

UBC Social, Ecological Economic Development Studies (SEEDS) Student Reports

Interactive Web-based Resource of UBC-V Sustainable Foods System Initiatives

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Scenario 8: Interactive Web-based Resource of UBC-V Sustainable Foods System Initiatives



LFS 450 Land, Food, & Community III

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Abstract

The goal of the UBC Food System Project (UBCFSP) is to "protect and enhance the diversity and quality of the ecosystem and improve social equity" (UBCFSP Vision Statement, 2010). More specifically, the project focuses on the University of British Columbia's Vancouver campus community. Through our assigned 'Interactive Web-based Resource of UBC-V Sustainable Food Systems Initiative' scenario, our group was given the task of creating a web-based resource that can be accessible to the campus-wide community. After going through previous LFS 450 research and SEEDS database, and consulting with our community contact Andrew Riseman, we were able to compile a database of 52 sustainability initiatives present at UBC-Vancouver. Through this database, a web-based interactive blog was created, which included a Google map to act as a consolidated reference of all the sustainability initiatives on campus. Furthermore, we conceptualized two games to accomplish the objectives of our scenario: the Sustainability Crossword Puzzle and an iPhone App called, "The Amazing Sustainability Initiatives Race", or simply, "TASIR". We were unable to create the app due to lack of time and funding. Instead, we have outlined how to make an app and we have created a sample game of TASIR for future students to develop.

Introduction

With nearly fifty percent of our world's population living in urban areas, the urban culture has become more connected with technology and less with nature. People living in urban centers are disconnected with how their foods are grown and processed prior to being purchased. Using a web-based virtual environment of Google map and a blog, we are hoping to geo-reference sustainable food system initiatives on campus. The

blog will include a database linking users to information on numerous sustainable initiatives on campus, such as locations of sustainably constructed buildings, where to recycle your electronics, sustainable food outlets, and the UBC Farm. We are targeting the UBC community, including students, faculty, and residents.

One of our goals is to use technology as a tool to get people to interact with the natural environment. To accomplish this goal, we are proposing an iPhone Application (app) game that we call, "The Amazing Sustainability Initiatives Race" or "TASIR", which will require users to physically visit locations at UBC to learn about various sustainability initiatives on campus. Furthermore, we have created a crossword puzzle on our blog, which allows students and faculty members to become familiar with the sustainable initiative projects on campus. Thus, we hope TASIR and crossword games will assist in raising awareness and knowledge about existing and upcoming sustainability programs at UBC.

Problem Definition

Scientists are coming into agreement that modern societies and the institutions within them are environmentally unsustainable. The problems causing this, lie within the human population's disconnect with nature, food, and the ecological systems surrounding them. Over the past few decades, the advancements and widespread access to technology has shifted demographics and behavioural changes (UBCFSP Scenarios, 2010). UN experts have stated that the world's population is projected to grow from its current 6.45 billion to 8 billion by 2025, and possibly 9.1 billion by 2050 (UBCFSP Scenarios, 2010). Taking into account the world's urban population has increased nearly fourfold, from 732 million in 1950 to more than 3.2 billion in 2006 (UBCFSP Scenarios, 2010), the world

demographic has more humans living in cities than in rural areas (UBCFSP Scenarios, 2010).

The transition of populations towards densely populated cities has posed great risks towards the preservation of ecosystems that provide the clean water, food, energy and climate stability that all cities depend on (UBCFSP Scenarios, 2010). The physical shift towards urban areas combined with the psychological shift that has dissociated urbanites from the natural environment, gives a society confined to structured environments that have lost obvious and direct connections to the natural environment. One evident disconnect is the relationship people have with their food. People no longer fully grasp where their food comes from, what products and procedures are required to produce them, or the long-term health effects of their food choices (UBCFSP Scenarios, 2010). Consequently, the disconnect from the natural world has brought upon a greater problem in waste management. As our landfills continue to be overfilled, we as a society are becoming increasingly desensitized to our actions. Proper waste and recycling practices are neglected by many who no longer value nature's contribution to our society's existence. Moreover, with the ever prevalent technological improvements made available, the time people spend within virtually created communities are increasing dramatically - especially with every new generation.

However, rather than calling for the ban of technology, we are challenged to utilize a virtual environment as a tool to assist in increasing the quantity and quality of time spent with nature. The UBC-V food system initiatives are an excellent starting point to reconnect people with nature as well as raise awareness of food and waste system sustainability.

UBC represents a research institution that is committed to sustainability projects that help reduce our impact and reliance on the natural system. Moreover, the efforts of the university are being promoted, modified, and improved further by initiatives such as the LFS 450 UBC Food System Project. This program has been beneficial in assisting the achievement of our campus' sustainability goals. Since the projects have only benefited those involved in previous scenarios, it has been recommended that greater accessibility and availability of these initiatives be available to a larger audience, which is one goal our project will strive for.

Vision Statement

With diverse backgrounds, each member of our group provided various perspectives of the seven guiding principles of the UBCFSP Vision Statement. The Vision Statement provided a guideline for our group to recognize the potential barriers and complications that could arise while developing our interactive web-based resource.

The Vision Statement brought some debate on the balance between foods locally grown, processed and produced, versus foods that are ethnically appropriate. We felt as a group that these two statements contradicted each other. Is it possible to have adequately ethnically diverse food using food that is locally grown, produced, and processed? Since UBC must cater to a vastly multicultural population, it must face the difficulty of adhering to the goals of providing local, yet ethnically diverse foods. Simply put, some foods cannot be grown in this climate, which in turn limits our accessibility to it. For example, rice is a staple food for many cultures (and served at many food outlets on campus), yet we cannot find locally grown rice - even within Canada (NationMaster, 2010).

The definition of "fair prices" was also conflicting and ambiguous. For a socially and ecologically conscious producer or consumer, what determines the price of the goods? Moreover, what is fair? Most consumers purchasing goods from the market do not fully understand the time, costs, and techniques growers require to produce their goods. As society is driven by the market of consumer supply and demand, the definition of "fair prices" will continue to change for the consumer.

The Vision Statements regarding waste recycling and composting locally is in compliance amongst the group. We agree that recycling our waste and practicing local composting will reduce the garbage output that is causing overflowing landfills. The focus on decreasing our ecological footprint through this principle was strongly emphasized. Furthermore, our web-based project is in accordance with this guiding principle. We will try to promote the usage of compost bins available on campus and various methods of recycling objects, such as furniture, electronics , and printer cartridges.

The principle "Food brings people together and enhances the community", is a vision we hope will come through with this web-based project. By incorporating technology with the sustainable resource database and interactive games, we want to promote and educate people at UBC about cultivation, processing, ingredients and nutrition. By bringing the campus community together and educating them about the complexities of the food and waste systems, we can demonstrate to the greater urban communities the results of our "living lab" intervention.

