



UCLA
Sustainability
Action Research

Zero Waste Team 2019 Midterm Report

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Abstract

The Zero-Waste Team is researching the use of educational material and campaigns in order to increase waste diversion in a university library. By utilizing a previous waste audit from Kikei Wong and our own team's waste audit, we will be creating and implementing educational material that we think will make the most effective impact on the library's waste stream. In addition, compost bins will be placed at selected locations in the library to increase the percentage of the waste stream that is composted. After this campaign, we will analyze how effective the team's work was at changing disposal habits of library users through the completion of another waste audit and present our recommendations to library staff.

Our team will be collaborating with Young Research Library (YRL), Facilities Management, and ASUCLA to develop and implement material that specifically tackles the challenges to becoming zero-waste at YRL. We will be focusing on Cafe 451, which generates a large portion of the plastic, food, and paper waste in the library. Our goal is to aid YRL in developing a long term plan towards becoming a zero-waste building.

Our primary mission is to determine how a strategic education based campaign can affect the waste streams in a university library with the aim of increasing the landfill diversion rate.

Introduction

UCLA has been participating in its zero waste by 2020 initiative since 2007, and the school has made tremendous progress towards that goal. However, there is still a lot of work to be done to improve UCLA's diversion rate. This year, the SAR Zero-Waste team has decided to focus on one area of campus where we feel we can improve the diversion rate. The Zero-waste team will be conducting a research project on the use of educational signage and outreach

campaigns towards increasing waste diversion at Young Research Library (YRL) with the intention of beginning the process of implementing a permanent zero-waste system in the library. A recent waste audit was conducted during week ten of Fall Quarter 2018, when library use is assumed to rise. This waste audit revealed that 85% of the 600 lbs of waste generated in the waste stream that day was divertable (it could have been composted or recycled). Cafe 451, an ASUCLA restaurant inside of the research library, is responsible for a portion of the waste created in YRL, although the exact amount is unknown. However, based on the amount of single-use cups, straws, and packaging of ingredients for cafe beverages found in the waste audit, there is a lot of waste produced both by the workers at Cafe 451 and its customers. The library also lacks clear signage and composting bins which creates another roadblock to ensure that waste is disposed of properly.

Michigan State University conducted a similar study with a nine week long zero waste challenge in their main library. Similar to YRL, the MSU Library had a cafe that the team put most of their focus on. They prioritized making disposal locations easy to identify, and at the end of the campaign, the study found that the diversion rate was improved (Tans 2016). Additionally, the GREEN LA Global Warming Action Plan conducted by LA Sanitation provides an example of a previous research study that highlights the successes of focusing initially on one area or building, and using that study as a guide for future locations (Bureau 2013). Both of these examples of outside research provide relevant information and advice for the zero-waste team as we start our campaign.

By implementing new signage and planning strategic educational and outreach methods our team intends on finding effective solutions to reducing waste. First, we will be placing

signage in YRL that will provide information on how certain waste products should be disposed of. Other educational outreach methods will include tabling, displays, interactive games, and giveaways to engage library users and capture their attention. Our methodology to understanding the results of our educational campaign and signage will be based on the results of waste audits conducted prior and directly after the campaigns that can be statistically assessed. During our tabling event we will also have library users fill out a survey to improve our understanding of how to effectively encourage behavioral changes. Ultimately, our results will aid in the implementation of an effective zero-waste system by providing information on the efficiency of certain methods and provide ideas to other departments and buildings hoping to become zero-waste.

Methodology

The methodology for this project consists of using data from waste audits to organize and then implement an educational program for around seven weeks, then understanding the efficiency and impact of the program through a second waste audit. In order to reach people and make a change we need to collect data that supports our claim that waste streams need to be improved, and then try and reach to the majority of the population involved in the problem. First, waste audits allow us to understand the waste stream in YRL, along with student waste behaviors during different parts of the quarter. Since Kikei Wong was able to provide us with data from a waste audit conducted week ten of the 2018 fall quarter, the team conducted a separate waste audit during the Wednesday of week seven. This involved sorting twenty-four hours worth of garbage from YRL into into landfill, recycle, and compost. Specifically, we broke down the quantity of recyclables into metals, glass, and containers/bottles. Coffee cups, straws,

and utensils were also sorted separately to serve multiple purposes including using the waste as displays for the educational campaign, and to understand the impact of Cafe 451 on the waste stream . We quantified our data by sorting each type of waste into the appropriate bag and weighing the bags at the end of the day. The waste audit revealed around 15% of the waste should have rightfully been sent to the landfill and around 85% of the waste being sent to the landfill could have been diverted in a more efficient manner. The divertible waste can be broken down to 63.5% compostable and 21.5% recyclables. In a single day there were 223 single-use straws thrown away and 411 single-use utensils. This number can be significantly decreased by raising awareness and equipping library-goers with the proper tools for food consumption.

