

UBC Social Ecological Economic Development Studies (SEEDS) Student Report

**Fostering and Reinforcing Sustainable Waste Management Behaviour through Social
Marketing and Participatory Learning Schemes**

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AgSc 450 Group 21 Scenario 7

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Abstract

The UBC Food System Project (UBCFSP) assesses the current and potential sustainability of the UBC Food System by identifying barriers to its sustainable development. Our sub-scenario of the UBCFSP entailed looking at the lack of consumer awareness on campus regarding sustainable waste sorting and effective composting. Composting is vital to the health and sustainability of all food systems, as it ensures the continuity of nutrient cycling and promotes the health and ecological diversity of both the local and global environment. In order for UBC's composting collection to expand further, there is a dire need for an increase in composting awareness and a greater understanding of efficient waste sorting. We designed an event based on a participatory learning model that encompassed an interactive activity called "bin basketball". We further included visual attractions, a sample food system display, a bin location poster and a sign up corner, all in hopes to foster and reinforce positive waste sorting behavior here on campus and beyond. Common waste sorting mistakes observed from bin basketball involved many contaminant materials such as chopsticks, milk cartons and sushi boxes which were often thrown incorrectly into the composting bin. Conclusively though most participants agreed that they had learned a lot about sustainable waste sorting through our interactive activity and visual display. This type of participatory learning was surveyed to be more effective at reinforcing sustainable composting behavior than the use of print materials (i.e: reading a pamphlet or a brochure), and the bin locations poster and sign up sheet assured a sense of continuity in the new behavior. We highly recommend that future colleagues further improve and expand upon the existing participatory learning model to further educate the public about sustainable waste sorting. This interactive model could be held at many more outreach events such as Imagine UBC.

Introduction to the UBC Food Systems Project

Over the years and continuing, 6 generations of the Agricultural Science (AGSC) 450 class within the Faculty of Land and Food Systems at the University of British Columbia (UBC) have been conducting research for the UBC Food System Project (UBCFSP). This project is a “collaborative, community-based action research project involving multiple partners and collaborators” such as UBC Food Services, UBC Waste Management and the UBC Campus Sustainability office (UBCFSP handout). Its aims are multifaceted but can be generalized as: assessing the current sustainability of the UBC food system through an interdisciplinary perspective, identifying barriers to sustainable food system development, and articulating transitional opportunities that will guide UBC towards a more sustainable food system.

Our Scenario and Problem Definition within the UBCFSP

An effectively managed waste stream is an essential component to the sustainability of a food system. Specifically, our scenario entailed analyzing the sustainability of the waste stream behind UBC’s food system. Generally speaking, “increasing education, awareness, participation, and effectiveness in composting on campus” (UBCFSP handout) was the over-arching focus of our scenario.

“More communities are realizing that organic materials should be treated as resources rather than waste, providing the raw materials for the composting process” (Antler 1998). In 2004 UBC realized this and UBC Waste Management (UBCWM) purchased an in-vessel composter and built a composting facility that was the first of its kind at a Canadian university (www.recycle.ubc.ca). In 2004 UBCWM set up its organics collection program, involving the collection of pre and post food waste from a multiple of UBC departments and faculties. However a serious problem arose, termed ‘contamination’. This involved non-compostable items that were routinely contaminating the organics bins, such as glass, plastics, milk cartons and

kitchen utensils. These items are still numerous and problematic. Not only do these items obviously affect the quality of UBCWM's final mulch product, they decrease the effectiveness of the entire composting system, pose as a serious health hazard to the UBC Waste Management in-vessel site workers and remain a serious impediment to the organic collection program's expansion.

Thus the problem of contamination can be seen, but it is caused by our problem definition: there is a serious lack awareness on UBC campus regarding composting and effective waste sorting. This is of course evident by the quantity of contamination found in the organics bins. UBC students and staff make up the greatest portion of the campus population; they are the key demographic that needs to be reached, this will in time increase the use of organics bins while decreasing the quantity of contaminants in the bins, allowing room for the program's expansion. Thus, efforts must be taken to raise awareness among UBC students and staff about composting on campus and there are many theories on fostering sustainable behavior, which includes sustainable waste management behavior. As some studies have found limited success with conventional methods such as written materials or lecture style learning, the use of interactive activities in high student traffic areas has been proven to be more effective in promoting behavioural change, such as the proper use of green organics bins across campus (McKenzie-Mohr 1999).

Why Compost, a Local to Global Connection

Upon evaluating the serious concerns of contamination within UBC's composting program, our group decided to focus on UBC student and staff's composting knowledge and general waste sorting behaviour. Composting has many beneficial effects as it is the transformation of solid organic wastes into nutrient rich building blocks for soil, it basically doubles the life of any land (Minich et al 1979). It allows the earth's biological systems and

nutrient cycles to remain thrive in balance, as it is an input back into the system. Composting thus replenishes the food system, and allows for the higher quality and nutrient rich growth of food. Firstly, considering that a compost pile is a living community of diverse life forms; a complex interaction of yeasts, algae, fungi, viruses, protozoa and bacteria, compost nourishes micro-organisms, stabilizes the soil pH, protects the topsoil against erosion, offers drought protection, extends crop's growing season and lastly returns nitrogen back to the land. Aside from increasing the earth's biodiversity, compost also decreases the need of fertilizers and irrigation (Minich et al 1979). It is difficult to quantify the actual numerous contributions such a complex biological process as composting offers to a food system, but the BioCycle journal of composting, summarized it as so: the offset in energy consumption and reduced gaseous emissions (gases being, green house gases associated with a reduction in transportation of solid waste and landfill generated gases associated with a contribution to climate change) (Biocycle 2004).

