Effective Use of Feedback to Facilitate Campus/Dormitory Food Waste Reduction across SUNY Campuses

[FINAL REPORT FOR SUNY SMALL SUSTAINABILITY FUND]

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1. Title of project
Effective Use of Feedback to Facilitate Campus/Dormitory Food Waste Reduction across SUNY campuses.

2. Abstracts

This pilot study investigates one of the challenges associated with current food consumption system that produces high levels of food waste in many college campuses across the nation including New York State University system. Three SUNY campuses (Brockport, Fredonia and New Paltz) participated in this study over the period of the spring and fall semesters of 2013.

The study finds that, from the first round of experiments conducted at Brockport and Fredonia, an information intervention with emphasis on environmental (vs. financial) concerns has shown to be marginally more effective in reduction of food waste in those SUNY campuses. The study provides data from a small group of students residing in townhome-style residential buildings. Although the data is derived from small size samples, the group with an intervention with emphasis on financial concerns has produced more food waste during the post intervention period. The control group that did not receive any type of intervention produced significantly less food waste during the post intervention period. This observation for the control group may indicate that the participants from the control group may have felt no longer encumbered by the designated food waste bin after 4 weeks without any intervention. This observation alone does not conclusively illustrate that the reduction of food waste was based on the concerted efforts by the participants in the control group. This finding may highlight that better management of food waste depends on the constant and consistent engagement of public education.

The second stage of the project took place in cafeteria setting at SUNY New Paltz (instead of SUNY Albany, as was originally planned in the proposal). Given the time limitation and other implementation related complications at Albany (IRB process and housing plan accommodations, etc.), the Brockport investigators reached out to SUNY, New Paltz, and coordinated for an experiment in the school cafeteria setting as the townhouse setting experimentation was not a feasible option for this campus at the time. In the experiment at New Paltz, the research team found that the engagement intervention with environmental concerns also had a marginally effective outcome in reducing food waste.

The principal investigators are satisfied with the findings of the study from three campuses, and optimistic with a reasonable level of confidence that the study will be accepted for publication in one of the consumer behavior/marketing/ sustainability economics journals. We anticipate that the study will bring some insights for the participants on three campuses. It will also reveal to more general public about the difficulties of limiting food waste in daily lives. The investigators will elucidate on the challenges on mitigating and managing food waste increase while directing the attention and awareness to systematically effective intervention approaches at micro levels to additionally educate the readers on the importance of food waste reduction awareness and tools.
3. The timeline and duration of the project

The pilot study was conducted from early March to middle of May 2013 at Brockport and Fredonia campuses. The experiment at Brockport began Tuesday (3/26) and ended early May (5/7). Fredonia campus experiment began Tuesday (3/19) and ended on Thursday (4/18). The Albany campus was originally planning to participate in the study but could not participate, due, in part, to delayed IRB procedure and recruiting difficulties of student participants. The SUNY at New Paltz joined the project in fall 2013 semester and completed their project by Nov. 24 2013. Their experiment took place in a cafeteria setting. Their experiment began Monday (11/4) and ran through Sunday (11/24).

4. Summary of preliminary data analysis

One of the challenges associated with the current food system remains in high levels of food waste (~1500 Kcal/per person/per day) that consume ~300 barrels of oil/year and over a quarter of total freshwater used (Hall et al., 2009) in preparation for the wasted amount. This presents a significant environmental concern, but the average consumer lacks the information necessary to reduce food waste, or sometimes is unaware of the significance of the waste. This project sought to create pro-environmental behavioral changes by the student participants that support sustainable food consumption patterns to reduce energy consumption and environmental impact within the food system in three SUNY campuses (Brockport, Fredonia, and New Paltz). We believe that the benefits of reduction in food waste can be extended into other SUNY campuses with potentially meaningful impacts.

