

UBC Social Ecological Economic Development Studies (SEEDS) Sustainability Program

Student Research Report

UBC Food Services: Increasing Food Skills in Residence

Stefan Cvoric, Jenna Fan, Marissa Gibbard, Britney Lentz, Kelsey Moore, Lan Nguyen

University of British Columbia

FNH 473

Themes: Community, Food, Health

April 9, 2018

Disclaimer: "UBC SEEDS Sustainability Program 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 research 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 Sustainability Program representative about the current status of the subject matter of a project/report".

Table of Contents:

Executive Summary	2
Introduction	3
Situational Assessment and Planning Framework	4
Project Goal and Objectives	10
Project Outputs	11
Evaluation Plan	15
Conclusion	17
Authors' Contributions	18
References	20
Appendices	24

Executive Summary

This intervention aimed to improve nutritional well being among students at the University of British Columbia (UBC). The target population was upper year students living in Walter Gage Residence (Gage) at UBC in Vancouver. The intervention was originally proposed by Melissa Baker, Manager, Nutrition and Wellbeing for UBC's Student Housing & Hospitality Services and Katherine MacGregor, Residence Life Manager (RLM) of Gage. This project used Social Cognitive Theory (SCT) to assist in achieving the main objective of this intervention which was to create an instructional manual for residence advisors (RAs) to facilitate community kitchens (CKs) in Gage that improved attendees' cooking capability, while building community.

Prior to beginning work on the project, a literature review was conducted to assess levels of food insecurity amongst university students, and to gain insight into effective interventions and programs of interest to the target population. Primary research (interviews) was conducted to assess the current level of food skills and knowledge of Gage residents. We found a combination of environmental, interpersonal and individual aspects that facilitate and mediate students' food choices, and despite limited research, food insecurity among university students is present, and there is a need for increased food knowledge and skills in this population (Melissa Baker, personal communication, January 24, 2018).

Project outputs consisted of a CK manual to aid RAs in running CK programs in Gage and a post-intervention survey to evaluate the effectiveness of the intervention in increasing cooking confidence. The manual and survey will be passed along to community stakeholders for further analysis and used for expansion of this intervention to other residences.

Introduction

Over the past decade, there has been an increasing focus on food insecurity and nutrition across Canadian university campuses (Silverthorn, 2016). Among other variables, students have identified food knowledge and cooking skills as important barriers to healthy cooking at home (Silverthorn, 2016). This is an urgent problem, as students' current food behaviours affects their health in the future, and immediate intervention is necessary to improve their nutrition (Fisher, Erasmus & Viljoen, 2016).

This project focuses on improving cooking skills among the primary audience, university students living in Gage at the UBC Vancouver campus. Gage houses over 1100 upper-year students aged 19 and older (Student Housing Hospitality Services [SHHS], 2018). Students in Gage live in groups of six with shared kitchen and living facilities, and they do not have direct access to a meal plan so they must cook and shop for themselves (SHHS, 2018). Students in Gage are overseen by an RA, a fellow student who is responsible for running social programs that enrich life on campus (SHHS, 2018). This project will help RAs to run cooking programs for residents, with the aim of improving students' cooking abilities and social networks to encourage cooking at home.

Secondary audiences of this intervention include RAs and students living in other UBC residences (as the project increases in scale and expands beyond Gage). Also included are UBC SHHS and Melissa Baker, who may have future funding to continue facilitating similar interventions for a wider audience of students across campus.

Situational Assessment & Planning Framework

Existing problems for university students:

Currently, little evidence exists regarding the prevalence of food insecurity across Canadian university campuses, but those working in close proximity to the student population are aware that it is an important issue (Melissa Baker, personal communication, January 24, 2018). Food security refers to the availability of and access to food, and includes food utilization and cooking skills (World Food Programme, 2018). In student populations, time is limited, finances are tight, and food knowledge may be low, so it is pertinent to identify and address barriers to better nutrition and cooking practices, in order to improve health outcomes (Murray et al., 2016).

According to Silverthorn (2016, p.1), nearly 39% of university students face some degree of food insecurity. Common barriers for preparing healthy meals at home are limited finances, time, and a lack of food and nutrition knowledge (Garcia, Sykes, Matthews, Martin, & Leipert, 2010; Meldrum & Willows, 2006). Additionally, busy students have little time to cook, let alone improve their methods or learn a new food skill (Murray et al., 2016). University students are surrounded by fast food outlets, which provide an easy alternative to cooking, but are much higher in salt, sugar, and fat when compared to meals cooked at home (Cohen & Bhatia, 2012).

There are 3 grocery stores near Gage, but there are over 20 restaurants and food trucks within walking distance, which impacts student attitudes about the ease and accessibility of cooking compared to eating out (UBC Food Services, 2018). During unit visits, Gage residents indicated that they cook <30% of the food that they consume, purchasing approximately 70% of their meals outside of their home (Lan Nguyen &

Kelsey Moore, personal communication, January 25, 2018). Since eating outside the home can significantly decrease diet quality, the limited number of home-cooked meals consumed by Gage residents is a major problem that needs addressing (Cohen & Bhatia, 2012). RAs have expressed interest in running cooking classes in residence to address this problem, but they currently do not have the time or knowledge to plan these programs alone (Lan Nguyen, personal communication, January 25, 2018).

