

UBC Social Ecological Economic Development Studies (SEEDS) Sustainability Program

Student Research Report

Creating New Menu Development Guidelines for UBC Food Services

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Executive Summary

This report summarizes the menu development guidelines project; a collaborative initiative aimed at promoting healthy eating on UBC campus. The project was led by a group of 4th year public health nutrition students under the guidance of the dietitian from UBC Health and Wellbeing, within the framework of a SEEDs sustainability program.

The introduction discusses the project aim, which was to establish nutrition-related guidelines to inform UBC food services chefs in their recipe development process. This section also identifies the target audience and overall approach to the program.

The situational assessment of the project identified two issues of relevance: (1) there are currently no guidelines in place to inform menu development, and (2) student demographics have implications for food choices. The program was predicated on three health behavior theories that were incorporated into the framework of the project: the Health Belief Model, Stages of Change model, and Diffusion of Innovation theory. The project identified a main goal of promoting healthy eating among students that live at UBC residence, as well as supporting short, medium, and long-term objectives.

The report summarizes the project outputs, which consist of the “Recipe Development Guidelines” and supporting document. The report also illustrates the program’s evaluation plan; both the process evaluation that we conducted as well as the hypothetical outcome evaluation that would be completed once all outcomes have been met. The conclusion considers the significance of the project, reflects on lessons learned, and makes recommendations for future programs.

Introduction

The menu engineering guidelines project is a collaborative initiative aimed at improving the health and nutrition of students that live in UBC residence. The project is led by a group of students in a public health nutrition course in partnership with community partners including a registered dietitian and UBC's head chef, within the framework of a SEEDs community based experiential learning (CBEL) project. Together, the group plans to develop media to communicate menu guidelines consistent with healthy eating and nutritional criteria to enable chefs to increase the prevalence of healthy options in residence dining halls.

The project aims to translate UBC's Food Vision and Values (2017) into an informative and accessible infographic that will help guide chefs in their menu planning process (*see Appendix A*). The project hopes to incorporate both nutrition and food-based goals to create a versatile and practical tool for chefs to use.

The primary audience of the project is UBC students living in residence, as they are most likely to frequent the dining halls and it is their behaviour and health that will most significantly be impacted. The chefs are another audience involved in the project, as they will be the mediator through whom the guidelines will affect the students.

The project aims to increase awareness of the role of food in health promotion. It is also an opportunity to foster a connection between food and health for chefs and help empower them to make healthy options appealing and interesting for students. The project is taking a collaborative approach to begin to improve health and nutrition of students and the broader community.

Situational Assessment

Issues relevant to the Target Population

UBC has various physical and online resources such as the UBC Wellness Centre and an online guide to healthy campus food, to help guide students towards making healthier food choices (UBC Student Services, n.d.). According to UBC Wellbeing (2017), “a nutritionally sound campus increases the intake of safe, healthy and sustainable foods; supports development of nutrition skills and knowledge; and promotes health and wellbeing of all members of the UBC community.”

By evaluating the nutrition goals of UBC, as well as analyzing the resources provided by our community partner, we were able to identify two main problems relevant to our primary target population (UBC students living on campus). Our first identified problem is that there is currently no clear, concise menu guidelines on healthy alternative ingredients for UBC chefs when developing new menu items. Although the chefs have contact with the UBC Food Services’ dietitian for support and suggestions, there are limitations to the ingredients they are able to purchase for UBC Food Services due to budget constraints (M. Baker, personal communication, Feb. 5, 2018). This can affect the nutritional quality of the dishes served in the residence dining halls and the nutritional status of UBC students living in residence.

Our second problem is concerned with the demographic of students living on campus. Factors such as age, ethnicity, and culture may affect the students’ familiarity with the food options available in UBC dining halls and, ultimately, their food choice. In Amos and Lordly’s (2014) research on Canadian international students and food choice, international students experience many food-related challenges when transitioning to a

new country, and feel more comfort and cultural identity when consuming traditional, ethnic foods. Additionally, in a UK study exploring the food choices of UK international university students, it was found that these students relied on campus food to get through busy school days, and would prefer a variety of traditional meals on campus (Corcoran, 2018). Similarly, in Vancouver, B.C., newly immigrated Punjabi families associate healthy eating with consuming traditional dishes (Chapman et al., 2011). With this information, we can predict a similar attitude in UBC student residents on their perception of campus food and need for more cultural food options.

Behaviours

There are a number of behaviours in our target population that contribute to the identified problems. Behaviours can be influenced by a variety of factors such as an individual's culture, attitude, perceptions, and preferences. Above, we identified that our first issue is the absence of menu guidelines on healthy alternative ingredients for UBC chefs to use when developing recipes. During an in-person interview with the head chef at Gather, located in UBC Vanier Residence, he shared that when developing recipes, he often searches for inspiration from current food trends, local popular restaurants, the Food Network program, and food surveys (S. Golob, personal communication, Feb. 13, 2018). This behaviour relates to the identified issue, of there being no menu guidelines presently, as popular food trends may not be based on scientific evidence and tend to be dynamic in nature. While drawing influence from food trends may have benefits with respect to business, it does not lend itself to the development of clear and consistent menu guidelines. In addition, during an in-person interview with the dietitian at UBC Food Services, it was mentioned that some of the chefs are reluctant to change, which

could decrease participation and subsequent implementation of healthy alternative ingredients within recipes (M. Baker, personal communication, Feb. 5, 2018).