Composting is vital to the continuity of UBC's sustainable food system as locally, it is creating a closed loop system where the final mulch product can be reintroduced into the UBC landscape. UBC annually has decreased its trips to the Vancouver Transfer Station by 54%, therefore drastically reducing its gaseous emissions (www.recycle.ubc.ca). As "the university is a microcosm of the larger community" globally, this resonated placing UBC as being a Canadian leader in sustainable waste management (Cortese and McDonough 2001). The Canadian waste sector alone generated 24.8% mega tons of carbon dioxide merely from landfill gas generation (Mohareb et al.2004). Locally composting can create a nutrient rich food system, while globally composting has the potential to localize food systems, and have a grandiose effect on reducing the speed of climate change.

Our Vision Statement

The importance of composting at both a local and global scale and UBC's accompanying issues of contamination are evident and therefore it is vital to divert of energy into understanding theories of fostering sustainable behavior through community-based social marketing (CSM). Social marketing is a term first introduced by Kotler and Zoltman meaning "the design, implementation, and control of programs seeking to increase the acceptability of a social idea or practice in a target group(s)" (Kotler, 1975, as noted in Bloom and Novelli, 1981). As a group, we envisioned and designed a social marketing scheme that involved a participatory learning component, which fostered sustainable waste management behavior. This took place in a high traffic location, the Student Union Building (SUB), during a sustainability mandated week called the UBC Responsible Consumption Week (RCW). We envisioned this interactive marketing scheme to be an effective and progressive strategy that would cause a higher and longer lasting degree of change than the usual written/conventional outreach materials (i.e: posters and pamphlets). Our interactive participatory learning method aimed to spread and reinforce knowledge of positive waste sorting behavior and further an understanding of the UBC composting system. It also intended to assure continuity in the new behavior by identifying green bin locations that are accessible within the different UBC communities.

Guiding Principles and Group Reflections

As a group of upper level students in the Faculty of Land and Food Systems, we all share a similar paradigm of working towards a more sustainable food system on campus that emphasizes aspects from all three pillars of sustainability: social, economic, and ecological sustainability. Our value system can be identified as the 'Ecologically Integrated' paradigm presented by Lang & Heasman (2004) this is simple due to the fact that we value the importance of natural biological systems (i.e:composting) as well as the interconnected symbiotic

relationships between each component of the system. We have prioritized this idea of environmental health into our strategy for promoting a change to sustainability minded behaviour. To this end we feel that the 7 guiding principles laid out by the UBCFSP are the perfect foundation for improvements to the food system. We feel that these principles do an excellent job of promoting ecological and social sustainability, while still accounting for economic feasibility by including issues such as affordability and fair prices.

Our group's primary focus was that of responsible and sustainable waste management on campus. We were fortunate to have one of the UBC Waste Management student coordinators in our group. This really helped us in focusing and defining our role in the UBCFSP. She provided us with added insight into what we as students, could contribute to the project. Our project focused mainly on two of the seven guiding principles:

2) Waste must be recycled or composted locally

4) Providers and educators promote awareness among consumers about cultivation, processing, ingredients and nutrition.

We feel that while these two principles are important guidelines for sustainable waste management, guideline number 4 could be further expanded to include the promotion of awareness of the waste products associated with things like food production. Our ideas on this principle are more in line with principle 6 from the Academic version of the guiding principles which states:

6) Fosters awareness, understanding and personal responsibility within the community of every component from production to disposal.

As a group we feel that awareness and education is of paramount importance when trying to promote responsible and sustainable waste management on campus. It allows the campus to act as a benchmark and role model for the surrounding communities. Our group believes that an additional guideline should be created to emphasize the importance of working with the

surrounding community, as well as promoting our institution as a role model for sustainable food production, consumption, and waste management.

The Waste Management Subsystem

The UBC campus produces large amounts of waste daily due to its population of 45 000 students, faculty, staff, and residents. Approximately 70% of the total annual waste produced on campus is classified as compostable and recyclable materials (UBCWm, 2006). To help divert the large quantity of compostable items from being sent to local landfills, an in-vessel composter was built on the southern portion of the UBC campus to collect compostable wastes from numerous locations across campus. Collection sites fall into one of two categories: 1. kitchen collection, and 2. post-consumer collection. Kitchen collection refers to the collection of food scraps directly from kitchens. Participating partners in kitchen collection include, but are not limited to: the UBC hospital, selected residences (Totem and Vanier Place), Ponderosa café, and 99 Chairs. On the other hand, post-consumer collection targets waste produced by consumers after consumption. The post-consumer collection sites can be found in areas such as the food court in the SUB and in other buildings across campus.