Secondly, the team has been using results from the waste audits and the literature review of case studies at similar university research libraries to create an educational campaign specific to waste diversion at YRL. The Charles E. Young Library (YRL) has a large user base including but likely not limited to: undergraduate and graduate students, faculty, visiting researchers, and staff. From stylistically inclusive signage to games aimed at specifically engaging student library visitors, the team has taken the diverse array of library users into consideration while creating the campaign. In the upcoming quarter, a survey will be conducted in an effort to understand what the main reason and who the main people using the library are. It will also be used to find out what motivates the waste behaviors of library users.

The addition of signage and composting bins are main components of the campaign to increase waste diversion. By adding signage around the library in close proximity to the waste bins we believe that students will think twice before they blindly throw away a bottle or apple core. Our team has developed bright easy-to-read signs so that library users will be imparted with

knowledge at a short glance. As seen in Appendix C, the Zero Waste team has created signs for common items that were found during the waste audit. We are currently in conversation with YRL staff in having these signs approved and placed.

Fifteen new composting bins have also been approved for YRL. The team observed library traffic on the first three levels of YRL in order to have the bins strategically placed throughout YRL. Specifically, we placed compost bins near Café 451 and scattered around the group study area on level 1. This first level has the most amount of foot traffic and compost bins make the most sense. Level 2 and the basement have more singular study pods and we found that it was challenging to find a central location for compost bins. We decided to place a singular bin close to the elevator for quick access.

This quarter has been fairly successful in terms of quantitative work that we achieved. The waste audit is the foundation upon which we are building our research because without the data collected we would not have a foothold upon which to push. In the upcoming quarter, we intend on supplementing the waste audits with more photographs and observations of waste and waste behaviors at YRL along with a survey filled out by library users.

Challenges

The SAR Zero Waste team has navigated and identified various challenges in our project, mostly related to communication, available data, and planning. In the scheduling of our waste audit we ran into difficulties when Athens Services mistakenly picked up the trash the morning the team was supposed to conduct the waste audit during week six. When planning a new waste-audit for week seven, there was a day off from classes due to a holiday, which meant less students would be on campus and using the library than normally. On top of this, it was

scheduled to rain for a few days that week, so we only had one day it would be possible to conduct an accurate audit. Scheduling the waste audit was more complicated than we realized it would be. However, we eventually completed our waste audit with around 270 kgs of waste, which made the confusion and planning worth the extra effort.

Another communications challenge was successfully reaching out to and consistently communicating with YRL staff and ASUCLA throughout the quarter. We will be putting more efforts into establishing strong lines of communication with YRL and ASUCLA, especially since the involvement of YRL staff and ASUCLA is imperative to moving zero-waste efforts at the library further.

During the week seven waste audit, we identified a challenge in creating a zero-waste plan for YRL due to the presence of certain items we found in the waste stream that are not sold on campus. Styrofoam food packaging, which is banned from sale on campus, and coffee cups sold in off-campus coffee houses were found during the audit. First, this demonstrates that banning an item from being sold on campus does not keep people from bringing it on campus from outside sources. Similarly, while it is confirmed that the coffee cups sold at on-campus coffeehouses are 100% compostable, there is no reliable and accessible information on whether the cups from off-campus coffeehouses are compostable or recyclable. Therefore, we need to account for the presence of these items while doing our education based campaign, especially because there is a lack of awareness on how these cups can be disposed of that our team needs to address.

Another challenge we identified was when we noticed the lack of publicly available data on waste at UCLA or the progress made in achieving the UC Zero-Waste to Landfill by 2020

goal during our preliminary research. Due to the lack of available data or publically reported progress throughout the different UC campuses, it was difficult to identify where issues existed and progress was being made. It also seemed that progress in achieving the zero-waste goal had slowed down and that the broadness of the sustainability goal led to a lack of action in creating specific and substantial changes on the different campuses.

Next quarter, the team will be confronting the challenge of effectively communicating to and capturing the attention the diverse library users and staff. Not only students use and create waste at YRL - staff, Cafe 451 baristas, professors, and visiting researchers all contribute to the waste stream. Creating content and messaging that will speak to these diverse audiences is imperative to our efforts in increasing waste diversion.