The second issue considered how factors such as age, ethnicity, and culture may have an affect on the food choices that students make. Student behaviours, as a result of demographic and cultural differences, may cause a changed perception and attitude towards residence food. This is especially the case for international students, who come from over 162 countries, and also make up 14,434 of the 62,923, total student population at UBC (UBC, 2017). In an American study by Alakaam et al. (2015), it was shown that international students had difficulties adapting to American culture due to factors including the food and campus environment, religion, and individual preferences. The study also showed that the dietary changes resulted in undesirable health outcomes, such as weight gain, increased blood glucose levels, increased cholesterol levels, high blood pressure, and mental health problems (Alakaam et al., 2015). Additionally, Ristovski-Slijepcevic et al. (2008) suggest that African and European households in Nova Scotia and Punjabi families in Vancouver associate healthy foods with consuming cultural foods, vegetables, and home cooked meals. Western foods were also perceived as too heavy and rich for digestion (Ristovski-Slijepcevic et al., 2008). Thus, cultural aspects must be considered, as they have a large impact on the health, well-being, and food choices made by students within residences.

Mediating Factors

Among the 13 residences on the UBC Vancouver campus, three of them have a mandatory meal plan (UBC, n.d.-a). Within the three residences, students have limited access to cooking facilities as the dormitories lack kitchens. Residences provide only

one microwave and refrigerator in the common area. In terms of individual factors, some students may choose to bring small, portable cooking equipment to dorm rooms.

Personal cooking equipment, for example, a rice cooker, can facilitate preparation of simple foods, thus reducing the consumption of cafeteria foods. In addition, self-efficacy of students to eat healthier was found to significantly affect food choice, and was positively associated with fruit and vegetable consumption (Bruening et al., 2010).

Secondly, ideas and information gained through past experiences and preoccupation of certain foods also affects student food choices. Notably, students' nutritional knowledge has profound influence on food choices, as it contributes to healthier choices and more adequate nutritional intake (Ilich et al., 1999). Students' personal traits may also play a role in food choice. Furst et al. (1996) state that students who are willing to experiment with different food styles and try new menu items often expressed themselves as food adventurous. Physiological factors such as allergies also affects student food choice, as it limits food options (Furst et al., 1996). Additionally, economic levels are an important individual factor as its degree of availability affects the scope and nature of food choice decisions (Furst et al., 1996). Mental health of students can also influence food choices, as students may experience learning pressures, stress, or anxiety associated with exams and schoolwork (Correa et al., 2017).

Students are influenced by their social framework and relationships when making food choices. Interpersonal factors such as upbringing and culture can influence student food choices. For example, if a student is raised in a vegetarian family, he/she may prefer vegetarian foods. On the other hand, if a student grew up in a coastal region, he/she may want more seafood items on the cafeteria menu. Peer influence is another

aspect of interpersonal relationships that can contribute to students' eating behaviors. Some students may go through a phase of limiting their intake to lose weight, perhaps due to perceived peer or societal pressures (Furst et al., 1996). Students' food choices are also affected by several environmental factors. For example, seasonally available fruits and vegetables may cost more during winter months, which could impact what is offered in the dining halls (Moyes, H., personal communication, Feb 8, 2018).

Health Behaviour Theories

The Health Belief Model is a theory that describes how perceptions, benefits, and barriers affect people's avoidance of a health problem (U.S. Department of Health and Human Services [HHS], 2005). According to the U.S. HHS (2005), there are six components that underlie the Health Belief Model: perceived susceptibility, perceived severity, perceived benefits, perceived barriers, cues to action, and self-efficacy. In designing our intervention, self-efficacy will be a major component of the planning process, as our intervention relies on providing the information and tools for UBC chefs to act to provide students with meals that follow our suggested guidelines. Furthermore, the perceived benefits of following these guidelines will need to be communicated in order to ensure that they outweigh perceived barriers to achieving the intervention.

The Stages of Change Model describes health behaviour change as a process over time rather than as a single event (U.S. HHS, 2005). The U.S. HHS (2005) notes that there are five stages in the model, and an individual or group can enter at any point during their behaviour change. The five stages are: precontemplation, contemplation, preparation, action, and maintenance. Students accessing the services offered by UBC SHHS will likely be entering at a variety of different stages, due to preconceived notions

and knowledge about healthy eating and the food offered by UBC SHHS. By designing menu guidelines that allow healthier food to be offered in the dining halls, we are taking advantage of the ability to influence students at various stages of the Stages of Change Model (particularly contemplation through maintenance) to make healthier food choices.

