

Engagement of U.Hill Secondary Students at the UBC Farm

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LFS 450
UBC Food Systems Project
UBC Food Systems Project - Engagement of U.Hill Secondary Students at the
UBC Farm
Scenario 5 Team 8
April 8th, 2011

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Abstract:

A way to improve the sustainability of the UBC community food system is to strengthen UBC's relationship with its community partners. The main goal of this project is to initiate a relationship between University Hill Secondary School and UBC Farm. Based on interviews with various stakeholders and literature research on the existing foods education programs in North America, our team is confident that a relationship will be beneficial to both parties. Concern has been raised over children and youths' lack of knowledge on food systems and healthy eating. Furthermore, there is currently an increasing disconnect between youth and their outdoor environment and surrounding community. Once University Hill Secondary School moves to its new location in 2012 it will conveniently be within walking distance to the UBC Farm. The UBC Farm can act as an outdoor classroom for the students to provide secondary school students with food systems education and a connection with their environment and community. U.Hill is encouraged to incorporate the food grown at the Farm into its Food and Nutrition classes, and also students are welcome to sign up for volunteering positions at the Farm. Lesson plans are designed according to the Vancouver School Board Food and Nutrition class curriculum. The "Introduction to Food System" lesson plan serves as a preparatory lecture for the Spring Planting lesson, which will take place at the Farm. Suggestions for how other subjects can link curriculum to the Farm are provided. This project has initiated a link between U.Hill and UBC Farm and stakeholders are encouraged to use the information provided and to implement the recommendations it in ways that are most adequate to their programs.

Introduction:

The University of British Columbia is an important institution for academics, but also has responsibilities to enhance and work with the community in which it resides. The Land and Food Systems' *University of British Columbia's Food System Project (UBCFSP)* is an opportunity for students to apply their knowledge to an educational project centered on working with members of the community. The ultimate goal of these community based projects is improving the sustainability of the UBC community food system. Our community partners for the LFS 450 UBCFSP project were the UBC Farm and University Hill Secondary School (U.Hill). As senior undergraduate students in LFS 450 we have significant experience working with community partners and a broad knowledge of food systems that enabled us to act as informed consultants. Our involvement in building a connection between the Farm and the

neighbouring U.Hill Secondary School supports the University's overall goal of being a positive and active leader in the community.

The Farm, located on the South Campus, is a student driven farm, producing food through its market garden program and providing education and research opportunities. Education is a primary component of the Farm's mandate and the farm currently has programming geared towards younger children and university students and would like to create programs for secondary school students. Community is a key component of the Farm and as U. Hill will be a neighbour to the farm in 2012 the Farm would like to build a relationship with the school and students. Mark Bomford is the director of the Farm and was a primary contact. U. Hill Secondary School will relocate to the corner of 16th and Westbrook, conveniently situated within minutes from the Farm. The new school will house grades 9-12 and offer junior (9/10) and senior foods (11/12). Ellen Walker is the current Foods and Nutrition teacher at University Hill and was our other primary contact.

It is of rising concern that youth in Vancouver and across North America are lacking awareness around food systems and the basics around healthy eating (Bagdonis, 2009). While students are required to take home economics in grades 8 and 9 following this it is an elective, and classes may not take a food systems or sustainability approach to food education (VSB, 2007). In response to concern over youths' eating habits and lack of knowledge around food systems, agriculture and sustainability, many initiatives have been undertaken across North America, including within Vancouver. These initiatives range in scope from incorporation of farm produce into cafeteria lunches to trips to a local farm depending on the context (Bagdonis, 2009; FoodShare, 2011, Think&EatGreen, 2011, Coblyn, 2000). The Think&EatGreen@School Project is a Vancouver based initiative aiming to reform the current educational system to

include more ecological and environmental based perspective on food systems (Think&EatGreen, 2011). The underlying goal of the partnership between U.Hill Secondary and the Farm is to promote awareness in our youth and educate students to become conscious about food system fundamentals. The project with which we are engaged is in line with the goals of the local Think&EatGreen initiative and fits in with the larger North American movement towards food systems education in public schools.

Ellen Walker and Mark Bomford are both very busy with their respective jobs, and due to their time constraints it can be a challenge to develop a mutual understanding and vision of how this relationship shall proceed. The role of our group was to facilitate the development of a relationship between the UBC Farm and University Hill Secondary School in order to enhance the students' learning. We will provide recommendations on how student learning at the Farm can be incorporated into the Vancouver School Board curriculum to enhance both food systems education within the Foods and Nutrition class and to provide hands-on learning experiences for Biology and Geography.

Methodology:

Primary Research:

Interviews with stakeholders were conducted in order to assess expectations and needs of our stakeholders. Prior to beginning our research it was essential to understand what each stakeholder was hoping to accomplish through the development of a relationship between the Farm and U.Hill as well as what each stakeholder was able to offer the other in terms of time commitments and resources. The Foods and Nutrition teacher, Ellen Walker, was interviewed on February 1st, 2011 by three students at University Hill Secondary. Mark Bomford, director of

the Farm, was interviewed by group of 12 students on February 9, 2011 at MacMillan. The interviews were informally structured. We had a list of questions to ask but allowed for free flowing conversation and written notes were taken.

