Food Waste and Behavior Change on Campus

Bailey Smith

ABSTRACT

Food waste creates many problems, both social and environmental. However, food waste is something that can be maintained, whether it be before it has been deemed waste or after. Minimizing food waste allows for the increase of food distribution to areas of need, prevents excess and unnecessary water and energy consumption, and helps divert from landfills. Although waste can be addressed on multiple levels of the food system, various studies have shown that the most effective opportunity to enhance the sustainability of the food system and to minimize waste is by altering consumption behavior. I conducted research and performed an experiment on food waste and improper recycling at Pacific Lutheran University by weighing garbage that would be sent to landfill and implementing a Community Based Social Marketing plan to prompt behavior change in regard to recycling and composting. Results indicate that a Community Based Social Marketing approach is an effective way to change behaviors about waste on campus and bring awareness to sustainability of the campus food system. Lack of proper signage and labeling and inconvenience were the two most prominent reasons students threw food waste and recycling in the garbage. This study is to serve as a reference for implementing suitable strategies to reduce food waste on campus and promote sustainable behavior.

KEYWORDS

Food waste, Community Based Social Marketing, behavior, diversion

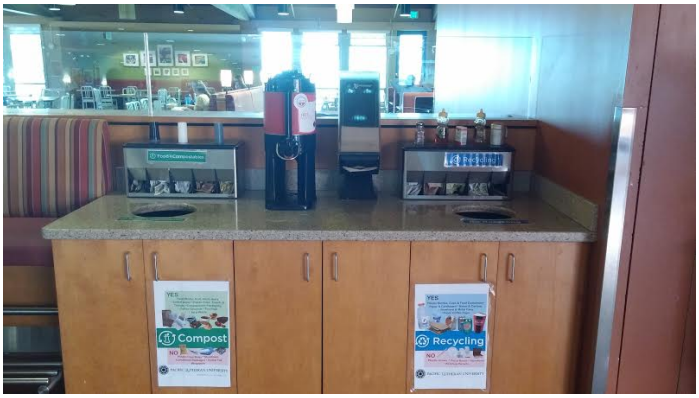
INTRODUCTION

The United States food system is in need of change. Losses in the American food system happen at every level, from production all the way to the consumer level. Dana Gunders of the Natural Resources Defense Council suggests that America is losing 40 percent of its food from farm to fork to landfill. While food losses and waste are a pressing issue all along the spectrum, consumers are the source of the highest percentage of waste. For instance, 38 percent of total grain loss in the US is lost at the consumer level (figure 1), including out-of-home consumption (Gunders 6). An even more compelling statistic stated in the USCC Position Statement claims, "In 2005, an estimated 245.7 million tons of municipal solid wastes were generated in the United States, that's 4.5 pounds per person per day" (US Composting Council 1). This means that roughly 82 million tons of organics are heading to the landfill every year. That is 82 million tons that could have been eaten, turned into valuable compost for soil enrichment, or fed to livestock to displace land use for their feed. Current trends in food waste threaten the long-term social, environmental and economic sustainability of the United States food system (Heller and Keoloian 1007). Edible food is being wasted in a world where many go hungry. Food waste to landfill prevents the cyclical nature of food production to continue, whereas diversion from landfill to compost could aid in the recapture of nutrients for soil to provide more food for the ever-growing population of the planet. The bottom line is that in order to better the sustainability of the food system we must change the behavior of consumers.

(Figure 1, Gunders)

Furthermore, because consumers produce the most waste, it makes sense to focus on the consumer level to eliminate the largest proportion of waste from the system. It is especially crucial to focus on food waste in America because affluent countries' "post-consumer food waste accounts for the greatest overall losses" (Parfitt 2010). Research on food waste has attributed waste to behavioral issues, suggesting that consumers' lack of awareness and unsustainable behavior are to blame for such high rates of loss (Parfitt 2010). Global food waste is a large issue to tackle and it will be hard to make changes in the global sphere; we must first make changes at the local level. To make these changes at a local level in an impactful setting I decided to pilot research at Pacific Lutheran University in an attempt to change behavior regarding sustainability—especially in relation to food waste. The skills and habits of college students are shaped during the college years and introducing sustainable behavior to this age group will promote a generation of sustainable individuals who will be able to carry out their habits in the real world.

(Figure 2, Smith)



(Figure 3, Smith)

METHODS

The research questions framing by project are as follows: Why do students behave unsustainably? How can CBSM and increased signage change behavior regarding sustainability, and specifically food waste, on campus? A specific area of waste at PLU I targeted is by the counter at Old Main Market in the University Center where students and staff pick up their coffees, bagels, and breakfast sandwiches (figure 2). There are two other locations like this on campus at Kelley Café in Morken and at the condiment counter in the Commons. However, bound by time and resources, I decided to focus on Old Main Market alone. It is my hope that this research can be applied to the other areas in the future. At Old Main Market you order your beverages and food on one side of the counter and pick up your purchases on the other side. In the figure, you can see that there is simply a counter with a hole in it (out of frame there is another hole in the counter) and it is directly next to where people grab their coffees, bagels, and

snacks—all of which are either compostable or recyclable. However, there are no signs, no labels, and 100 percent of what was being thrown in those holes was going straight to the landfill. One might think it would easy enough to just slap a few signs on the cabinets and call it good. However, simply changing signs would not lead to behavior change. That is why I decided to use Community Based Social Marketing to frame my research and prompt behavior change in the students and staff at Pacific Lutheran University.

