

Fostering Connections between University Hill Secondary School and the UBC Farm

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University of British Columbia
Land and Food Systems 450 Food Systems Project

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ABSTRACT

University Hill Secondary School (UHSS), located in Vancouver, British Columbia, will be moving to a new building near the UBC Farm. The UBC Farm is a research and educational facility located on UBC campus. This report aims to help the UHSS Home Economics teacher, Ellen Walker, reconnect her students with food, ecological systems, and the environment through new curriculum ideas for her Home Economics classes that utilize the resources of the UBC Farm. This project began with a primary literature review followed by the decision to focus on a 'fall' theme in order to collaborate with a second LFS group assigned to this project. We met with our stakeholders: the Land and Food System (LFS) teaching team, Ellen Walker and the students of UHSS, and Mark Bomford of the UBC Farm. The result of this project was three lesson plans (topics: chickens and eggs, apples, and pumpkins) which address the knowledge disconnect between farm and plate, tie into Ms. Walker's existing lesson plans, and outline the many of BC Ministry of Education's Prescribed Learning Outcomes given for grades 10-12 that they meet. Through our adapted lesson plans, students will acquire a greater understanding of the food system as well as gain hands-on learning opportunities at the UBC Farm. Three recommendations were given with clear and timely goals which aim to establish a lasting and meaningful connection between UHSS and the UBC Farm. First, we hope the connection is initiated with a minimum of two farm visits in the upcoming school year. We then hope UHSS encourages extra-curricular student participation, and that future LFS student groups evaluate the progress to determine the success of and potential for expansion on these adapted lesson plans.

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INTRODUCTION

University Hill Secondary School (UHSS), located on UBC campus in Vancouver, British Columbia, is a part of the Vancouver School District 39. UHSS will soon move to a new building located along W. 16th Ave near Wesbrook Mall, a five minute walk from the UBC Farm, a research and educational facility located on UBC campus. Mark Bomford, Director of the Center for Sustainable Food Systems at the UBC Farm, and Mark Pearmain, Principal of UHSS, have expressed interest in establishing a stronger partnership for the enhancement of educational opportunities at UHSS. Ms. Ellen Walker, the UHSS Home Economics teacher indicated an interest in extending her Foods and Nutrition courses to the UBC Farm to enable this connection.

Our group consisted of five fourth year UBC students from the faculty of Land and Food Systems, majoring in Agroecology, Global Resource Systems, and Food, Nutrition and Health. In the context of UBC and the campus framework, this project is part of the UBC Food Systems Project (UBCFSP), which works to assess and improve food system sustainability on the UBC campus. In this project, we have worked in conjunction with a second group of LFS 450 students, “group 8”; given the same objectives, we have orchestrated our specific goals to avoid overlap. Finally, the development of this UBC Farm-UHSS partnership also falls within the domain of the Think&EatGreen@School project, another UBC-based initiative that addresses food security issues throughout Vancouver schools. In the future, we hope UHSS staff will be able to work with these two initiatives to gain the support they need to continue fostering sustainability and food security within their school.

Therefore, through this project, we aimed to facilitate a connection between UHSS and the UBC Farm by designing new curriculum ideas for the Home Economics class that utilize the farm's resources. This will act as a benchmark for other staff at UHSS for future farm connections in other realms, as well. Each exposure the students receive to the UBC Farm will help reconnect them with food, ecological systems and the environment.

While this project is directly aimed at achieving these goals once UHSS students are transferred to their new facility, the recommendations made in this project are also feasible for their current location as well.

BACKGROUND RESEARCH

This project has many similarities to Farm-to-School (FTS) programs found throughout the United States. Most FTS programs are designed to connect primary and secondary schools with local farms to foster healthy eating, provide educational opportunities, and support local agriculture (Izumi, Rostant, Moss, & Hamm, 2006; Joshi, Azuma, & Feenstra, 2008). These goals are attained at the most basic level through exposure to local farm products in cafeterias, while many FTS programs also incorporate these items into curriculum and field trips. This particular project varies slightly from typical FTS programs in that it does not include a cafeteria component; it serves simply to connect the UBC Farm to UHSS through lesson modifications in its Home Economics classes.