The Diffusion of Innovation Model explains how new concepts, ideas, and technologies spread through and between populations (U.S. HHS, 2005). In our intervention, the innovation that is being considered is the new menu engineering criteria that we will be drafting. Utilizing communication channels and the social system (i.e. other universities adopting our menu engineering criteria), over time we would expect that student diet would improve with the drafted menu criteria.

Overall, the situational assessment that was conducted for this assignment had several limitations. These included lack of time, resources, and access to information from other stakeholders such as the target audience. Time was a major constraint, as it limited our ability to conduct thorough research on the food environment at UBC resident dining halls to better our outputs. However, some of the strengths that became apparent as part of the situational assessment included the insight from community partners and the UBC residence head chefs. Interviewing the UBC head chefs led us to the proper direction for our outputs. During our situational assessment, we believed that a visually appealing infographic would best benefit the UBC chefs; however, it was stated by the head chefs that more textual guidelines would strengthen the infographic. Our community partners also helped liaise our team with other UBC Food Service members, which allowed us to access valuable data such as top sold menu items. Both of these perspectives served as invaluable assets in the formation of our program.

Project Goals and Objectives

Our goal for this project:

- Promoting healthy eating among students who live in and access UBC residence dining halls.

Our short-term outcome objectives:

- Create an infographic and supporting document on healthy menu guidelines for UBC chefs to use in menu development by March 2018.

Our medium-term outcome objective:

- UBC chefs will implement the infographic guidelines when developing new menu items to students living in UBC residences by the end of 2020.

Our long-term outcome objective:

- UBC students living in UBC residences will have an improvement in dietary quality by 2025.

Description of Project Outputs

Outputs are essential in a program. They are the activities provided in the program that engage program participants (McCawley, 2001). Implementation of outputs allow program developers to monitor the effectiveness of the program and its relation to the situational assessment (McCawley, 2001). As indicated in our logic model (see *Appendix B*), our program consists of two main outputs: the “Recipe Development Guidelines” visual infographic and the supporting document that contains evidence-based information that justifies the recommendations outlined in our infographic. Both are paper and online documents that contain data from Canada’s Food Guide, the UBC Food Vision and Values, resources provided by our community partner, and additional scholarly research performed by the team.

The “Recipe Development Guidelines” (see *Appendix C*) has a strong focus on increasing the use of whole grains (“use a variety of whole grain options at least 70%”), fruits and vegetables (“aim for ½ the dish to be fruits or vegetables”), and plant-based protein and milks. Additionally, there is an emphasis on decreasing the use of processed foods with added salt, fat, and sugar. The Healthy Plate Model was included, as requested by our community partner, for the UBC chefs to reference when they are creating new menu items. The model helps them visualize the portioning of the food groups when choosing which ingredients to use in a dish.

The supporting document (see *Appendix D*) was created to provide UBC chefs with in-depth, evidence-based information to explain the reason behind why certain recommendations were included in the infographic. For example, the supporting document details the health benefits of whole grains (eg. satiating due to high fibre

content, decreased risk for heart disease). This could help the chefs understand the health standards and menu expectations that our community partner has for the chefs.

With this, our program outputs (the visual infographic and supporting document) can reflect the application of our health behaviour theories in both the individual and community level, which were discussed earlier in the Situational Assessment.

At the individual level, our outputs can be applied through the Health Belief Model and Stages of Change Theory. Self-efficacy and perceived benefits, which are the two main components of the Health Belief Model, can be seen as part of the main outcomes of our program outputs (*see Appendix B*). Our infographic and supporting document can promote self-efficacy for UBC chefs by increasing their knowledge and skills toward designing a healthy food menu. Our program outputs would also improve perceived benefits of the chefs by helping them gain greater understanding and knowledge of the benefits of healthy food for students, thereby encouraging them to implement the guidelines into their food menu design.

Another theory at the individual level that our program outputs can apply to is the Stages of Change Theory. We believe that UBC students are at various stages of healthy eating. Some may already be maintaining a healthy diet, whereas other have no intention of eating healthier anytime soon. With the implementation of the “Recipe Development Guidelines” infographic, students at different stages of healthy eating can benefit from the availability of healthy meals prepared by the UBC chefs at the three resident dining halls. This increased diversity of healthier menu items can improve UBC students’ eating habits and nutritional status at any behaviour stage in the model.

At the community level, our program outputs reflect the application of the

Diffusion of Innovations Theory. This theory addresses how our program outputs can spread within the community through four main components: innovation, communication channel, social system, and time (U.S. Department of Health and Human Services, 2005). Our innovation is to provide the visual infographic and supporting document for the UBC chefs to utilize, thus establishing a healthy food menu at the residence dining halls. This innovation can be communicated through the communication channel by the key stakeholders of this program - our community partner and the executive chef that overlooks UBC Food Services. More communication between UBC dietitians, chefs, dining hall staff and students would help this innovation diffuse into the community faster and become successful. When our program becomes successful, it can be adopted by other parts of the social system such as other schools and universities. Therefore, this allows more people to be exposed to this innovation and could potentially improve their health and eating habits.