Behaviours that contribute to students' food choices:

Recent studies indicate that a lack of culinary skills and reliance on fast food may be attributed to students feeling like they lack control (Murray et al., 2016). Upper-year students believe that cooking is difficult due to the commitment and planning it requires in comparison to eating out, and other university students have identified lack of nutrition and food knowledge as factors that lead to purchasing fast or convenience foods instead of cooking at home (Garcia et al., 2010; Murray et al., 2016). This lack of self-efficacy in cooking and nutrition knowledge only fuels the perceptions around the ease and accessibility of fast food. Perceptions of high cost of groceries and managing a budget also influence the amount of fresh meals that students prepare at home (Murray et al., 2016). Evidently, students lack self-efficacy when it comes to healthy cooking at home. Therefore self-efficacy and behavioural capability may be important factors in improving food behaviours. Since the current behaviours contribute to unhealthy eating habits, intervention is greatly needed.

Factors that mediate students' food choices:

Environmental: The environment that people live in is one of the principal determinants of their health (Mikkonen & Raphael, 2010). Access to cookbooks and

clearly labeled nutrition facts on menus are environmental factors known to facilitate student's healthy eating behaviours (Garcia et al., 2010). In addition, the availability of CK programs, which involve groups of people cooking a meal together and sharing food skills can mediate many nutrition and food related needs (Iacovou, Pattieson, Truby, & Palermo, 2012). These programs can decrease participant's fast food consumption and increase cooking confidence, thus improving participants' overall dietary intake (Garcia, Reardon, McDonald, & Vargas-Garcia, 2016; Iacovou et al., 2012; Reicks, Trofholz, Stang, & Laska, 2014). To be most effective, Murray et al. (2016) found programs on campus should offer simple, budget-friendly recipes that students are interested in cooking, while providing take-home recipes. Existing university interventions include Cooking on Campus at the University of Arizona, the Cooking Workshop initiative at Simon Fraser University, Varsity Athlete Cooking Workshops at UBC, and Community Kitchen Program at UBC Farm (Katherine Hastie, personal communication, January 30, 2018; Melissa Baker, personal communication, January 24, 2018) (Appendix A).

There are many existing attributes at Gage which can help facilitate nutritional wellbeing for students. Gage has a demo kitchen containing 6 workspaces stocked with utensils and cookware; this is an underused asset with incredible potential (Melissa Baker, personal communication, January 24, 2018). Gage is also home to 18 RAs who run programs on health and wellness for residents (Katherine MacGregor, personal communication, January 24 2018). RAs are allotted \$80/semester to run these programs, and can apply for more funding, averaging at 100\$/session (Katherine MacGregor, personal communication, January 24 2018). The identified needs of the

students, the assets at Gage residence, and the proven efficacy of CKs and cooking classes will help guide the focus of this intervention.

Interpersonal: The interpersonal factors social connectivity and sense of community within a population are vital to facilitating healthy behaviours (Iacovou et al., 2012). A common strategy used in cooking programs is the opportunity to taste food or share a meal at the end of the session (Garcia et al., 2016). This promotes social bonding and discussion around food and nutrition, and encourages participants to try new foods (Garcia et al., 2016). Consequently, CK programs have been shown to increase participants' social connections and support, which increases their enjoyment of cooking on their own (Iacovou et al., 2012). Therefore, programs like CKs should incorporate social connectivity components to increase their effectiveness.

Individual: Several individual factors mediate nutritional health; at UBC, residents have exclusive access to the campus Registered Dietitian who is available for individual questions and counselling- a significant asset for students looking to increase nutritional knowledge on their own (Melissa Baker, personal communication, January 24, 2018). However, increasing nutritional knowledge alone is not enough to improve food choices, but may work when paired with hands-on initiatives that improve cooking confidence and skills, such as CKs (Clifford, Anderson, Auld, & Champ, 2009). Canadian university students have also identified that access to simple cookbooks and recipes encourages healthy food choices and improves confidence in the kitchen (Garcia et al., 2010).

Health Behavior Theory relevant to this intervention:

This project will be guided by SCT to address complex interactions between mediating factors that affect the food skills and nutrition knowledge of Gage residents.

SCT is a theory that describes the interconnected personal, environmental, and behavioural factors that influence an individuals' health behaviours (Glanz & Rimer, 2005). According to SCT, the three main factors that affect the probability of an individual modifying a health behaviour are: self-efficacy, goals, and outcome expectancies (Glanz & Rimer, 2005). SCT can be used to assess effectiveness of programs that promote health behaviour changes; most studies on cooking classes assess self-efficacy and expectations to determine how likely individuals are to adapt the learned food behaviours (Clifford et al., 2009). All three constructs of SCT will guide this program to ensure the most impactful aspects of behaviour change are targeted.