Glassman (2006) states that people must be agriculturally literate to make wise and informed economic and political decisions. In his study on the effectiveness of

agricultural education curricula, he found that students who learned with hands-on teaching had higher agricultural literacy test scores than those with only lecture style learning. Morris and Zidenberg-Cherr (2002) also found that students experienced longer-lasting positive effects on vegetable preferences when exposed to nutrition education and hands-on vegetable gardening activities than to theoretical nutrition education alone. Based on these findings, we therefore conclude that it is likely more effective and efficient to teach about the food system through hands-on experiential learning and that the UHSS Home Economics classes would benefit from experiences at the UBC Farm.

As we drew inspiration from other communities and our own, we aspired to create unique education opportunities for UHSS students while fostering a lasting relationship between the UBC Farm and UHSS. This paper will outline the steps taken to create a series of lesson plans to be incorporated into Ms. Walker's existing curriculum, discussion of their implications, and recommendations for the future. It was our intention that this project be the first step in the reconnection of people, health, and the environment.

METHODOLOGY

The initial stages of our project required extensive research and idea generation to determine how we could facilitate a connection between the UBC Farm and UHSS. A literature review examined existing programs with similar goals to generate ideas for our project. Following this, we conducted informal interviews with Mark Bomford and Ms Walker. This enabled us to identify the resources available for UHSS students at the UBC

farm, and to identify Ms. Walker's expectations of the project. By receiving Ms. Walker's comments and a basic outline of her current teaching plan, we were able to determine how we could integrate farm based activities into the current UHSS curriculum. Interviewing Mark Bomford allowed us to assess the potential for UBC Farm involvement, as well as gain insight into their vision for this partnership.

After the interview process, both groups collaborated to develop an assessment survey as a method to introduce the project to the UHSS students. This survey was also intended to assess their food systems interest and current knowledge. It was our hope to use this survey as a method of incorporating the University Hill student voice into our research. However, after a consultation with Dr. Andrew Riseman and Marc Schutzbank, members of the LFS 450 Teaching Team, it was decided to focus on the needs of our primary stakeholder, Ms. Walker. Our group decided to centralize our efforts on facilitating connections between the UBC Farm and UHSS by designing a series of lesson plans that include a UBC Farm component for Ms. Walker's classes. We agreed that in order to maximize the effectiveness of them, the lessons must be designed to be as conscious of and as accommodating as possible to Ms. Walker's existing curriculum. Please see Appendix 1 for a copy of our proposed Student Survey; if used in upcoming years, it will need revision and approval by appropriate bodies.

To avoid project overlap, it was decided to allocate the fall season to our group, and the spring season to Group 8. Our group focused on apples, chickens and eggs, and pumpkins. To facilitate a connection between UBC Farm and UHSS and to maximize student learning, we constructed each lesson plan to include three main components: in-class theory, a field trip to the UBC Farm with hands on opportunities, and in-class meal

preparation using fresh - and ideally, UBC Farm-grown - ingredients. In Appendix 5, a list of seasonal produce is provided as a guide for Ms. Walker if she wishes to alter the lesson plan to a different topic. Each lesson also includes suggested presentation topics for the students to investigate and teach to their peers.

We reviewed the current Home Economics curriculum goals outlined by the British Columbia Ministry of Education and incorporated the Prescribed Learning Outcomes (PLOs) into three lesson plans created for this project.

The Apple Unit was created to teach about biodiversity and includes the UBC Heritage Orchard. Apples are cost effective, versatile fruits that can be used in many recipes as well as impart various health benefits.

Agriculture in the Classroom (USDA, 2010), a website devoted to promoting agriculture awareness, provided us with numerous hands-on learning curricula ideas, including "From egg to chicken", a lesson in embryology, and "Face-to-Face with Chickens", a lesson about the chicken life cycle at a farm. Through this, the Chicken and Egg Unit was created to utilize the chickens at the UBC Farm as a learning tool.

The Pumpkin Unit was designed with the help of the Eating Well with Canada's Food Guide, which recommends healthy recipes and topics on nutrition that can potentially raise the awareness of adopting a wholesome lifestyle with the consumption of local produce. The unit was designed to enhance students' learning of local, seasonal produce and the full-cycle of organic waste.

In lieu of implementing a formal survey to UHSS students, our team was able to spend time with two of Ms. Walker's classes (one junior and one senior). The purpose of doing so was to introduce ourselves and this project to the students, emphasizing their

role as stakeholders in this project. This meeting also served as a chance to gain insight into the students' experiences and perspectives of farming and food (See Text Box 1).

