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Panther Ovation Project: Combatting Food Waste and Overconsumption at UNI

Many students have expressed their concerns about the amount of food waste that is happening on campus. The primary concern is that students have seen many people in the dining halls take too much food, which then eventually gets thrown away since they are not able to finish it. In addition, this leads to the kitchen staff overproducing food for students because there is so much taken by students, along with some students not receiving as much as they need. This is a problem because students are wasting perfectly good food that could have gone to someone else because they took too much, along with it just being an overconsumption and waste of resources. Looking at past societies, it is very easy to see that the overconsumption and waste of resources can negatively impact communities. One of the societies where this was apparent is Rome; through lectures it was shown how the Roman Empire spread themselves thin through constant conquering and expansion of their Empire. This led to them overconsuming a lot of natural resources that helped them expand until they eventually ran out, which led to the inevitable downfall of the Roman Empire. This example alone shows how the overconsumption and waste of resources can be detrimental to a society and lead to a lot of problems within a community. Obviously, the population of UNI is nowhere near the size of the Roman Empire, especially at the height of their rule; nonetheless, the issue of the food that is wasted is a very pressing concern but is often overlooked by many people. To combat the waste, there are many different solutions and combinations of said solutions that would help UNI combat food waste.

Some solutions that were found to be beneficial at other universities are implementing trayless dining, forecasting demand of food so there won't be an overproduction of food, and a campus-wide composting project.

To begin with, trayless dining is the act of removing all trays from a dining area; this forces students to use individual plates and bowls, which in turn cuts down on the amount of food they are able to take and cuts down on waste (Musicus et al. 2). This practice is already somewhat implemented at UNI, with students only using trays to carry their plates of food, but to fully implement this practice and make it effective, trays need to be fully removed from the dining halls. Making the dining halls a space with the absence of trays changes the choice architecture that these spaces hold. Choice architecture refers to the different ways a space can be designed that influence the choices that will be presented to the consumers who use the area (Rajbhandari-Thapa 2). For example, by removing trays from dining areas, students are forced to carry only the items that they want to eat, which limits the amount of food they are able to take with them (2). A potential problem with this solution is the fact that students are able to just set down the food that they had gotten so that they can go back and get more. Although this issue isn't that significant because many students are not very willing to go back to get more food before they have finished eating the food they had initially gotten. In addition, this practice doesn't outright cut off the amount of food students are able to eat in a single meal if, say, a student hasn't eaten all day and is very hungry. This practice is just meant to cut down on the excessive piling of food on their trays; if students are very hungry, they can just go back to get more food after finishing their first portion. Trayless dining is probably the easiest solution to implement in the dining halls, as it just requires the removal of all trays in the dining halls, but it would require a period where students are unfamiliar with the new system. Furthermore, the

benefits of this simple system heavily outweigh the awkward period of unfamiliarity that students and staff will face. A study that looked at several universities that implemented various waste prevention techniques found that universities that implemented trayless dining areas helped prevent around 86% of waste (As seen in Table 1 below) (Musicus et al. 5). Trayless dining should be one solution that is implemented in UNI since it helps promote mindful eating by forcing students to initially take less, and it is such a simple change that offers a lot of positive benefits.

Another possible solution is forecasting the demand of food, so the kitchen staff will not overproduce food. This includes predicting and coming up with an estimated guess of what food items will be the most popular, so the kitchen staff can prepare the correct amount of food without having the risk of wasting leftover food (Musicus et al. 6). Although most people assume that food waste in the university setting solely comes from students throwing away food that they couldn't finish, this is a major contributing factor to the food waste on a campus. Moreover, an additional factor that goes into the rising waste in a university is the kitchen staff overproducing food that does not all get eaten. This is in no way the kitchen staff's fault; it is hard to make food for thousands of students almost every day, and it is difficult to determine what food items will be popular with students on a daily basis. Fortunately, through studies at different universities, there have been numerous ways that a kitchen staff can predict how much food to make on a given day. One of these ways is observing the historical data of what items, days, or events drive students to come to the dining areas or pull them away (Aci 1683). For example, there might be a particularly popular food item that a lot of students love, so the kitchen staff should take this into account and prepare more of this food, and vice versa for an unpopular food item that students do not like, so they should prepare less of this item. This is also the same for different days of the

week; there might be some days where the dining hall will see more people come in than others, and this variability should be taken into account when preparing food on a day-to-day basis. Lastly, major events that take place at a university may increase the number of people who eat in the dining halls. For example, during a family weekend, many students' families may visit and eat in the dining halls; as a result, the kitchen staff will be aware that they need to prepare more food. Knowing this information, it is very apparent that kitchen staff can help prevent food waste by looking at past data to infer the days that will be the busiest and require the most amount of food preparation. Having this connection between the kitchen staff and students can start a new understanding of how much will be required on any given day (Reynolds 8). In addition, the ability to forecast how much food will be needed on a certain day is an effective way to prevent waste, as studies show this ability is able to prevent 91% of possible food waste (as seen in Table 1 below) (Musicus et al. 5).