Self-efficacy is defined as “a person’s confidence in exhibiting a particular behaviour at a given moment” (Xu et al., 2017, p.2). Evidence suggests that self-efficacy is increased through improved confidence, achieving small goals, and behavioural contracting that involves setting rules for one to follow (Glanz & Rimer, 2005). As discussed, university students lack confidence and knowledge to prepare healthy meals on their own, and CKs are an effective way of improving these skills and confidence in these skills (Clifford et al., 2009). This intervention will target self-efficacy and behavioural capacity, improving students’ cooking confidence through participation in a CK, followed by a brief facilitated goal setting session at the end of the workshop. This program will also target outcome expectations, defined as “the anticipation of the outcome of a particular behaviour and the value that one places on these outcomes” (Xu et al., 2017, p.2). As outlined, university students expect to encounter time, money, and convenience barriers when preparing meals on their own (Murray et al., 2016). This intervention will provide information and skills needed to follow recipes that are time and

budget friendly, thus challenging current expectations. Unfortunately, this intervention will not address the SCT concepts of reciprocal determinism and reinforcement because it will not occur frequently enough to impact these factors.

Limitations of Situational Analysis:

Information was gathered through database searches (Appendix B), interviews with Gage residents and RAs, and personal communication with key stakeholders. Data was summarized and sorted in a communal document where salient details were evaluated for relevance, following the *Hierarchy of Evidence* outlined by the National Health and Medical Research Council (2009). Our analysis was limited by minimal peer reviewed data on food security and food habits of Canadian university students. To address the lack of data, we conducted interviews among Gage residents at UBC, but further scientific investigation is needed. Similarly, most studies evaluating CKs are observational and lack rigorous methods for assessing impact on participants' food security and eating habits, so experimental studies are needed to accurately determine how these programs can be used in public health nutrition interventions (Iacovou et al., 2012; Reicks et al., 2014). Specifically, the cited literature lacked consistent, validated measures to assess improvements in food skills, confidence, and knowledge after cooking interventions. Common practice involves use of a five point Likert scale to address SCT constructs, but the variation in assessment methods makes it difficult to draw comparisons across studies cited in this analysis (Clifford et al., 2009).

Project Goals & Objectives

Overall Goal for the Increasing Food Skills in Residence Project: To improve the nutritional health and well-being of UBC students living in Gage residence.

Project Objectives:

Short term:

- One community kitchen pilot program is run for 15 students by May 2018
- At the end of each community kitchen program, 85% of attendees report an increase in food skills confidence
- At the end of each community kitchen program, 90% of attendees report making a new social connection

Medium term:

- UBC Food Services, in partnership with UBC Student Housing & Hospitality Services increases the frequency of community kitchen programs executed in Gage Residence to once per month by the 2021 Winter Term (September 2021).
- Amount of home cooked meals consumed monthly by CK attendees increases by 15% by the 2021 Winter Term (September 2021).

Long term:

- UBC Food Services, in partnership with UBC Student Housing & Hospitality Services, expands the community kitchen program to one other student residence on UBC campus by the 2024 Winter Term (September 2024).

An overview of how these objectives integrate with the project inputs and outputs can be found in the Logic Model (Appendix C).

Project Outputs

Our intervention will provide RAs with the knowledge and tools to facilitate CK events in Gage and increase food skills in residents through two main outputs:

- 1) A manual of CK lesson plans and complete workshop guide
- 2) A post-intervention survey for residents to complete after CK participation.

These outputs will be used by RAs in Gage to plan, implement, and evaluate the CK, and results will be reported to key stakeholders post-workshop for intervention monitoring. In the future, this intervention may expand to other residences within the UBC community, impacting a larger number of RAs and students. The logic model created for this intervention (Appendix C) displays project inputs and outputs, clearly linking aspects of SCT to project objectives.

The CK manual (attached) is our main output and a necessary component of this project. Due to the lack of time, knowledge, and confidence of RAs to create and facilitate these workshops on their own, this manual will be an invaluable resource, equipping RAs with the tools to effectively facilitate a cooking program while promoting improvements in their own cooking skills and knowledge, as well as those of the students attending (Lan Nguyen, personal communication, January 25, 2018). The tips and resources provided in the manual will also build on the existing leadership and communication skills that RAs already possess, using these skills to build connection and camaraderie between students.

The manual will act as a complete guide for RAs to run CK programs, and will include workshop preparation instructions, shopping and kitchen equipment lists, workshop outlines, nutrition and food safety information, and tips for building community

and social connectedness among workshop participants. The manual and recipe handouts (included within it) address concepts of SCT to try and increase the nutritional well being of residents in Gage (Glanz & Rimer, 2005). This manual is necessary to increase the self-efficacy of RAs, in order to facilitate CK programs for their residents. The manual provides the RAs with resources to carry out an effective program, and through the skills training provided in the manual, both RAs and students will discover that they have the capability and knowledge to perform a given behaviour - in this case, cooking a healthy meal from scratch.