RESULTS

Interviews

Our first meeting with Ms. Walker provided us with information regarding current resources as well as anticipated plans for the new school. Currently, UHSS offers full-year courses and has a single Home Economics classroom. The classroom has 6 fully functional kitchen units, which services approximately 24 students per class. Each lecture period lasts nearly 1.5 hours and students are seen every second day. UHSS does not have a food-services program but students in the Cafeteria Training 11/12 course use the kitchen space to provide small, low-cost food items to the students and staff. Ms. Walker indicated that she felt her classes would benefit from a connection to the UBC Food Services ordering system to enable more economical purchases. She expressed that the senior classes (Grades 11/12) would be the most suitable targets for our program while the junior (Grades 9/10) classes are still suitable, but less ideal; the grade 8 classes are unsuitable due to time constriction of their Home Economics rotation and lack of maturity.

The current curriculum for junior classes includes topics such as (in chronological order): kitchen equipment and measuring, baking, vegetables, proteins and staples, dairy, and fruit. The senior classes cover preservation, the BC and Canada Food Guides with an emphasis on local foods, plan-a-pantry, nutrients and lifestyle diseases, proteins, and

foods around the world. We identified the topics of vegetables, food guides, and proteins as the most conducive to incorporating UBC Farm connections.

Budget was identified as a limiting factor for purchasing UBC Farm produce on a regular basis. Ms. Walker currently acquires most of her ingredients from Extra Foods. She welcomes the idea of acquiring weekly orders of produce from the UBC Farm, in a CSA fashion, if it is comparably priced to that which she typically buys.

Details regarding the new school are still limited. The new facility will have two classrooms for Home Economics, a food service program, and a rooftop garden; however, Ms. Walker was unsure of the details of these programs.

Our team met with Mark Bomford to discuss the potential integration of the farm with the Home Economics program at UHSS. The UBC Farm hosts a wide range of kids' activities such as summer camps, the Landed Learning program, Farm Discovery tours, Spring Farmers for Home Learners, and contrasting landscapes with botany. Most groups hosted at the Farm are elementary school age, however Bomford is confident older age groups can be accommodated. According to Bomford, the farm can accommodate UHSS by providing food, volunteer opportunities, education, and financial assistance (please see Appendix 2 for a comprehensive table of potential farm activities). He explained that the farm may be able to run a free pilot project to determine the feasibility of hosting high school groups. The ongoing costs of these visits require further discussion. The farm is able to tailor a tour or a workshop for UHSS but first requires a set of desired learning outcomes.

Lesson plans

Our lesson plans reflect some of the many ways in which food and food systems can be presented to students: in-class through teacher lectures and demonstrations, student-lead presentations, and hands-on learning. Each lesson includes the PLOs, suggested activities, and five to ten minute student presentation topics. Material covered includes nutrition, food safety, food system concepts (such as nutrient cycling and food miles), and cooking methods. The in-class meal preparation component remains in the lesson plans as a standard part of a Home Economics class.

Each lesson plan provides a more holistic viewpoint of the food system, including a variety of topic materials and disciplines to accurately reflect the complexity of the food system. The lesson plans are included in Appendix 2.

Meeting with the students

Text Box 1: Maynard's experience with a class at UHSS.

March 18th, 2011

I was hungry from missing lunch, but full of energy and nerves. I sat in the plastic school chair at the low table looking up at the black board as Ms. Walker took her position at the front of the class.

“Jenny?” called Ms. Walker as she scanned her pen down the attendance list.

“She’s in China,” called back some of the grade 11 and 12 boys and girls sitting around me.

We were in the UHSS Grade 12 Home Economics Class, and I was there as a guest presenter. As soon as Ms. Walker finished role call, Dennis and Andrew, my project partners, began the presentation as I sat in and listened.

Only about half the class was present – the other half was away for Spring Break in China. Of the half remaining, only half was paying attention. Four of the fifteen students had glazed eyes. One was asleep with his head on the table but about eight students were genuinely interested in what Dennis and Andrew were saying. The others may have just

been too timid to show their enthusiasm. Dennis and Andrew were explaining our course project, and what we were doing in their class. Dennis talked about the UBC Farm and asked some questions about people's impression of the farm: Had they been there before? Had they ever been to any farm before? What was their favourite farm animal?

The Class responded enthusiastically with their experiences. "My grand-dad owns a farm!" one girl was excited to tell us. Another girl told us that she had worked at FarmWonders Summer Camp last year and had taught younger students about bees, chickens and vegetables. The majority of the class had never been to the UBC farm.

