Action Research Team Waste Watchers University of California Los Angeles

Educational for Sustainable Living Program

Leaders:

Heidi Winner & Alisa Ahmadian

Team Members:

Debbie Chong, Natalie Gaber, Lotta Chan, Victor Weisberg, Eric Vallone

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Contact Information:

Alisa Ahmadian
Heidi Winner
Eric Vallone
Natalie Gaber
Debbie Chong
Victor Weisberg
Lotta Chan

alisa.ahmadian@gmail.comslugbugyellow@att.netericv20@gmail.comngaber@ucla.edudebbiechong@ucla.edumusicvicfr@sbcglobal.netlottiedottie_da@yahoo.com

Overview and Objectives

The objective of our action research team was to quantify and reduce food waste in the UCLA dining halls. We focused on the De Neve Dining Hall, UCLA's largest dining facility. We aimed to evaluate both student food waste and potential systematic waste on behalf of Dining Services. Waste Watchers has existed as a program since fall of 2007, and has calculated student food waste in various dining halls around 10 ten times. We participated in the Action Research Program to further institutionalize the program. We worked with UCLA Dining Services, as well as Housing & Hospitality Services. Our stakeholders were Alex Macias (General Manager of De Neve Dining Hall), Daryl Ansel (Food & Beverage Director), and Robert Gilbert (Housing Sustainability Coordinator). Auxiliary stakeholders included Rob Kadota (Assistant Director, Office of Residential Life) and Peter Angelis (Associate Vice Chancellor of Housing). The aim of our program was to calculate the average amount of food waste per student through the De Neve pilot project, in order to educate students about their personal impact. We also hoped to evaluate the way that food was served in the dining halls, to make changes, and to reduce the default amount of waste. The broader aim of the project was to reduce the amount of food wasted in the dining halls as well as to educate students about wasting less food. The ultimate goal was to reduce the impact students (and the UCLA institution) had on the natural environment and to produce financial savings for Dining in order to purchase more sustainable food options with the saved money.

Both Dining and Housing have made significant strides towards sustainability since the implementation of the Waste Watchers program two years ago. Changes include: Beefless Thursdays, tray-less dining in the Hedrick Dining Hall, an organic salad bar in Hedrick, compostable ware in several eateries, a composting program, and sustainability marketing. Many of these changes have been the result of collaboration between students and Housing, Dining, and ORL. In addition, UCLA aims to participate in the Real Food Challenge, a national endeavor aimed at redirecting 20% of money spent on food in the university system towards sustainable foods.

Waste Watchers focused on the De Neve dining hall to learn about patterns in student food waste. We sought to learn about changes that Dining could make to cut down on food waste, and also about student attitudes towards sustainable foods. We held weekly meetings with several stakeholders to update them about our findings and recommend systematic changes that could be made within the dining hall to reduce food waste. Our stakeholders were very responsive and quickly responded with structural changes. We attempted a holistic approach to our research; viewing the systemic "behind the scenes" to numerically quantify waste produced, and how small changes in food service lead to less waste. Education was also a large component of our project, because ultimately it is the students who are producing the food waste.

Initial Conditions

Through weekly measuring of food waste in De Neve Dining Hall, Waste Watchers calculated that on average 378.889 pounds of food was wasted each dinner period. With an average of 2,148.333 people served, that comes out to 0.176 pounds of food waste per person. Thinking of it in other terms, that is equivalent to each person throwing away three slices of bread after every meal. Over the course of one day, a total of approximately 3,500 pounds of food are being wasted in UCLA's four dining halls. Additionally, students often used an excessive number of plates, bowls, utensils and napkins. Through random sampling, we discovered students sometimes used up to six napkins for one meal. Because Waste Watchers was done with low profile, the majority of students were unaware their eating habits were being studied and so these numbers can safely be said to reflect normal conditions prior to educational efforts.

These "initial conditions" were quantified during the first quarter, the Winter quarter, of the ART program. Before, there was no benchmark for food waste, because food waste is not currrently monitored in the De Neve dining hall. Therefore, spending a quarter to gain an understanding of initial conditions in terms of food, beverage, utensil and napkin usage was essential.