On March 18th 2011, three group members gave a short presentation to the Foods 9/10 class and to the Foods 11/12 class. A discussion was facilitated with the students on their knowledge of the farm and their potential learning interests at the farm. We acknowledge that these students are not necessarily those who will be at U.Hill once the programming links are made with UBC, however the students provide a sample of the age and demographic of students that the programming will be designed for. The goal of this interaction was to get a feeling of how much knowledge the students had of the Farm and of agriculture and food production in general and to gage their interest in possible learning experiences at the Farm. A secondary goal was to inform the students presently engaged in Foods and Nutrition of what sorts of activities occur at the Farm and ways in which they could get involved on their own if interested.

Secondary Research:

Secondary research was used to gain information from food systems education programs that have already been established and as source of information on curriculum development. The information we gathered from secondary research was relied on in the development of our lesson plans and informed the recommendations made to stakeholders. Secondary research was conducted using the UBC Library's journal database and the UBC Education Library resources. Web based searching was carried out and the websites of organizations that are already providing food systems and/or environmental education in public schools, as well as the Food to School organizations' sites were very valuable. When searching on line or library databases the key

terms searched were “food systems + curriculum,” “food systems + school,” “place based education,” “experiential education,” “school gardens + education,” “agriculture + curriculum”, “agriculture + education.” The curriculum objectives were taken from the online Vancouver School Board documents.

Findings:

Interview with Ellen Walker:

The Foods classes are separated into grades 9/10 and into grades 11/12 and curriculum can be designed for either group. The new school is scheduled to open in 2012 and will have a larger student body. The classes are 1.5 hours and programming should be designed to fit this time frame. The class has a lab component where students prepare food and there is potential for incorporating produce from the Farm, but the budget for food ingredients is very low and cost may be a barrier. The new school will have a cafeteria, Walker was unsure about who will be providing this service and whether there is potential for the Farm to sell to the cafeteria. The curriculum objectives for foods are very open and Walker is confident that a wide array of programming on food systems and incorporation of the Farm will fit with the objectives. Walker has her own units prepared for the year and is open to making links within her planned programming or incorporating new programing that is complementary. Some units that could be linked with programming at the Farm are a unit on vegetables, local/seasonal foods, fruit unit, Halloween party, food from around the world (global food system), and healthy eating and nutrition units.

Interview with Mark Bomford:

The Farm already hosts educational programming for younger children and would like to expand this programming to reach high school students. There is the potential for the teacher designing and implementing her/his own curriculum at the Farm, the potential for a Farm staff to design and run a program, or co-development. In order to facilitate a Farm staff led program we should inform the farm of the learning objectives to be met. It is also possible for farm staff to come to the school to lead an in class lesson if the teacher desires. In terms of cost there may be a small site fee for a teacher bringing a class to the Farm, and if a Farm staff develops and leads programming there will need to be a fee. Bomford is willing to do an initial year free to U.Hill in order to establish a relationship. Another possibility is for the U.Hill and the Farm is to jointly seek outside funding (such as grants) to establish a solid program for the future. In terms of providing produce, it is definitely possible to supply ingredients for cooking lessons and students would be able to partake in harvesting. In terms of cost Bomford is willing to match conventional retail prices for limited amount of class ingredients. If a class or group of students is committed, the Farm is open to donating a small plot for students to grow their own food for their cooking class. The Farm also invites U.Hill students to partake in regular volunteer programming and events at the Farm.

Interaction with U.Hill Students:

On March 18th, 2011, we had the opportunity to participate in two separate interactions with U.Hill students in Walker's Foods classes. During our first presentation to her grade 9 & 10's, we introduced ourselves, the Think&EatGreen project philosophy, and general information and activities available at the Farm. We were surprised at how many of the students had been to the Farm, their basic knowledge about what the function of a farm is, and what a farm produces.

All of the students expressed interest in using the farm as a teaching tool for their Foods class, especially by means of harvesting ingredients to be used in their cooking lab. It is encouraging to see the younger students' enthusiasm towards the farm as it is these students who will benefit from it once U.Hill moves to its new location. Our second presentation to the Foods 11/12 class informed the students of the goals of our project and introduced them to the Faculty of Land and Food Systems, to the UBC Food Systems Project and to the UBC Farm. Based on this interaction the students on average knew little about what happens at the Farm and few of the students had ever been to a farm. Students expressed interest in harvesting their own cooking ingredients and were unsure about what they specifically wanted to learn at the farm, but expressed interest in classes held at the farm. Based on the 11/12 students' limited knowledge of UBC Farm and of farming, the integration of the Farm into the program will certainly provide a new and valuable learning experience for many students. Furthermore, it will give the enthusiastic younger students an opportunity to have their interests incorporated into their learning and academic curriculum. Overall there was variation in the students' level of knowledge but there was definitely interest in having a connection with the Farm.

Findings from Secondary Research:

Through our secondary research we found that there is a plethora of organizations that work on providing education on some aspect of food to public schools in Canada and the United States (see Appendix 1). Farm to School (FTS) programs were found to be especially prominent. These programs focus on providing produce from local farms to school cafeterias to improve nutrition and educate students on food choices (National Farm to School Network, 2011; Foodshare, 2011). We are not designing a FTS Program; however many of the FTS

organizations had insight on the objectives of food systems education and ways to incorporate food systems education into the classroom as well as the cafeteria. Through our secondary research we found numerous organizations that have already designed food systems programming for either in a classroom, in a school garden or on a farm that was beneficial to the development of our lesson plans. Many of the organizations websites provided a resource and publication section with valuable information. There is far more information out there than we can convey in this report, therefore the resources we found to be especially applicable have been compiled in Appendix 1. We think they will be useful if our stakeholders wish to pursue further research or to use as reference.