After a twenty-five minute introduction and chat, Dennis and Andrew left, leaving me behind. Earlier that week, Mrs. Walker had offered our team the chance to "do something" with her students for an hour. I had volunteered. Before showing up to their class that morning, I had decided that I wanted to do something memorable with the students in my allotted hour.

My nerves had long passed, and I was excited to show the students the world outside their classroom. First I gave them a piece of licorice fern to taste. I had collected it before class. I explained that the Licorice fern grows all around their school in the big leaf maple trees, and that the first nations in the Stein Valley had used it to stem hunger when they were on Vision Quests (a right-of-passage for kids about the same age as the class I was leading). The students were able to identify the sporophyte, the fronds, and the spores, because they had learned these terms in their biology class. They did not, however, know the names of any local ferns, or even that ferns grew nearby.

Next I showed them the crocus, the cedar, Oregon grape, periwinkle, Sambucus, and hemlock. None of the names were familiar to the students. I talked about how these plants were used by humans traditionally and today. The students used their knowledge from foods, biology, and history to answer questions like, "How might Taxol be used in modern medicine?" (An intelligent girl with a biology background correctly guessed that it could be used to treat cancer.)

During the hour and a half I spent with the students I learned their names, a bit about their interests, and some of their backgrounds. This experience with the students gave me an idea of their level of agricultural literacy, and it gave me a fresh perspective on the ideal way to integrate their class with the UBC farm.

-Jordan Maynard

DISCUSSION

The reality of our world is incredibly frightening. “One generation from now most people in the U.S. will have spent more time in the virtual world than in nature” (Schei, 2010). According to the Canadian Heart and Stroke Foundation (CHSF), each day 30% of children living within North America eat at a fast food restaurant and of people who have diabetes, about 90% have type 2, which may have been prevented with proper nutrition and exercise (CHSF, 2011). “Approximately 26% of Canadian children ages 2-17 years old are currently overweight or obese” (Childhood Obesity Foundation, 2011). There is a serious disconnection between us, our food system, and the natural world (Jensen, 2002).

Young people spend six to eight hours a day, five days a week at school. This is the perfect place to begin repairing this gap. Outdoor experiential learning must be nurtured within the school environment and we must reintroduce the idea that the natural environment is sacred (Jensen, 2002). “What they do not know, they will not protect. And what they do not protect, they will lose” (Schei, 2010).

The overall goals of our lesson plans were to incorporate the interconnectedness of ecological systems and issues of food security within a Home Economics class. Each lesson plan would provide an avenue to address these topics as well as demonstrate how individual actions can impact the global community (Jensen, 2002). A heritage apple orchard provides the perfect setting to discuss the importance of ecological diversity, issues of food choice, as well as supply and demand, which can be further related to globalization and food security. A pumpkin patch can demonstrate that the health of the environment, soil, air, water, and plants, directly affect the health of the people reliant on

the land. These lessons provide a framework to discuss the complexities of the food system but in a manner that is less conceptual and more localized. Facilitating these types of active, hands-on, learning opportunities can shape the learners' perspectives of health and the environment resulting in healthier youth, families, and communities (Jensen, 2011).

Inevitably however, there are both positive and negative aspects to our lesson plans. We do believe that we successfully linked Ms. Walker's pre-existing lesson themes to features of the UBC Farm. By doing so, we were able to implement hands-on learning opportunities which result in more effective learning (Glassman, 2006; Morris and Zidenberg-Cherr, 2002). Furthermore, the suggested activities could be incorporated throughout the year focusing on different aspects of food production and crop maintenance. For example, Ms. Walker's classes could become more involved with field preparation, planting pumpkin seeds and later harvesting them in the fall. This would enable students to see the development of a crop throughout the growing season, providing an avenue for a variety of learning opportunities.

Conversely, the lesson plans are not without flaws. One lesson plan incorporated chickens which are currently used for research purposes, therefore no actual hands-on activities are allowed. Furthermore, if Ms. Walker were to implement all three lesson plans, there will be overlap of particular topics; however this could positively reinforce the interconnectedness of the food system.

PROJECT EVALUATION

Stage 1: Did we effectively demonstrate why a connection between UHSS and UBC

Farm is important? Did we provide realistic avenues to establish this connection? Finally, did we demonstrate how this connection may be maintained?

