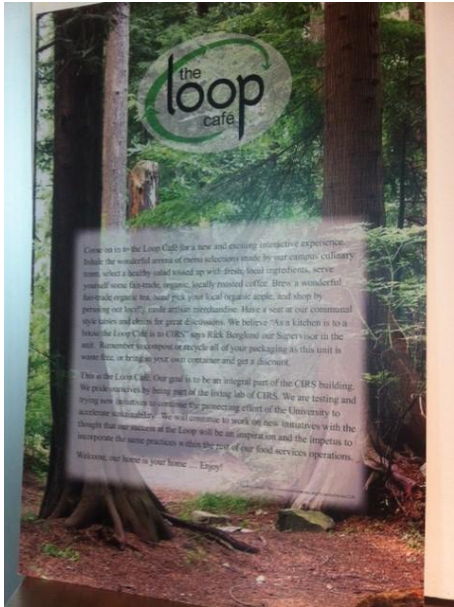


Fig. A22: A poster illustrating the image the Loop Café is trying to create – a green and sustainable repertoire

Fig. A23: Questions used to guide the data collected for first impressions observational surveys

- What snacks choices are most obvious?
- Pricing
 - o What are specific prices of some snacks? (Healthy vs Unhealthy)
 - o How visible are prices
- Where are the healthy snacks stocked in the outlet? Visibility
- Take pictures
- Ambiance
 - o Environment (what are people doing around the location?)
 - Studying?
 - Eating?
 - Chatting?
- Sanitation
- Note the lighting/windows
- Smell
- Atmosphere (noise level?)
- Relative location to study areas, eating areas, and classrooms

Fig. A24: First Impressions Observational Surveys, raw data

The Loop

- Observations done by Amanda Singer on March 6, 2013
 - Ambiance
 - o Very green
 - o Warm and inviting
 - o Quieter than some other food outlets
 - o Nice décor
 - Snacks
 - o Kale chips, salad bar, baked goods (gluten free, organic), and juice bar with fresh fruit and herbs (self serve)
 - Pricing
 - o Sandwiches: 4-7\$
 - o Salads: pay by weight
 - o Baked goods: 2.25-3.50\$ - labeled on individual items, but very small
-

Point Grill

- Observations done by Amanda Singer on March 6, 2013
- Pricing: <http://pointgrill.food.ubc.ca/menus.html>
- Casual gourmet type restaurant
- Snacks
 - o Some grab-and-go options such as sandwiches and salads, but not typically a place someone comes to eat alone
- Sit down restaurant with service staff, different from other food outlets surveyed on campus
- Ambiance
 - o Nice décor
 - o Good natural light
- Location
 - o Not easy to get to
 - o Many students have never heard of it or has never been there due to the location
- Pricing
 - o Higher than other food outlets

- Strong stand for quality in sourcing products
-

Place Vanier Dining Hall

- Observations done by Amanda Singer on March 6, 2013
 - Location
 - Difficult to find if you have never been to the residences
 - No signage outside to indicate that anyone can purchase meals at Vanier
 - Ambiance
 - Lots of seating inside
 - Lots of windows and natural light
 - Snacks
 - Many choices: Fusions, Cedar Grill, Salads, Stackables, desserts, soups, and cereals
 - Has made-to-order sandwiches
 - Smoothies – made from local and organic ingredients
 - Fruits are prominently placed
 - Has pay-by-weight ice cream and a large variety of desserts
 - Salads and fruits well displayed
 - Lots of gluten-free, vegan and vegetarian options
 - Pricing
 - Reasonable pricing even at retail
 - Difference in price for residents and general public
 - Main lunch items generally no more than 7\$
 - Not much signage indicating prices
-