Through our secondary research, we found that place-based education, school gardens, and similar hands-on and outdoor programs are positively correlated to students' learning processes, environmental attitudes and healthy eating habits (McAleese and Rankin, 2007; Sobel, 2004). Research has shown that school gardens are great place for enhancing academic instruction and student learning (Graham and Zindenberg-Cherr, 2005). Gardens can be used as an outdoor laboratory to teach ecology, biodiversity, how to grow food, and are a means of integrating subjects and curriculum learning objectives (Bunshu-Mooney, 2003). The UBC Farm provides an opportunity for place-based education and for hands-on/experiential education that can benefit U.Hill students learning processes and foster positive attitudes towards environmental stewardship. Many research findings highlight the benefits of school gardens on youths' education and attitudes towards food and nutrition and it is believed that student experiences on the Farm will have a similarly positive effects.

Discussion:

Interview Results:

The interviews with our stakeholders informed the direction and outcomes of our project. As we had expected the interviews made clear that a FTS program or a similar program would not be possible in this situation. The Farm is too limited in the amount and the season of produce offered and U.Hill is limited by budget and currently cannot afford to buy large amounts of organic produce. However it was learned that the students who take Foods classes have cooking labs and there is opportunity for incorporating the Farm's produce into these labs. Even if just a small amount of produce, it will raise awareness in students on local agriculture and the Farm and could be a starting point to a broader discussion on the topic. Secondly, the Farm grows unique varieties of produce not available in conventional grocery stores, which if incorporated into cooking labs, could open students' minds to the variety of foods grown. The students we spoke with expressed an interest in incorporating the Farm's produce into their labs. Therefore even though large amounts of the Farm's produce will not be incorporated into U.Hill foods classes, Bomford and Walker both agreed that the use of small amounts of select produce from the Farm in Foods classes is beneficial as it provides a way for students to learn about local food and agriculture.

From the interview with Walker it was gathered that she already has a lot on her plate both in terms of her teaching and extra-curricular activities with which she aids. Walker was very interested in incorporating the Farm into lesson plans but it did not seem like she had much time to be designing this curriculum. In the interview with Bomford it was stated that having farm staff leading programming for U.Hill students was a possibility. Based on this information and the fact that Walker is busy and is less familiar with farming than the Farm staff, we concluded

that it would be most effective for food systems/agriculture programming on the farm to be led by Farm staff. We therefore chose to develop one lesson plan that could be carried out in class by Walker and one plan for the Farm that is to be led by a Farm staff.

In our interview with Walker she described lesson units that are taught in the Foods classes. The units bring in many different aspects of food systems but there was no lesson explicitly on the food system itself. An introduction to food systems is an important starting point and it can then be easily referred back to during other units. Part of the Foods curriculum is teaching students to make informed choices about the food they eat, and part of being able to make these choices is understanding where your food comes from. There are two LFS 450 groups involved with this project and in an aim to prevent overlap, our group created a lesson plan designed for the spring term and the other group designed one for the fall term. Through our discussion with Walker's Foods students it was learned that few of them had ever been to a farm and were largely unfamiliar with what happens on a farm. Therefore trips to the Farm will provide new experiences for many students. The students expressed an interest in harvesting food to cook with but unfortunately there is currently much produce available at the Farm during the spring. The second LFS 450 group is incorporating harvesting into their fall lesson plan, therefore we chose to focus on planting. The Spring Planting lesson focuses on how food is produced, which is essential to an understanding of where food comes from and the implications of your food choices.

Lastly through our interviews with Bomford and Walker we realised that the Farm has such great diversity and not all of what can be learned at the Farm fits with the Foods and Nutrition Curriculum. Bomford is excited to work with the foods class but also expressed interest in having more than just one class use the Farm as a learning tool. For instance almost

half of the land is covered by forest, an area difficult to incorporate into high school Foods curriculum, but can be easily integrated into an ecology unit in a Biology class. Furthermore it was learned that Foods class is an elective and not all students take it. Therefore to maximize the learning potential on the Farm and to maximize the amount of students learning on the Farm, we chose to explore curriculum connections with other subjects.

Lesson Plans:

Increasing students knowledge of food systems, food diversity, and sustainable growing practices supports the fundamental aim of Foods and Nutrition 8 to 12 which “is to provide opportunities for students to develop the knowledge, skills, and attitudes that have immediate and future applications in their personal and family lives, as well as in local and global environments,” (VSB, 2007). Learning experiences at the Farm have the potential to positively impact both personal food choices as well as local and global environmental stewardship. The lessons plans we developed further illustrate these connections. The VSB curriculum objectives are divided based on five categories called the curriculum organizers. The tables we included with the lesson plans have the curriculum organizers along the top row and the body of the table shows how the lesson achieves certain objectives within each of the five categories. The curriculum organizers are the same for all grades of Food and Nutrition and for the high school classes there is substantial overlap in the learning objectives from grade to grade. The curriculum we developed fits both the objectives of the Jr. and Sr. Foods curriculum and the content can be tailored to the appropriate grade level by the Farm staff or teacher leading the lesson.