This stage of evaluation consists of personal reflections as well as feedback from our community partner, Mr. Bomford. We believe that we provided ample information outlining the importance of fostering a connection between UHSS and UBC Farm to reconnect students with the natural environment, their food system and improve the overall health of our communities. The lesson plans incorporated a variety of topics and hands-on learning opportunities to engage the students and to demonstrate the complexity of our food system. However due to time constraints, we were unable to implement the lesson plans and therefore cannot fully evaluate their effectiveness.

Stage 2: In the future, implementation of each lesson plan by our stakeholders would be the most effective way to determine their suitability and practicality. It would be an effective way to analyze their success and to identify any problems. Feedback from stakeholders through an interview would highlight areas requiring improvement.

Interview questions would consist of:

- Did the objectives sufficiently meet the B.C. Ministry of Education PLOs?
- Were the activities well suited for the farm? Why or why not?
- Were the students receptive of the activities?
- Did you, the instructor, experience any time constraints?
- Are there any additional comments and/or feedback?

Stage 3: By implementing changes from stage two, further feedback can be gained from the students to determine the effectiveness of the activities. A tailored survey or informal group discussion with the students are suggested as methods of gaining this insight. The necessary changes would then be implemented into the lesson plans once all stakeholders had had the opportunity to provide input.

RECOMMENDATIONS

Recommendation 1: Between Ms. Walker and UBC Farm

Objective: During the 2011/2012 school year we hope to see two class visits to the UBC Farm by Ms. Walker's Home Economics classes.

The students' increased involvement in the farm will undoubtedly raise their awareness of sustainable food systems through hands-on experience and learning in farm activities. Furthermore, this may lead to increased student interest and may potentially influence teachers in other faculties to modify and incorporate food-related topics into their lesson plans. We are hopeful that class visits will influence teachers to incorporate food systems education and the UBC Farm into their respective lesson plans establishing a community involving UHSS and UBC. Please see Appendix 4 for a list of resources that can be used to develop additional lesson plan components.

Recommendation 2: For UHSS and UBC Farm

Objective: Increase UHSS student participation during the 2011/2012 school year by monitoring volunteer hours with the UBC Farm

We recommend the encouragement of student participation on the farm through

student clubs or volunteer projects that are linked directly to UHSS or other ongoing UBC Farm projects or events. This may also be achieved through the expansion of this partnership beyond Home Economics to other disciplines such as Biology and Ecology. Establishing a Food Production Awareness Day at the school could include school assemblies with guest speakers, and related student project presentations. In addition, posters can be used around the school to promote the UBC Farm projects, initiatives, and student involvement opportunities. Student-led initiatives such as cooking clubs could also be established.

Recommendation 3: For LFS students, farm, and faculty

Objective: During the 2011/2012 school year monitor, survey, and implement new ideas to support the connection between UHSS and UBC.

For future LFS 450 groups, we recommend that they conduct student, teacher, and stakeholder surveys to determine their level of satisfaction with our proposed curriculum. They can also encourage UHSS teachers in other disciplines to become involved with this project.

In addition, there is a potential to link the future UHSS rooftop garden to the classroom and to the UBC Farm. Not only could the garden contribute to the school environment as green space, it could also grow produce to be consumed or used in the classroom. We believe that the rooftop garden could provide another connection with the UBC Farm and that roles should be set out for the stakeholders.

Finally, the creation of a scholarship or grant could be established for students interested in post secondary studies in the faculty of Land and Food Systems.

CONCLUSION

As a part of the UBCFSP, our project aimed to create a working relationship between the UHSS and UBC Farm. This collaboration aims to teach UHSS students about the food system through a holistic, hands-on approach. Lesson plans were tailored to include the B.C. Ministry of Education PLOs and to incorporate aspects of food security and food systems knowledge. Through discussions with stakeholders, we were able to propose realistic and attainable activities to foster a partnership between the UBC Farm and UHSS. Although our lesson plans contain both strengths and weaknesses, we believe that this project is simply the first step in fostering a lasting connection between UHSS and the UBC Farm.

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Appendix 1: Proposed Student Survey. To be used as a suggestion/outline only.
Subject to revision and approval.