Methodology

One of the first ways we began our project was by speaking with Andrew Riseman, our professor and one of our main contacts, in an informal interview. We discussed our ideas with him to create an interesting project that pertains to his vision, as well as ours. His vision of creating an iPhone app directed us to speak with Morgan Reid from the LFS Learning Centre. With Morgan, we discussed ideas such as how to make an iPhone app, how we can present our material in the form of a game, and other creative uses for our database that did not involve an application. Morgan also directed us to the iPhone Development Centre website for information on what is involved in app development. Here, we used the online tutorials to learn about the software and hardware used to develop apps, and the required background computer programming knowledge needed to build an app.

In addition to the research about the logistics of an application, we looked into already made applications, such as Yelp and Green Maps. To further our project, each member of the group searched the internet for resources that related to our proposal. We reviewed the projects and reports produced by previous students, which include: "Mapping Edible Food Places on the UBC Campus", "Discover UBC and Tree Tour '04-05: A Collection of Green Maps Fostering Campus Stewardship", "Sustainability Mapping", and "Edible Food Map".

Furthermore, our group researched the many sustainable initiative programs on UBC campus using the internet, and compiled our findings into one table. Some of the sustainable initiatives were found by using maps from past groups (i.e. The Edible Food Map), which we then incorporated into our own map. Only sustainable initiative

programs with addresses and edible food trees were put onto a Google Map (see Appendix 1). Using Blogger, we developed a blog and incorporated a crossword, our table of sustainable initiative programs, and the Google Map to present our gathered information (see Appendix 1). We created a Google doc for our database, which presents the information in Microsoft Word format, so users can copy and manipulate the data if they want.

As an interactive component for the blog, we created a crossword using the program Armored Penguin (Armored Penguin, 2010). We made clues using the sustainability programs we found. The puzzle would require students to look for the answers by using the map and database we created. The crossword puzzle was integrated into the blog (see Appendix 2).

Findings

Our group has collectively found 52 sustainable initiatives within UBC Vancouver that we compiled into the UBC Sustainable Initiatives Database (see Appendix 3). The database is presented as a table with two columns. The first column shows the address, contact information and webpage of that particular initiative. The second column includes a brief description of the program. The database contains initiatives ranging from sustainability programs, food outlets, and "green" buildings. Google map was used to showcase the sustainability programs from our database that had an address or a location. Edible food plants that our group collected from the report "Mapping Edible Food Places on the UBC Campus" by D. Bartley (2008), are also included in the Google Map.

Yelp is a social website that involves individuals who find, review, and discuss what is available within their specific region (Yelp, 2010). Green Maps is a system that uses mapmaking to promote sustainable community development (Green Maps Systems, 2009). These tools were researched because they contributed as guidelines for how we should layout our project. However, after much research, we discovered that Green Maps was rather complicated to use and difficult to find things on their mapping system. Yelp was a good tool when it came to finding local resources, such as food outlets and shopping malls, but it was not specific to certain programs, which made us question its accuracy of information. These applications gave us a more specific idea of what was lacking and what we should incorporate into our own application.

From our discussion, Andrew Riseman revealed his vision of having an interactive iPhone application to use on campus, which educates users on sustainability programs at UBC. He suggested integrating the "compass" function, available on the new iPhone 3GS, to create a program where users must interact with the natural environment.

Morgan Reid at the LFS Learning Centre gave us insight into the logistics of developing an iPhone application. For our interactive web-based game, he mentioned that a GPS program could be integrated into the iPhone application. He also advised us to collaborate with other people or students outside our class in developing this application. Since a respectable portion of people at UBC use iPhones, Morgan believes that an iPhone app has a potential for success. Morgan introduced us to the idea of using a GPS system in our game.

After much perusal of the iPhone Developer website, we found numerous guides on developing an app, such as the "iPhone Application Programming Guide", "iPhone

Development Guide", "iPhone Human Interface Guidelines", "Your First iPhone Application", "Learning Objective-C: A Primer", and "Xcode Build System Guide: Introduction" (iPhone Dev Center, 2010). After registering to be an Apple Developer, we discovered that a \$99/year fee was required to have full access to the iPhone Developer Programs required to build apps.

Discussion

One of the main objectives posed to our group by Andrew Riseman during our meeting was to create a database of sustainable food system initiatives at UBC. However, we did not want to limit our database to focus exclusively on the UBC Food System. We believe that choosing a broader focus to include all types of sustainability initiatives on campus would capture a larger audience. Furthermore, when one accesses our database for information on initiatives such as the ECO trek project, or the LEED (Leadership in Energy and Environment Design) certification of buildings on campus, the user will inevitably be exposed to the sustainable food system initiatives, and at the very least, passively acquire knowledge about them. Despite the broader focus of our database, we aimed to find initiatives that address the seven goals outlined in the Vision Statement For A Sustainable UBC Food System (UBCFSP Vision Statement, 2010). We have made our database available in Microsoft Word format using Google docs. Users can click on the link, which is found on our blog, to access the table. Anyone can copy and paste from the document to build on the database or manipulate it however they see fit.

A second objective of our project was to present our information in a web-based format. Given our level of technical knowledge, we decided that a blog was the most

manageable online medium to work with. Here, we posted our database in an alphabetized table format that included the name, description, and location of each initiative. One purpose of this online database is to serve as a "one stop shop" for sustainability initiatives at UBC. To enrich the user's interaction with the blog, we geo-referenced our information using a Google Map that was created specifically for this project. As a whole, our blog also serves as the foundation of the interactive component of our project. In addition, to our database and map, we have created a crossword using the sustainability initiatives as clues (see Appendix 2). Our crossword is an educational tool that will familiarize users with the sustainability initiatives at UBC.

A third objective of our project was to create an interactive tool that connects people to the natural world; to use the virtual environment as a tool to get people out of their constructed environments. This interaction must serve to reconnect people to nature and bridge the disconnect people have developed between their food - where it comes from, and what is needed to produce it. To meet this objective, our group envisioned an interactive iPhone application we call, "The Amazing Sustainability Initiatives Race" or simply, "TASIR". This game requires players to physically be in a location in order to receive hints to progress further in the game. It also incorporates the social networking platform, Facebook, to raise awareness for the game, and ultimately the sustainability initiatives at UBC. Due to lack of funding and computer programming knowledge, our group was unable to develop the iPhone app that we had envisioned. Instead, our group created a document on the basics of making an iPhone App, called "How to Make an iPhone App: The Basics" (see Appendix 5). We hope this document can provide useful information for future colleagues who are interested in iPhone app development.