The manual sets up RAs to run a successful workshop, modelling healthy meal preparation for the residents attending. In this way, the RAs will challenge student expectations for the better - seeing the RAs model positive outcomes will encourage them to change their own behaviour. The cooking workshops (a result of following the manual), will serve to increase self-efficacy of students, as well as increase their behavioural capability, encouraging healthy behaviour change even when faced with obstacles (Warmin, Sharp & Condrasky, 2012). In this particular case, students will practice preparing a recipe, and then have the opportunity to take that recipe handout home to make again, as the recipe handouts are pre-prepared for the RAs within the manual. Knowing that they have already made this recipe successfully once, students will have an increase in their confidence in making it again, providing more perceived control even when they are in the kitchen by themselves.

Completion of the manual required time and knowledge from group members to organize ideas, conduct research, compile information, and design the layout. In addition, Melissa Baker and Katherine MacGregor contributed time and feedback

regarding the contents of the manual, it's layout, and usefulness of the information included. Gage residence cooking facilities are required for actual use of the manual when implementing a CK event, and funding from The Gage Residence Association (GRA) is required to provide food to cook with during the programs. These funds are available pending approval by GRA at the time of implementation.

Our second output, the post-intervention survey (Appendix D), is vital for timely and thorough evaluation of the CK programs implemented in Gage. The survey was constructed specifically for the CKs in the workshop guide, and will assess changes in participant's self-reported confidence in cooking skills, their food knowledge, and social connectivity. This survey is designed to collect participant and RA feedback, facilitate goal setting, and collect measurable changes in participant health behaviors (see Evaluation for details). The constructs assessed in the survey are heavily informed by SCT, with a specific focus on self-efficacy and behavioural capability. There is an identifiable gap in self-efficacy in university residents regarding cooking for themselves (Murray et al., 2016), and confidence is a foundational component of self-efficacy (Glanz & Rimer, 2005), so the survey will directly assess cooking confidence through targeted questions and rating scales (see Evaluation for details).

Creation of the post-intervention survey required time of group members to conduct literature reviews, compile information, and design a questionnaire based on valid, SCT assessment measures for cooking programs. Use of the surveys will require the RA's time to distribute and collect them, as well as their time to compile results. Our community partners, Melissa and Katherine, have committed to keeping track of compiled data for use or analysis in subsequent years of the program. This data will be

used to evaluate the immediate usefulness of the CK programs in Gage, and may be used to determine potential funding for program expansion in the future.

Evaluation

At the end of the CK, attendees will be asked to complete a brief 6 question survey (Appendix D) that will be used to assess if the CK is achieving its short term objectives. Increases in cooking skill confidence will be assessed by comparing attendees self-perceived ability to cook the meal prepared in the CK workshop before and after completing the CK session. The scale used asks attendees if they could prepare the meal all by themselves, with a little help, with a lot of help, or not at all. Anderson, Bell, Adamson, and Moynihan (2002) found this scale to be a reliable and valid tool for assessing perceived confidence in cooking skills. Assessing cooking skill confidence is an indirect measure of self-efficacy (Clifford et al., 2009). The objective was to impact 85% of attendees, with the intervention impacting as many students as possible. It may not be realistic to impact every single student, as some students may be familiar with recipes already or may only attend one CK workshop.

Making a social connection was set as a short term objective since developing community support helps promote sustained improvements to diet quality after community kitchen interventions (Iacovou et al., 2012). Building friendships at CK events helps increase enjoyment of both cooking and eating (Iacovou et al., 2012). Based on the SFU community kitchen program where 93% of attendees made a new social connection, aiming for 90% of attendees making a new social connection is a realistic value among university students in Vancouver (Melissa Baker, personal communication, Jan 24, 2018). This will be assessed through a yes/no question included on the survey. The short-term objective to run a pilot CK program for 15 students in April 2018 will be completed by May 1st by Kelsey Moore, an RA in Gage

who is also part of the group planning this intervention and has volunteered to test the CK intervention among the target population (Gage residents).

Increasing cooking competence is an effective way of decreasing convenience food consumption, which includes frozen meals and fast food (Ternier, 2010). CK programs are an effective way of increasing cooking confidence and increasing home cooked meal consumption, but there is currently not enough quantitative data to show how significant these changes are (Ternier, 2010). This intervention set a conservative objective of a 15% increase in home cooked meal consumption among workshop participants. As survey data is submitted to Melissa Baker for her records, she will be in charge of assessing this objective. Melissa will have access to all of the post CK survey results and can contact attendees after the workshop to inquire about how many home cooked meals they consume weekly, if desired. Since Melissa has the ability to expand the program further, it is crucial that she has access to all data collected to evaluate the efficacy of the CK intervention if desired.