Future Plans

In spring quarter, the Zero Waste Team will be centering the next phase of our project around education and outreach. After walking through the library and assessing the current waste disposal system, our team realized two things: there are no compost bins in the library and the current waste receptacles are poorly labelled, providing no guidance on waste sorting. From this analysis, it was presumed that an educational campaign providing library users with information on the sometimes complicated process of waste sorting would be an effective means of achieving zero-waste at YRL.

First, the team needs to ensure that the compost bins and signage are placed in the proper areas of the library. A detailed map of the locations where the team believes the placement of compost bins may be most effective was sent to Kikei Wong, so we will confirm that the bins

were placed in the right areas we marked. We also intend on touring the kitchen staff areas in the library to decide on the placement of compost bins and signs in these areas.

In order to encourage library patrons to use the compost bins correctly, the informational signs created during winter quarter need to be strategically placed throughout YRL during week one of spring quarter. The signs have been approved by Tom Rosholt, the Library Building Officer, and are in the process of being approved by library supervisors, so we anticipate that the signs will be printed and placed by the first week of the spring quarter. The signs that detail what can be disposed of in each waste stream (compost, recycling, and landfill) will ideally be posted above each corresponding waste receptacle to provide guidance in the waste sorting process. The sign that details all three waste streams will be posted at significant locations throughout the library, such as study spaces or areas with high foot traffic, to ensure that the information reaches the most library users possible. The goal of the three-stream sign is to provide a simple, engaging description of what goes in each waste receptacle, so posting this at many locations throughout the library will hopefully grab the attention of library patrons and get them thinking about proper waste disposal before they even reach the trash can. Our team also created signs that focus on more specific waste items, such as coffee cups, boba containers, and takeout food. We chose to specifically address these items because they comprised a large portion of the waste that was sorted during our waste audit, so properly disposing of these items could have an impact on the diversion rate at YRL. We plan on posting the coffee cup signages near Cafe 451, where many of the coffee cups in the waste stream originate. The coffee cup signs will also be placed throughout the library and near waste receptacles, since many library users bring in coffee from outside sources. The signs detailing proper boba disposal and take-out food disposal will ideally be

placed near waste receptacles and possibly in significant locations throughout the library in order to reach a wide audience. Throughout spring quarter, our team will assess the the location, effectiveness, and clarity of the signs, along with waste disposal behavior and patterns in YRL through observations and by conducting surveys.

In addition to posting informational signs throughout YRL, the Zero Waste Team plans on regularly tabling at the library and conducting in-person educational campaigns. The goal of tabling at YRL is to directly address library users and engage them in a conversation about zero-waste in a memorable, interactive, and informational manner. We plan on creating signs and interactive displays with different themes and content addressing various aspects of zero-waste that we will rotate depending on how often we will be permitted to table. Specific tabling ideas we have planned include the follow: creating displays out of straws and utensils from our waste audit to visually show library users the sheer magnitude of waste generated in just one day at YRL, displaying sculptures made out of waste by UCLA students, engaging library users in thought-provoking games and challenges, and zero-waste gift set giveaways.

The Zero Waste Team will assess the effectiveness of our campaigning efforts by conducting another waste audit of YRL. We intend on performing the waste audit the Wednesday of week seven, the same time that we performed our first audit last quarter, in order to control for outside factors as much as possible and receive comparable results to the first audit. We will ideally use the same methodologies as the first waste audit by sorting the waste into similar categories, although we may create a few more specific categories. Our objective for this secondary waste audit is to see whether more waste in the library is going to compost and

recycling rather than landfill and how the diversion rate may or may not have been impacted by the compost bins and the educational campaign.

On top of our main goals for spring quarter, the team is considering what the role of pamphlets, a library web-page dedicated to sustainability, and surveys in our project could be. We will be drafting pamphlets that synthesize the how-to disposal information from the signage and explain the zero-waste efforts at UCLA to pass out during our tabling events. During our next meeting with Tom Rosholt and Christopher Brennan, which we are scheduling for week one, we will discuss creating a model for a possible web-page for the UCLA library website that will make events, data, and other information related to zero-waste efforts in UCLA libraries public. Lastly, in order to supplement our research on waste behaviours at the Charles E. Young Research Library, we will be working with our stakeholder Kikei Wong to create a survey to further understand how we can alter the waste disposal behaviors of YRL patrons.