The iPhone is a multimedia- and internet-enabled smartphone that is produced by Apple Inc. (Apple Inc., 2010). Currently, there are thousands of applications for the iPhone available for download from the Apple App store. iPhone apps are software applications that can be downloaded onto an iPhone (or iPod touch). Apple has incorporated numerous features into the phone that are available for integration into these apps. Features of interest include: Internet and Wi-Fi access, assisted GPS, built-in digital compass (3GS model only), a multi-touch screen user interface, and a virtual keyboard (Apple Inc., 2010). Over 50 million iPhones have been sold worldwide as of 2010 (Wikipedia, 2010). Morgan Reid from the Learning Centre estimated that approximately 15% of cellular phone users have iPhones, which is a substantial percentage of the population given the number of different mobile devices currently available (M. Reid, personal communication, March 3, 2010). Due to the iPhone's increasing popularity and recent drop in price (Apple Inc., 2010), developers continue to make apps for the iPhone, which include various educational tools and games. It may seem that choosing to develop an application specifically for the iPhone will limit our target population to iPhone users, but in fact, only one iPhone is needed to play TASIR. Groups of people can create a team and play the game together using one iPhone.

In order for TASIR to achieve its objective of getting people to physically interact with the natural world, it will take advantage of the iPhone's assisted GPS function and Wi-Fi access. At the start of the game, the players are given a clue about a location on campus that employs a sustainability initiative. This can be a restaurant, building, garden, etc. By searching our database on the blog using the iPhone, the players will determine this first location. Players must go to this location and be within a small radius (about 3

meters) of its programmed GPS coordinates. Only once the players are at the correct location will a second clue appear. This second clue will direct them to the next location, and so on. In the end, there will be 10 locations that the players must visit. Four times during the game a "Road Block" will appear before the group reaches their next destination. The Road Blocks will be a multiple choice or True/False question about different sustainability programs or facts related to the UBC Food System Project. The players must answer these questions correctly before they can progress further in the game. Once the players have completed the entire challenge, a prize, such as a coupon will appear. The coupon should promote companies listed on our database. For a detailed description of the game, please refer to Appendix 4.

Since TASIR is a race, the players will be timed from when the first clue appears, to when they receive their coupon. The game will be linked to Facebook, so players can choose to post their race time on their Facebook profile and/or "Share" the game with their friends online. The purpose of this is to foster competition among individuals to promote the game, which in turn, will get more people to go play the game and learn about and develop appreciation for the sustainability initiatives found on campus.

Recommendations and Conclusion

We as a community should not create conflicts as to which method of action is the most efficient in combating the central issues regarding our ecological footprint. Rather, we should work with what is available to us. We can use technology as a method of networking and educating our communities to further our goal of creating a more sustainable food system, thereby creating a more sustainable society. UBC is a strong example of a system that continues to expand its community while creating new

sustainable ways of living to decrease the impact we have on the world. Many of the sustainability initiatives created on campus deals with waste recycling, reducing usage of energy and resources. In addition, many of the food outlets at UBC use local produce grown at UBC farm. A large number of sustainable initiatives were compiled into a database and the information was applied to a map and crossword with hopes of increasing the awareness of our target group. Reflecting the goal of the UBC Food System Project, we created a theoretical web-based interactive game with the objective of connecting people back to the natural world and giving them the knowledge to recognize which aspects of the urban world can be sustainable.

As members of the faculty of Land and food systems, we are exposed to the paradigm of sustainability, food security and community. Many other students do not have this opportunity and thus, lack the knowledge of the many initiatives on campus. We believe that it is important for future colleagues to evaluate the awareness levels of these students by means of a survey or interviews and then brainstorm ways in which this knowledge can be passed on to the rest of campus including non-student residents. The target groups can be limited to students and faculty, but we believe that it is important to reach out to the rest of the community at UBC. It would be more effective to engage them in UBC's plan to keep the campus sustainable. It helps to make people aware of the projects going on and hopefully, gets them involved in sustainability projects such as the community gardens.

We recommend our future colleagues to pursue our aforementioned ideas of iPhone application games using the data we have already compiled. It may even be useful to make an event to "showcase" your app, or include the game into an event on

campus similar to Campus Chase. Promoting during Imagine Day or in the Ubyyssey, or even Metro and 24 Hours newspapers are efficient ways of reaching a large population. It may be of interest to initially use our already made blog and crossword to spark interests in the group as well as provide a basic knowledge of current projects on campus.

Future colleagues can also make an iPhone app like Yelp, which works by listing locations of specific categories (e.g. food locations) that are near the person. The reason we did not want to use Yelp is that it is a public domain where everyone can add to it. We want to make something that guarantees reliable and accurate information from reliable sources. The public will have access to it but only select members should be able to edit the information. In either case, making an app is relatively simple if one is familiar with computer programming language, but it takes time, so starting early is the key. It would be helpful to find someone who may already have an app program and understands computer language (such as a computer science student) to assist with the project. We found talking to Morgan Reid in the LFS Learning Center very helpful as he helped us take our ideas to the next level.

The database we compiled has over fifty sustainable programs, but anyone interested can copy it from the Google doc and manipulate it for their future projects. Using the database, one can include a virtual 3D map similar to Google street, rather than just a simple Google map. Another resource of interest could be:

<http://www.batchgeocode.com>, which can be used to make a map. It is an online program that helps you plot your map from a list of addresses you provide on an excel spreadsheet, which can speed up your map-making process. All of this information can be put into an "umbrella" UBC sustainable website so that a person has access with one

click of a button. UBC Campus sustainability office should add an accompanying link on their website so that the information collected by us can act as a table of contents for all UBC sustainability programs. This way, the information can be constantly updated and monitored by reliable sources.

It was amazing to discover the numerous sustainability initiatives at UBC. Not only have we learned about food sustainability projects but also about the numerous waste management projects available. Furthermore, we were introduced to numerous "green" buildings and projects that represent great achievements in the move towards creating a more sustainable campus. We are extremely proud and motivated to continue to learn about the many projects and hopefully one day be involved in them. The many innovations were inspiring and gives us pride that our campus is a leader and role model for the rest of the world.

Although we were unable to produce the iPhone app, we believe the information compiled will be a useful resource for future colleagues and other members of society. Even if iPhones become obsolete in the near future, our database can be helpful in creating other interactive educational tools using newer generations of technological media. Throughout this project we have learned numerous ways of presenting material. We hope that the resources we have created will contribute to UBC's effort in creating a more sustainable world.