The evaluation plan has been discussed with community partners in order to monitor the medium and long term objectives regarding the frequency of CKs run and the number of residences that offer CK programs. Ultimately, the projects' community stakeholders are responsible for assessing whether the community kitchen program is growing, checking if it is run once a month by 2021 winter term, and monitoring expansion to other residences on campus by the 2024 winter term. One way this can be assessed is through monitoring records of RAs who have applied for funding required to run a CK session.

Conclusion

The key contributions of this project were the completion of a ready-to-use guide for RAs to implement CKs in Gage residence at UBC, and the creation of post-intervention surveys for CK participants, to ensure timely and thorough evaluation of the program. The guide and evaluation tool are necessary resources for implementing workshops that effectively translate cooking and nutrition knowledge to students in order to improve their nutritional well being.

Completion of this project involved critical learning for all group members. The group learned that reliance on literature to understand the needs of a population may not disclose all complexities or details of a circumstance, and consultation with key stakeholders and members of the primary audience is vital to understand the needs and assets of a population prior to designing and implementing interventions. In addition, the group learned how the use of a logic model served to simplify program planning. Drafting the model together allowed everyone to reach the same level of understanding regarding project scope, clarified objectives, helped plan for timely evaluation, and focused the project to help properly apply constructs of SCT, resulting in the most effective interventions.

Further qualitative and quantitative research is needed to better characterize the circumstances of university students in Canada. However, this program addresses an identified gap in the resources of UBC residents living in Gage, and should be continued and built upon in following years of FNH 473 to allow for proper program implementation and long-term evaluation. Continuation of this project should involve analysis of evaluation data and expansion to additional UBC residences.

Author's Contributions

All group members were involved in project development through weekly investigation of learning issues, creation of project goals, objectives, outputs, and drafting of the logic model. Individual contributions are as follows:

Stefan Cvoric took primary responsibility for drafting part of the situational assessment, project goal and objectives, evaluation plan, part of the authors contributions, references, and the logic model. He also helped in editing all sections of the report. During the literature review Stefan found research supporting the use of SCT when planning a CK intervention. Stefan actively contributed at all group work sessions and meetings with community stakeholders. He created the PowerPoint slides for the logic model and final presentations. He was a presenter during the logic model presentation.

Jenna Fan helped write and edit the CK Manual, appendices and author's contributions. She wrote several food safety tips and one of the recipes for the manual. Jenna contacted the coordinator of community kitchen program at UBC farm for information regarding their CK program, and summarized the other CK programs for the appendices. Jenna also met deadlines every week, and helped research and review supporting literature articles. Jenna also presented during the final presentation.

Marissa Gibbard helped write and edit the introduction, situational assessment, outputs, evaluation plan and conclusion sections of the report, and the authors contributions and appendices. She was also responsible for drafting the vegetarian chili recipe in the manual, and for speaking during in class presentations. During data collection, Marissa completed a literature review involving collection/summarization of

key articles included in the report, and took notes for the group at the meeting with Melissa and Katherine.

Britney Lentz assisted in the writing and editing of the final paper, including the situational assessment, goals & objectives, outputs and authors contributions sections and appendices. She was one of the speakers in the Logic Model presentation and spoke during the final presentation. Britney acted as a liaison between the project group and key stakeholders, managing all communication and making sure that it was timely and professional. She actively contributed to each group meeting and held team members accountable to deadlines, moving the project forward to its timely completion.

Kelsey Moore contributed mainly to writing and editing the CK manual. Specifically, she wrote the introduction as well as several tips on safe food handling practices, edited comments from community partner, added a recipe and footnotes. Additionally, she gathered secondary and primary research for the situational assessment. In regards to the final report, Kelsey helped to write the executive summary and helped to edit. Kelsey will also be co-leading the pilot of this intervention.

Lan Nguyen helped write and edit the CK Manual. She created additional resources for the manual as seen needed by Melissa. To ensure that the project delivers valuable outcomes, she helped conduct primary research to determine the needs and desire of the target audience. Lan contributed in conducting literature reviews to justify the project's goals and objectives. She presented the logic model alongside with groups members and will be speaking during the final class presentation. Lan will be co-leading the pilot of this intervention.

References

- Anderson, A., Bell, A., Adamson, A., & Moynihan, P. (2002). A questionnaire assessment of nutrition knowledge – validity and reliability issues. *Public Health Nutrition*, 5(3), 497-503. doi:10.1079/PHN2001307
- Center for sustainable food systems at UBC farm. (n.d.) *Community Kitchen at UBC Farm*. (2018, February 10). Retrieved from University of British Columbia: <http://ubcfarm.ubc.ca/events/community-kitchen-at-ubc-farm/>
- Clifford, D., Anderson, J., Auld, G., & Champ, J. (2009). Good grubbin': Impact of a TV cooking show for college students living off campus. *Journal of Nutrition Education and Behavior*, 41(3), 194-200. doi:10.1016/j.jneb.2008.01.006
- Cohen, D. A., & Bhatia, R. (2012). Nutrition standards for away- from- home foods in the USA. *Obesity Reviews*, 13(7), 618-629. doi:10.1111/j.1467-789X.2012.00983.x
- Community Food Centers Canada. (2014, April 11). *Tips to making community kitchen programs open and inclusive*. Retrieved from <http://thepod.cfccanada.ca/blog/tips-making-community-kitchen-programs-open-and-inclusive>
- Fisher, H., Erasmus, A. C., & Viljoen, A. T. (2016). Young adults' consideration of their food choices a propos consequences for their future health. *International Journal of Consumer Studies*, 40(4), 475-483. doi:10.1111/ijcs.12273
- Garcia, A. C., Sykes, L., Matthews, J., Martin, N., & Leipert, B. (2010). Perceived facilitators of and barriers to healthful eating among university students.