It was also important for us, as well as Dining, to understand what types of food students were wasting the most. In general, we discovered that the side dishes next to meat entrees were often discarded by students. These included rice, mixed vegetables, mashed potatoes, and stuffing that usually accompanied a turkey dish. Less frequently, but still noteworthy, was the

fact that some students would discard entire entree dishes without taking as much as a single bite.

Initially, dining did not clearly advertise the option to customize their meals or label desserts. They did not use recycled napkins, or engage in much dialogue with customers. We concluded that these may have been facotrs contributing to food waste and causing a detrimental impact on the environment. The initial findings showed us that food waste on the hill was indeed a severe problem, and that to improve the situation we needed to discover the root causes of waste, and address them with dining services, and educate the student body on the negative environmental impact of food waste.

Research Methodology

During winter quarter, we conducted waste audits during dinner in DeNeve Dining Hall every Tuesday night (except 7th week, when schedule conflicts required us to cancel the audit) from 5-9:15pm. Working in 3-person teams, we put on gloves and aprons and stationed ourselves in the back of the dining hall where the used trays come through on rotating racks. For each tray that came through, we removed all the edible food waste (excluding items such as banana peels, apple cores, and egg shells) and liquid waste from each tray. All the food waste was placed into special large garbage cans, and the liquid waste was divided into two categories (soup/cereal and beverages) and then poured into large plastic tubs.

Additionally, we photographed random samples of trays every 10 minutes. The samples were made random by the fact that we alternated from which of the 4 racks we sampled (e.g. at 7:00 we took a tray from the bottom rack, at 7:10 we took a tray from the second rack, etc.). This sampling technique limited a potential confound whereby people who place their trays on certain racks have different food waste behaviors than students who put their trays on different racks. The digital pictures of the random samples were later uploaded onto a Flickr account, and team members looked at the pictures and recorded which food items were present on the pictured trays. This data was later used to compile a list of the most wasted food items throughout the quarter.

At the end of each waste audit, we weighed all the food and liquid waste from the entire dinner period, and we also recorded the number of guests who entered the dining hall that night and the specific menu items that were served. We later used this data to determine the average amount of food wasted per person who ate in DeNeve that night.

During spring quarter, we focused on educational efforts rather than data collection, but we did do a few waste audits. One audit was conducted in conjunction with our Zero Waste Challenge Day, which occurred during dinner on Tuesday of 7th week. On this night, team members stood outside each of the 4 residential restaurants (DeNeve, Covel, Rieber, and Hedrick) and asked entering guests to take the "zero waste challenge." Guests who agreed to take the challenge were given a small green sticker to wear as a visual reminder to create zero food waste during that meal. Additional team members and volunteers conducted a waste audit in DeNeve dining hall that night to see if there was any reduction in the amount of liquid and food waste that night as a result of our educational efforts. Pulp data from Hedrick was also analyzed to see if a reduction in waste was noticed.

In addition to conducting 2 waste audits in spring quarter, we conducted surveys of guests in all 4 residential restaurants during dinner on Tuesday of 5^{th} week to find out students' opinions and knowledge on food waste and sustainability. The survey questions were created jointly by our ART team and by UCLA Dining administrators. A copy of the survey can be found at the end of this report. Two or 3 team members stood in the entry halls of each of the residential restaurants with clip boards and pens and asked entering guests if they would mind filling out a quick survey. In total, about 600 students from all 4 residential restaurants were surveyed. Although our sampling technique was not extremely scientific, we feel that the results are still representative of the UCLA student body as a whole.

Data

Figure 1:

***	WEEK	DEDCONC	ECODO	E/D	COUDC	C/D	LIQUIDO	I /D
W	WEEK	PERSONS	FOODS	F/P	SOUPS	S/P		L/P
Α	1	2166	365	0.169	15	0.007	73	0.034
S	2	2199	432	0.196	14	0.006	75	0.034
Т	3	2229	398	0.179		0.000	70	0.031
Е	4	2056	336	0.163	38	0.018	50	0.024
W	5	2143	432	0.202	11	0.005	70	0.033
Α	6	2288	412	0.180	16	0.007	70	0.031
Т	7							
С	8	1958	316	0.161	15	0.008	50	0.026
Н	9	2224	310	0.139	14	0.006	36	0.016
Е	10	2072	409	0.197	16	0.008	65	0.031
R	FINALS							
S	average	2148.333	378.889	0.176	17.375	0.007	62.111	0.029

This was the data collected from doing Waste Watchers in De Neve over a ten week period.