The Food System lesson plan and the Spring Planting lesson plan that our team designed specifically for the Foods and Nutrition class, provides examples on how U. Hill Secondary School can be connected to the Farm. The lesson plans are designed in ways that target the main objectives of both the Foods and Nutrition junior and senior classes. The lesson plans also complement each other by reinforcing materials learned in each lesson. The Food System lesson plan focuses on the basic building blocks of a food system and is lecture-based, whereas the Spring Planting lesson plan focuses on food growth and requires practical/active learning. We hope that by incorporating these two lesson plans into the curriculum, students will be more conscious on how to achieve a sustainable food system in their daily lives, and that their overall learning process will be enhanced by hands-on experiences at the Farm. For the detailed lesson plans and associated learning objectives, please refer to Appendix 2.

Inclusion of Other Subjects

Having access to a teaching tool like the Farm will benefit the education and overall learning experience for students at U.Hill. The teaching value the Farm offers extends beyond just a Foods class as its diversity of programs and amenities fits the curriculum of multiple high school subjects. Reaching the teachers of various subjects will broaden school wide participation and better allow us to reach our goal of strengthening the relationship between the Farm and U.Hill as a whole. By researching the Vancouver School Board's curricula, we found areas to incorporate the Farm into the Biology 11, Earth Science 11 and Geography 12 learning objectives. We hope that students will notice a reoccurring theme throughout their classes, which highlights the farm, environmental ecosystems, and sustainability. This will encourage their environmental stewardship and environmental literacy further beyond what they would have learnt in just a Foods class. Furthermore, hands on learning through field trips to the Farm,

creates diversity in ways students can gain their education. Frequent visits to the Farm will also raise awareness, participation and strengthen the overall relationship between U.Hill and the Farm.

Connection to Existing Programs:

The current education system is centered around structured requirements and appeals to measurements like standardized testing and curriculum with little regard for exploration or curiosity. These rigorous standards present themselves as barriers towards reforming the school system and curriculum to one that is more focused on experiential education. A new discourse surrounding school systems has been emerging with a shift towards an ecological based curriculum (Gruenewald, 2003). Creating programming links between the Farm and U.Hill fits in with this shift towards, or re-valuing of, ecological and experiential education.

Programs such as FTS, place-based education, and school gardens have shown to benefit students in various ways from academic improvement to eating healthy at home. According to the University of California, FTS programs integrate food services with instructional school gardens, school recycling programs, farm visits, and curriculum development to create a holistic, experience-based learning environment. A FTS program in Los Angeles has proven to be successful in addressing diet-related health problems and awareness in local agriculture (UC Davis 2006). Much of the focus was placed on activities that lead to health-promoting dietary changes (UC Davis, 2006). Even though we are not developing a FTS program, the incorporation of some of the Farm's produce into cooking labs and field trips to the Farm can have similar beneficial learning outcomes as FTS programs have proven to have.

Similarly, school gardens have been effective in promoting nutrition and socio-environmental education. Based on a study of sixth graders, the presence of a school garden

showed significant increases in vitamin A, C and fibre intake. This indicated the efficacy of using garden-based nutrition education to increase adolescents' consumption of fruits and vegetables (McAleese and Rankin, 2007). Although older students may be more difficult to influence a habitual diet change, this engagement would at least create awareness for personal health choices. With a school garden, educators were able to implement specific projects related to nutrition, environmental awareness, and community beautification (Bundschu-Mooney, 2003). One of the most frequent reasons for having or accessing a garden was for enhancement of academic instruction (Graham *et al.*, 2005). Principals strongly argued that resources such as curriculum materials linked to academic instructions, and lessons on teaching nutrition in the garden, would assist in the accomplishing educational goals in the garden (Graham *et al.*, 2005). Most important of all, it gave students a chance to experience cooperation, creativity and community service (Graham *et al.*, 2005).

Our objectives were similar to those of the programs just discussed. We have initiatives to engage U.Hill in educational activities at the Farm while enhancing their knowledge of nutritional health. As suggested in studies, our lesson plans incorporate classroom education with outdoor interactions at the Farm to integrate different subjects. The Farm could essentially function as a teaching nexus for the natural sciences, nutrition, history, social studies, and other subjects. The goals of the researched programs are to improve student nutrition, promote agriculture, increase awareness of health and nutrition through education, support local farmers, and build community knowledge. We hope to achieve similar goals through the creation of programming links between U.Hill and UBC Farm.

Recommendations:

Recommendations to Mark Bomford (UBC Farm):

We encourage the Farm to establish two complimentary programs to be offered to U.Hill. The Farm should design the programs to be specific to Walker's Foods and Nutrition classes. A staff member of the Farm, who has expertise on farming and food systems, should teach the programs to students during an organized field trip. The Spring Planting lesson has been designed for a Farm staff to carry out to ensure VSB learning objectives are being met. In addition to this, the Farm could develop a different program where teachers from U. Hill are able to access the Farm site and carry out their own lesson. This way, they are able to have more freedom in their lessons and will not need to be dependent on availability of Farm staff. Lastly, it is recommended that the Farm make their produce available to the Foods and Nutrition classes at affordable prices. This will allow Farm produce to be integrated into students' recipes. Not only will U. Hill be provided with prices that match produce prices from conventional grocery stores, they will be promoting sustainability through buying from local farmers.