IRC Snackbar at Woodward

- Observations done by Tina Liu on March 1, 2013 at 2 pm
- Location
 - Café was pretty empty
- Snacks
 - Small basket of fruits
 - Baked goods by the counter
 - Samosas and wraps
 - Drinks include pop and juice (displayed clearly at the front), and milk, Odwalla smoothie drinks (behind the pop and juice)
 - No particular spot at the café where healthy options could be found
 - Yogurt, some milk, soy milk, and Happy Planet drinks were stored together in one refrigerator, but Odwalla smoothies and some milk was also stored with pop and juice
- Pricing
 - No prices on actual items
 - Through observations for about 10 minutes, most customers had to ask about individual items they were interested in buying
 - Fruits were 99cents each, but there was no price displayed or indication on overhead

- menu
 - Prices were not on the actual item, but on an overhead menu where some prices were indicated
 - Ambiance
 - Most people were either studying or on their laptops, not many had food on their tables or were eating
 - Had streamline waste bin at the café
 - No garbage was seen on the floor or tables of the café
 - Café was dimly lit, but had a window on the opposite wall of the café
 - No unpleasant smell
 - Café was fairly quiet
 - Located beside the men's washroom, close to a few vending machines, and in the same building as the Woodward library and lecture halls
 - Has some seating area by the café for eating or studying
-

Reboot Café

- Observations done by Gwendalen Chan on March 1, 2013
 - Snacks
 - Baked goods
 - Fruits
 - Wraps & vegetable snacks in cooler
 - Yogurt, milk and juice stored in cooler with wraps
 - Cooler is located beside the cashier
 - Pricing
 - Healthy options were more expensive
 - Unhealthy options were not cheap (rice crispy was over 2\$)
 - Prices were not on the actual item, but on an overhead menu
 - Some prices were not clear – some foods had 2 prices
 - Ambiance
 - Most people at the café were studying
 - Café was clean throughout, with different bins for recycling, compost and garbage by the café, but none in the sitting/dining area
 - Café is close to a window, allowing for natural light
 - Internal lighting was dim
 - Quiet atmosphere
 - Located near the edge of campus, across from Tim Hortons at Forestry building
-

Neville Café

- Observations done by Stephanie Law on March 1, 2013
- Snacks
 - On left side of the counter: baked goods such as croissants, muffins, scones, cinnamon buns

Group 2: Healthy & Sustainable Snacks

- Middle of the counter: sandwiches, Panini, milk, coconut water, chocolate almond milk, a small basket of fruits (apples and bananas)
- On right side of the counter next to the cashier: Dorito chips, Miss Vickie's chips, and a basket of pastries such as chocolate oat bar, banana loaf, and lemon loaf
- Pricing
 - Some healthy snack prices are not listed on the menu, such as coconut water, chocolate almond milk, and fruits
 - Two price menus are placed on top of the baked food shelf, one for drinks and the other for baked goods
 - Healthy drinks (coconut water, milk, Odwella juice, soy milk) are placed in the refrigerator (in the middle)
 - Healthy snacks (fruits) are stored next to the cashier
- Ambiance
 - There are seats and tables available outside the library, but it was observed that most people did not stay after purchasing food items
 - a few people entered the library after purchasing
 - the counters and floors are kept clean, with a good amount of lighting inside, no unpleasant smells, and a relatively quiet atmosphere
 - café is located opposite to the library, next to a lecture hall, with a few long tables nearby for dining/sitting

Section B: Key informant interviews, sample

Fig. B1: Sample of location specific interviews

In Line-Up	
1. What UBC Food outlet out of the six provided do you frequent the most?	
Campus Eateries:	
<input type="checkbox"/> IRC Snack Bar at Woodward	<input type="checkbox"/> The Loop Café at CIRS
<input type="checkbox"/> Neville's	<input type="checkbox"/> Reboot Café
<input type="checkbox"/> Point Grill	<input type="checkbox"/> Vanier's
2. Why do you frequent the UBC food outlet chosen above? Out of the reasons provided below please rate them by importance (4 being most important and 1 being least important) - use each number once * Show customer	
<input type="checkbox"/> Convenience of location to classes and study area	
<input type="checkbox"/> The specific food choices found at this location	
<input type="checkbox"/> The prices offered at this location	
<input type="checkbox"/> The hours of operation of this location	
Healthy and Sustainable Opinions	
1. What does healthy and sustainable snacks mean to you? ‘	
2. Do you think such snacks are available at UBC?	
3. Are there any location(s) on campus that you feel lack healthy snacks?	
Utopia	
1. What is one healthy and sustainable snack option you wish was available at this particular location but isn't?	