Conclusion

During winter quarter, the focus of the Zero Waste Team's project has been on research, design, and preparation for our intended campaigning efforts. Our team is excited to jump into spring quarter and delve into impactful action and outreach. Through our past and planned efforts, we intend on creating an influential campaign centered around proper waste disposal behaviors that is comprehensible and engaging to the wide population of students, researchers, and staff who use Young Research Library regularly. Influencing waste diversion at YRL is certainly a central focus of our project, but we are striving to accomplish larger, more significant goals as well. After the culmination of our project, we hope to have influenced library goes to make more informed decisions when disposing of their waste so they can rely on proper waste

disposal behaviors outside of the library. We also hope to make a substantial contribution to the achievement of UCLA's goal of Zero Waste to Landfill by 2020. Finally, the Zero Waste Team envisions that our outreach efforts, if deemed effective, can be reproduced at other locations across campus in order to impact larger and more diverse populations at UCLA. Ideally, our research and action will reach farther than the scope of our project to positively influence the larger campus community.

Appendix A
Week 10 Fall Quarter 2018 YRL Waste Audit Data and Results

Data

Waste Stream	Amount of Waste (kg)	Percentages
Landfill	23.70 kg	15.04%
Recycle	58.01 kg	21.46%
Compost	156.90 kg	63.50%
Total	270.70 kg	100%

Appendix B
Week 7 Winter Quarter 2019 YRL Waste Audit Data and Results

Data

Waste Stream	Amount of Waste (kg)	Percentages
Landfill	48.25 kg	21.35%
Recycle	50.04 kg	22.15%
Compost	127.65 kg	56.50%
Total	225.94 kg	100%

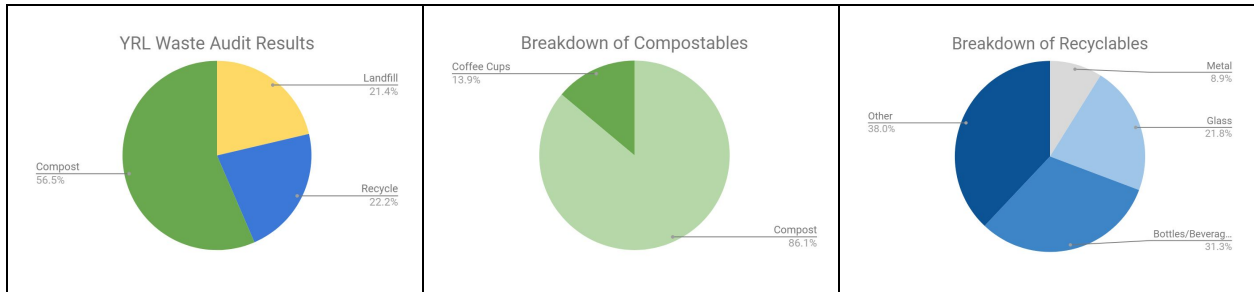
Compostable Materials Breakdown

Type of Material	Percentage
Coffee Cups	13.89%
Other Compostables	86.11%

Recyclable Materials Breakdown

Type of Material	Percentage
Metal	8.91%
Glass	21.81%
Containers/Bottles	31.33%
Other Recyclables	37.95%

Visual Displays




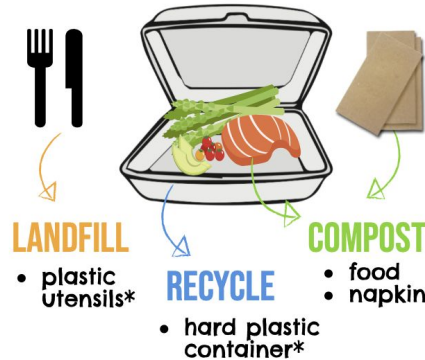
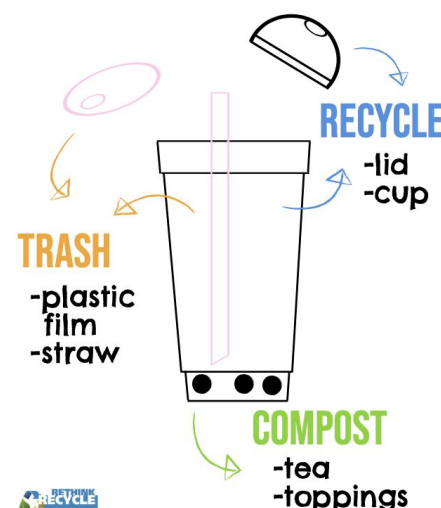