While the in-vessel composter is a definite step towards sustainable, on-campus waste management, there are still unresolved issues regarding contamination and the large volume of uncomposted compostable waste. Organic waste collected in the green organics bins across campus is transported to the in-vessel composter located at UBC South Campus. The organic waste is then loaded into a mixer where it is combined with carbon rich wood chips. This is the point where contamination becomes problematic. Contaminants can jam the mixer and must be removed manually by workers, these items can include steak knives, jagged glass and sharp plastics. The in-vessel can compost up to 5 tonnes of waste per day, but is not currently working at full capacity as the contamination stream is an impediment to growth (UBCWm, 2006).

Subjecting the organic waste to a large screening machine after the entire process is complete has aided with the quality of the final product, and was an obligatory purchase as the contamination stream was so dense. The sorting machine works by breaking down and removing large chunks of waste or contamination items. However, this does not entirely eliminate non-compostable waste.

Methodology

In an attempt to determine the current state of the UBC food system, we examined many pieces of literature, which included AGSC 450 papers from past groups related to our scenario. We reviewed the Sauder School of Business Marketing Report 2006 (Brown et al., 2006) for the UBC Food Services and various secondary literature such as resource material from the UBCFSP partners. We also studied the UBC waste audit paper written in 1998 to gain further insight into the issues surrounding our scenario (Felder, 1998). From the waste audit paper along with recent waste audits done by employees of UBC Waste Management, it was evident that contamination and fostering sustainable waste management behaviour were the main problems that needed to be dealt with.

In order to deal with the issue of contamination, consensus and cooperation guided our research design for a participatory learning model. This was applied and brought into effect at our event during the RCW, on March 22nd, 2007. In Cortese and McDonough's report on *Education for Sustainability, Accelerating the Transition to Sustainability Through Higher Education*, a university aspiring to foster sustainable behaviour would do so by changing from compartmentalized conventional learning and move onto bold experimentation in sustainable living. "The process of education [should] emphasize active, experiential learning and real world problem solving on the campus" (Cortese and McDonough 2001). The experiential learning model states that people learn and remember most by participation, where they are actively

engaged in an interactive game or are involved in a hands-on learning activity (Fudenburg, 1998). Thus, we have decided on utilizing community-based action research and social marketing to facilitate a long lasting behavioural change (CBAR). Not only does the CBAR encourage active engagement of research participants to promote the learning objectives, and it has also been shown to be effective among a wide range of participants (Stringer, 1999). We utilized a wide range of participants, our demographics being UBC students of all ages and faculties, UBC professors, high school students, community members and UBC staff. We have followed the guidelines outlined by Stringer (1999) for the design of our CBAR. The collective vision and action of our aims were the basis of our research methodology: to determine whether interactive teaching tools are effective in reaching the overarching goal of a sustainable food system specifically involving the fostering of sustainable waste management behaviour.

To assess the current situation dealing with composting, we spoke directly with UBC Waste Management and reviewed the UBC Waste Management website. We also carried out a pre-assessment by designing a tally sheet (Appendix 1) to keep track of current composting behavior/problematic trends at the composting station in front of Starbucks in the SUB. We conducted these observations, using stratified sampling one week before and after our participatory learning activity, in order to test whether our activity was successful or not. From our research we concluded that there is sufficient awareness regarding composting on campus due to the work done by previous AGSC 450 groups and UBC Waste Management, but the main issue was as predicted, the immense volume of contamination in the compost bins and the amount of potentially compostable items that were mal-sorted.

Our goal to increase education, awareness and participation of proper composting on campus led to the development of an interactive game called “bin basketball”. The goal of this game was to encourage participants to learn how to identify items that can be composted

compared to those which should be recycled, or disposed in the garbage. We chose 15 items and involved specifically those that are most problematic based on the contamination information gathered from UBC waste management and our previous tallys; this included: chopsticks, milk cartons, and a take-out sushi containers. We developed and devised rules for the game (Appendix 1b), and participants were required to sort through the items and throw them into the appropriate colored bins: green (compost), grey (recycling) and black (garbage).

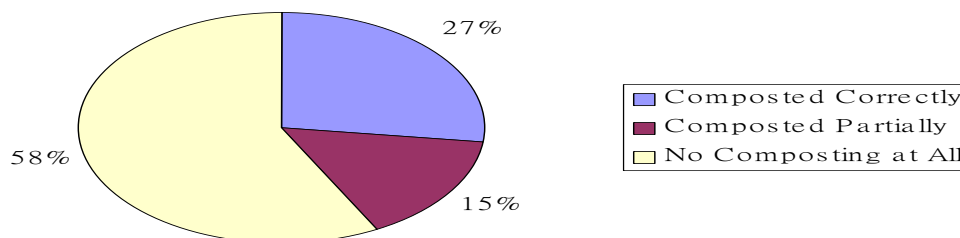
We set out to test our participatory learning activity in the SUB in order to gain access to people with a variety of backgrounds in composting and also to target people from different faculties as well as staff. The idea of this event was to test whether participatory learning works better than delivering pamphlets to teach people how to compost correctly. Our booth design gave each participant a chance to learn more about composting after they finished the game. Participants were first guided to a table with a sample of contaminated compost and a poster illustrating the correct bins for the 14 commonly encountered wastes. On an adjacent table, there was a bulletin board displaying pictures of the in-vessel and the different areas of waste management. We also created a map of UBC marked with all the compost bin locations on campus so participants could look up where bins are in the buildings they spend time in. This table also had a sign-up sheet for tours of the in-vessel, composting workshops, and bimonthly newsletters. Next in this step-by-step learning process, we had the bin basketball game, which allowed participants to learn about composting in an engaging manner. The participants were given 15 different items and had to throw them into the bin they felt they belonged in. We developed a tally sheet to keep track of the items deposited into each bin, which allowed us to determine which ones were particularly problematic (Appendix 2B). Following this was a survey (Appendix 1A), using convenience sampling, designed to test new knowledge after the game was played. Specific questions were asked in the survey to determine past and present