Recommendations to Ellen Walker:

To enhance students' learning, our team recommends field trip(s) to the Farm. To prepare students for the field trip(s), the lesson on Food Systems should be taught in class as it includes important concepts that students need to be familiar with when at the Farm. It will also highlight connections to other units taught in class. As a start, two trips can be scheduled (one in the spring and one in the fall) so that the students can experience how seasonality has a role in food production. Walker is encouraged to use food sources from the Farm for the cooking

classes. Students will have the opportunity to experience how the food system works and how each stage affects each other (i.e. planting and harvesting, preparing meals using produce from the Farm, and waste and compost management).

Recommendations to Other Teachers:

As an approach to achieving our goal of strengthening the relationship between U.Hill and the Farm, we decided to link the Farm with the school in as many ways as possible. Instead of just making connections with one class (i.e. food from the farm integrated into foods classes) we felt that the diversity of the Farm can be extended to other subjects. Therefore we created a chart for the Biology 11, Foods 11 and 12 and Geography 12 teachers about how they can relate the diversity and strengths of the Farm into their subject's curriculum. Furthermore, we constructed a brief letter to these teachers explaining our project, its goals, and chart of recommendations. You can find both documents in Appendix 4. To ensure effective learning for U. Hill students, we recommend that various classes should implement "food security" and its related concepts into their curriculum, and these classes should be taught in ways that reinforce and complement each other.

Project Evaluation:

The interviews conducted with our stakeholders indicated that everyone involved was very eager to establish a relationship between the school and the Farm. Our group designed two lessons plans for Walker to modify and use as a basic format for her class. The lesson plans incorporated the required learning outcomes for her curriculum that could be used at the Farm. We compiled a list of resources that can be found in Appendix 1, to supplement and inspire

Walker's future lessons plans in relation to the Farm. Although there were many successes in our project, it is inevitable that challenges will arise. Our initial plan was to develop a survey to get a better indication of what the students at the school were interested in, and what their knowledge and attitudes were towards the Farm were. After some discussion, it was evident that this would not be the most useful way to spend our time. The approval from the ethical board would be a challenge and would not fit into our timeline. This idea was ruled out and instead our interaction with the students involved a casual and informal presentation to introduce them to the Farm. The presentation went smoothly and it was a positive experience for us to interact with the students and with Ellen Walker.

Overall our group agrees that interacting and learning in an outdoor environment like the Farm will be valuable for secondary students. We hope that Walker is inspired and comfortable bringing her class to the Farm and it was evident that there would be strong support from the Farm to provide resources and lead workshops

Recommendations to LFS 450 Students

Upon completion of the project our group developed some recommendations for future LFS 450 students and the following year's scenario. In order to reduce overlap and confusion, only one group should be assigned to this project. One of the main findings from our project revealed that both Bomford and Walker are definitely interested in developing a relationship. Therefore future students should focus on the actual logistics of carrying out the lesson plan at the farm and getting feedback from students, teacher and Farm staff. Perhaps students can lead the lesson plan we already developed and then evaluate its success. Subsequent groups can develop evaluation criteria for the success of lesson plans.

Conclusion:

The overall task of our UBCFSP was to facilitate the development of a relationship between the UBC Farm and University Hill Secondary School. Instead of creating one specific way to achieve this, our group instead compiled a variety of resources for both U.Hill and the Farm for each to utilize in the future. We hope our contributions provide the teachers at U.Hill with ideas on how to incorporate the resources of the Farm into their curriculum through our sample lesson plans, chart of recommendations, and list of academic resources. Moreover, by implementing our ideas into classes at U.Hill, we hope it will raise awareness to the students about the Farm, and encourage them to participate in volunteering or other activities available to them. This will achieve our goal of creating a symbiotic relationship that will yield positive benefits for one another. We would like to thank both of our community partners for taking time out of their busy schedules to meet with us and allowing us to share our ideas with them.

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Appendix 1: Resources for Teachers at U.Hill and the UBC Farm

I) Integrating Food Systems and Agriculture into Curriculum

FoodShare Toronto's Field to Table Schools program is working towards developing and integrating food systems curriculum into education.

<http://www.foodshare.net/school02.htm>

Think and Eat Green Project: A community based research project to address food security issues in Vancouver Schools

<http://thinkeatgreen.ca/>

Teacher Gram: Sustainable Agriculture Guides for Secondary Schools. Food systems curriculum integration resource developed by Lifecycles Victoria.

http://lifecyclesproject.ca/resources/teacher_gram.php

French Fries and the Food System: A year-round curriculum connecting youth with farming and food. A book by Sara Coblyn in conjunction with the Food Project organization. Excellent lesson ideas geared towards youth 14-16 years old and designed to be led on a farm. Available at the UBC Education Library.

II) Establishing a School Garden

Turning the Earth: a month-by-month guide to your school garden. Published by the Vancouver School Board, 2007. Available at the UBC Education Library.

Setting up and Running a School Garden: a manual for teachers, parents and communities. Published by: Food and Agriculture Organization of the United Nations, 2005.