Figure 2:



As the number of people increases, so does the lbs of food waste; which averaged .18 lbs per person.



As the quarter progressed, the amount of food wasted per person on average decreased, but not substantially.





As the quarter progressed, the amount of food wasted on average decreased, but not substantially.

Figure 5:



This graph shows the number of people who swiped into De Neve Dining Hall per week.

Figure 6:



As the number of people increases, so do the qts of liquid waste; which averaged .04 qts per extra person.

Figure 7:



As the number of people increases, the amount of soup wasted decreased; which averaged .025 qts per extra person.

Figure 8:



Persons and Foods Wasted including the Zero Waste Challenge data.

Figure 9:Survey and Responses

<u>Survey</u>

Ques	<u>stion</u>					
	as a less					
1	detrimental impact on the environment?					
	YES	70.5	ERROR	2.3		
	NO	13.2				
	DON'T KNOW	14				
Are you aware of the environmental impacts of						
2	"Beefless Thursdays?"					
	YES	69.2	ERROR	0.1		
	NO	20.5				
	DON'T KNOW	10.2				
	If you do not finish all o	f your food wh	en eating in the			
3	dining halls, why?					
	TASTE	63.4	PAID	7.1		
	TOO MUCH	34.7	NONE	32.6		
	VARITITY	25	THOUGHT	4.9		
	PORTION	16.6				
	Would you make an eff	ort to waste le	ss food if it meant tha	at Dining Servic	es could provide	
4	4 more organic & locally-grown food options?					
	YES	62.7	ERROR	0.9		
	NO	15.8				
	DON'T KNOW	20.6				
	Are you aware of the D	ining Services				
5	Composting Program?					
	YES	41.4	ERROR	2.2		
	NO	57.4				
6	Are you aware of the organic salad bar in the Hedrick					

	dining hall?					
	YES	73.5	ERROR	3.1		
	NO	23.4				
	Did you know that you can customize your order to get only the food items					
7	you want in the portion y	ou want?				
	YES	64	ERROR	0.3		
	NO	36.3				
	What kind of operation is	UCLA Dining				
8	Services?					
	FOR-PROFIT	21.1	ERROR	0.1		
	NON-PROFIT	14				
	DON'T KNOW	64.8				

Figure 9 A:



Figure 9 B:



Figure 9 C:



Figure 9 D:



Figure 9 E:



Figure 9 F:



Figure 9 G:



Figure 9 H:



Key Findings

Over the course of the 2-quarter Action Research Team program, Waste Watchers was able to identify several key findings. First and foremost among these was the fact that overall, the majority of students who eat at the residence halls do so in a relatively sustainable way that corresponds with their general understanding of, and support for, the benefits of sustainability programs. This is supported by the observation that student behavior was bimodal: while the majority of trays contained a very low amount of waste, with many in fact having no waste, there was a small proportion of trays that were incredibly wasteful. This suggests the calculated average waste of ~0.18 lbs. per person could have been skewed by the effect of these extremely wasteful students, and may therefore not accurately reflect the true average student waste per meal. Further, nearly three quarters of students were aware that eating locally and organically grown foods has a less detrimental impact on the environment, and only ~16% said they would not waste less food if it meant that the school could provide more organically and locally grown food (though ~21% were unsure). A full third of students reported rarely wasting anything; when students did waste, the largest factor by far was taste.

In order to address this and related issues, Waste Watchers consistently coordinated with Dining administration. This interaction resulted in a second key finding that not only does Dining have a high level of commitment to sustainable efforts it is implementing itself, but it also is extremely supportive of student efforts in this respect, making immediate and tangible progress to address issues identified by Waste Watchers. The introduction of Beefless Thursdays, an organic salad bar in Hedrick dining hall, which also went trayless (as will Rieber in Fall 2009), compostable eating utensils in the take out restaurants, a composting program, and other actions over only the past two years show a strong and productive commitment to sustainability. With respect to general efforts of Waste Watchers this year, Dining switched to recycled napkins everywhere on the hill and increased sustainability marketing and related educational information displayed in its various eateries. Waste Watchers identified side dishes as the largest contributor to food waste, and in response Dining eliminated some completely, modified portion sizes, and included a new option to take an entree by itself. Other efforts include reminders for students to encourage dish customization in both quantity and content, investigation and modification of dishes Waste Watchers identified as least enjoyed by students, and discussion of a 'sample station' to be implemented in the near future.