composting behaviour, and whether or not this game was effective at improving composting knowledge. At the end of the survey there were 3 true or false questions to test and reinforce the important learning objectives from the game. Once the survey was filled out, we rewarded the participants with gift certificates generously sponsored by AMS Food Services and Agora Eats. Participants were also entered into a \$100 shopping spree at the RCW. These prizes served as incentives for the participants to engage themselves with our activity and the prizes also showed our appreciation for their involvement.

Findings

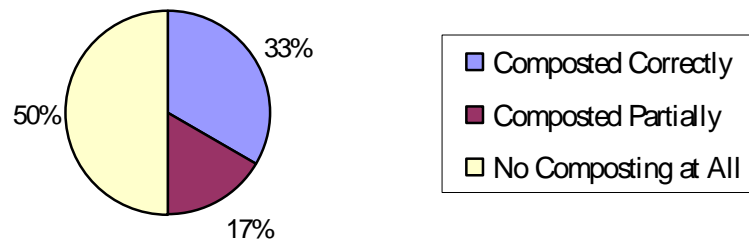
A sorting area consists of a compost bin, a recycle bin and a garbage bin. Results of pre-activity composting behaviour assessment found that 7 people composted correctly, 4 composted partially, 15 did not compost at all, and 2 people recycled (Figure 1). “Composted partially” represents subjects who attempted to compost, but did not compost correctly. The items that caused confusion for people who did not compost correctly included composting plastic utensils, plastic sushi containers, and milk cartons; all of which are not compostable. Paper cups and pizza boxes were the most compostable wastes that were not composted. The items that were recycled were a pop can and a plastic bottle. Many subjects did pause and think before placing their wastes in the different bins, but looked confused at the idea of sorting their wastes.

Figure 1. Pre-activity Sorting Behavior at the Sorting Station near Starbucks in the SUB on March 14th & 21st, 2007.



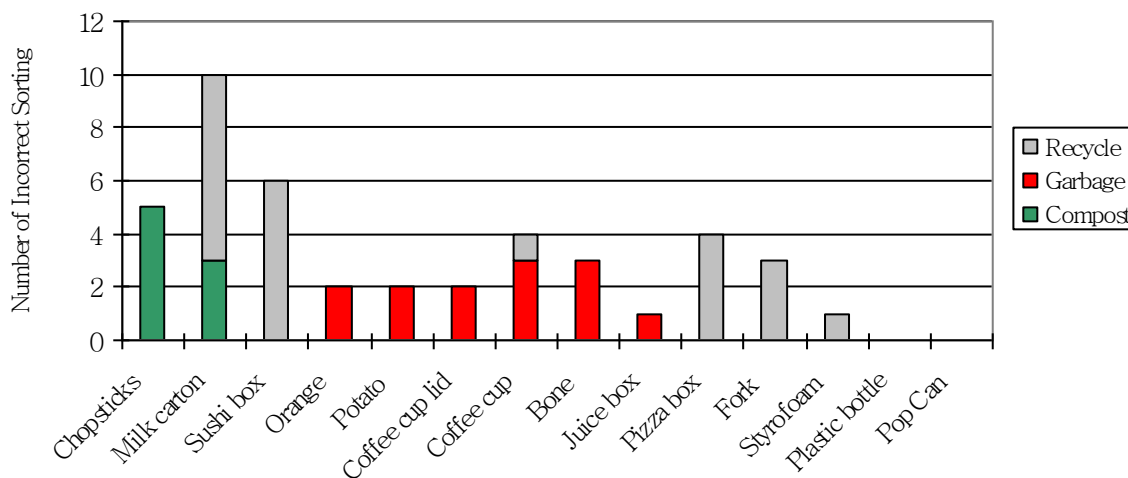
Results of post-activity composting behaviour assessment found that 4 people composted correctly, 2 composted partially, 6 did not compost at all, and 6 people recycled (Figure 2). For the subjects who composted partially, one did not compost a paper cup and the other composted a styrofoam take-out container. It must be noted that the subject who composted the styrofoam container did read the signs displayed above the sorting area, but still failed to compost properly. A pizza box, some napkins, and paper bags were thrown into the garbage bin instead of being composted. Recycling of glass bottles and pop cans were done by all who had those items.