My plan for this was rooted strongly in Community Based Social Marketing (hereinafter referred to as CBSM). CBSM "identifies the benefits and barriers to behavior and then organizes people in groups with common characteristics, so that delivery programs will be the most efficient" (McKenzie-Mohr, 3). The steps involved in CBSM are simple yet crucial: Identify barriers and benefits develop a strategy that utilizes tools that have been shown to be effective in changing behavior, pilot the strategy and evaluate the strategy. The underlying assumptions as to why people do not behave sustainably are that people will naturally gravitate toward actions that have high benefits and few barriers, perceived barriers and benefits are different for different individuals and behavior competes with behavior. People make choices between different behaviors. (Mckenzie-Mohr, 3) The barriers I identified were that there were no signs for people to follow, the location of other recycling and compost receptacles were inconvenient in relation to the food pickup area, and that people are unclear on how to properly sort. Another barrier that is on a more technical level is that compost can smell bad, attract bugs and people might not want to deal with compost. The perceived benefits and barriers can be seen in figure 4 below.

	New Behavior: Compost and Recycle at OMM, Kelly Café & The Commons	Competing Behavior 1: Toss everything in the trash	Competing Behavior 2: Improperly disposing of recyclable and compostable
Perceived Benefits	Helps Environment, Saves PLU money, instills values for future	Convenience, saves time	Convenience, saves time, better than just throwing it in the trash
Perceived Barriers	Takes extra time, can smell if not taken care of, signage might be confusing	Costs PLU more money, generates more GHGs, against PLU culture and values	Costs PLU more money, Sustainability office must spend more time working in order to properly sort

(Figure 4, Smith)

The second step in CBSM is to develop a strategy that utilizes tools that are useful in behavior change. The tools I used are incentives, effective communications, social norms, and prompts. The provided incentives built in to my pilot program are that PLU saves money by paying less for garbage and earns money from the compost and recycling it sends out. Another incentive is that PLU has a more firm stance on sustainability by having streamlined recycling and composting areas and students whose behavior reflects the mission statement of the university which states, "PLU seeks to educate students for lives of thoughtful inquiry, service, leadership and care – for other people, for their communities and for the earth." Effective communications I used are seen in the clearly worded posters that are color coded and provide images of items that can be recycled and composted. Social norms involved in this project are grounded in the idea that PLU is a sustainable school and that PLU composts and recycles. The

norms work to obstruct the deviant behavior of throwing organics and recyclables into the landfill. The final tool I used is a prompt. A prompt is a suggestion for someone to do something. Essentially, the posters I put up act as prompts because they urge people to perform a certain behavior (recycle or compost). Doug Mckenzie-Mohr suggests that prompts work best when placed next to the area where behavior is needed to change. Thus, I put the signs directly on the cabinets and counter of the area where all the waste was heading.

Before I put the signs up and put my tools to work, I did a controlled experiment of the area called a garbology. A garbology is when you weigh the total amount of garbage, sort through the garbage creating piles of landfill, compost, and recyclables and calculate the percentages of each category over the total weight to calculate what percent of the garbage could have been diverted to recycling and compost. I did garbologies three different days collecting the garbage between 9:00 am and 11:00 am each time. I recorded my data and the following week, put up the signs to test the signs. When putting up the signs I discussed them with people near Old Main Market. Every person I spoke with expressed excitement about a convenient location to recycle and compost. I also observed the location periodically and noticed that people took time to read the signs and were properly sorting—for the most part. Then, I performed garboloies on the area after having put the signs up.

FINDINGS

The pre-signage data revealed that roughly 37 percent of what was being thrown in the landfill could have been recycled and roughly 54 percent could have been composted (figure 7). Pre-signage data also revealed that food waste accounted for the largest proportion of weight that was being sent to the landfill. Post-signage data revealed that a large proportion (94%) of what

had been tossed away was able to be successfully diverted (figure 6). Qualitative information this study reveals is that when provided clear signs near a convenient location students will compost and recycle more. Students also observed one another examining the signs and this shows that social norms will play a role in continuing this project—when students observe others recycling, they want to follow the norm and as a result, they will also recycle.

DISCUSSION

When performing the garbologies on post-signage receptacles, I did notice that students were still putting some garbage in to the wrong containers. This could be fixed by providing a small trash/landfill receptacle next to the counter. To further this project and apply more tools, a typed prompt could be set on the counter that tells students to remember to compost and recycle. Another way that prompts could be used is by placing stickers that say something along the lines of "recycle me" on the coffee cups at Old Main Market. One final tool that Doug Mckenzie-Mohr discusses is the idea of commitments. Mckenzie-Mohr suggests that when people make voluntary public commitments to perform a certain behavior, they are more likely to actually perform the behavior because people want to be seen as consistent. A sustainability campaign that might promote sustainable behavior could be to ask students to wear buttons claiming that they recycle/compost. By wearing the buttons and having others see them, they will be more likely to participate in the behavior they publicly claim to take part in.