Fig. B2: Non location specific interview sample

1. What UBC Food outlet out of the six provided do you frequent the most?
Campus Eateries:

<input type="checkbox"/> IRC Snack Bar at Woodward	<input type="checkbox"/> The Loop Café at CIRS
<input type="checkbox"/> Neville's	<input type="checkbox"/> Reboot Café
<input type="checkbox"/> Point Grill	<input type="checkbox"/> Vanier's

If you don't visit any of these UBC Foodoutlets please indicate why.

2. Why do you frequent the UBC food outlet chosen above? Out of the reasons provided below please rate them by importance (**4 being most important and 1 being least important**) - use each number once * Show customer

- Convenience of location to classes and study area
- The specific food choices found at this location
- The prices offered at this location
- The hours of operation of this location

Healthy and Sustainable Opinions

1. What do healthy and sustainable snacks mean to you? (try providing examples or other words you associate with healthy and sustainability)

2. Do you think such snacks are available at UBC? (Why or why not?)

3. Are there any location(s) on campus that you feel lack healthy snacks? (Name specific buildings and/or general location)

Utopia
What is one healthy and sustainable snack option you wish was available but isn't currently?

Fig. B3: Envelope labeled “Fig. B3” contains consent forms from all of the interview participants and photo release consent forms, submitted to course instructor Sophia Baker-French.

Fig. B4: Envelope labeled “Fig. B4” contains original interview documents used during key informant interviews, submitted to course instructor Sophia Baker-French

Section C: Media Release**Healthy & Sustainable Snacks on UBC Campus**

Above: The Healthy and Sustainable Snacks project of UBC FSP from LFS450 at the Loop Café

Snack foods are often associated with an unhealthy and unsustainable image because they are often highly processed and packaged for convenience. The 2013 addition to the Healthy and Sustainable Snacks project, part of the University of British Columbia (UBC) Food Systems Project in collaboration with LFS 450, aims to develop an action plan for implementing healthy and sustainable snacks in UBC food outlets for the UBC community.

We found that the Loop Café, Point Grill, and Place Vanier dining hall are UBC food outlets that have been successful in providing healthy and sustainable food options. However, IRC Snack Bar, Neville's Café, and Reboot Café are examples of UBC food outlets that require further improvement in this aspect. Using the successful UBC food outlets as a model, we developed short term and long term solutions to improving the less successful food outlets. We are particular enthusiastic about our recommendation of having fresh fruit and vegetable smoothies available on campus and hope that it can be implemented in the future.

Section D: Key informant interview, organized data

Fig. D1: Data from non-location specific interviews

Healthy definition	
Content	<ul style="list-style-type: none"> ● Low in salt ● No carbohydrates ● Whole wheat/ multigrain ● Low/no fat ● Low in sugar ● Good amount of fibre ● Good source of protein: protein shakes and high protein ● Provide adequate nutrients: contain vitamins and minerals, does not have large caloric content ● Meet suggested daily servings from Canadian Food Guide
Requirement	<ul style="list-style-type: none"> ● Organic ● Fresh food/ produce (not processed) ● Cheap ● No sweets ● Not greasy ● Not fried food
Keyword description	<ul style="list-style-type: none"> ● Whole foods ● Foods that maintain healthy habits
Example	<ul style="list-style-type: none"> ● Milk, fish, variety of herbal tea
Sustainability definition	
Ingredient	<ul style="list-style-type: none"> ● locally produced ● non manufactured ● fair trade
Food product production	<ul style="list-style-type: none"> ● low carbon footprint ● environmentally friendly ● conserve energy
Packaging	<ul style="list-style-type: none"> ● recyclable ● biodegradable ● using recycled material