Figure 2. Post-activity Sorting Behavior at the Sorting Station near Starbucks in the SUB on March 14th & 21st, 2007.



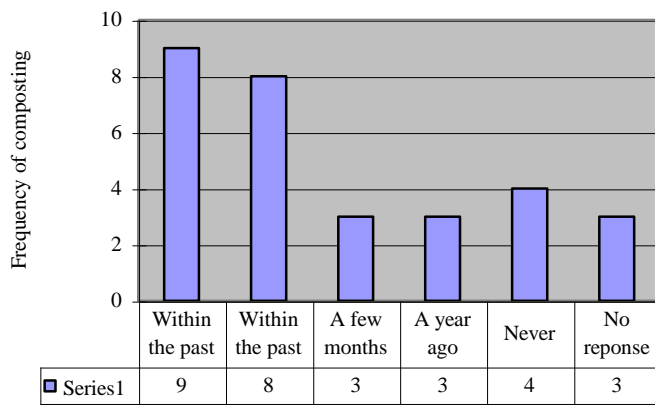
Results from bin basketball showed that the participants had the most problems with milk cartons, chopsticks and plastic sushi boxes (Figure 3).

Figure 3. Frequency of incorrect sorting by participants during bin-basketball. Bin type indicates where the item in question was incorrectly displaced. The plastic bottle and pop can were always correctly thrown into the recycling bin.



Post-game survey of the 30 participants showed that they all learned something new. Specifically, 37% learned that chopsticks are not compostable and 23% learned Starbucks cups can be composted (Appendix). Figure 4 summarizes when the participants last composted. Of the 11 participants who composted on campus, most composted at resident cafeterias and in the SUB (3 each), followed by MacMillan (2), Buchannon (1), Tim Horton's (1) and Woodward (1).

Figure 4. When the participants had last composted.



Comment on the Graph:
Probably don't need to actually list out the numbers underneath the graph since the whole point of the graph is to illustrate those numbers → i.e. #'s become redundant.

In the survey, participants were also asked to identify the location of composting bins. Only 9 participants did not know where any of the compost bins were located (3 of them were visitors). However, the rest could only name one or just a few of the compost bin locations around campus. Twenty-seven percent of participants knew of the location of at least one of the sorting areas in the SUB. Resident cafeteria (13%) and MacMillan (10%) were the other top responses from participants. One hundred percent of participants were willing to compost in the future and also agreed that the bin basketball activity was more effective at reinforcing composting behavior than from reading a pamphlet or a brochure. Sixty percent of the participants signed up after the game to receive more information on composting from UBC Waste Management. In the true or false questions (Appendix) nearly everyone answered the first two questions correctly (93% and 100%, respectfully) but just over half (53%) of the participants answered the third question correctly.

Discussion & Final Reflections

The general response to our event was quite amazing, and at times there were line-ups to participate in bin basketball. People were intrigued by our display, and drawn in by the bright posters and prize incentives. We were pleased to find out that once they knew the purpose of our event, people were still genuinely interested in participating and learning more.

All thirty people who participated in the interactive activity and followed up with the survey reported that they found the activity much more effective at promoting proper waste sorting behaviour than by merely handing them a pamphlet or putting posters up around campus. The game was not only fun, but it also allowed the participants to accept this behavior through their experiences. In general, they felt that by physically going through the waste sorting steps they would be more likely to remember what they had learned and increase their participation in composting on campus. Although this type of activity is more resource intensive and time costly than a poster campaign, we believe that the benefits strongly outweigh the costs. Even if we were not able to target as large a group of people through this, we feel that those people who did participate will be much more likely to use their knowledge and improve their waste sorting behaviour. In the end, we feel that successfully getting the point across to a small number of people on campus is more beneficial than having a large number of people slightly aware of the idea, but with no clear knowledge about composting and contamination.

From the survey results there were several recurrent areas that people were unsure of. The three main problem items which we identified before the event; chopsticks, milk cartons, and sushi-containers, proved to still cause confusion for participants. The majority of people did not know that chopsticks are not compostable due to the treatment and compressing of them. Plasticized milk cartons caused a lot of confusion for participants as well. People were torn between throwing the carton into the organics bin or the recycling bin, when it actually belonged

in the garbage bin. Moreover, plastic items such as the take-out sushi container and plastic forks caused problems. Although there was a poster above the grey recycle bin with numbers of plastic items that could be recycled, participants still struggled with this concept. They were generally confused about the numbering system, and some participants did not even know where to look for the numbers, leading them to misplace the sushi-container and plastic forks into the grey bin. Though our event was focussed on campus composting, it was interesting to note the confusion with plastic recyclables, and this could be an area to focus on in the future. Finally, we found that the coffee cup and pizza box were problematic items because many people did not realize that paper products are actually biodegradable, and with the in-vessel on campus we can compost these objects.