Lifecycles: Growing Schools Program. Lifecycles is a food advocacy organization in Victoria, BC with a program that aids schools to establish gardens through hands on workshops.

http://lifecyclesproject.ca/initiatives/growing_schools/

School Year Gardens: A Toolkit for High Schools to Grow Food from September to June. By Paris Marshall Smith and Arzeena Hamir. Richmond Fruit Tree Project, BC, Canada, 2007. The Richmond Fruit Tree project is a food advocacy organization and this manual is especially useful as it is specific to the Vancouver region.

<http://www.phabc.org/modules.php?name=Farmtoschool&pa=viewdoc&cid=6>

III) Integrating Local Farm Produce into School Lunches (Farm to School)

Farm to School Salad Bar in BC. Sponsored by the Public Health Association of BC (PHABC). To date there are 26 Farm to School Programs in operation in BC and 18 more on the drawing board. This site provides info and resources on how to establish a farm to school program in your school.

<http://www.phabc.org/modules.php?name=Farmtoschool>

Foodshare Toronto Salad Bar Program. Foodshare is a food security organization in Toronto who is a leader in establishing salad bars in schools through their Salad Bar Program. They have published a how to set up salad bars in school manual available for purchase on their website.

http://www.foodshare.net/toolbox_salad01.htm

National Farm to School Web-Site of the United States: contains many resources on existing farm to school programs across the US.

<http://www.farmtoschool.org/index.php>

IV) Environmental Literacy in Education

Center for Ecoliteracy: carries out work around school gardens, school lunches, and integrating ecological principles and sustainability into school curricula. The Center offers books, teaching guides, professional development seminars, a sustainability leadership academy, keynote presentations, and consulting services.

<http://www.ecoliteracy.org/>

V) Agricultural Biodiversity - Environmental Farm Planning

An environmental farm planning fact sheet that focuses on how biodiversity can benefit farm productivity and contribute to long term sustainability. Also, it raises awareness and encourages consideration of wildlife and plants and their habitat where appropriate in farm management. In the same document shows eight agricultural biodiversity principles in an illustration.

http://www.al.gov.bc.ca/resmgmt/EnviroFarmPlanning/EFP_Refguide/2010_Documents/07_Biodiversity.pdf

Appendix 2: Food Systems Introduction Lesson

"Introduction to Food System" - For Food and Nutrition Classes:

Timing:

- Activity 1 = 35 minutes
- Activity 2 = 55 minutes

Staffing:

Food and Nutrition classes teacher

Goal of Lesson:

- 1) Students will gain a better understanding on how their food choices can have social, economical and cultural influences on the world

Lesson Plan Structure:

Activity 1: What is a Food System? (35 minutes)

- Teacher will show video to students: "What's Wrong With Our Food System"
- Students will have the opportunity to share their thoughts on what constitutes a food system by creating flow charts
- Teacher will summarize and give a generalized definition of food system
- Main concepts to consider: production (growing, harvesting, and processing) of food; consuming food products; waste management; food security

Activity 2: Defining Food Security (55 minutes)

- Before the day of class, students will need to pick 2-3 food items from home and write down where these food items came from (may focus on food item itself or main ingredients)
- On the day of class, teacher will divide class into small groups (4-5 students each group)
- Teacher will have copies of world map ready, and give one copy to each group
- Group members will write/draw food items on world map provided, then measure distance between food item origin and current location
- Each group will then complete questions:
 1. Which food item came from the farthest? Which came from a local farm?
 2. How did food travel?
 3. How does this affect the environment? The economy? Local farmers?
 4. Do you know how the food item is produced?
- Each group will share its world map and answers
- Teacher will summarize and give a generalized definition of food security
- Main concepts to consider: balance between social system, ecosystem, and the economy; AAAASS (Availability, Accessibility, Affordability, Appropriateness, Safety, Sustainability); effects on the current and future generations
- Teacher will conclude lesson with videos: "NASA | Science for a Hungry World: parts 1 to 6" and/or "Improving food security in West and Central Africa"

Student Assessment/Homework

- Students will do research on current food system, and ways to improve. Can pick a current food-related issue and discuss

Possible Sources for Lesson Materials

Videos

1. TEDxNextGenerationAsheville - Birke Baehr - "What's Wrong With Our Food System"
<http://www.youtube.com/watch?v=F7Id9caYw-Y>
2. NASA | Science for a Hungry World: part 1 to part 6
http://www.nasa.gov/topics/earth/features/ag_casts/index.html
3. Improving food security in West and Central Africa.
<http://www.youtube.com/watch?v=wAnPQZjipaM>

Table 1: Linking the Spring Planting Lesson to the Food and Nutrition Curriculum Objectives.
Across the top of the table are the VSB Food and Nutrition curriculum organizers and the italicized text highlights the learning objective being met within the category (VSB, 2007)

Food Preparation Foundations	Food Preparation Techniques	Nutrition and Healthy Eating	Social, Economic, and Cultural Influences	Career Opportunities
Food safety knowledge to reduce risk of food borne illnesses	Apply health and nutrition principles when preparing food	Be conscious about the nutritional value and content of food consumed	Analyze how local grown food items and imported food items can have effects on the economy and environment	Learn about the various career opportunities at different levels of food system - i.e. farming, Quality Assurance, Quality Control, health personnel
Increases knowledge in choosing appropriate food items that are affordable and safe	Ensure food safety by applying the appropriate cooking methods to various types of food	Knowledge on how processing may have effects on nutrients present in food	Aware of the human health-related and environmental problems that food production and consumption can induce	Careers in promoting healthy eating and the prevention of diseases associated with unhealthy dietary styles
		Be knowledgeable enough to enhance eating behaviour, while fulfilling dietary needs		