Availability of healthy and sustainable snacks in UBC	
Yes	<ul style="list-style-type: none"> • sandwiches, apples bananas, granola bars • packaging is sustainable • Sprouts Agora, Deli • Awareness increased demands • don't taste good
Somewhat	<ul style="list-style-type: none"> • difficult to find • healthy products are usually expensive • only at the sub • room for improvement • varied in locations, ex: woodward lacks of healthy options
No/Not sure	<ul style="list-style-type: none"> • mostly burgers • no produce stands • food products provided by UBC are pricy • inconvenient • not enough • snacks are usually high in calories • high capital costs • target population is small

Food outlets that are lacking of healthy and sustainable snacks: SUB, Ike's Café, Sauder building

The top 3 most wanted healthy and sustainable snacks are: fruits and vegetables, smoothies and yogurt.

Fig. D2: Data from location specific interviews, organized data

Data from Place Vanier Dining Hall

Sustainability definition	
Ingredient	<ul style="list-style-type: none"> • Fair trade • Local • Organic
Food product	<ul style="list-style-type: none"> • Minimal processing and minimal carbon footprint or chemical impact

Group 2: Healthy & Sustainable Snacks

production	during the production (from growth to sale) <ul style="list-style-type: none"> • Environmentally friendly
Packaging	<ul style="list-style-type: none"> • less plastic • less packaging • compostable
Waste system	<ul style="list-style-type: none"> • good waste and disposable system

Availability of healthy snacks on campus:

Yes	<ul style="list-style-type: none"> • Examples are fruits, salad, dried fruit, nuts and oatmeal are available
Somewhat	<ul style="list-style-type: none"> • limited selections • not always available • very few and far in between (need more location) • mostly on served meal items, not much on snacks • usually extremely expensive comparing to other substitutes

Majority of the people think healthy snacks are available in UBC food outlets, but in only certain situations, and therefore were classified as “somewhat”.

Locations that are lacking healthy snacks

Sub	<ul style="list-style-type: none"> • salad bar are only open during rush hour, in which students considered as not available because of its inconvenience • outlets that sell healthy products usually have long line up, which lower the desire of purchasing healthy food products
Most Locations	<ul style="list-style-type: none"> • Most locations lack the healthy snacks that they are looking for
Vanier	<ul style="list-style-type: none"> • specifically referring to Vanier convenience stores

The top three healthy and sustainable snacks that are from this location is to go granola/protein/energy bar, fruit cups/fresh fruits and fruit juice/smoothie/light protein shake and smoothies.

Data from the Loop Café

Healthy definition

Content	<ul style="list-style-type: none"> ● no additive, not saturated fat ● low in sugar, fat and calories ● high in vitamins and energy ● more than just carbohydrates and protein
Requirement	<ul style="list-style-type: none"> ● easy to digest ● non-processed/ not frozen ● close to original form ● not many calories
Keyword description	<ul style="list-style-type: none"> ● vegetables and fruits ● fresh ● organic ● local ● nutritious ● fibre
Example	<ul style="list-style-type: none"> ● kale salad, cucumber hummus, dates, nuts, dried banana chips, protein bars, fruits, not fries nor cookies

Sustainability definition

Ingredient	<ul style="list-style-type: none"> ● locally sourced ● organic ● fair trade
Food product production	<ul style="list-style-type: none"> ● ethically grown ● no exploitation, no mono-agriculture, no mass farming ● non-beef product, because raising cattle pollutes the environment ● aware of where snacks are coming from and how are they made
Waste system	<ul style="list-style-type: none"> ● environmental waste system, recyclable, reusable