   a. First stage experiments at Brockport and Fredonia in town house setting

SUNY, The College at Brockport

Thirty nine students residing on northeastern campus housing participated in this study. In preparing for data analysis, we dropped participants who did not provide food waste for more than 2 successive weeks or who missed waste pick-ups too often, resulting in a smaller number with 17 participants. In the two experimental groups, participants received a message about benefits of food waste reduction. Experimental group 1 received a message that emphasized environmental benefits of food waste reduction, while experiment group 2 received a message primarily about monetary benefits of food waste reduction. These messages were shown to the participants between the pre-intervention and the intervention period, which was around after two weeks from the initiation of the food waste collection for the study. The control group did not receive any message. The following table represents the weight of collected food waste per person by group and time period.
In experimental group 1, food waste decreased after participants received the message. In the other two groups, food waste did not change significantly. We ran paired-samples t-test for each group to compare the weight of food waste between the pre-intervention and the intervention period. The change in the food waste was marginally significant in the experimental group 1 (33.5 vs. 24.33, \( t = 2.204, p < .08 \)). The other two groups did not yield any significant change in food waste between the first two periods (ps > .70). The details of the Brockport’s experiment can be found in the Appendix 1.

**SUNY at Fredonia**

The experimental procedure at SUNY Fredonia was similar to the procedure established and used at Brockport, with a few exceptions. First, it included a control group and only one experimental group. Second, a post-intervention period was not utilized, resulting in only a pre-intervention period and an intervention period. One hundred one students living on campus participated in this study. 40 participants were assigned to the experimental group, and 61 participants were assigned to the control group. Between the two periods, the experimental group received the intervention message about environmental benefits of food waste reduction, while the control group received no message. The following table illustrates the weight of food waste by group and time period.

<table>
<thead>
<tr>
<th>Groups</th>
<th>n</th>
<th>pre-intervention</th>
<th>intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experiment group 1</td>
<td>6</td>
<td>33.5</td>
<td>24.33</td>
</tr>
<tr>
<td>(Environmental effect)</td>
<td></td>
<td></td>
<td>30.33</td>
</tr>
<tr>
<td>Experiment group 2</td>
<td>5</td>
<td>24.6</td>
<td>26.2</td>
</tr>
<tr>
<td>(Financial effect)</td>
<td></td>
<td></td>
<td>36.6</td>
</tr>
<tr>
<td>Control group</td>
<td>6</td>
<td>34.83</td>
<td>36.5</td>
</tr>
</tbody>
</table>

In both the experimental group and control group, there was a significant decrease in the amount of collected food waste. In the experiment group, the reason for food waste reduction would be attributed to the intervention. An unexpected effect was that there also was a decrease in food waste in the control group. We speculate that this is probably because some participants in the control group were in contact with the experimental group, and the awareness for the purpose of this study could have influenced their food waste practice. Nevertheless, the amount of waste reduction in the control group was not compatible with the amount of waste reduction in the experimental group. And therefore, the PI team concludes that the intervention method at Fredonia was moderately effective.
b. Second stage experiment at New Paltz in cafeteria setting

In fall 2013 semester, SUNY New Paltz volunteered for the project, after an unsuccessful attempt of SUNY, Albany to proceed with the experimentation phase. With considerations for the time and resource limitations, the PI team decided to conduct the second round of experiment in a cafeteria setting at New Paltz. Ms. Lisa Mitten devised and introduced additional ideas for interventions to this portion of the project. The major purpose of this study was examining the impact of food waste reduction messages in a campus dining hall. The study consisted of three time periods, each of which was one week: baseline food waste collection period, first intervention period with signage only, and second intervention period with signage and a direct engagement component. In the baseline period (week 1), there was no intervention, and the researcher simply collected and measured post-consumer food waste at the dining hall. In the first intervention period (week 2), food waste reduction messages were posted at various places in the dining hall, including napkin dispensers, stairwell, food and dish return areas, computer screens, etc. In the second intervention period, additional interventions that utilized student engagement were added (see Appendix 2 for details). Through the 3-week study period, the number of diners per meal and day was counted. The following table displays post-consumer food waste by period.