Appendix 3: Spring Planting Lesson

Spring Planting Lesson - For Food and Nutrition Classes:

Timing (class = 1.5rhs):

- Travel Time = 30min (15 min walk each way)
- On farm lesson time = 60 minutes

Staffing:

- UBC Farm Staff Leader: carries out lesson, who?? Cost??
- Teacher provides assistance to farm staff

Goals of Lesson:

- 1) To increase students understanding of the cycle of food production from seed – crop – harvested food – crop residues – compost using hands on and demonstration activities at the UBC Farm.
- 2) Relate different aspects of planting and growing food to the learning objectives of the Food and Nutrition class to broaden the students understanding of food beyond the kitchen classroom.

Lesson Plan Structure:

Activity 1: Composting (10 min)

- Kids will have collected compost from school to bring to the UBC farm with them to contribute to the UBC Farm
- Toss compost into the current feedstock bin
- Farm staff explains the multi-bin compost system and process and explains the importance of compost to growing food

Activity 2: Seeding in the Greenhouse/Seed Diversity (30 min)

- Students are taken to the seeding greenhouse, where there is sufficient room for them all to be seated (and cover from rain)
- Different dishes of seeds will be laid out with a list of plants written up on the board, students must try to figure out which seed is which plant
- Brief trivia game to test students knowledge on the diversity of foods for example:
 - How many varieties of apples exist? (7500) How many grown can you name? How many grown at the UBC farm?
 - How many different vegetables are grown at the UBC farm? How many varieties are grown?
- Pass some seed catalogues around for students to explore the many vegetables and varieties
- The farm staff will lead a discussion on the importance of seed and plant diversity to nutrition and food security, explain heirlooms
- Farm staff explains purpose of transplants, kids are divided into a few groups and each group plants one tray of something (depends on timing but could be squash, cucumbers, brassicas) for the farm

Activity 3: What happens to the seedlings? – Tour of the Fields (20 min)

- Students will be lead on a tour where farm staff explains the future of the seeds the students just planted

- Stop at the machinery to explain the role of the tractor and tiller in spreading compost and preparing beds for transplants or direct seeding
- Walk through the fields and explain how beds are prepared – what has to happen before transplant can go in the ground
- Discuss some of the links between UBC farms (organic) planting practices and the health of the food and the environment
- At some point in tour stop in one of the hoop houses with something growing and discuss the importance of green houses to food production
- Walk back up to the harvest hut and discuss the essentials of harvesting, cleaning and packing (mention food safety)
- Engage the students in a discussion on the benefits and draw backs of direct marketing
- Conclude with any final questions from students

Student Assessment/Homework

- Student must select their favourite food ingredient and do research on how it is produced, where it is commonly produced, where it is available for purchase, if it is seasonal, how many varieties there are (or species)
- Present research on above in combination with what they learned from the farm excursion in the form of a reflection/journal

Table 2: Linking the Spring Planting Lesson to the Food and Nutrition Curriculum Objectives.
Across the top of the table are the VSB Food and Nutrition curriculum organizers and the italicized text highlights the learning objective being met within the category (VSB, 2007)

Food Preparation Foundations	Ingredients, Food Preparation Techniques	Cooking Nutrition and Healthy Eating	Social, Economic, and Cultural Influences	Career Opportunities
<i>Learn principles of food safety at processing level – compliments food safety in the kitchen learning objective, cause of food borne illness can occur at all levels of the food system not just preparation.</i>	<i>Improved understanding of kitchen ingredients by understanding where these ingredients came from, where and how they grow and when they are in season in Vancouver</i>	Diversity of foods = diversity of nutrients being consumed which is part of <i>healthy eating</i> .	<i>Learn different marketing routes – purpose of direct marketing</i>	UBC Farm provides <i>example of job opportunities</i> in agriculture as well as in community/non-profit sector
	<i>Increased understanding of diversity of food ingredients through examination of seed diversity and diversity of varieties planted & grown at</i>	<i>Healthy eating</i> promoted by drawing connection between local and nutritious foods. Fresh harvested foods have higher nutrient content.	Link growing one's own food and local agriculture to broader <i>understanding of environmental and health issues</i>	<i>Learn planting skills/knowledge</i> that can be applied in a home garden situation

	UBC farm and other farms.		<i>related to the production and consumption of food</i>	
		<i>Link between healthy land, healthy food and healthy people is illustrated. What goes into our food goes into our bodies. (chemicals vs organic, soil nutrient levels)</i>	Link growing one's own food and local agriculture to food security and <i>foster a positive attitude towards sustainable agriculture.</i>	

*Lesson design informed by Coblyn, 2000, VSB 2007 and knowledge of UBC farm operations

Appendix 4: Letter to Teachers

Dear University Hill Teachers,

This document was created for you by six students from the University of British Columbia who are studying in the faculty of Land and Food Systems. Since January 2011, we have been collaborating with your school on a community-university project called Think&EatGreen@School. It is a research based program that is dedicated to improving children's eating practices and raising their awareness about food and environmental security. For our portion of the project, we were assigned the task of strengthening the relationship between your school and your future neighbour, the UBC Farm. We feel that your school and the Farm have the potential to provide each other with the tools to benefit each other in an advantageous manner. A way to achieve this is to connect the strengths of the Farm with the subjects offered at U.Hill through various methods. Relating the diversity and qualities of the Farm into multiple subjects' curriculum will familiarize the students with what the Farm has to offer. Furthermore we hope you will be able to use the Farm as a teaching tool, through hands on activities like planting and harvesting, or as guest speakers from the Farm in your classroom. Below you will find a table of subjects with ways to teach aspects of the Farm to fulfill the prescribed learning outcomes developed by the BC Ministry of Education. We would appreciate it if you utilize our suggestions and/or take them as general ideas to build upon.