REFERENCES

- Apple Inc. (2010). Why you'll love iPhone. Retrieved on April 8, 2010, from
<http://www.apple.com/ca/iphone/why-iphone/>
- Armoredpenguin (2010). Crossword Puzzle Maker. Retrieved on March 31, 2010, from
www.armoredpenguin.com/crossword
- Bartley, D. (2008). Map of Edible Food Places.
- Bartley, D. (2008). Mapping Edible Food Places on the UBC Campus.
- Flavin, C. (2007) "Preface" in State of the World 2007: Our Urban Future. New York:
Norton & Company.
- Hermansen, S. (200x). Sustainability Mapping.
- iPhone Developer Center (2010). iPhone Developer Program. Retrieved on April 8, 2010,
from <http://developer.apple.com/iphone/index.action>
- Miro, A., and Mason, N. (2004). Discover UBC and Tree Tour '04-05: A collection of
green maps fostering campus sustainability.
- Nationmaster. (2010). Rice Production. Retrieved March 28, 2010, from
[http://www.nationmaster.com/graph/agr_gra_ric_pro-agriculture-grains-rice-
production](http://www.nationmaster.com/graph/agr_gra_ric_pro-agriculture-grains-rice-production)
- The University of British Columbia Food System Project (UBCFSP) (2010).
- Vital Signs. (2007). Population Rise Slows But Continues. Retrieved December 10, 2007
from <http://www.worldwatch.org/node/5454>
- Wikipedia. (2010). iPhone. Retrieved on April 8, 2010, from
<http://en.wikipedia.org/wiki/Iphone>

Wikipedia. (2010a). Assisted GPS. Retrieved on April 8, 2010, from

http://en.wikipedia.org/wiki/Assisted_GPS

Worldwatch Institute. (January 2007). Cities Key to Tackling Poverty, Climate Change.

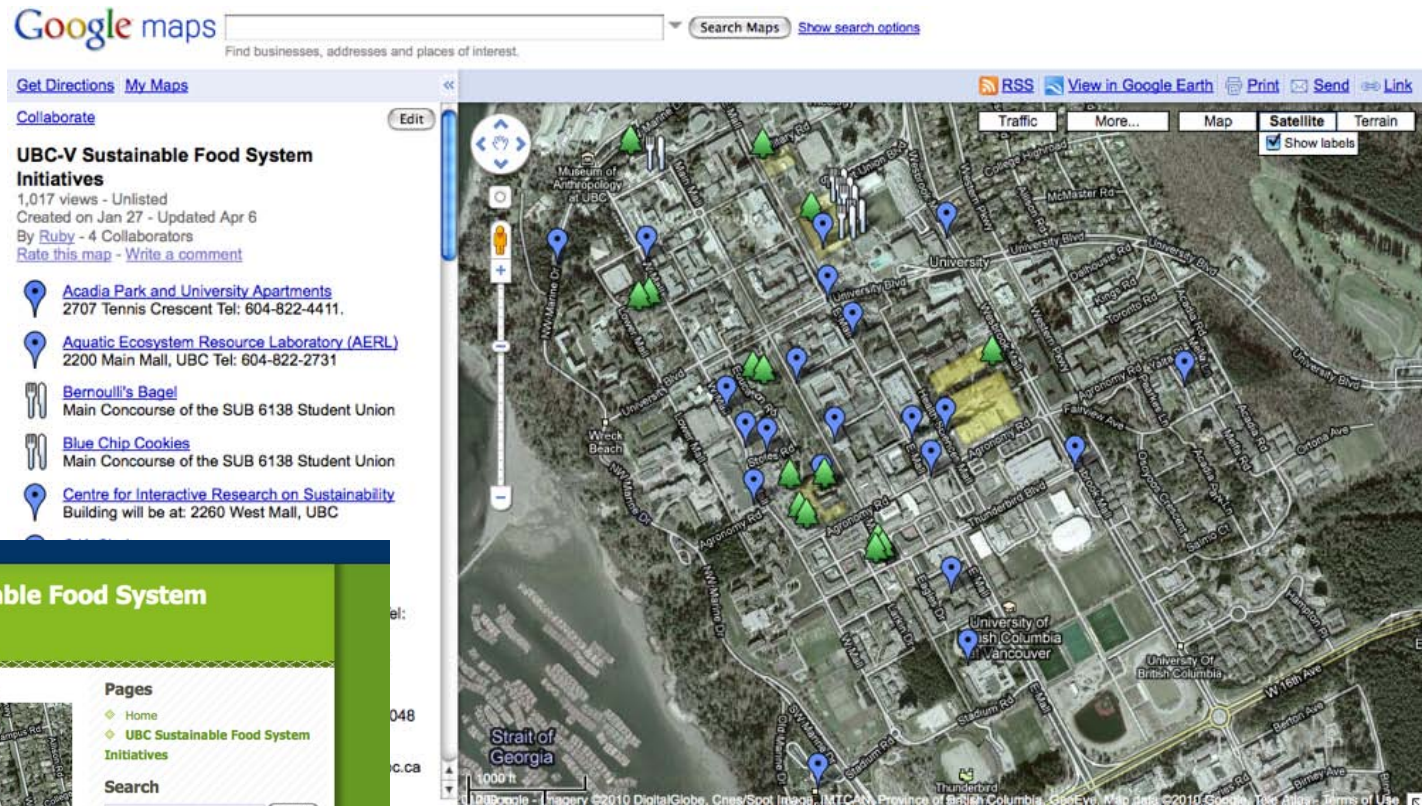
Retrieved December 6, 2007 from <http://www.worldwatch.org/node/4839>

Yelp. (2010). Yelp San Francisco. Retrieved April 10, 2010, from <http://www.yelp.com/>

Green Map Systems. (2009). Think Global, Map Local! Retrieved April 10, 2010,

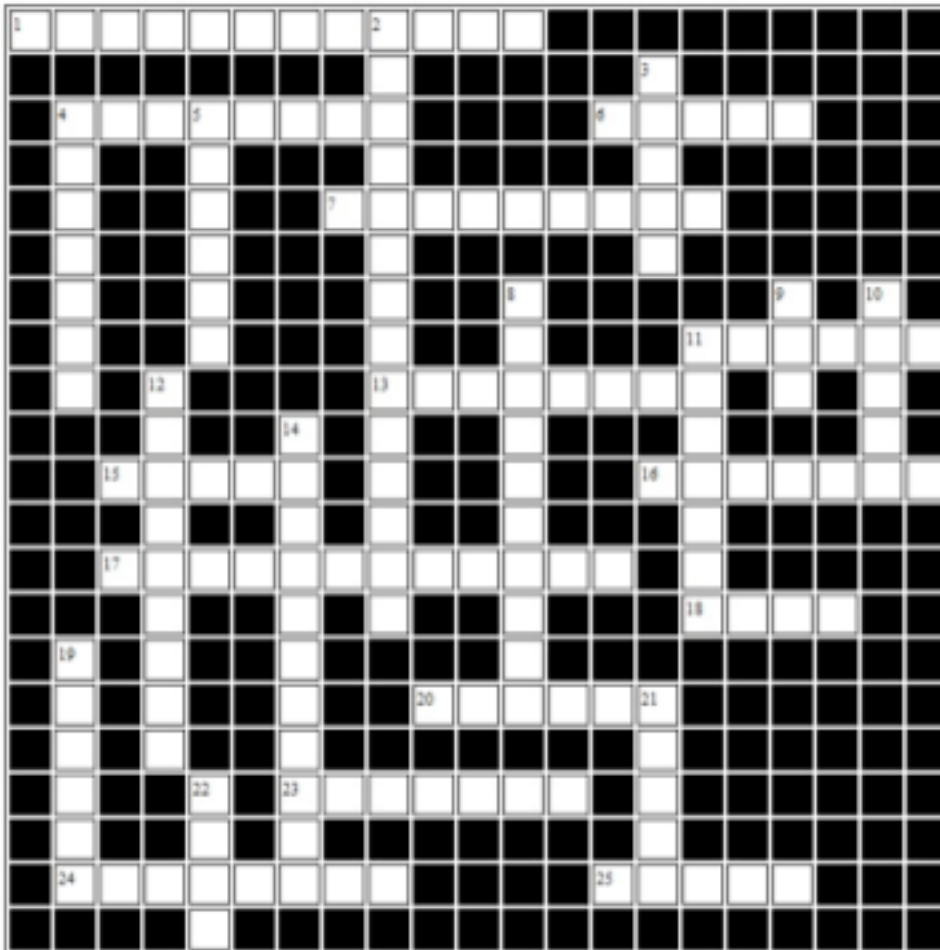
from <http://www.greenmap.org/greenhouse/en/about>