Canadian Journal of Dietetic Practice and Research, 71(2), 28-33.

doi:10.3148/71.2.2010.XX

Garcia, A. L., Reardon, R., McDonald, M., & Vargas-Garcia, E. J. (2016). Community interventions to improve cooking skills and their effects on confidence and eating behaviour. *Current nutrition reports*, 5(4), 315-322. doi:10.1007/s13668-016-0185-3

Glanz, K., & Rimer, B. (2005). *Theory at a glance: A guide for health promotion practice (second edition)*. United States: National Cancer Institute. Retrieved From: <https://www.sbcccimplementationkits.org/demandrnmnch/wp-content/uploads/2014/02/Theory-at-a-Glance-A-Guide-For-Health-Promotion-Practice.pdf>

Health Canada. (2014, January 24). *Food safety and you*. Retrieved from <https://www.canada.ca/en/health-canada/services/general-food-safety-tips/food-safety-you.html>

Iacovou, M., Pattieson, D. C., Truby, H., & Palermo, C. (2012). Social health and nutrition impacts of community kitchens: A systematic review. *Public Health Nutrition*, 16(3), 1-9. doi:10.1017/S1368980012002753

McCrudden, E. (2017). *Varsity athlete cooking workshops mid-year assessment*. Vancouver: UBC Thunderbirds.

Meldrum, L. A., & Willows, N. D. (2006). Food insecurity in university students receiving financial aid. *Canadian Journal of Dietetic Practice and Research*, 67(1), 43-46. doi:10.3148/67.1.2006.43

- Mikkonen, J., & Raphael, D., (2010) *Social determinants of health: The Canadian facts*. Toronto, ON: York University School of Health Policy and Management.
Retrieved from http://thecanadianfacts.org/The_Canadian_Facts.pdf
- Murray, D. W., Mahadevan, M., Gatto, K., O'Connor, K., Fissinger, A., Bailey, D., & Cassara, E. (2016). Culinary efficacy: An exploratory study of skills, confidence, and healthy cooking competencies among university students. *Perspectives in Public Health*, 136(3), 143-151. doi:10.1177/1757913915600195
- National Health and Medical Research Council. (2009). *NHMRC levels of evidence and grades for recommendations for developers of clinical practice guidelines*. Retrieved from: <https://canberra.libguides.com/c.php?g=599346&p=4149721>
- Reicks, M., Trofholz, A., Stang, J., & Laska, M. (2014). Impact of cooking and home food preparation interventions among adults: Outcomes and implications for future programs. *Journal of Nutrition Education and Behavior*, 46(4), 259-276. doi:10.1016/j.jneb.2014.02.001
- Silverthorn, D. (2016). *Hungry for knowledge: Assessing the prevalence of student food insecurity on five Canadian campuses*. Toronto: Meal Exchange. Retrieved from <http://mealexchange.com>
- Soneff, R., & Worboys, J. (2013). *Kitchen connections, a facilitator's manual cooking program for mental health clients*. Retrieved from <https://www.interiorhealth.ca/YourHealth/HealthyLiving/FoodSecurity/Documents/Kitchen%20Connections%20-%20Facilitators%20Manual.pdf>
- Student Housing and Hospitality Services. (2018). *Walter Gage*. Retrieved from <http://vancouver.housing.ubc.ca/residences/walter-gage/>

Ternier, S. (2010). Understanding and measuring cooking skills and knowledge as factors influencing convenience food purchases and consumption. *Studies by Undergraduate Researchers at Guelph*, 3(2), 69-76.

The University of Arizona (2018) *Cooking on Campus*. (2018, February 10). Retrieved from The University of Arizona: <http://cookingoncampus.arizona.edu/>

UBC Food Services. (2018). *Places to eat*. Retrieved from <http://www.food.ubc.ca/places-to-eat/>

Warmin, A., Sharp, J., & Condrasky, M. D. (2012). Cooking with a chef: A culinary nutrition program for college aged students. *Topics in Clinical Nutrition*, 27(2), 164-173. doi:10.1097/TIN.0b013e3182542417

World Food Programme. (2018). *What is food security?*. Retrieved from <https://www.wfp.org/node/359289>