As with most events we encountered many individuals who stood out throughout the day. One woman came up to our display with a broken umbrella and asked which bin she should put it into, clearly not realizing that the bins were being used for a demonstration. Another woman was collecting bottles in the SUB and took one of the items from our demonstration bin to add to her collection. On the other hand, we had a few people who surprised us with their knowledge, interest, and appreciation for our project. A woman, who happened to work for Vancouver's Sustainability Office, was very impressed by the waste management initiative at UBC, and even referred us to McKenzie-Mohr's book "Fostering Sustainable Behaviour" to help us with our project. She was also keen to learn more about the initiative at UBC and how it could be expanded and built upon to include the surrounding area and the city of Vancouver.

The three true or false questions at the end of our survey were a way to test the effectiveness of the game at educating participants. They were also a means to reinforce the key points we wanted to highlight in the activity. The answers to the first two questions, one regarding plastic wrap and milk cartons, and one about Starbucks cups, were nearly all answered

correctly. This showed that people did learn from the game, and hopefully in the future they will know how to correctly dispose of these items. The final question, about composting meat and dairy products, however, caused some confusion. Nearly half the respondents answered this question incorrectly, reporting that meat and dairy could not be composted on campus. We believe that it was largely due to the wording of the question, as it was unclear that we were referring strictly to UBC's composting facilities. The in-vessel at UBC has the capability to breakdown many food items, such as meat and dairy, that would otherwise not be broken down in people's home composting bins. It is important to note the differences between campus and home composting systems and make it clear to the participants. This also reinforced the importance of careful survey and question design in order to eliminate response error due to confusion or bias.

The final way of auditing the success of our activity was the before and after observations of waste sorting. This was an attempt to see if there were any improvements in composting at the bin location near Starbucks in the SUB. Since there were only four pre-activity and post-activity audits in total, we did not see any significant changes in sorting behaviour. In order for this to be a successful method of testing the effectiveness of participatory learning activities, it would have to be carried out over a longer period of time, and at more waste sorting locations. If future students followed this idea and increased the duration of observations before and after an event, it could be a good way of evaluating the success of the campaign.

As a group we believe that interactive games are the most effective way to increase knowledge about composting on campus. We feel that the "bin basketball" activity and the display booth that we piloted at RCW this year should be used as a model for the type of activity that should occur more frequently at campus events. If waste management and future AGSC

classes can expand upon this model, there could be huge improvements with campus composting and waste-reductions.

Recommendations

Results from our participatory learning research indicated a high degree of success in the compost promotion campaign. Thus, it would be in the best interest of all stakeholders to continue and improve upon the proposed activity. The following recommendations have been tailored to suit each stakeholder to further reduce barriers to composting, while enhancing the benefits of composting.

UBC Waste Management:

UBC Waste Management could enhance compost promotion by having catchy visual displays around campus, especially next to compost bins and sorting areas, to remind the public about composting. Advertisements on bin locations are also essential.

- Brightly coloured, self-explanatory visual displays such as a poster should be exhibited at eye level (McKenzie-Mohr, 1999)
- The visual displays, especially the ones above sorting areas, should also have clear & concise statement regarding composting (ex. Get Caught Composting) and proper composting techniques
 - Improve communication on which items are compostable and which ones are not
- Publicize on-going improvement in composting around campus to make composting a norm (McKenzie-Mohr, 1999)
 - Ex. Make the “Soil Made Possible by UBC Compost” sign more visible, i.e. on tree trunks so sign is at eye-level

- Be involved as a sponsor for a variety of student events to increase exposure among the student body
 - Ex. Storm the Wall, Arts County Fair, Imagine Day
- Supply “Compost Me” stickers to be used for UBC Food Services and AMS Food Services (see below)

AMS Food Services

AMS Food Services could exploit the direct contact they have with customers to further consolidate commitment to behavioural change as suggested by McKenzie-Mohr (1999).

- While giving customers their orders, food services staff could remind them of the items that can be composted
- Also, items that can be composted could be marked with “COMPOST ME” stickers (supplied by UBC Waste Management) to remind customers to compost
- Customers could be asked to sign a “compost pledge” on a voluntary basis at the cashier counter to strengthen composting behaviour
- Purchase more “sorting areas” to make compost a norm; participants expressed the need for convenience.
- Do not put garbage bins next to sorting areas as customers are more likely to throw everything into the garbage instead of sorting the wastes
 - A step further: replace all garbage bins in the SUB with sorting areas

UBC Food Services

UBC Food Services is a generous sponsor of many student-run events. By imposing a “compost all compostable” mandate as part of a sponsorship agreement could enhance composting behaviour.

UBC Sustainability Office

- Emphasize the importance of *proper* composting
- Modify the UBC Sustainability Office website to make the URL link to UBC Waste Management more accessible
 - Ex. A strategic point to provide the URL link to UBC Waste Management is on the “What You Can Do Page” under “Conserve Resources”, right after the comment on how composting can reduce waste

Future AGSC 450 Students

Main goal for the future AGSC 450 students would be to exploit the potential of participatory activity to further educate the public about the importance of compost as well as proper composting.

- Increase activity exposure
 - Be involved in more campus-wide events (Ex. Storm the Wall)
 - Having the activity booth run on both days of the RCW
- Improve and build-upon the existing participatory activity
 - See “Discussion” for further details

To take composting a step further, future students can form liaisons with the City of Vancouver Composting Initiatives to educate people on how to compost at home as many people had expressed interest in at-home composting but lacked the knowledge.