Regarding the amount of time that our innovation would take to be diffused into the community, we are hoping to see the UBC chefs using our infographic guideline within 2 years. This is our medium-term goal for this program. It is based on what we observed from the current menu options at the dining halls, as well as the chefs' level of willingness to implement a new model in their current menu development process. For our long-term goal, we estimate that it will take approximately 7 years to see the actual change and improvement in the students' eating habits. This timeframe is based on the consideration that UBC students are at various stages of healthy eating. Additionally, we must account for the amount of time it would possibly take to educate and equip the students with knowledge on how to improve their diet and health status.

We believe our “Recipe Development Guidelines” and the supporting document play an important role in these health belief theories. When the first version of both documents were created, they were delivered to our community partners and the three UBC chefs in charge of recipe development via email for review. We mainly received feedback for our infographic, as it was the most important document for our program. Three subsequent of the infographic drafts were developed afterwards and final draft was sent to our community partners and chefs for approval. Due to time constraints, a final review of the supporting document was not feasible (*see Appendix D for the original draft*). As a team, we have decided to continue developing and improving the two outputs so they can be implemented into UBC Food Services as soon as possible. With implementation, we hope that an even greater variety of healthier dishes will be available in residence dining halls, which will ultimately improve the nutrition status of UBC students who use and access the residence dining halls.

Evaluation Plan

Evaluation is a systematic assessment of a program's implementation and consequences to produce information about the program's performance in achieving its objectives, ultimately to promote social change for the betterment of the community (Grembowski, 2016). In our project, the ultimate goal would be to improve the overall dietary intakes of UBC students by adopting a healthier menu. There are two basic types of evaluation designs (Grembowski, 2016). Due to limited time constraints, we were only able to conduct part of the evaluation ourselves. If we were to see the project through to the fruition of the medium and long-term outcomes, the following hypothetical methods convey how we would approach evaluation of the program.

The first evaluation design is process evaluation, which examines how the project was implemented. To conduct this evaluation, both quantitative methods (such as surveys) and qualitative methods (interviews) can be used. For the quantitative method, a satisfaction questionnaire regarding our developed menu guidelines can be completed by the UBC chefs. This questionnaire can be used to determine the effectiveness and feasibility of our menu guidelines, and whether it is useful in menu creation and user-friendly (Kristal et al., 2014). For the qualitative method, focus groups can be conducted with the community partners to gain more in-depth information about people's opinions about the menu guideline and how these opinions might be incorporated into our project. The quantitative and qualitative methods can be mixed to evaluate the process indicators, as this can create more opportunities for stakeholders and UBC community members to be involved in the design and evaluation process.

Moreover, combination of these methods can allow the evaluation to be more comprehensive (Grembowski, 2016).

The second type of evaluation is impact evaluation. This evaluation process begins by identifying our project objectives. In general, impact evaluations typically address whether a program has achieved its ultimate objectives (Grembowski, 2016). Specifying clear, well-defined objectives is important because they can help to create the evaluation questions, which defines the purposes of the evaluation and will direct the design and conduct of the evaluation (Grembowski, 2016).

The first research question based on our project objective is whether our menu guidelines will be implemented by chefs when developing new menu items. This question can be answered by collecting qualitative information from the chefs and our UBC community partners. We can collect rich and detailed information through interviews with 3 chefs to achieve a deeper understanding. The second research question based on our project objective is if students will be provided with healthier food choices after menu guideline implementation. We can compare the top sales of food items collected from three dining halls before and after the menu guideline implementation. The last question based on our project objective is to see if students' overall dietary quality is improved. Since we did not collect data of students' dietary intake before our project, we can only perform post-test designs for this impact evaluation. A validated Food frequency questionnaire can be completed by students one year after the our project started.

Conclusion

Utilizing the UBC Food Vision and Values (2017) as a starting point, our team was able to achieve our short-term objective of creating an infographic and supporting document that outlined healthy menu development guidelines for the UBC dining hall chefs to use when creating nutritious recipes for the students. During this process, we critically analyzed and gathered information, resources, and feedback from key stakeholders, and transformed it into a functional tool for the chefs to utilize.

The most prominent lesson we learned was that awareness of the context in which the key stakeholders work in is critical. During our project we looked closely at the menus that were being offered at the dining halls, and included practical examples in our guidelines of ways the chefs can make the current dishes they offer more nutritious. Also, we noticed that budget is an important factor to consider when working with our key stakeholders, which prompted us to consider the feasibility of our guidelines. Furthermore, another lesson we learned is that clear communication between group members and also with our key stakeholders is vital, as time is of essence.