Part I: Basic Demographics

1. *Gender*
2. *Grade*
3. *Cultural background*

Part II: Existing food habits/knowledge

1. *Where does the food you eat at home come from (can circle more than one)?*
 - a. *Grocery store/super market*
 - b. *Farmers' market*
 - c. *Garden*
 - d. *CSA/produce box*
 - e. *Farm*
 - f. *Other*
 - g. *Unknown*
2. *Where does your school lunch come from?*
 - a. *Cafeteria*
 - b. *Home (packed lunch/go home for lunch)*
 - c. *Purchase lunch outside of school*
 - d. *Do not eat lunch*
 - e. *Other*

3. *Have you ever visited a farm?*

- a. *Yes*
- b. *No*

4. *What do you consider healthy food?*

Part III: Areas of Interest

1. *What would you be interested in learning through a visit to UBC farm?*
 - a. *Locally grown foods*
 - b. *native plants and trees,*
 - c. *cultural/ethnic foods*
 - d. *harvesting and cooking foods,*
 - e. *seasonal foods of Vancouver,*
 - f. *animals (chicken, bees, cows),*
 - g. *soil and composting,*
 - h. *planting and growing foods,*
 - i. *nutrition,*
 - j. *food storage*
2. *What would you like to learn about food and agriculture that you haven't learned in Home Economics?*

Appendix 2: The outcome of our Interview with Mark Bomford, March 2, 2011;
Suggested ways to integrate UHSS with the UBC Farm.

Topic	Cost	Facilitator needs	Notes
Composting	Free	Compost collection bin. Someone to carry the bin to the farm regularly	Bringing compost to the farm would be welcomed. The compost needs to be high quality
CSA	TBD -	List of desired seasonal crops.	A modified CSA Style weekly box could be delivered to the school
Sharing in the Harvest	Free. Depended on volunteer availability to help with the harvest.	1-2 Farm Staff to explain how and what to harvest. Harvest Bins.	Students could harvest a crop for use in class (most likely crops with high harvest costs such as beans)
Volunteering	Free	none	The outcome of the students' volunteer experience is only limited by their own learning objectives.
Fundraising	Dependent on availability of suitable volunteers to assist with ongoing management.	1-2 Farm staff to help with farming instruction.	Students could potentially spend volunteer hours working their own piece of land as a fundraiser for their class (for example, growing their own pumpkin patch).
Staff Lead Farm Tours	Likely a per student cost (some funding available)	1-2 farm staff. Learning Outcomes TBD by Ms. Walker	Identify Learning Outcomes for each tour /workshop.
Farm staff visit to the school	No cost. 6 visits per semester.	1-2 Farm staff needed to help with ongoing management of rooftop garden	Rooftop Garden maintenance and instruction.
Farm Discovery type Program	Per student fee	Ms. Walker not needed.	
Teacher Lead Farm Tour	Free	Ms. Walker	A teacher led exploration at the Farm. No Farm staff required.

Appendix 3: Proposed Lesson Plans. The three lesson plans provided here work together to meet the following Prescribed Learning Outcomes, given by the BC Ministry of Education Home Economics Curriculum.

Grade 10:

Food Preparation Foundations

Safety and Sanitation

A1 - identify sources of food-borne illnesses (e.g., salmonella, botulism, E. Coli 0157:H7, staphylococcus, Hepatitis A) and apply appropriate preventative measures

Kitchen Basics

A3 - demonstrate the ability to accurately evaluate and follow a recipe using appropriate equipment and measuring techniques

A4 - identify various types of equipment used for food preparation

A5 - demonstrate organization and co-operation in partner and group work, including integration of planning skills (e.g., task sequencing, time management)

Function of Ingredients

A6 - compare like ingredients and how they affect nutrition, flavour, texture, taste, and quality of the product

Food Preparation Techniques

Food Products

B1 - apply cooking principles to prepare healthy dishes and meals, incorporating presentation

Methods of Cooking

B2 - use a variety of cooking methods to prepare food

Nutrition and Healthy Eating

C1 - demonstrate an understanding of the following nutrients and their relationship to healthy living: variety of protein choices, simple and complex carbohydrates, saturated, unsaturated, and trans fats, and micronutrients, including vitamins and minerals.