Appendix 1: UBC Sustainability Initiatives Google Map and Blog (available at <http://ubcsfsi.blogspot.com/p/ubc-sustainable-food-system-initiatives.html>)



Appendix 2: Crossword Puzzle

(available at <http://ubcsfsi.blogspot.com/p/ubc-sustainable-food-system-initiatives.html>)



Across

1. Fresh, local, organic produce can be found (2 words)
4. These animals help fertilize the UBC farm's soil and provide organic eggs
6. UBC _____ Management is responsible for the disposal of campus wide garbage and recycling
7. A garden at UBC used for plant research
11. Sustainability street is on _____ road
13. They sell 100% fair trade and yummy sinful goods (2 words)
15. Student run cafe in MacMillan
16. What is the green coloured garbage bins in the SUB used for?
17. 2010 Olympic hockey venue (_____ Thunderbird Sports Centre) (2 words)
18. The _____ bistro serves organic food from UBC farm

20. This UBC housing complex has open community garden plots available for its residents
23. Project to renew academic buildings to be more sustainable (2 words)
24. One type of composting at UBC
25. Second type of composting

Down

2. "My waste, My ____" program: A recycling program developed by UBC (6-across) management program
3. Of Guatemalan descent, _____ grow crops such as maize at the UBC farm
4. An old form of natural building that was prevalent in 15th Century England. A mixture of sand, clay and straw
5. Receive weekly fresh and local produce after subscribing to this (2 words)
8. _____ offers over 300 coupons to be used including UBC farmers market (2 words)
9. These food labels at AMS and UBC food services provide information on sustainable food alternatives
10. Academic programs for sustainability studies/initiatives
11. The fair trade products store that serves free lunch meals each Friday
12. Flower featured in April/May at the (7-across) garden
14. Summer Camp at the UBC farm-open to children aged 6-11 (2 words)
19. Asian building that was constructed using materials that are recyclable or recycled, including bricks from demolished buildings & wooden beams from UBC's Old Armouries
21. Fruit tree found in the Macmillan courtyard
22. Buzzers of the UBC farm

Appendix 3: UBC Sustainability Initiatives Database (<http://ubcsfsi.blogspot.com/p/ubc-sustainable-food-system-initiatives.html>)

No.	Sustainable Initiative	Description
1.	Acadia Park and University Apartments 2707 Tennis Crescent Tel: 604-822-4411. http://www.housing.ubc.ca/faculty-staff/r/m-acadia-u-apts	Residents at the Acadia Housing have the opportunity to engage with the local community through the available community garden plots. Residents who are interested simply have to contact please contact Carol Young.
2.	Aquatic Ecosystem Resource Laboratory (AERL) 2202 Main Mall Tel: 604-822-2731 http://www.fisheries.ubc.ca/	AERL was awarded the LEED silver rating. Uses natural ventilation, passive solar lighting and heating and uses natural materials and renewable wood.
3.	Bernoulli's Bagels Main Concourse of the SUB 6138 Student Union Boulevard Tel: 604-822-8806 http://www2.ams.ubc.ca/index.php/businesses/category/bernoullis_bagels/	Bernoulli's Bagel composts much of their vegetable waste, use local products whenever possible and recycle their paper and cardboard waste. They also offer discount to customers who bring their own mug or reusable containers.
4.	Blue Chip Cookies Main Concourse of the SUB 6138 Student Union Boulevard Tel: 604-822-6999 http://www2.ams.ubc.ca/index.php/businesses/category/blue_chip_cookies	Blue Chip Cookies sell 100% Fair Trade coffee and use compostable cups. Customers are able to save 25cents when they bring their own mug for the coffee.
5.	Centre for Interactive Research on Sustainability Building will be at: 2260 West Mall http://www.cirs.ubc.ca/index.php Contact: 445 - 2202 Main Mall Tel: 604-822-9376 http://www.cirs.ubc.ca/index.php	Opening in 2011, the Centre for Interactive Research on Sustainability (CIRS) aims to be the greenest building in North America. In addition to the use of sustainable construction materials and building techniques, the CIRS facility will also use natural sources of energy such as the sun, wind, and ground to facilitate the building's electricity, water supply, and etc. The CIRS research partners will include Simon Fraser University (SFU), the Emily Carr University of Art+Design (EC), the British Columbia Institute of Technology (BCIT) and NGO partners. Together, research programs will be created to find solutions in accelerating sustainability within the Lower Mainland of B.C.
6.	Chemical Exchange program http://www.hse.ubc.ca/safetyenvironment/hazardousmaterials/chemical_exchange_pro	The Chemical Exchange Program was developed to identify chemicals on campus that are no longer of use to the original user and divert them from disposal.