Even with improved forecasting to determine demand for food and trayless dining halls, there will still be food waste. Scraps that were accumulated during food preparation, leftovers, and food that wasn't liked by the consumer will still exist. To combat this inevitable waste, the implementation of a school-wide composting program would be beneficial to turn the food waste into a nutrient-rich soil. This is able to happen through a decomposition process that takes organic waste and turns it into a soil-like product that has a lot of beneficial attributes to the environment (Waliczek et al. 592). This can be useful for a university for several reasons; the main one is that the waste that would usually just get thrown away gets transformed into something else that can be used by many different people, either on campus or for people off campus. For example, this compost can be used in the greenhouses or different classes that could use the compost for a lesson, or the compost could be sold to different institutions or

communities for them to use (Waliczek et al. 594). To obtain the food waste that will be turned into compost, there needs to be proper bin signage for students so the waste can eventually be composted (593). Composting is arguably the best solution to food waste, mainly because the other two solutions could not guarantee a complete end to waste at UNI. Establishing a composting program would not eliminate food waste either, but it takes waste that would regularly be thrown away and transforms it into something useful for a campus and even other communities. Furthermore, the ability to compost potential waste can help turn 72% of food waste into compost, which makes nutrient-rich soil (as seen in Table 1 below) (Musicus et al. 5).

Table 1. Food-waste concern, measurement, reduction efforts, and barriers to reduction among sampled institutions (n = 57).

Variable	*n*	%
Level of concern paid to addressing food waste		
Very high	15	26%
High	26	46%
Moderate	14	25%
Low	1	2%
Not at all	0	0%
Specific food waste goals?		
Yes	43	75%
No	11	19%
Unsure	2	4%
Food waste measured?		
Yes	44	77%
No	9	16%
Unsure	1	2%
Types of food waste measured		
Pre-consumer	27	47%
Service	23	40%
Post-consumer	18	32%
Pre, Post, and Service combined	19	33%
Food waste measured with computer system	14	25%
Food waste separation		
Liquids vs. solids	17	30%
Solid food groups	9	16%
Efforts to reduce food waste		
Forecast demand to prevent overproduction	52	91%
Prepare smaller batches	50	88%
Trayless dining	49	86%
Change menu planning to reduce food waste	48	84%
Use leftovers for other dishes	46	81%
Offer smaller-sized plates and bowls	41	72%
Offer smaller portions	40	70%
Reduce amount of food served toward the end of the meal period	40	70%
Provide educational communications about quantity and/or impact of food waste	38	67%
Offer smaller serving utensils for self-portioned/self-served items	26	46%
Offer sample bites	17	30%
Use social norming	15	26%
Efforts to repurpose food waste		
Donating to charitable organizations	48	84%
Composting	42	74%
Among composting institutions:		
Pre-consumer level (inedible waste: plant and/or animal components that are not served/eaten)	39	93%
Post-consumer level (plate waste)	39	93%
Mean % food composted (SD)	72% (24%)	N/A
Industrial usage	24	42%
Animal feed	7	12%

In conclusion, some solutions to combatting food waste that were found to be beneficial at other universities are implementing trayless dining, forecasting demand of food so there won't be an overproduction of food, and a campus-wide composting project. Implementing one of these solutions, or a combination of solutions, is important since it helps a society achieve the Sustainable Development Goals (SDG) that help us get closer to a sustainable future (Wang 1). As mentioned before in the example of the downfall of the Roman Empire, it is important to address the underlying problem of waste and overconsumption because these problems can evolve into bigger problems. UNI could adopt all of these solutions, or just a few, but nonetheless any of these solutions would majorly help improve the issue of food waste on campus. Having trayless dining halls is the most simple change that could be added to campus, since it includes doing away with the use of trays on campus. In addition, this is one of the simplest solutions that provides some of the biggest benefits in combating food waste and overconsumption of food by students. Kitchen staff forecasting food demand helps the staff produce the right amount of food, so students can have enough to eat with minimal or zero waste, which would cut off food waste at the source. Composting projects guarantee that the unavoidable waste that will accumulate is repurposed into something useful, rather than just being thrown away. Implementing these projects can lead to UNI becoming a more sustainable campus, since these projects can help heavily reduce food waste that the UNI campus currently struggles with. In addition, these projects can eventually lead to UNI saving money, as thousands of dollars could be saved since less money will be spent on waste removal services and lower food purchasing costs. This money can then be spent elsewhere on campus, which could overall improve satisfaction of life, enjoyment, and the education for the residents in the UNI campus. Although a downside is the fact that both the technology needed for forecasting demand of the

food and the cost of starting up a compost project can be quite expensive. The technology needed

for forecasting demand of food can cost hundreds of dollars, and the price of starting up a

campus-wide composting project can cost thousands of dollars. To offset these prices, UNI could

sell some of the unused compost from the composting project to nearby communities or

companies. In addition, in the long term these projects would save money for UNI and would

eventually offset the cost of establishing these projects.

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