CONCLUSION

In conclusion, Community Based Social Marketing is and effective program that should be utilized by Pacific Lutheran University to streamline recycling receptacles on campus and should be further used to promote sustainable behavior change in students, staff, and faculty.

Food waste, and waste in general, is an ever-increasing problem as the population of earth rises and space and resources become limited. Tackling a global issue such as food waste and world hunger is not something a small liberal arts college can handle. However, we can make an impact on the world by started in our own PLU community and creating a group of educated Lutes that have all the tools, skills, and habits of a sustainable citizen of our one planet.

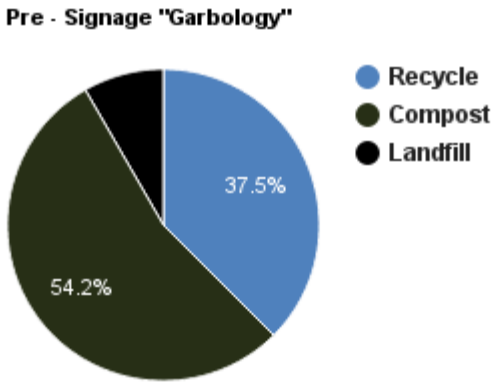
Pre-signage						
Date	Total Weight (lbs.)	Original Weight to Landfill	Lbs. Diverted to Recycling	Lbs. Diverted to compost	Lbs. of Actual Trash	Total % that Could be Diverted from Landfill
4/14/15	12	12	4.5	6.5	1	92%
4/15/15	5	5	1	3	1	80%
4/20/15	6.5	6.5	2.5	3.5	0.5	92%
						Average= 88%

(Figure 5, Smith)

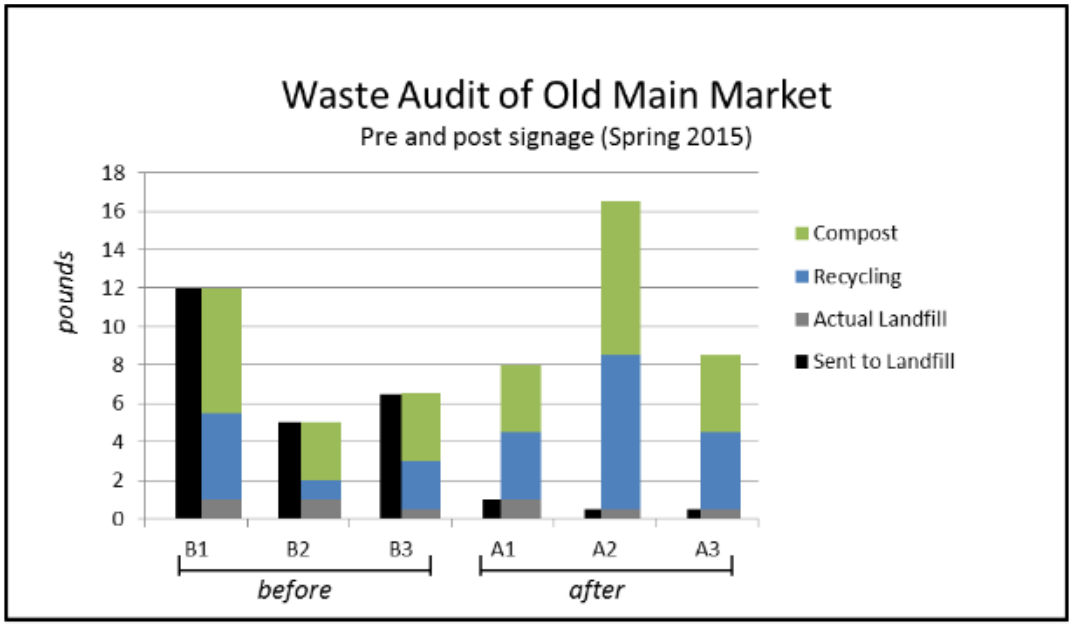
Post-Signage	**Total Weight Combined Compost and Recycle**	**Total Weight in Recycling Bin**	**Total Weight in Compost Bin**	**Lbs. of Actual Trash**	**Total Diverted from Landfill**	**Total % Successfully Diverted from Landfill**
Date						
4/21/15	9 lbs.	3.5 lbs.	5.5 lbs.	1	8 lbs.	89%
4/22/15	17 lbs.	8 lbs.	9 lbs.	0.5	16.5 lbs.	97%
4/23/15	12 lbs.	4 lbs.	8 lbs.	0.5	11.5 lbs.	96%

						Average = 94%

(Figure 6, Smith)



(Figure 7, Smith)



(Figure 8, Smith)

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