Xu, X., Pu, Y., Sharma, M., Rao, Y., Cai, Y., & Zhao, Y. (2017). Predicting physical activity and healthy nutrition behaviours using social cognitive theory: Cross-sectional survey among undergraduate students in Chongqing, China. *International Journal of Environmental Research and Public Health*, 14(11), 1346-1359. doi:10.3390/ijerph14111346

Appendix A: Existing Interventions for University Students

The Cooking Workshops of University of Arizona (The University of Arizona, 2018):

The Cooking Workshops at University of Arizona had partnerships with Campus Recreation, Campus Health Services, Culinary Services, Associated Students of University of Arizona and the Student Health Advocacy Committee (SHAC). The goal of the program was to guide students to shop and choose healthy foods on a budget, improve cooking skills, and cook healthy recipes. The program also taught students basics on cooking, and answered nutrition-related questions from students. The program was limited to 18 people and recipes used included brunch (avocado egg boats and zucchini sweet potato hash) and healthy alternatives to fast food (veggie burgers and sweet potato fries). There is no information available regarding evaluation of the outcomes of this program.

The Community Cooking Workshop of Simon Fraser University (SFU) (Melissa Baker, personal communication, January 24, 2018)

The community cooking workshop at SFU was conducted 2-4 times a month from January to March. The goal of the program was to help students cook healthy recipes, meet new friends, and improve health behaviors. A handout referred students to websites and apps where they could find easy and healthy recipes, and it introduced daily food and activity tracking software to help students better support their health. Students were also encouraged to personalize their own food plan according to lifestyles, while sticking to the Canadian Food Guide. Sample recipes included curry lentils and salads. 93% of the participants reported that they have made new friends and developed their social networks after the workshop.

The Varsity Athletic Cooking Workshop of UBC (McCrudden, 2017):

The Varsity Athletic Cooking Workshop at UBC was designed to improve the students' nutrition during their athletic life and beyond by enhancing their cooking skills and food preparation skills with consideration of limited time and budget. The workshop also educated athletes on nutritional practices with specific nutrients, such as iron, protein, omega 3 fatty acids etc., and some food hygiene skills. The athletes would eventually get familiar with cooking equipment and the recipes they learned to cook. The maximum class size was 22 and each workshop lasted 1.5-2 hours. Athletes learned to cook 8-12 meals in assigned small teams, and they would provide feedbacks after. The program did positively influence the wider UBC community by promoting a healthy and fun environment for athletes, and students are encouraged to develop their cooking skills and support their health. Most of the attendees found that the recipes and cooking skills taught were helpful for them as an athlete, and they had increased confidence on food preparation skills after the workshop.

The Community Kitchen Program at UBC Farm (Katherine Hastie, personal communication, January 30, 2018):

The community kitchen program by UBC Farm was organized once a month from November 2017 to February 2018. The goal of the program was to increase students' interests of cooking and improve student's cooking skills and nutritional knowledge (Center for sustainable food systems at UBC farm, n.d.). Participants could register online, and each session could fit 15 people. The farm provided seasonal ingredients they that could harvest or buy fresh near the university. Costs differed depending on what recipe was used, varying between \$64-\$140 for 10-15 people. The recipes they chose for each month were vegan and gluten free, and were easy for students to cook on their own and had them involved in cooking throughout the duration of each session, such as sushi, samosas, and tacos. The program also accepted donations. There is no information available regarding evaluation of the outcomes of this program.

Appendix B: Methodology

Literature review and situational assessment:

The situational assessment began with a meeting with our community partners to discuss aims and expectations for the project, exchange important resources, and to clarify our role in project development and implementation. From there, we conducted a literature review using key word searches in EBSCO, CAB Direct, and UBC Summon databases. Group members also conducted in-person interviews with students living in the Gage residence to determine the priorities and interests of the primary audience regarding cooking classes in residence.

Development of the cooking manual:

The cooking manual was based on existing programs created by the University of Arizona, SFU, UBC Varsity, and the UBC Farm (Appendix A), and a guide by Soneff & Worboys (2013). The manual was tailored to meet the specifications of our community partners. Information regarding food safety was adopted from Health Canada (2014). Community building and workshop information was adapted from RAs' existing knowledge, and from Community Food Centers Canada (2014). Recipes were found from various online recipe websites, and were adapted to include necessary components (nutrition or food safety tips, storage considerations) based on group members' existing cooking knowledge and the information gathered from Health Canada (2014). The manual was designed to be used as a tool by RAs who have basic cooking abilities. It incorporates simple, cost effective recipes as well as nutrition information and food handling tips. It also incorporates tips and a "how-to guide" for RAs who want to introduce a new recipe that is not in the manual.

Appendix C: The Logic Model

SITUATION: UBC students living in upper year residences have compromised nutritional well-being because of a lack of food skills, nutritional knowledge, motivation, and finances.