Although, we have finished creating the materials that are needed for the chefs to create nutritious recipes for the students, this is an ongoing process and more work needs to be implemented to achieve our medium- and long-term objectives. In the future, work needs to be done to find strategies on the best ways to motivate the chefs to utilize the guidelines. In addition, we would recommend constant evaluation of these strategies to look for additional ways to improve the dietary quality of students living in the UBC residences.

Author's Contributions

AT:

Went to meetings with our community partner, interviewed one of the UBC Food Services chefs, drafted the “Health Behaviour Theories” section, executive summary, and newsletter for the final report, drafted and conducted research for the supporting document, helped revise the “Recipe Development Guidelines” infographic, drafted the Logic Model, helped create the PowerPoint presentation, and revised, reviewed, and finalized the report.

GS:

Went to meetings with our community partner, drafted the “Behaviours” section and conclusion for the final report, drafted the Logic Model, created the “Recipe Development Guidelines” infographic, helped revise the supporting document, helped create the PowerPoint presentation, and revised, reviewed, and finalized the report.

FZ:

Went to meetings with our community partner, interviewed one of the UBC Food Services chefs, liaised with our community partner via email, drafted the “Project Goals and Objectives” and “Description of Project Outputs” section for the final report, drafted the Logic Model, drafted and conducted research for the supporting document, helped revise the “Recipe Development Guidelines” infographic, helped create the PowerPoint presentation, and revised, reviewed, and finalized the report.

SY:

Went to meetings with our community partner, interviewed one of the UBC Food Services chefs, drafted the “Mediating Factors” and “Evaluation Plan” section, drafted the Logic Model, drafted and conducted research for the supporting document, helped revise the “Recipe Development Guidelines” infographic, helped create the PowerPoint presentation, and revised, reviewed, and finalised the report.

SC:

Went to meetings with our community partner, drafted the “Issues relevant to the Target Population” and “Description of Project Outputs” section, created the appendix, drafted and created template for Logic model, created the “Recipe Development Guidelines” infographic, helped revise the supporting document, helped create the PowerPoint presentation, and revised, reviewed, and finalized the report.

UT:

Went to meetings with our community partner, interviewed one of the UBC Food Services chefs, drafted the introduction, executive summary, and newsletter for the final report, drafted and conducted research for the supporting document, helped revise the “Recipe Development Guidelines” infographic, drafted the Logic Model, helped create the PowerPoint presentation, and revised, reviewed, and finalized the report.

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Appendices

Appendix A: UBC Food Vision & Values

FOOD VISION & VALUES

We nourish and support the students, faculty, staff, and visitors of UBC by providing a diverse selection of fresh, delicious, and memorable food experiences in a socially and ecologically conscious manner. We do this by creating marketplaces and environments where wholesome, healthful food is a priority because our guests, our food, and our wellbeing matter.



GREAT INGREDIENTS

More than 60% of our ingredients are purchased from local producers (within 400km of UBC) like the [UBC Farm](#).



MADE IN-HOUSE

We prepare as many menu items as possible in house, with support from our [Registered Dietitian](#).



TRANSPARENCY

Labelling nutrition information, ingredients and allergens allows customers to make informed decisions about what they eat.



EDUCATION

Food and nutrition knowledge and skills are shared to improve the health and wellbeing of our community.



PLANT-BASED OPTIONS

Vegan and vegetarian are options readily available to reduce our impact on our air, land, water and climate.



FOOD SAFETY

Rigorous food safety procedures, training, and auditing ensure a safe environment guests can trust.



FAIR TRADE

We are a [Fair Trade certified campus](#). We strive to offer more Fair Trade and ethically sourced products every year.



OCEAN WISE®

We are a proud [Ocean Wise®](#) partner and prioritize purchasing sustainable seafood.