Availability of healthy and sustainable snacks in UBC

Yes	<ul style="list-style-type: none"> ● easy to find ● not processed and fresh fruits are easy to find if they are well advertised. Example: never heard of sprout until 3rd year ● sub seafood is ocean wise
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Group 2: Healthy & Sustainable Snacks

	<ul style="list-style-type: none"> ● healthy snacks can be found at the loop ● ethnical coffee bean is sustainable
Somewhat	<ul style="list-style-type: none"> ● not a lot, more pricy than unhealthy snacks/ not affordable ● not easy to find ● varies in places ● limited quantities and options ● it is getting better
No/Not sure	<ul style="list-style-type: none"> ● mostly baked food ● locally sourced is hard to find

Locations that are lacking healthy snacks: SUB, Sauder/Triple O's, generally everywhere on campus.

The top three most wanted healthy and sustainable snacks from this location are more fruit options, smoothies/ fresh juice and salad. In terms of having more fresh fruits, students suggested it could be whole fruit or fruit cups, fruit salad or fresh fruit by weight.

Data from Point Grill interviews
Healthy definition

Content	<ul style="list-style-type: none"> ● low in sugar, fat and salt ● high nutrient content relative to energy content
Requirement	<ul style="list-style-type: none"> ● food that is less processed ● made on site (not frozen/ reheated)
Keyword description	<ul style="list-style-type: none"> ● local and fresh ● nutritious
Examples	<ul style="list-style-type: none"> ● vegetables, granola bar, fruit

Sustainability definition

Food product production	<ul style="list-style-type: none"> ● no negative impact
Packaging	<ul style="list-style-type: none"> ● not packaged

Availability of healthy and sustainable snacks in UBC

Somewhat	<ul style="list-style-type: none"> • more unhealthy snacks than health • not at every location • need more fresh fruit and vegetable options
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Most of the people agree that healthy and sustainable snacks can be found in UBC. Also, none of these interviewers think healthy and sustainable snacks are not available in UBC.

Locations that are lacking healthy and sustainable snacks: SUB, very few locations have healthy snacks are open after 5pm, and south campus

In this location, one of the top 3 most wanted snacks are food products from Agora such as their granola bar. Students are also picked vegetables with dip and kebabs as their desired snacks.

Data from Neville's Café interviews

Healthy definition

Content	<ul style="list-style-type: none"> • low sodium and hydrogenated fats • low sugar • low in oil • no trans fat • highest nutrient value, not white sugar/flour • raw foods • provide energy
Requirement	<ul style="list-style-type: none"> • organic • locally grown • natural • not processed • balanced in nutrients • filling but healthy • not junk food/ fast food
Keyword description	<ul style="list-style-type: none"> • nutritious
Examples	<ul style="list-style-type: none"> • soup and vegetables • granola bar • kale chips

Group 2: Healthy & Sustainable Snacks

	<ul style="list-style-type: none"> ● oatmeal ● fruit and yoghurt ● sandwiches ● food products from Agora (with good prices too) ● treats and bars without sugar
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Sustainability definition

Ingredient	<ul style="list-style-type: none"> ● provided by local merchants ● fair trade ● organic ● local, non GMO ● foods that are grown in UBC farm
Food product production	<ul style="list-style-type: none"> ● environmentally friendly ● carbon neutral ● 100 mile diet ● ethnically grown ● renewable resources ● low waste
Packaging	<ul style="list-style-type: none"> ● compostable ● recyclable ● minimal packaging/ no packaging

Are such snacks available at UBC?

Yes	<ul style="list-style-type: none"> ● easy to find ● Agora ● Options are available
Somewhat	<ul style="list-style-type: none"> ● Only at main campus ● Limited places offer such snacks ● Overpriced (usually the cheapest options are unhealthy) ● Very limited variety ● Does a better job on sustainability, not too much on health aspect
No/Not sure	<ul style="list-style-type: none"> ● mostly unhealthy food ● hard to find gluten free product ● a lot of plastic in packaging ● same packages and products at most UBC food outlets

Group 2: Healthy & Sustainable Snacks

Locations that are lacking healthy and sustainable snacks: SUB, Triple O's/Sauder

No/ Not really	<ul style="list-style-type: none"> • available everywhere • have both healthy and unhealthy food products in most places
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In this location, granola bars from Agora are the most desired healthy and sustainable snacks, because of its tastiness and healthy content. Fresh fruit smoothies and salad bars/ salad options such as mixed salad and quinoa are the other two most wanted snacks.