A final key finding of Waste Watchers resulted directly from analysis of the Zero Waste Challenge, a one-time event held hill-wide during dinner. Waste Watchers members campaigned outside each dining hall and challenged students to have a zero waste meal; additionally, Waste Watchers arranged for an educational display outside De Neve that visually represented the 3,500 lbs of food wasted by students each day. While many students were responsive to the challenge, the reduction in waste during that dinner was 0.026 of a pound, from 0.176 lbs/person to 0.15 lbs/person. The Zero Waste Challenge prevented almost 300 lbs of food waste that evening, as calculated by reducing the average food waste per dinner -1,500 lbs by 2.6%. Though significant, the team members were hit with the realization that because many people waste little food and a few people waste a lot, there will always be a percentage of the population that refuse to change their behavior, and thus there will always be a baseline waste. What must be focused on now, then, is reducing the environmental impact of that wasted food by purchasing from local and organic vendors.

Recommendations

During spring quarter 2009, UCLA Dining implemented several of Waste Watchers' recommendations to reduce food and paper waste and raise student awareness. All dining halls now use recycled napkins, and the switch has brought both environmental and economic benefits. Each ton of 100% post-consumer recycled paper saves 24 trees, 7000 gallons of water, 4100 kilowatts of electricity and 60 pounds of air pollution; it also saves Dining \$2,700 per year. Dining has also agreed to further tackle paper by posting laminated "These Come From Trees" stickers on napkin holders, which will reduce napkin usage as students become aware of the connection between napkins and paper waste. In addition, Dining now serves side dishes separately or in smaller portions, and it has begun listing the ingredients of its desserts; these changes will help ensure that students take the food they will actually eat. They hope to implement a "sample station" where students can sample new dishes before taking a full portion, cutting down on proxy waste that occurs when students do not like something they had not

previously tried. Lastly, Rieber dining hall is scheduled to go trayless in fall 2009, which will save water and detergent and may reduce food waste as well.

Several recommendations that Waste Watchers has discussed with Dining are planned to be implemented in summer and fall 2009. Menus at each serving station will include a reminder for students to customize their order according to preferred portion size and ingredients. Dining is also looking into ways to redesign the recipes of the least popular dishes to match students' tastes. Table tents with Waste Watchers' educational information about food waste should be extended to every dining hall on the Hill. Dining also should use the LCD screens at the entrance and inside the dining halls to display information on the amounts of food wasted, environmental facts food, waste reduction tips, and the fact that Dining is not-for-profit and could use savings from wasting less to purchase more organic and locally grown food. Waste Watchers' survey results have shown that many students are not aware that Dining is not-forprofit and would be supportive of wasting less in return for sustainably produced food. Dining hopes to counteract this misconception through educating freshman students, potentially during orientation sessions in the summer, about dining's sustainability efforts and the fact that dining is non-profit.

Due to our regular meetings with stakeholders, most of the recommendations that we had discussed amongst our group were fulfilled by Dining. We served as a "taskforce" for Daryl Ansel during the Spring quarter and recommend that a similiar taskforce is created next year. Continuing to learn about student attitudes towards food and sustainability through masssurveying is also very important.

Waste Watchers commends UCLA Dining for its receptivity, support, and action toward reducing food and paper waste and conserving water and energy. We look forward to future collaboration to make UCLA's dining halls among the greenest in the nation.