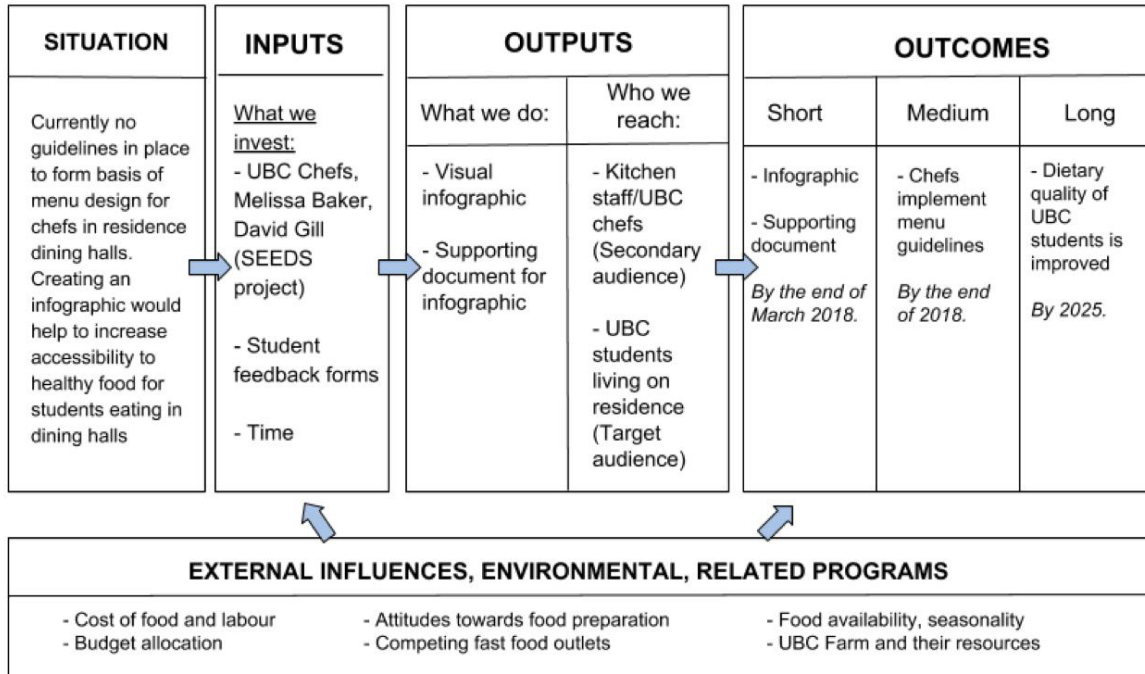


ZERO WASTE

As a [Zero Waste partner](#) we strive to compost all food scraps, use recyclable or compostable single-use containers, and offer [discount container programs](#).

Appendix B: Logic Model of UBC Food Service Menu Engineering Project

Logic Model of UBC Food Service Menu Engineering Project



Appendix C: “Recipe Development Guidelines” Infographic

RECIPE DEVELOPMENT GUIDELINES

UBC FOOD SERVICES

This is a student-led collaboration with faculty and staff through the SEEDS Sustainability Program.



FRUITS & VEGETABLES

- ▶ Use a colourful array, especially green and orange vegetables
- ▶ Aim for 1/2 the dish to be fruits or vegetables (refer to **Healthy Plate Model**)
- ▶ Incorporate seasonal produce to maximize flavour and budget

APPLICATION

Try adding more vegetables to:

- ▶ Pasta sauces
- ▶ Stir-fries
- ▶ Sandwiches
- ▶ Pizza toppings

SPINACH:

Rich in folic acid and other vitamins.
Great addition to soups, salads, and burgers!



GRAINS

Variety of whole grain options

At least
70%

APPLICATION

Try using whole grains in:

- ▶ Pasta
- ▶ Entree dishes
- ▶ Pizza dough

MILLET:

A nutrient-dense, gluten-free option!



PLANT & ANIMAL PROTEIN

- ▶ Choose more fish and limit use of red meat
- ▶ Increase variety of plant-based proteins



APPLICATION

- ▶ Reduce use of processed meats (e.g. bacon and sausages)
- ▶ Use plant-based proteins often such as: soy products, beans, and lentils in place of red meat
- ▶ Offer omega-3 rich foods each day (e.g. salmon, flaxseed)

LENTILS:

High in protein, fibre, B vitamins and minerals. Add them to soups, pasta and more!

PLANT & ANIMAL MILK

- ▶ Provide unsweetened milk and yogurt options
- ▶ Use less cheese by choosing sharper varieties

APPLICATION

- ▶ Offer fortified milk alternatives, such as: soy, almond, cashew, etc.

- ▶ Limit use of heavy cream, substitute with lighter options, such as milk and half and half

SOY MILK:

Fortified soy milk is nutritionally equivalent to cow's milk, as it is the only alternative with comparable protein.



DECREASE PROCESSED FOODS WITH ADDED SALT, FAT, SUGAR

- ▶ **Salt:** Incorporate herbs and spices for more flavour
- ▶ **Fat:** Limit the use of oil when cooking foods with high fat ingredients (e.g. avocado, seeds, nuts, cheese)
- ▶ **Sugar:** Use naturally sweetened ingredients
- ▶ Use cooking methods that require little or no added fat (e.g. baking and steaming)



Use the Healthy Plate Model portions as a basis when developing nutrient-dense recipes.

Image from: HealthHub

**UBC Food Services Menu Guidelines
Supporting Document**



Overview

The *UBC Food Services Menu Guidelines Supporting Document* is created to detail the recommendations provided in the Menu Guidelines Infographic.

This document touches upon:

- **Plant and Animal Protein**
 - Health Benefits
 - Plant-Based Protein
 - Environmental Impacts
 - Recommendations for Preparation/Intake

- **Grain Products**
 - Health Benefits
 - Difference between Whole Grains and Refined Grains
 - Recommendations for Preparation/Intake
 - List of Gluten-Containing and Gluten-Free Grain Products

- **Fruits and Vegetables**
 - Health Benefits
 - Environmental Impacts
 - Recommendations for Preparation/Intake
 - Intervention to Increase Fruit and Vegetable Consumption

- **Plant and Animal Milk**
 - Health Benefits
 - Recommendations for Preparation/Intake

- **Additional Recommendations**
 - Emphasize Whole Foods and Ingredients
 - Decrease Added Salt, Fat and Sugar

Plant and Animal Milk

What are the general health benefits of meat and its alternatives?