INPUTS:

- Time: How long will it take to develop the manual, how long does each program run
- Money: from student housing and hospitality budget to equip the kitchen with cooking supplies and ingredients for each workshop
- Partners: Melissa Baker, Katherine MacGregor, and UBC Food Services
- Facilities: demo kitchen in the common area of Gage residence
- Knowledge: FNH students with specific expertise in nutrition/food safety/cooking

OUTPUTS:

- What we do:
 - Manual for RAs to run community kitchen (includes: complete shopping lists, preparation instructions, equipment list, and nutritional/food safety tips for each workshop) to increase students' self-efficacy and behavioural capability
 - Post-intervention survey for residents
- Who we reach:
 - Gage Residents
 - Gage Resident Advisors
 - (Long term) Other UBC residences

OBJECTIVES (OUTCOMES):

- | Short term: | Medium term: | Long term: |
|---|---|---|
| <ul style="list-style-type: none"> • One community kitchen pilot program is run for 15 students by May 2018 • At the end of each community kitchen program, 85% of attendees report an increase in cooking confidence • At the end of each community kitchen program, 90% of attendees report making a new social connection | <ul style="list-style-type: none"> • UBC Food Services, in partnership with UBC Student Housing & Hospitality Services increases the frequency of community kitchen programs executed in Gage Residence to once per month by the 2021 Winter Term (September 2021). • Amount of home cooked meals consumed weekly by CK attendees' increases by 15% by the 2021 Winter Term (September 2021). | <ul style="list-style-type: none"> • UBC Food Services, in partnership with UBC Student Housing & Hospitality Services, expands the community kitchen program to one other student residence on UBC campus by the 2024 Winter Term (September 2024). |

Outcome Indicators:

- The number of university students attending the pilot cooking class in Gage residence (short term)
- Cooking skill confidence rating of attendees' on a questionnaire at the end of CK workshops (short term)
- Attendees' response regarding new social connections made on a questionnaire at the end of CK workshops (short term)
- Frequency of community kitchen programs run in Gage residence, assessed by Katherine checking record of RAs applying for funding (medium term)
- Percent of meals that residents cook at home, assessed via follow up emails by Melissa Baker (medium term)
- Number of UBC Residences implementing a community kitchen program, assessed by Katherine checking record of RAs applying for funding (long term)

Process Indicators:

- Having a manual completed by the end of the term
- Finalization of evaluation survey by the end of the term
- Application for funding to stock the Gage kitchen with cookware is approved

Appendix D: Evaluation Tool

Post workshop questionnaire:

1. Before attending this community kitchen I felt like I would have been able to prepare today's meal:
 - a) All by myself
 - b) With a little help
 - c) With a lot of help
 - d) Not at all
2. After attending this community kitchen I feel like I would be able to prepare today's meal:
 - a) All by myself
 - b) With a little help
 - c) With a lot of help
 - d) Not at all
3. I made a new friend as a result of attending this community kitchen
 - a) Agree
 - b) Disagree
4. Set a goal for how many meals you'd like to prepare at home per week (includes breakfast/lunch/dinner/snacks).
5. Please provide your email if you feel comfortable being contacted as a follow up and see how often you prepare meals for yourself at home. (optional)
6. Do you have any suggestions for improving community kitchen nights such as this in the future? (optional)

Online version of the questionnaire can be found at:

https://www.surveymonkey.com/collect/?sm=FvchYW_2BRFGojJBEn0Isvi1ArZJyyhJpvO_2FBJ0yjgAO53mOrnbuAJKUIjvfgSXSp6

IMPROVING FOOD SKILLS IN GAGE RESIDENCE

creating a cooking workshop

Six food-loving FNH students set out on a mission: to increase the food skills of residents living in the Gage through interactive workshops that promote a love of cooking and stronger community connections. Over the semester, we developed a Community Kitchen Manual for Residence Advisors in Gage to facilitate community building and cooking skill development for residents. We created a framework for an engaging cooking workshop that is both fun and educational for students.



community partners

We had the opportunity to work with Melissa Baker, Manager of Nutrition and Wellbeing for UBC Student Housing & Hospitality Services, and Katherine MacGregor, the Residence Life Manager of Gage residence, who were key stakeholders in our project and provided valuable guidance. We also had the chance to speak directly with Gage residents and Residence Advisors, which helped us create a manual that was specifically tailored to their needs.

what we learned

Through working with the community, we gained insight into the importance of a situational assessment that seeks out stakeholder perspectives prior to designing interventions.

After the situational assessment and community consultation, it became clear that the needs and assets of Gage residents were not entirely reflected in the literature. We learned that the community had an interest in baking and in cooking vegetarian food, and that a student's roommate situation could greatly affect their interest in cooking at home. These critical learning moments regarding the community and program planning allowed us to reflect on our own work as group, and refine our goals to create clear, achievable objectives that were realistic based on the time frame, and impactful based on the identified community interests

in the future...

We hope that our manual will be used to assist in planning future community kitchen programs, expanding beyond Gage to other residences across campus. We envision these programs being offered on a monthly basis to increase students' food and nutritional knowledge, while strengthening communities at UBC. We would love to see this program continued by future 473 groups to facilitate evaluation and expansion.