Next Steps and Conclusions

Performing Waste Watchers as a program, and subsequently as part of the Action Research Team program has illuminated many interseting trends about student food waste and sustainable operations in the dining halls. Fortunately, due to the longevity of our program, we benefitted from long-standing stakeholder relationships and knowledge about the dining halls. These factors allowed us to create change quickly. Looking to the future for Waste Watchers means adapting the structure and purpose of the program. Despite marketing pushes and adapting operations, students waste about .2 pounds less per meal than they did two years ago. When performing research, we notice that most trays return with little waste, and many have zero waste. We realize, especially combined with survey data, that the students that leave large amounts of food on their trays are the students that evidence little interest in sutstinablity or attempting of waste less food for more sustainable options. Thus, continuing the Waste Watchers program as it stands could be ineffficient, espeically in light of potential efforts by the dining halls to track food waste in all eateries. Performing Waste Watchers occasionally, utilizing voluteers from different sections of campus (example: students needing community service hours in the dormitories) might help to spread the word more efficiently. Because the greater goal of Waste Watchers is to acquire more sustainable food options in the dorms, using Waste Watchers as a taskforce to help research opportunities for this could be more helpful.

Sample Survey

Waste Watchers Survey

"Reducing Food Waste Through Education & Action"

Waste Watchers Enviro 185B (check all that apply)

1. Do you believe eating locally & organically grown food has a less

detrimental impact on the environment?

□ Yes □ No □ Don't Know

2. Are you aware of the environmental impact benefits of "Beefless Thursdays"?

□ Yes □ No □ Don't Know

3. If you do not finish all of your food when eating in the dining halls, why?

- □ Did not like the taste
- □ Took too much
- □ Wanted to try the different food options available
- □ Portion size too big
- □ I've paid for it so I can take as much as I want

□ I usually don't leave extra food on my plate

□ I've never thought about it/no particular reason

4. Would you make an effort to waste less food if it meant that Dining

Services could provide more organic & locally-grown food options?

🗆 Yes 🗆 No 🗆 Don't Know

5. Are you aware of the Dining Services Composting Program?

□ Yes □ No

6. Are you aware of the organic salad bar in the Hedrick dining hall?

□ Yes □ No

7. Did you know that you can customize your order to get only the food items

you want in the portions you want?

□ Yes □ No

8. What kind of operation is UCLA Dining Services?

□ For Profit □ Non-Profit □ Don't Know

Sample Table Tent

Treading Lightly Reducing Your Environmental Impact While You Chew.

Think transportation emissions is the largest contributor to global warming? **Think Again.**

New studies show that the average American diet produces an extra 1.5 tons of greenhouse emissions per person per year than a plant based one. In contrast, switching from a sedan to a hybrid car only saves about 1 ton of CO2 emissions.

WHAT YOU EAT HAS A GLOBAL EFFECT. WHAT YOU WASTE HAS MORE.

We're not saying go vegan. We're saying that it's important to realize the impact our food – and more importantly the food we take but don't eathas on the earth. Food waste can be prevented. Take these small easy steps to lessen the impact you have on the environment.

Take only what you really want first, and then go back for seconds. Don't fall prey to the "eyes are bigger than my stomach" syndrome or laziness.

Don't use excessive dishes- that means excessive washing. Water filtering and transport uses 1/3 of all the electricity used in California²

. Use just one glass.

Use only one set of silverware. Reuse your plate-ware when possible. Ask the servers for the portion you prefer. Don't hesitate to ask for smaller

(or larger) portions. Getting an amount catered to your stomach is a sure and easy way to reduce waste.

Think Trees. Just because you're not at a desk doesn't mean that you aren't wasting paper. One extra napkin used per person per meal adds up incredibly quickly when you consider the thousands of people served in the dining halls each day.

Waste Watchers, a student run program that measured the food waste that students produced in De Neve dining hall on Tues April 19, found that the **4,335 people served, created 974 lbs of waste**. Results showed that the average student wastes close to a quarter pound of food per meal. That's a ¼ pound burger wasted on every tray! "Producing a single hamburger patty uses enough fossil fuel to drive a small car 20 miles and enough water for 17 showers."3

You have an impact on the environment.

What are you going to do about it?

Seek one of these UCLA campus organizations to help make a difference outside of the dining hall: Environmental Bruins, E3, SWC Recycling, CALPIRG, Geography Club, Rainforest Action Network, Bruins for Animals or the Office of Residential Life's Sustainability Committee.