- They are great source of protein, fat and other essential nutrients such as B vitamins and iron.
- Plant-based protein is a great alternative to meat as it is lower in saturated fat and higher in fibre than animal products.

Plant-Based Protein:

- Offer more protein foods from plants than meat (1).
- Offer plant-based proteins such as legumes, nuts, seeds and soy products at least three times a week, ideally every day (2).
- Implement programs like "Meatless Day" at least once a week to reduce meat-based protein purchase, and promote plant-based protein consumption.
- Use plant-based protein to make dishes that usually have meat. For example, replace part of the beef in hamburger patty, chili or pasta sauce with legumes or tofu (3).
- Offer more new recipes for salads and soups using plant-based proteins such as legumes and tofu (3).
- Plant-based protein have a less detrimental impact on the environment than meat (1).

What are the environmental impacts?

- Beef contributes to the most GHG emission, 41% of *total* livestock GHG outputs (4)
- Cattle are responsible for the most greenhouse gas (GHG) emissions, contributing to 65% (including meat and dairy) of global livestock emissions (4).
- Pigs and poultry have a lower impact on GHG emissions, accounting for 9% and 8% of total livestock GHG emissions respectively (4).
- Pigs and poultry require five times less feed to make 1 kg protein compared to cow, sheep or goat (5).
- Water consumption to produce 1 kg of meat is extremely high: 15,500 liters for beef meat, 6,000 liters for pig meat, and 4,400 liters for chicken meat. Water usage to produce 1 g of vegetable and fruits is respectively 350 liters and 1,000 liters (6).

Recommendations for Preparation/Intake:

- Canada's Food Guide recommends to provide non-fried lean meat, seafood, and other alternatives such as plant-based protein everyday (7).
- Provide seafood such as herring, sardines, mackerel and salmon which are rich in omega-3 fatty acids at least 2 times a week (2) (8).
- Intake of fish is associated with reduced risk of cardiovascular disease (9).

- Lean meat/poultry contains 10 g of fat, 4.5 g or less saturated fat, less than 95 mg of cholesterol per 100 g (2).
- Consumption of saturated fat has been associated with an increase in LDL cholesterol, which may put one at subsequent risk of heart attack and stroke (9).
- Examples of lean meat/poultry are 95% lean cooked ground beef, beef/pork top round steak or roast, ham/turkey deli slices, skinless chicken/turkey breast (2).

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Grain Products

What are the health benefits of grains and grain products?

- Whole grains are a rich source of complex carbohydrates, B vitamins like niacin and folate, as well as minerals like iron, zinc, and magnesium.
- Grains are satisfying and satiating, in part due to their high fibre content.
- Consumption of fibre rich grains has been associated with a decreased risk of heart disease, stroke, obesity, and improved blood cholesterol levels (2).

What's the difference between whole grains and refined grain products?

- Whole grains contain an intact bran, endosperm, and germ, while refined grains contain only the endosperm (2).
- The removal of the nutrient rich germ and bran layers in refined grain products lead to the product become whiter, finer, and considerably less nutrient dense.
- Refined grain products are often enriched through fortification with some of the nutrients lost during processing, however, it is regarded that grains in their intact form with naturally occurring nutrients within the food matrix promote health in a way that fortified products are unable to match.
- The bran and germ contain a rich array of vitamins, minerals, healthy fats, and phytochemicals that are hard to mimic through fortification (1).

Recommendations for Preparation/Intake:

- While there are many varieties of grains and grain products, whole grains are an optimal choice and it is recommended that whole grain options are chosen at least half of the time (1).
- To optimize intake of grains and their associated benefits, variety is key. Changing up the grains one eats can increase exposure to a variety of nutrients and keep their consumption interesting.
- Many people consider grains to be synonymous with gluten, however there are a multitude of other grain products that are naturally gluten-free.
- Offering gluten-free grain options can make dining in residence halls more accessible for those with celiac disease and non-celiac gluten sensitivity.
- The table below includes examples of both gluten-containing and naturally gluten-free grains (3).

List of Gluten-Containing and Gluten-Free Grain Products:

Gluten-Containing	Gluten-Free
Barley	Amaranth
Bulgur	Buckwheat
Farro	Brown Rice products (eg. noodles, flour)
Whole wheat products	Corn
Wheat berries	Millet
	Oats*
	Quinoa
	Rice
	Soba noodles with 100% buckwheat flour
	Sorghum
	Teff
	Wild Rice

*Please note that oats are commonly cross contaminated with gluten during growing and processing, as such their consumption is only suitable for those with celiac disease if they are certified gluten-free (3).

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Fruit and Vegetables

What are the health benefits of vegetables and fruits?