Social, Economic, and Cultural Influences

D2 - identify factors that affect food production and supply, especially in Canada today

Career Opportunities

E1 - describe food-related occupations and careers

Grade 11:

Food Preparation Foundations

Kitchen Basics

A1 - Identify sources of food-borne illnesses (e.g., salmonella, botulism, E. coli 0157:H7, staphylococcus, hepatitis A, Norwalk virus) and apply appropriate preventative measures

A5 - Demonstrate organization and co-operation in partner and group work, including integration of planning skills (e.g., task sequencing, time management)

Functions of Ingredients

A6 - Vary ingredients and methods in recipes to affect nutrition, flavour, texture, taste, and quality of the product

Food Preparation Techniques

Methods of Cooking

B2 - Use a variety of cooking methods to prepare food

Nutrition and Healthy Eating

C2 - Create nutrition plans within a specified budget for a variety of dietary considerations that meet recommendations from Eating Well with Canada's Food Guide

C3 - analyse individual eating practices as they relate to physical and mental well-being, food fads, and food myths (e.g., comfort foods, trendy diets, exaggerated claims about foods)

C4 - Identify ways to improve the nutritional value of recipe

Social, Economic, and Cultural Influences

D1 - analyse the effect of food marketing practices on consumer behaviour

D2 - Demonstrate an awareness of environmental and health issues related to the production and consumption of food

Grade 12:

Food Preparation Foundations

Functions of Ingredients

A1 - Analyse sources of food-borne illnesses (e.g., salmonella, botulism, E. coli 0157:H7, staphylococcus, hepatitis A, Norwalk virus, campylobacter, parasites) and apply appropriate preventative measures

A6 - Adapt ingredients and methods to create original recipes

Food Preparation Techniques

Food Products

B1 - Select recipes and apply cooking principles to prepare healthy dishes and multi-course meals, incorporating presentation and budgetary considerations

Nutrition and Healthy Eating

C1 - Apply principles from Eating Well with Canada's Food Guide and other reliable sources to analyse menus and make recommendations for particular dietary needs

C2 - Demonstrate an understanding of the importance of energy balance

C4 - Modify and test recipes to improve their nutritional value

C5 - Critique the use of additives and enrichments, use of pesticides, and nutrition and health statements about food

Social, Economic, and Cultural Influences

D1 - Analyse comparative costs of convenience, restaurant, and self-prepared foods

D2 - Analyse global and environmental health issues related to the production and consumption of food

Career Opportunities

E1 - Investigate food-related occupations and careers

APPLE LESSON PLAN**DAY 1**

Learning objectives facilitated by the UBC Farm Staff:

- To become aware of apple varieties and biodiversity among food crops
- The importance of pollinators and plant diversity in food production
- To connection food to farms
- To become aware of influences affecting our (limited) choices in food market

Suggested activities:

- Field Trip to UBC Farm Heritage Apple Orchard (Including a discussion based on learning objectives)
- Taste three apple varieties and complete the attached Taste Test Activity
- Discuss effect of pesticides in food and human health

Backup or additional activities

- Visit bee hives

DAY 2

Learning objectives facilitated by Ms. Walker:

- Analyze sources of food-borne illnesses in apple cider
- Apply principles from Eating Well with Canada's Food Guide
 - The nutritional benefits of apples to their health
 - Dietary fiber
 - Vitamin C, Vitamin A

Suggested activities

- Student presentation: pollinators
- Discuss: Nutrition, Food preservation methods such as pasteurization Nutritional benefits of Apples (Fibre, Vitamins A & C)

Backup or additional activities

- Make apple cider

DAY 3

Learning objectives facilitated by Ms. Walker:

- Work with different varieties of apples for healthy apple recipes
- Practice food safe skills
- Use basic kitchen skills

Suggested activities

- Apple and cranberry crumble
- Apple spiced muffin
- Whole wheat apple pie
- Apple Chips

Backup or additional activities

- Research recipes

Apple Taste Test Activity

Apple taste testing can help you distinguish between varieties. Describe which apples have the most flavour. Are there any unusual flavours or textures? Taste three apple varieties and fill in the table below.

Name:

Apple Variety	Physical Description	Texture	Taste	Rating 1-5 (1-Dislike, 5-Like)

PUMPKIN LESSON PLAN

DAY 1

Learning objectives facilitated by the UBC Farm Staff:

Basics of soil science

- Harvesting at the farm -- to understand the crops of the different seasons from the farm and how they can be made into cultural cuisines and cultural holidays; how they could be used for different recipes for seasonal dishes.
- Significance of the “Three Sisters” planting scheme.