> 1 http://geosci.uchicago.edu/~gidon/papers/nutri/nutri.html 2 Tim Papandreou, Los Angeles County Metropolitan Transit Agency 3 People for the Ethical Treatment of Animals

Daily Bruin Article

Waste Watchers weigh in on trashed food

- By <u>Chris Eldredge</u>
- Published: Wednesday, April 15, 2009

During their sophomore years, Heidi Winner and Alisa Ahmadian noticed that UCLA students living in the dorms waste a lot of food.



Fourth-year political science student Alisa Ahmadian and anthropology student Heidi Winner are co-facilitators of Waste Watchers, a group of students that weighs food waste in the dining halls on campus to promote sustainability.

Interested in finding out just how much is left on the trays, the now fourth-year students organized volunteers to measure the leftovers.

Winner and Ahmadian, who met in seventh grade and are now roommates, call themselves "Waste Watchers."

The pair have found that the average student wastes about 0.18 pounds of food each meal, the equivalent of three slices of bread, said Winner, co-facilitator of Waste Watchers.

"Considering we serve over 20,000 people a day, that's quite a lot of food waste," said Robert Gilbert, sustainability coordinator for Housing and Hospitality Services.

By making students more aware of their leftovers, Waste Watchers aims to save money and help the environment, Winner said.

"If you were at home, you wouldn't use five cups because your mom wouldn't wash them," said Ahmadian, who is the other co-facilitator.

This year, Waste Watchers has formed an Action Research Team through the UCLA Environmental Health Sciences Department. Seven UCLA students, including Winner and Ahmadian, are now receiving two to three units for working closely with faculty and dining staff to make UCLA more sustainable by reducing food waste.

Waste Watchers started more than two years ago, Ahmadian said.

"The Action Research Team presented a really good opportunity to present our work to administrators and actually effect institutional change," she said.

In weighing leftovers in the De Neve and Hedrick dining halls, they have also noticed some patterns.

During finals week, for example, students typically waste a lot more food, perhaps because they are studying in the dining halls, Winner said.

Uneaten side dishes also add up.

"We would get trays with literally three or four plates of just peas, carrots and mashed potatoes," she said.

The dining staff has been receptive to feedback and shares Waste Watchers' goal of reducing leftover food, Winner added.

De Neve, for example, now plans to offer students a choice of plates without side dishes, she said.

Waste Watchers aims to change students' attitudes and habits by providing more accurate information.

Winner said she, like many students, used to think, "I waste food that sucks, but I pay a ton of money to come eat at De Neve, so I can waste whatever I want."

However, when students waste less, UCLA Dining Services saves money by purchasing less food. These savings can be used to lower fees or purchase more sustainable foods such as local and organic ingredients or cage-free eggs, Gilbert said.

Action Research Team members spent last quarter scraping dishes and weighing food waste to measure how much was thrown away. This quarter, while they will still periodically measure progress, their aim is educating residents on the Hill. As part of that effort, there are a few projects underway.

The team is working with the Office of Residential Life to get data and pictures about food waste displayed on the LCD screens above the entrances to the dining halls, Winner said.

An educational video and "customize your order" signs will remind students to ask for smaller portions.

The Action Research Team is also interested in calculating and displaying the carbon footprint of waste, Winner said. A separate effort focuses on getting students to reduce their napkin use, she added.

"A lot of trays are reasonable and have just one or two (napkins), but other trays are just ridiculous," Winner said. "They have like seven or eight napkins."

The team is working with staff to explore switching to recycled napkins, which are cheaper, Winner said. And there are also plans to place stickers that say "These are made from trees" on napkin dispensers to remind students to conserve.

All of these efforts will culminate in an all-Hill challenge day later this quarter, when students will be asked to reduce waste by a fixed amount, perhaps 5 percent, Winner said.

Other UC campuses including Davis, Irvine and Santa Cruz have similar efforts to reduce food waste, Ahmadian said.

Though both Winner and Ahmadian are graduating this year, they expect Waste Watchers to continue because it helps well-intentioned students come up with ways to live more sustainably.

"We know that a lot of people are interested in doing the right thing," but struggle to find contributions they can make, Winner said.

Through educating the students around them, she and the other Waste Watchers hope to change this.

"I feel like there's a giant disconnect in our society between realizing that food had a life before you obtained it and that it has a life after," Winner said.

"Waste Watchers brings to light the secret life of your food."