- Familiarize with the City of Vancouver Compost Initiative:
<http://www.cityfarmer.org/paulcomp66.html>
- Educate the public on at-home composting

Conclusion

Our scenario entailed increasing education and participation in composting on campus in order to minimize problems such as contamination and lack of consumer awareness on campus regarding composting. In order to increase compost education and decrease the amount of contaminants being put into the organic waste bins, efforts were taken to raise awareness with students about campus composting. The importance of composting in both a local and global system, along with the hazard behind contamination is evident. Therefore, we felt it was vital to create theories of fostering sustainable behaviour through community-based social marketing and participatory learning. Responsible Consumption Week at the SUB was the perfect opportunity to test our “bin basketball” event and booth display. This event incorporated our vision of participatory learning and education towards campus composting. The overall impact of the event on the participants was very positive and demonstrated a positive reinforcement loop. Most agreed that they had learned more about waste sorting and that the bin basketball event was more effective at reinforcing composting behavior than conventional methods of learning and inspiring change. Recommendations to future colleagues undertaking this event include extending the period of time for auditing the success of our activity before and after our event, ensuring the follow-up survey is clear and understandable, and building-upon the existing participatory activity.

In conclusion, we believe that “everyday social practices are connected to wider social structures” and therefore fostering sustainable behaviour through interactive events are one of the most effective way to resonate knowledge about composting on campus and beyond (Blewitt 2006). The participatory learning model is vital in facilitating sustainable food systems, and the sustainability minded behavioural changes that need to be reinforced along with it. If interactive activities of this nature could increase in frequency at various UBC outreach events, the amount

of surveying, effective interaction and positive behavioural changes in sustainable waste management would increase tenfold. In the long term this would allow the contamination of waste stream to lessen and furthermore facilitate an immense growth of composting on UBC campus. A campus that is able to sustainably manage all of its pre and post consumer food waste through the positive waste sorting awareness of its community would be a pivotal step in UBC achieving a more sustainable food system.

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Appendix

Appendix 1

Compost Talley (BEFORE our event)

March 21st, 2007, 12:00-1:00pm @ Sorting Area next to Starbucks in the SUB

Composting Categories	#	Notes
Composted CORRECTLY!	5	People composted correctly
Composted PARTIALLY	3	People composted partially *1 person put plastics spoon and forks into the compost, 1 person put a sushi box into the compost, 1 person put milk carton into the compost
No Composting AT ALL	10	People did not compost at all *threw everything into garbage including compostable items
Other Notes:		people read the posters and looked really confused, and threw everything in the garbage, or wrong compartments

March 14th, 2007, 12:45 – 1:15pm @ Sorting Area next to Starbucks in the SUB

Composting Categories	#	Notes
Composted CORRECTLY!	2	People composted correctly *Composted: paper & paper plate
Composted PARTIALLY	1	People composted partially *Partially Composted: paper
No Composting AT ALL	5	People did not compost at all *Not composted: drink cup from A&W, paper straw wrapper, pizza box, paper cup
Recycled	2	*Recycled: plastic bottle & pop can
Other Notes:		Many people looked at compost bin, but also looked confused, so threw everything into the garbage next to the sorting area

Appendix 1A) Compost Comprehension Questionnaire

- 1) Name something new that you learned from today's interactive activity.
- 2) When was the last time you composted? If on campus, where was this?
- 3) Can you identify the locations of compost bins in the building that you spend most of your time in? **If not check out our bin locations map**
- 4) Do you think this type of interactive activity and surveying is more effective than a pamphlet or a brochure? Why or why not?
- 5) Are you honestly more likely to compost after this activity? Why or why not?
- 6a) Plastic wrap and milk cartons should go into the compost.

TRUE or FALSE

6b) Ideally you should drop your Starbucks coffee cup (lid not included) into a green bin not the garbage

TRUE or FALSE

6c) In the green bins on campus, all fruits, veggies and grains are allowed to be put inside, but not dairy and meat

TRUE or FALSE

Appendix 1B) Bin Basketball

When: Thursday, March 22nd 2007, as part of UBC's Responsible Consumption week.

Where: The UBC Student Union Building main pavilion on south side near the main entrance.

Goal: To raise awareness of green organics disposal bins on campus, and positively reinforce correct waste sorting behavior, through the use of an interactive public game.

Materials:

- Green Organic waste bin
- Garbage bins
- Grey Plastic recyclables and bottles/cans bin
- 15 items commonly found in any of the three bins to be used as projectiles to be sorted.

Procedure:

Each player looks at the Bin check list poster for 2 minutes, attempting to memorize the pictures and bin lists. Each player starts approximately 3 meters from their set of three bins, with their sort able items in a container in front of them. When they are told to start, each contestant picks up one item at a time and attempts to throw the item they have selected into the correct bin. The game ends when the player has finished throwing all of his items at a bin. Points are awarded for each item deposited into the correct bin; correct sorting knowledge are tantamount to winning.