Suggested activities

- Soil science lecture by farm staff
- Harvest pumpkins / other fall crops / the three sisters

Backup or additional activities

- Plant seeds for future crops

DAY 2

Learning objectives facilitated by Ms. Walker:

- Learn /present (student presentation) about food marketing, phytochemicals, nutritional myth busters, composting efforts at UBC, in Vancouver, and within Canada, the three sisters
- Meal planning strategies

Suggested activities

- Student presentations
- Prepare next day’s recipe, based on the crop harvested from day 1: research, ask teacher clarifying questions, prepare the ingredients that can be prepared for next day’s cooking

Backup or additional activities

- Nutritional videos

DAY 3

Learning objectives facilitated by Ms. Walker:

- Learn about composting process
- Meal planning strategies

Suggested activities

- Cooking -- cook according to recipes prepared from day 2
- Lessons on composting

Backup or additional activities

- Facilitate participation with a UBC farm project

CHICKEN AND EGG LESSON PLAN

DAY 1

Learning objectives facilitated by the UBC Farm Staff:

Grade 11 D2; Grade 12 C5, D2

- To visit the UBC Farm and learn about the complex food system in relation to nutrient cycling and food production
- To meet a live chicken
- To make a connection between poultry products used in cooking class to how they are produced
- To have an awareness of the different rearing methods used in commercial chicken industry with a discussion on the impacts (benefits and drawbacks) of these methods.

Suggested activities (see Table 1 for specifics).

- Tour of the UBC Farm
 - Lesson and discussion on chickens based on listed learning objectives
- Agroforestry Trail Walk: to contemplate over focus questions while the student walk to and from the UBC Farm

Backup or additional activities

- Observation of the UBC Farm and the surroundings (Lead by Ms. Walker)

Side note: Actual interaction with live chickens might not be allowed since chickens are currently a part of UBC research. To lessen the chickens' exposure to variables, minimized human interaction may be necessary.

DAY 2

Learning objectives facilitated by Ms. Walker:

- Learn /present (student presentation) about food marketing, phytochemicals, nutritional myth busters, composting efforts at UBC, in Vancouver, and within Canada, the three sisters
- Meal planning strategies

Suggested activities

- Student presentations
- Prepare next day's recipe, based on the crop harvested from day 1: research, ask teacher clarifying questions, prepare the ingredients that can be prepared for next day's cooking

Backup or additional activities

- Nutritional videos

DAY 3

Learning objectives facilitated by Ms. Walker:

- Learn about composting process
- Meal planning strategies

Suggested activities

- Cooking -- cook according to recipes prepared from day 2
- Lessons on composting

Backup or additional activities

- Facilitate participation with a UBC farm project

Appendix 4: Resources / Contacts

Title	Name	Phone	Email/web	Availability	Notes
Farm Coordinator	Gemma McNeil			m-f 9-4pm	To arrange any activities at the farm call Gemma
UBC Farm Manager	Mark Bomford		mark.bomford@ubc.ca	m-f 8-4pm	Can help arrange ongoing farm education
EYA	Environmental Youth Alliance (EYA)		www.eya.ca		Teacher resources available
UBC Apple Festival		604-822-9666	www.ubcbotanicalgarden.org/events/applefest.php	Oct 16-17 11-4pm daily	apple tasting, cider pressing, tours, etc.
UBC Farm Project Contact			http://www.landfood.ubc.ca/ubcfarm/project_menu.php farmteam@interchange.ubc.ca		email or look up site for info; re: UBC Farm Projects
Southlands Farm Manager	Jordan Maynard		SouthlandsFarm@gmail.com	varied	pumpkin patch, farm education, chicken workshops www.southlandsfarms.com
Egg Information and Recipes	Egg Farmers of Canada			internet	Egg related resources which helps to link farm and classroom activities

Appendix 5: In Season Food Calendar

January	February	March	April	May	June	July	August	September	October	November	December
						Apples					
				Arugula/rocket							
				Asparagus							
					Basil						
				Beets							
					Blackberries						
					Blueberries						
				Broccoli							
						Brussels Sprouts					
				Cabbage							
					Cantaloupes						
				Carrots							
					Cauliflower						
					Celery						
					Cherries						
				Corn							
								Cranberries			
					Cucumbers						
					Eggplants						
			Fava Beans								
								Fennel			
						Garlic					
							Grapes				
						Green Beans					
						Leeks					
				Lettuce							
					Melons						
		Mushrooms (wild)									
						Nectarines					
						Onions					
				Oregano							
				Parsley							
			Parsnips								
			Pea Greens								
					Peaches						
					Pears						
				Peas							
					Peppers						
					Plums						
					Potatoes						
						Pumpkins					
				Radishes							
					Raspberries						
				Green Onions							
				Spinach							
					Squash (summer)						
					Squash (winter)						
				Strawberries							
					Tomatoes						
					Turnips						
					Watermelon						
					Zucchini						