No.	Sustainable Initiative	Description
7.	C.K. Choi 1855 West Mall Tel: 604-822-4688 http://www.iar.ubc.ca/aboutus/theckchoibuilding/seeingwithneweyes.aspx	Composting toilets! With reused heavy timbers and reused red brick to name a few, this building is made from reused and recycled materials. This energy and water friendly building is a great example of how our buildings can be built sustainably in the future.
8.	CSA Box Program 6182 South Campus Road. Farm Centre Tel: 604-822-5092 http://www.landfood.ubc.ca/ubcfarm/csa.php	The Community Supported Agriculture (CSA) Program is a partnership between producers and consumers. The consumer pays the producer a set price and in return they are able to receive a weekly box of fresh and local produce. For more information, the 2009 UBC Farm CSA Box Program Details is available in a PDF file.
9.	Doug Mitchell Thunderbird Sports Centre 6006 Thunderbird Boulevard Tel: 604-822-6121 http://www.icerink.ubc.ca	Doug Mitchell Thunderbird Sports Centre was renovated from 2006 to 2008 that includes many sustainability features. As one of the arena that is used for 2010 Winter Olympic venue, Thunderbird Sports Centre serves as a model for future sustainability development.
10.	Ecotrek project http://www.ecotrek.ubc.ca/index.htm	The objectives of the ecotrek project are to renew academic buildings and to create a more sustainable campus by reducing water and energy consumption. Some improvements include replacing light fixtures with eco-friendly lights and censored switches as well as metering to monitor consumption in the buildings.
11.	Electronic Waste Recycling Program http://www.recycle.ubc.ca/ewaste.htm	An initiative to recycle electronic wastes which includes cell phones, monitors, television sets, video cassettes, keyboards, scanners, printers, and scientific equipment.
12.	Farm Wonders 6182 South Campus Road Tel: 604-827-4048 (voice mail only) http://www.farmwonders.ca/	The Center for Sustainable Food Systems at the UBC Farm introduces Farm Wonders Summer Camp for ages 6-11. Here, Farm Wonders 'campers' learn about the environmental awareness through science-based farm learning.
13.	Fred Kaiser 2332 Main Mall http://www.publicaffairs.ubc.ca/media/releases/2005/mr-05-111.html	The building is holds numerous sustainable features- solar-protectant ceramic window coating, automatic lighting system, passive ventilation and low-flow plumbing fixtures are just a few highlights that helps to decrease the annual greenhouse emissions of

No.	Sustainable Initiative	Description
		the building.
14.	Friends of UBC Farm http://www.ams.ubc.ca/clubs/friendsubcfarm/Site/Home.html http://www.landfood.ubc.ca/ubcfarm/farmblog/?page_id=34	The Friends of the UBC Farm is a UBC based group, incorporated through the Alma Mater Society (AMS) Clubs, but it is open to UBC students, faculty and community members. The main goal is to raise awareness about the UBC Farm and to educate members about the UBC community.
15.	Fun Camps http://www.fun camps.ca	Fun Camps is another summer camp offered to youth aged 10-15. FUN=Friends Uniting for Nature, and members learn about environmental leadership.
16.	Green Buildings http://www.sustain.ubc.ca/campus-sustainability/greening-the-campus/green-buildings	UBC Infrastructure Development's initiative in partnership with UBC Sustainability office. It is responsible for delivering cost effective, durable and sustainable buildings to support learning and research at the University. A major program UBC Renew renovates existing UBC infrastructure rather than demolishing the buildings. Tours can be booked through the website.
17.	Green Zebra http://landfood.ubc.ca/ubcfarm/market_garden.php	Green Zebra is Vancouver's only green living guide and coupon book. The Green Zebra book contains over 300 offers from partners like the UBC Farm. There are coupons for restaurants, cafes, markets, organic produce delivery services, spas, clothing stores, green home services, theatres, and more.
18.	Integrated Stormwater Management Plan www.planning.ubc.ca/plans_and_policies/infrastructure.php www.planning.ubc.ca/smallbox4/file.php?sb4ab9222917a95	This ongoing project involves the development of stormwater practices that will protect UBC's ecosystem. Final recommendation and adoption of this project was scheduled on autumn 2009.
19.	In-Vessel Compost Facility Site 6035 Nurseries Rd Tel: 604-822-9456 http://www.recycle.ubc.ca/compost.htm	In-vessel composting allows organic matter to decompose in a mechanized and fully enclosed vessel to produce products that can be used in gardens. Through this process, UBC can decrease the amount of waste that goes to the landfill.
20.	Land and Food System Orchard Garden West side of Macmillan Building 2357 Main Mall http://www.landfood.ubc.ca/people/orchard-garden	Located on the west side of Macmillan Building, the Orchard Garden is used as an outdoor classroom for those who wants to learn about small-scale urban farming and sustainable practices. Produces that are grown from the farm will be used at the Agora café and Agriculture Undergraduate

No.	Sustainable Initiative	Description
		Society's weekly barbeques.
21.	Life Science Building 2350 Health Sciences Mall http://www.publicaffairs.ubc.ca/media/releases/2006/mr-06-004.html	The largest building in Canada to receive the LEED Gold certification from the US Green Building Council. Used recycled materials and over 50% of the open area is restored with plants and 87% is from native and adaptive species.
22.	Liu Institute for Global Issues 6476 North West Marine Drive http://www.ligi.ubc.ca/	Liu institute conducts and helps research on global issues by combining knowledge into solutions and policy. It is constructed from materials from other buildings. The energy conserving features include natural air circulation and efficient heating and cooling.
23.	Local Organic Vegan (LOV) Program http://www2.ams.ubc.ca/index.php/student_government/subpage/category/eco_friendly_day/ http://circle.ubc.ca/bitstream/handle/2429/21219/Cho_Choi_Chondro_etc_SEEDS_Student%20Report.pdf?sequence=1	LOV is a lighter footprint menu line that helps to bring awareness on the impact of food choices. LOV products are available at many food outlets in the SUB and are promoted on Eco-Friendly day.
24.	Michael Smith Building 2185 East Mall http://www.michaelsmith.ubc.ca/	The Micheal Smith Lab is built on top of existing buildings to optimize land use and preserve open space, energy efficient lighting and high performance glazing.
25.	My Waste, My Responsibility program http://www.recycle.ubc.ca/Recyclingmain.htm	An initiative developed by UBC Waste Management Program to recycle paper, cans, bottles, and plastics. With special items which include office furniture and equipment, fluorescent tubes, batteries, plastic bags, wood, and metal.
26.	Pie R ² Main Concourse of the SUB 6138 Student Union Boulevard Tel: 604-822-4396 http://www2.ams.ubc.ca/index.php/businesses/category/pie_r_squared	Made fresh daily, the restaurant offers your standard favourites from pepperoni to Hawaiian pizzas to more adventurous varieties such as teriyaki chicken and potato n' bacon. The vegetarian and LOV options are available so keep an eye out for local choices!
27.	Residential Environmental Assessment Program (REAP) http://www.sustain.ubc.ca/campus-sustainability/greening-the-campus/residential-environmental-assessment-program	REAP is a rating system that is used to assess ecological factors on family housing projects at UBC. More credits are given to developers who achieved higher requirement on the seven key areas of environmental impact (sustainable Sites, water efficiency, energy and atmosphere, materials and resources, indoor environmental quality, construction, innovation and design process).