Incentive:

Each participant will receive a food prize simply for participating, and the winner of the game will be entered into a draw for a chance at winning a 100-dollar shopping spree at the RCW fair, taking place in the SUB main concourse. The draw will occur on Friday the 23rd of March, 2007. Also there will be books, book marks, stickers, 5\$ and 10\$ ams food outlet gift certificates and 5\$ agora certificates.

Further Discussion:

After playing the game participants will be asked to answer a few simple questions to gauge knowledge and awareness of organic waste management on campus, and to gauge the effectiveness of the activity in improving awareness. This is were continuity and reinforcement of the behavior is prioritized. Direct players to the bin locations map, sign up sheet, display booth and food systems display according to their answers.

Appendix 2A

1) Name Something new that you learned from today's interactive activity

- Can't compost Styrofoam

- Starbucks is compostable X 7

- Contamination
- Pizza box is compostable
- Compost bins on campus X 2
- good waste sorter, meat and dairy
- Chopsticks cannot be composted X 11
- UBC has game, you guys are on recycling like a fat kid on Smarties
- Bones can be composted X 2
- Milk cartons are not compostable X 2
- Learned how to compost and sort waste X 4
- Sushi box is not recycled
- Have to pay attention to plastics X 5

2) When was the last time you composted? If on campus, where was this?

When?

- This morning X 4
- Lunch time X 3
- Yesterday X 2
- Within a week X 5
- Within a few weeks ago X 2
- Within a month ago
- Within a few months X 3
- Longer than 1 year ago X 3
- Never X 4

Where?

- SUB X 3
- MacMillan X 2
- At home X 5
- Residential cafeteria X 3
- Tim Hortons
- Woodward
- Buchanan
- Not on campus X 4
- Not in Canada X 2

3) Can you identify the locations of compost bins in the building that you spend most of your time in?

- SUB X 8
- Starbucks
- Residential cafeteria X 4
- Outside
- Tim Horton's
- Buchanan, knows some of them where his classes are
- MacMillan X 3
- Woodward by the food store place
- Yes X 2
- No X 6
- No, visiting X 3

4) Do you think this type of interactive activity and surveying is more effective than a pamphlet or a brochure? Why or why not?

- Yes, gets people involved
- Yes, more fun X 5
- Yes, more interactive X 2, reinforcing positive sorting behavior
- Yes, visual display and location map
- Yes, forces person to learn through experience X 4
- Yes, people learn better X 2
- Game - can sort properly
- Yes, it is very helpful X 2
- Yes, learn in play manner
- Yes, more likely to remember X 3
- Yes, better than pamphlet because I wouldn't read them X 8
- Yes, of positive knowing of things and the cookies
- Yes, make us go thru all steps before game

5) Are you honestly more likely to compost after this activity? Why or why not?

- Yes, know where bins are X 2
- Only if this project managed to get more bins on campus
- Yes X 10
- Building doesn't have bins to get compost
- May be a little
- Yes, because now I know X 4

- Yes, more aware X 3
- Out at fence - may be when I moved out
- If see compost bins, will use it
- Yes, this helped to know where things belong
- Yes, already doing it X 5

6a) Plastic wrap and milk cartons should go into the compost

TRUE 2 FALSE 28

6b) Ideally you should drop your Starbucks coffee cup (lid not included) into a green bin not the garbage

TRUE 30 FALSE

6c) In the green bins on campus, all fruits, veggies and grains are allowed to be put inside, but not dairy and meat

TRUE 14 FALSE 16

Appendix 2B

Compost Talley at the Game (Numbers indicate frequency of incorrect sorting)

	Organic	Garbage	Grey bin	Total
Chopsticks	5			5
Milk carton	3		7	10
Sushi box			6	6
Orange		2		2
Potato		2		2
Coffee cup lid		2		2
Coffee cup		3	1	4
Bone		3		3
Juice box		1		1
Pizza box			4	4
Fork			3	3
Styrofoam			1	1
Plastic bottle				
Cans				

Appendix 3

Compost Talley (AFTER our event)

April 2nd, 2007 12:20 – 12:50pm @ Sorting Area next to Starbucks in the SUB

Composting Categories	#	Notes
Composted CORRECTLY!	3	People composted correctly *Composted: paper bag, coffee cup and apple core
Composted PARTIALLY	1	People composted partially *Partially Composted: pizza box but not coffee cup
No Composting AT ALL	4	People did not compost at all *Not composted: pizza box, napkins x2, and paper bag x2

Recycled	5	*Recycled: glass bottle & pop can
Other Notes:		People will sort out glass bottle and pop can into recycle bin, but usually dump other things as a whole into garbage

Composting Categories	#	Notes
Composted CORRECTLY!	1	People composted correctly *Composted: banana and napkin
Composted PARTIALLY	1	People composted partially *Partially Composted: Styrofoam box
No Composting AT ALL	2	People did not compost at all * Not composted: everything into garbage
Recycled	1	*Recycled: pop can
Other Notes:		The one who threw the Styrofoam box did stop and thought for a minute, but still threw Styrofoam into compost bin

Appendix 4 Pictures

Composting Information Display Booth and snacks!



Bin check list poster and food systems visual display



Food Systems Display, from folk to dirt



Interactive Participatory game