Data from Reboot Café interviews

Healthy definition

Content	<ul style="list-style-type: none"> • low in sodium • low in sugar and fat • low calories, carbohydrates and preservatives • high protein • sensible caloric content • balanced carbohydrate : fat : protein ration • maintained nutrient values
Requirement	<ul style="list-style-type: none"> • organic • local and regional sourced • not processed • fresh • good for the body (not causing any sickness) • made on the spot
Keyword description	<ul style="list-style-type: none"> • nutritious • fruit and vegetables • green • non-junk • nutritious • delicious

Sustainability definition

Ingredient	<ul style="list-style-type: none"> • local
Food product production	<ul style="list-style-type: none"> • environmentally friendly

Group 2: Healthy & Sustainable Snacks

Packaging	<ul style="list-style-type: none"> ● recyclable
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Are such snacks available in UBC?

Yes	<ul style="list-style-type: none"> ● organic coffee, chicken wrap, granola bar, fair trade coffee, sandwiches and soup, kale chips, salad
Somewhat	<ul style="list-style-type: none"> ● vary in locations ● expensive
No/Not sure	<ul style="list-style-type: none"> ● not too many

Locations that are lacking healthy and sustainable snacks: SUB, Reboot Café, Sauder, and Koerner Library

In this location, the most wanted healthy and sustainable snacks are smoothies/ fresh juice. Fresh fruits and yoghurt is the second and third most wanted healthy and sustainable snacks. Some other interesting suggestions are brown rice sushi, salad bar, and hummus with pita bread.

Data from IRC Snack bar interviews

Healthy definition

Content	<ul style="list-style-type: none"> ● low in sodium ● low in sugar and fat ● low carbohydrates ● low in trans fat, saturated fat, additives ● provide micronutrients rather than macronutrients
Requirement	<ul style="list-style-type: none"> ● fresh produce ● not processed/ minimal processing ● organic ● balanced good nutritional value and good tasting ● variety of food groups ● provide enough energy
Keyword description	<ul style="list-style-type: none"> ● good for health
Examples	<ul style="list-style-type: none"> ● fruits, apple chips ● not fast food/ junk food

Group 2: Healthy & Sustainable Snacks**Sustainability definition**

Ingredient	<ul style="list-style-type: none"> ● locally grown ● from environmental friendly processors which contribute to the least harm to the environment/ little residual waste ● fair trade ● can be easily grown
Food product production	<ul style="list-style-type: none"> ● minimal carbon footprint production
Packaging	<ul style="list-style-type: none"> ● minimal packaging ● does not contribute much waste that is not compostable ● recyclable

Availability of health and sustainable snacks in UBC?

Yes	<ul style="list-style-type: none"> ● adverse as BC grown ● sandwiches, bagels, sushi, fruits, salad, wrap, soup, granola bars, blue chips ● agora and sprouts ● bags and containers are compostable ● residence offer snacks that are not packaged
Somewhat	<ul style="list-style-type: none"> ● vary in locations ● expensive ● not very tasty ● limited selection ● locations are not convenient ● food outlets tend to close early
No/Not sure	<ul style="list-style-type: none"> ● definitely not enough ● too much processed convenience snacks ● especially products that require refrigeration such as fruits and yoghurt

Locations that are lacking healthy and sustainable snacks: all or most of the locations, especially SUB and IRC Snack bar

Healthy and sustainable snacks high in demand: smoothies, fresh fruit and yoghurt cups with fruit toppings and granola