No.	Sustainable Initiative	Description
28.	Sage Bistro 6331 Crescent Road Tel: 604-822-0968 www.sage.ubc.ca http://circle.ubc.ca/bitstream/handle/2429/22911/Scenario04Group162008orgpaper_3.pdf?sequence=1	Sage Bistro is one of the food outlets in UBC that uses produce from the UBC Farm, when possible. This collaboration between the two organizations will lead to an increase in local food consumption.
29.	SEEDS http://www.sustain.ubc.ca/campus-sustainability/getting-involved/seeds	The SEEDS program brings staff and students together to work collaboratively on research projects and addresses 8 campus sustainability issues; air, water, energy, financial, food, human, land and materials
30.	Sprouts SUB Lower Level 6138 Student Union Boulevard Tel: 604-822-9124 http://ubcsprouts.ca/index.html	Sprouts is a non-profit student-run organization at UBC that depends on 100% volunteers. Sprouts strives to make local, organic, and fair-trade foods accessible to the UBC community. Some Sprouts products include: UBC Farm produce, Biota Farm Eggs, Café Justicia Coffee, bulk dried goods, and at the Sprouts Café, nutritious and vegan soups are served. To become a Sprouts member, a membership fee of \$1 is required and is valid until the end of the school year (April).
31.	Sprouts Boxes SUB Lower Level 6138 Student Union Boulevard Tel: 604-822-9124 http://ubcsprouts.ca/csa.html	Sprouts Boxes are offered by delivery through the AMS Bike Co-op. The boxes come with assorted local and seasonal produce that vary from week to week and are not customizable. Small boxes are \$15/week and large boxes are \$20/week for approximately ten weeks. Subscriptions require that students pay up front before deliveries begin.
32.	Sustainability Street Stores Road http://www.planning.ubc.ca/campus_design_public_places/featured_projects/sustainability_street.php	Sustainability Street will be the world's first closed-loop system of water recycling and reuse that integrates storm water management, wastewater treatment and ground source geo-exchange for heating and cooling of adjacent academic buildings. Recycled and re-used materials are integrated throughout Sustainability Street. The granite used in paving, water bars and weirs was retrieved from demolished portions of the Vancouver College of Theology
33.	Swing Space Building 2175 West Mall	The Swing Space Building uses natural ventilation and used reduced mechanical systems and energy usage.

No.	Sustainable Initiative	Description
	http://www.sustain.ubc.ca/pdfs/ar/0405CS0AnnualReport.pdf	
34.	Styrofoam Recycling Research Project http://www.sustain.ubc.ca/campus-sustainability/greening-the-campus/green-research-program	"The UBC Green Research Program facilitates the sustainable reduction of the University's research footprint through training, guidance and consultation, and recycling and recovery initiatives." The styrofoam recycling project is a pilot project developed by the UBC Brain research center to integrate a campus-wide Styrofoam-recycling system.
35.	Technology Enterprise Facility III 6190 Agronomy Road, UBC http://www.rjc.ca/cms/page1634.cfm	The 1 st LEED certified silver lining building which features dual-flush toilets and waterless urinals which saves more than 2.95 million litres of water. Also uses low flow fume hoods and energy efficient mechanical systems which saves more than 346000 kg of carbon dioxide per year.
36.	The Honour Roll SUB Lower Level 6138 Student Union Boulevard Tel: 604-827-5589 http://www2.ams.ubc.ca/index.php/businesses/category/the_honour_roll	Sushi, sushi and more sushi! There are vegan and LOV options available for students to enjoy and try out. This cost friendly food outlet is among the most popular restaurants on campus for those who want something quick.
37.	The Organics Collection Program 2329 West Mall Tel: 604-822-3827 http://www.recycle.ubc.ca/compost.htm	Compostable materials are collected by the UBC Waste Management in approximately 70 different locations. Once collected, the products are sent to In-Vessel Composting Facility and be made into useful products. A map of the 70 locations can be found here: http://www.batchgeo.com/map/?i=21511c87ab7bc9e1204112hab61d5eda .
38.	The Pendulum SUB Lower Level 6138 Student Union Boulevard Tel: 604-822-3411 http://www2.ams.ubc.ca/index.php/businesses/category/the_pendulum	A licensed open patio sit down restaurant located at the basement of the Student Union Building. It provides numerous vegan and vegetarian options as well as daily specials written on their blackboards. Fair trade coffee is also available for the students on the go.
39.	UBC Biodiesel Project #217-2216 Main Mall Tel: 604-822-1243 http://www.eya.ca/biodiesel/	The goal is goal to design, build and test an affordable community scale biodiesel processing facility which is financially self-sustainable and can supply Biodiesel fuel at a competitive rate. UBC Biodiesel Project also does feedstock, technical, financial, regulatory, quality control, engine testing and

No.	Sustainable Initiative	Description
		production process studies to aid small producers in getting started.
40.	UBC Bioenergy Research and Demonstration Project (BRDP) http://www.planning.ubc.ca/campus_design_public_places/current_projects/academic/articles267.php	In partnership with Vancouver-based Nexterra Systems Corp. and GE Water & Power, UBC Bioenergy Research and Demonstration Project will be the first North American demonstration of a biomass-fueled heat-and-power generation system. This \$26-million project will the university's natural gas consumption by up to 12 per cent and eliminate up to 4,500 tonnes of greenhouse gas emissions per year. In addition, this project will create new research and learning opportunities in upgrading the standards for bioenergy system performance.
41.	UBC Bookstore: No Sweat Policy 6200 University Blvd Tel: 604-822-2665 http://www.bookstore.ubc.ca/common/nosweat/ns_introduction.html	UBC Bookstore collaborates with Oxfam Canada and the AMS society in promoting a NO Sweat Policy. No Sweat Policy allows the UBC Bookstore to work with vendors that conducts fair labour practices, environmentally responsible and law abiding.
42.	UBC Botanical Garden and Centre for Plant Research 6804 SW Marine Drive Tel: 604-822-9666 http://www.ubcbotanicalgarden.org/	The UBC Botanical garden is a wonderful place to visit on a nice all year round. Not only are there exotic plants to see in every season but it is a place to learn and explore nature at its best. The garden is a place for plant research as well. It takes a minimum of an hour to walk through the garden and under the canopy. You can even bring some of the garden home with you.
43.	UBC Clean Energy Research Centre 2360 East Mall Tel: 604-827-4342 http://www.cerc.ubc.ca/	The Clean Energy Research Centre (CERC) serves as a facility where researches on sustainable energy are developed. Different partnerships were made between industry, academic institutions and governmental bodies that allows CERC to find sustainable solutions.
44.	UBC Compost Project 2329 West Mall Tel: 604-822-3827 http://www.recycle.ubc.ca/compostmain.htm	An initiative to reduce waste disposal through large and small scale composting. Currently there are two types of composting vermicomposting and in-vessel composting. Join the weekly tours on Thursdays from 1:30-2:30 through appointment 48 hours in advance.
45.	UBC Farm	The UBC Farm is a 24-hectare teaching, research and community farm located right