Appendix C Potential Campaign Signage

General Waste Signage

<h3>COMPOST</h3> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>FOOD</p> <p>All foods are compostable</p> </div> <div style="text-align: center;"> <p>SOILED PAPER</p> <p>Paper soiled with food or liquids</p> </div> <div style="text-align: center;"> <p>GREENWARE</p> <p>Must say compostable plastic or have PLA #7 symbol</p> <p>Hard plastic containers and lids are recycled</p> </div> </div>			<h3>RECYCLE</h3> <div style="display: flex; justify-content: space-between;"> <div style="width: 20%;"> <p>PAPER</p> <p>Empty food waste and liquids into compost</p> </div> <div style="width: 20%;"> <p>HARD PLASTICS</p> <p>(containers and lids)</p> <p>Empty food waste and liquids into compost</p> </div> <div style="width: 20%;"> <p>METAL</p> <p>Empty food waste and liquids into compost</p> </div> <div style="width: 20%;"> <p>GLASS</p> <p>Empty food waste and liquids into compost</p> <p>NO broken glass</p> </div> </div>			
<h3>LANDFILL</h3> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>SNACK WRAPPERS</p> <p>Empty food into compost before disposing of wrapper</p> </div> <div style="text-align: center;"> <p>STYROFOAM</p> <p>ALL styrofoam is landfill material</p> </div> <div style="text-align: center;"> <p>SOILED PLASTIC</p> <p>"Soft" plastics</p> <p>Plastics with heavy food contamination</p> </div> </div>			<h3>Compost</h3>	<h3>Recycle</h3>	<h3>Landfill</h3>	

Product Specific Signage

<h3 style="background-color: #76b82a; color: white; padding: 5px; border-radius: 10px; display: inline-block;">Cafe 451</h3>  <p>Compost the Lid Compost the Sleeve Compost the Cup</p> <p>THE PEET'S COFFEE CUPS FROM THE BOMB-SHELTER ARE ALSO COMPOSTABLE</p>	<h3 style="background-color: #76b82a; color: white; padding: 5px; border-radius: 10px; display: inline-block;">Other Coffee Cups</h3>  <p>Recycle the Lid Recycle the Sleeve Landfill</p> <p>BRING YOUR OWN CUP : CUPS FROM OTHER COFFEE SHOPS OFTEN CONTAIN PLASTIC LININGS WHICH MAKE THEM UNABLE TO BE COMPOSTED</p>	<h3 style="background-color: #76b82a; color: white; padding: 5px; border-radius: 10px; display: inline-block;">The Breakdown</h3>  <p>Recycle the Lid Recycle the Sleeve Landfill</p> <p>HELP UCLA GO ZERO WASTE BY 2020</p> <p><small>UCLA Sustainability Action Research</small></p> <p><small>RECYCLE</small></p>
<h3 style="background-color: #76b82a; color: white; padding: 5px; border-radius: 10px; display: inline-block;">TAKEOUT FOOD DISPOSAL</h3>  <p>LANDFILL</p> <ul style="list-style-type: none"> • plastic utensils* <p>RECYCLE</p> <ul style="list-style-type: none"> • hard plastic container* <p>COMPOST</p> <ul style="list-style-type: none"> • food • napkin <p>*If utensils or container is compostable plastic (PLA 7), dispose of in COMPOST</p>	<h3 style="background-color: black; color: white; padding: 5px; border-radius: 10px; display: inline-block;">BOBA DISPOSAL</h3>  <p>RECYCLE</p> <ul style="list-style-type: none"> -lid -cup <p>TRASH</p> <ul style="list-style-type: none"> -plastic film -straw <p>COMPOST</p> <ul style="list-style-type: none"> -tea toppings <p><small>RECYCLE</small></p>	

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- Bureau of Sanitation. *City of Los Angeles Zero Waste Progress Report*. City of Los Angeles Department of Public Works, 2013, *City of Los Angeles Zero Waste Progress Report*, planning.lacity.org/eir/8150Sunset/References/4.K.3.%20Solid%20Waste/SW.04_Zero%20Waste%20Progress%20Report_March%202013.pdf.
- Tans, Eric (2016) Zero Waste: A Waste Reduction Challenge at the Michigan State University Library. Paper presented at: IFLA WLIC 2016 – Columbus, OH – Connections. Collaboration. Community in Session 101 - Poster Sessions. <http://library.ifla.org/1538/>