In order to book a trip to the farm or for further information please contact the farm staff in advance, either by phone 604-822-5092, or via email: farmteam@interchange.ubc.ca

Sincerely,

Andrew, Chloe, Alison, Dennis, Adam and Eleonora

Subject	BC Ministry of Education Prescribed Learning Outcome	How learning outcome can be linked to the UBC Farm
Biology 11	<u>Ecology Unit:</u> analyze the functional inter-relationships of organisms within an ecosystem	<ul style="list-style-type: none">-Discuss relationships between soil, water, air and how they interact with each other at the UBC Farm-Educate students on how interactions within an ecosystem can positively and negatively influence growth, production, and maintenance at the UBC Farm-Explore the wildlife present at ubc farm (birds, small mammals, soil biota, etc)
Foods and Nutrition 11	<u>Nutrition and Healthy Eating Unit:</u> demonstrate an understanding of the importance of nutrients during various stages of the lifecycle	<ul style="list-style-type: none">-Explain timing of harvesting and how it relates to nutrient content of food

	<p><u>Nutrition and Healthy Eating Unit:</u> analyze individual eating practices as they relate to physical and mental well-being, food fads and food myths</p> <p><u>Social, Economic and Cultural Influences Unit:</u> analyze the effect of food marketing practices on consumer behavior</p> <p><u>Social, Economic and Cultural Influences Unit:</u> demonstrate an awareness of environmental and health issues related to the production and consumption of food</p> <p><u>Career Opportunities Unit:</u> investigate food-related occupations and careers</p>	<ul style="list-style-type: none"> -Discuss how growing and harvesting your own food can influence healthy eating habits and increase your mental well-being -Encourage buying local in as a social construct to increase consumer behavior -Promote the advantages to buying from the UBC Farm, ie: it decreases your ecological footprint, safe and pesticide free products, gives business to local farmers -Describe the health issues pertaining to the use of pesticides during the production of food -Highlight advantages and disadvantages to organic food -Explain organic food influences in the social and economic context (ie: price of organic vs non-organic, organic food as a trend) -Describe the benefits of having the occupation of a farmer, roles in the food system, advantages of providing people with food
Foods and Nutrition 12	<p><u>Social, Economic and Cultural Influences Unit:</u> analyze global and environmental health issues related to the production and consumption of food</p> <p><u>Career Opportunities Unit:</u> analyze career opportunities and prerequisites related to food production, service, and marketing</p>	<ul style="list-style-type: none"> -Discuss harmful effects of pesticides during the production of food on both environmental and human health (UBC Farm does not use pesticides, herbicides or fertilizers) -Discuss the role of genetically modified foods in the market (what they are, why there is a need for them, potential health risks, how they are produced, etc) -Highlight the opportunities related to becoming a farmer (may be best to have a guest speaker come and do a lecture on this)

Geography 12	<p><u>Themes and Skills Unit:</u> describe the major interactions of the atmosphere and biosphere</p> <p><u>Biomes Unit:</u> relate soil types to biomes</p> <p><u>Biomes Unit:</u> describe how vegetation adapts to environmental conditions</p> <p><u>Biomes Unit:</u> analyze the interactions between human activity and biomes, with reference to deforestation and soil degradation</p> <p><u>Resources and Environmental Sustainability Unit:</u> assess the various considerations involved in resource management, including: sustainability, availability and economic consequences</p> <p><u>Resources and Environmental Sustainability Unit:</u> assess the environmental impact of human activities, including: agriculture and waste disposal</p>	<ul style="list-style-type: none"> -Explore how soil interacts with the atmosphere, biosphere, lithosphere and hydrosphere -Use soil management on a farm as an example to illustrate these interactions -Use soil pit at the farm to explore soil properties and illustrate a soil type -Compare a forest soil to an agricultural soil to illustrate how different soils support different vegetation -Draw connection between seasonal and local food availability and environmental/climatic conditions -Explore 2nd growth forest to discuss timber and non-timber products of value and the effects of deforestation -Discussion the connection (conflict) between sustainable management and resource use (economics and environment) -Highlight the vast functionality of the Farm and the resources it has to offer (buying food locally is environmentally sustainable, food from the Farm is economically beneficial, unlike imported foods) -Discuss agricultural management practices that have a positive environmental impact (soil enrichment, land preservation, support biodiversity) -Have a guest speaker from UBC Farm to discuss composting and
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		<p>how it aids in waste management</p> <p>-Describe sustainability through the relationship between compost, waste and agriculture (ie: less waste and more compost equals more environmental sustainability)</p>
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