No.	Sustainable Initiative	Description
	6182 South Campus Road. Farm Centre Tel: 604-822-5092 http://landfood.ubc.ca/ubcfarm/	on UBC's Vancouver campus. The UBC Farm allows for field-scale production of food, fibre, fuel, and provides a range of ecosystem services to the campus. Programs at UBC Farm include UBC Farm Market, CSA Box Program, and Farm Wonders.
46.	UBC Farm Market 6182 South Campus Road. Farm Centre Tel: 604-822-5092 http://landfood.ubc.ca/ubcfarm/market_garden.php	The UBC Farmers Market offers fresh, local and organic produce. The produce is harvested either on the day of the market or one day in advance. In addition, all of the fruits and vegetables are grown right on the UBC Farm with no synthetic pesticides, herbicides or fertilizers. For more information, sign up on the UBC Farmer's Market email service and receive information on upcoming events and further details about the produce being sold each week.
47.	UBC Food Garden at the Botanical Garden 6804 SW Marine Drive. Tel: 604-822-9666. http://www.ubcbotanicalgarden.org/garden/food.php	A research and resource centre that grows a variety of vegetables, berries and fruit trees which can grow well in this region of BC and throughout the Pacific Northwest. It provides information such as small space pruning, types of fruits and plants to grow and training techniques. Some tropical examples such as Chinese gooseberries (Kiwi fruit) are increasing popular to visitors coming to the garden. The UBC Food garden contributes parts of its garden produce to local soup kitchens.
48.	UBC Renew http://www.sustain.ubc.ca/campus-sustainability/greening-the-campus/green-buildings	UBC Renew is a project focused on renovating existing infrastructure on the UBC Vancouver campus. The projects not only help save the research institution from extra construction costs, it saves millions of megajoules of energy, liters of water and kilowatts of electricity. Two main buildings that are completed include the Friedman Building and the UBC Chemistry Centre.
49.	UBC Trek Program http://www.trek.ubc.ca/TREKindex.htm	Do your part and cut emissions! UBC Trek Program is dedicated in promoting alternative and sustainable modes of transportation. With programs such as the U-Pass and Employer Pass Programs, End of Trip facilities for cyclists and an Emergency Ride Home program that are all helping to decrease emissions!
50.	U-Pass Program	The U-Pass Program is created through the partnership between Alma Mater Society and

No.	Sustainable Initiative	Description
	#110 – 2075 Westbrook Mall Tel: 604-822-2050 http://www.upass.ubc.ca/upass/upassabout.html	Translink in 2003-2004. This program enables many UBC commuters to use public transit as their main mode of travel, therefore decreasing the Greenhouse Gas Emissions.
51.	UBC Waste Free Initiative http://www.sustain.ubc.ca/campus-sustainability/greening-the-campus/ubc-waste-free	An initiative created to reduce the waste production in UBC community. Initiatives include regular printer cartridge round-up, deskside recycling, disposables, composting and litter at UBC.
52.	Water Sustainability http://www.sustain.ubc.ca/campus-sustainability/campus-themes/water	Another one of UBC's many themes is Water. As a campus surrounded by water, it is important to "achieve a positive net water system," by creating innovative ways to recycle and reuse water. The water returned to campus is used as clean drinking water as well as irrigation and heat for the buildings.

Appendix 4:

TASIR: The Amazing Sustainability Initiatives Race

Clue 1: This cookie café uses the L.O.V. (local organic vegan) labels for their food.

Blue Chip Cookies

Clue 2: This delicious Bistro on campus purchases organic herbs and salad greens from UBC farm.

Sage Bistro

Road Block: Answer this question correctly before proceeding to location 2:

This building, opening in 2011, aims to be the greenest building in North America

- a) C.K Choi Building
- b) Centre for Interactive Research on Sustainability
- c) Fred Kaiser Building

Clue 3: UBC's first green structure that features reduced water consumption, composting toilets, recycled building materials, and energy efficiency.

C.K. Choi Building

Clue 4: This fig-licious tree is found by a very "Long House".

Fig tree by the Longhouse on West Mall

Road Block: Answer this question before proceeding to your next location:

CSA stands for:

- a) Community Supported Agriculture
- b) Community Started Agriculture
- c) Community Sustainable Agriculture

Clue 5: This sustainable street will be the world's first closed-loop system of water recycling and re-use that integrates storm water management, wastewater treatment, and ground source geo-exchange for heating and cooling of adjacent academic buildings.

Sustainability Street

Clue 6: What is LFSOG? Go to this location.

LFS Orchard Garden

Road Block: Answer this question before proceeding to your next location:

True or False: CSA involves a partnership between the consumer and the producer. The consumer pays the producer a set price and receives fresh and seasonal vegetables and fruits each week ready to be picked up from a designated location. **ANSWER TRUE.**

Clue 7: UBC's garden for plant research, education, and conservation. Go there and have a botanical experience.

UBC Botanical Garden

Road Block: Answer this question before proceeding to your next location:

True or False: The UBC ECOTrek project involves rebuilding and retrofitting the infrastructure of current academic buildings on campus. *ANSWER TRUE.*

Clue 8: The UBC Farm is home to over 82 free range _____. Go find their home built by the Faculty's very own Dr. David Shackleton.

Chicken Coop

Clue 9: You can sign up for this annual event with your email to receive exclusive updates regarding produce vendors, growing seasons and food related events. Go to this location and buy yourself something tasty!

UBC Farm farmer's market

Clue 10: Here, kids aged 6-11 spend a week learning about the Wonders of the Farm during the summer. Go to the place where the kids learn how to garden!

UBC Farm's kids garden.

Congratulations! Here's a coupon!

Appendix 5:

How to Make An iPhone App: The Basics

Become a Registered iPhone Developer

- o Cost: Free
- o Register at <http://developer.apple.com/programs/register/>
- o Download the free software development kit, iPhone SDK
- o Have an Intel-based Mac and Mac OSX 10.5.5

Subscribe to iPhone Developer Program

- o Cost: \$99 plus tax
- o You will have access for one year
- o Subscribe at <http://developer.apple.com/programs/iphone/>

Be knowledgeable in the Objective-C programming language and become familiar with Apple's Cocoa framework.

Install the iPhone SDK on your computer.

- o The file should contain the Xcode program

Open Xcode to create project. Try to use one of the templates provided.

Build an interface using the visual development utility called the Interface Builder.

Add appropriate codes.

You can test your app with the iPhone Simulator.

Test your app further with a "test team".

- o To add testers to project, get Provisioning Profile from iPhone Program Portal.
- o Access to Program Portal is granted with iPhone Developer Program subscription.
- o Have project testers create and run testing scenarios for the app.

Code-sign the app by obtaining certificates from iPhone Program Portal (used in step 9).

Test it some more!

- o Use Xcode utilities to measure and tune the final app.

Load onto an iPhone or iPod touch and try out the app.

**For more resources and downloadable software, go to:
<http://developer.apple.com/iphone/index.action>**