- A large amount of evidence shows that high consumption of vegetables and fruits promotes health and prevents diet-related chronic disease (1).
- Fruits and vegetables provide dietary fiber and fiber intake is associated with lowering incidence of cardiovascular disease and obesity (1).
- Also, certain fruits and vegetables are rich sources of different vitamins and minerals, such as vitamin C (1).
- They are sources of phytochemicals, which function as antioxidants and anti-inflammatory agents (1).

What are the environmental impacts?

- High consumption of vegetables benefits the climate. Greenhouse gas emissions were 29% lower for vegetarians and 22% for semi-vegetarians compared to meat eaters (2).

Recommendations for Preparation/Intake:

- Provide variety of vegetables especially dark green and orange vegetables (3).
- Examples of dark green vegetables include broccoli, collard greens, and beet greens while orange vegetables include yams, squash, and carrots (3).
- Prepare vegetables and fruits with little or no added fat, sugar or salt (3).
- Use fresh or dried herbs, spices, flavoured vinegars or lemon juice instead of salt to enhance the flavour of veggies (3).
- Utilize fresh and seasonal vegetables and fruits products to optimize the flavour and decrease the food cost (3).

How do we increase students' vegetables and fruits consumption?

- **Rationale:** In our university, interventions of dietary changes in school dining hall can have great impact because students have limited access to cooking facilities and eating sites on campus (4).
- **Application:** One good way to increase vegetables and fruits consumption is to increase its portion size in one dish.
- **Evidence:** According to the study done by Reinders, participants consumed 87% more vegetables from their plates when their portion size of vegetables is increased (5). Noteworthy, participants have higher vegetables amount and lower meat amount during the intervention period, but they remained satisfied with their dish. As a result, changing portion sizes in school dining hall can be an effective way to promote healthy eating and increases consumption of vegetables and fruits (5).

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Plant and Animal Milk

What are the health benefits of milk and its alternatives?

- It is recommended to include milk and alternatives each day in the diet (Health Canada, 2011).
- Milk and alternatives contain vitamin D, calcium, phosphorus, and protein (Health Canada, 2011).

Recommendation for Preparation/Intake:

- It is recommended to limit the consumption of added sugars to less than 10% of total daily calories - offering milk and alternatives with little to no added sugars will help students follow this guideline (Heart & Stroke Foundation, n.d.).
- It is recommended that low or reduced-fat options be chosen as often as possible in order to prevent excessive fat and energy intake (Health Canada, 2011). This includes making sure that students are able to meet their milk and alternative requirements through options other than cheese, which is high in saturated fat and energy.
- Fortified soy milk is the only milk alternative considered nutritionally equivalent to cow's milk (Health Canada, 2011).
- Dairy products are a source of important nutrients for bone health, including vitamin D, calcium, and phosphorus (Health Canada, 2011)
- Ensuring that alternatives (i.e. soy and almond based products, and lactose free products) are provided will ensure that students with food allergies, intolerances, and preferences are also able to access food served by UBC Food Services.

References:

1. Health Canada. (2011). Eating Well With Canada's Food Guide. Retrieved from https://www.canada.ca/content/dam/hc-sc/migration/hc-sc/fn-an/alt_formats/hpfb-dgpsa/pdf/food-guide-aliment/print_eatwell_bienmang-eng.pdf
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Additional Recommendations

Emphasize Whole Foods and Ingredients

- Utilize foods that have undergone minimal processing to enjoy the natural flavour and nutrient density of whole foods
- The consumption of whole fruit over fruit juice is recommended (Health Canada, 2011).

Decrease Added Salt, Fat and Sugar

- Avoiding processed foods high in added fat, sodium, and sugar is recommended (Health Canada, 2011).
- Limiting consumption of oils and margarines to 2-3 Tbsp a day is recommended (Health Canada, 2011).
- It is recommended to choose cooking options with little to no added fat, sugar, and salt (Health Canada, 2011).

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UBC FOOD SERVICES MENU ENGINEERING GUIDELINES

UBC sustainability



CREATING HEALTHY MENU GUIDELINES

This project was done as a UBC SEEDS Project, and was a collaboration between six FNH 473 students, Chef David Speight, David Gill, and Melissa Baker, RD. The students valued the opportunity to design and implement a health promotion program.

After a consultation process involving the FNH 473 students and key stakeholders and community partners, an infographic was created that can be used to guide creation of new menu items in the UBC SHHS outlets. The purpose of these guidelines was to help guide inclusion of new healthy menu items.



Salmon Poke Bowl from Gather, a UBC SHHS outlet

Building students knowledge of public health nutrition

This project presented an opportunity for UBC students to learn about the creation, implementation, and the evaluation of public health interventions. Having the opportunity to interact with our community partners has been an invaluable experience, and one we will carry forward into any future work we do in public health. We valued the opportunity to build on our communication and collaboration skills while learning about the use of various health behaviour theories and models.

On behalf of the FNH 473 team, thank you so much for having us!