<table>
<thead>
<tr>
<th>Week 1: Baseline Data Collection</th>
<th>Day</th>
<th>Compostable total (food waste) weight</th>
<th>n</th>
<th>Per student weight (food waste)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monday</td>
<td>1030</td>
<td>3133</td>
<td>0.33</td>
<td></td>
</tr>
<tr>
<td>Tuesday</td>
<td>910</td>
<td>3342</td>
<td>0.27</td>
<td></td>
</tr>
<tr>
<td>Wednesday</td>
<td>650</td>
<td>3239</td>
<td>0.20</td>
<td></td>
</tr>
<tr>
<td>Thursday</td>
<td>780</td>
<td>3175</td>
<td>0.25</td>
<td></td>
</tr>
<tr>
<td>Friday</td>
<td>770</td>
<td>2746</td>
<td>0.28</td>
<td></td>
</tr>
<tr>
<td>Week 2: Signage Only</td>
<td>Monday</td>
<td>1195</td>
<td>3230</td>
<td>0.37</td>
</tr>
<tr>
<td>Tuesday</td>
<td>1005</td>
<td>3218</td>
<td>0.31</td>
<td></td>
</tr>
<tr>
<td>Wednesday</td>
<td>1200</td>
<td>3017</td>
<td>0.40</td>
<td></td>
</tr>
<tr>
<td>Thursday</td>
<td>985</td>
<td>3352</td>
<td>0.29</td>
<td></td>
</tr>
<tr>
<td>Friday</td>
<td>880</td>
<td>2762</td>
<td>0.32</td>
<td></td>
</tr>
<tr>
<td>Week 3: Direct Engagement</td>
<td>Monday</td>
<td>960</td>
<td>3203</td>
<td>0.30</td>
</tr>
<tr>
<td>Tuesday</td>
<td>930</td>
<td>3210</td>
<td>0.29</td>
<td></td>
</tr>
<tr>
<td>Wednesday</td>
<td>775</td>
<td>3159</td>
<td>0.25</td>
<td></td>
</tr>
<tr>
<td>Thursday</td>
<td>825</td>
<td>3292</td>
<td>0.25</td>
<td></td>
</tr>
<tr>
<td>Friday</td>
<td>no data</td>
<td>no data</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The amount of post-consumer food waste was expected to decrease over the 3-week research period. Although the food waste generated in the first intervention period (week 2) was slightly more than the food waste recorded in the baseline period (week 1), the reduction of food waste was leaning in the predicted direction steadily over the 2-week
intervention periods. This pattern suggests that the interventions were successfully effective in reducing food waste at the dining hall.

Although it was not a part of the original study design, the PIs felt strongly about installing mirrors in the background of the food pick up stations at the school cafeteria and restaurants for an additional intervention. However, this intervention idea was not originally included in our research design, and we ultimately decided not to incorporate it into the experiment (some cafeterias do not have the layout to accommodate the installation of reflecting mirrors at food pick-up stations). The investigators anticipate that this idea may be reserved for a future project that could augment or supplement the goals of this study. The study observed that there was an increase in food waste in the Week 2. It appears that this particular increase in food waste was consequence of the Sodexo’s (New Paltz cafeteria service) 4 week menu change cycle. The details of the New Paltz’s procedure can be found in the Appendix 2. This cafeteria setting experiment provides strong statistical power for our project and the results.

5. Conclusion

The goal of this project was to create pro-environmental behavioral changes that support sustainable food consumption patterns in order to reduce energy consumption on SUNY campuses. This first-hand college experiences as participants, but also as non-participant observers on campus, will help create stronger awareness for the sustainability at different levels. The investigators anticipate that the students who come in contact with this project will draw greater understanding and appreciation for the importance of the sustainability efforts. Obvious benefits of reduction in food waste can be extended at local and national levels. The SUNY campuses share similar challenges that will not be overcome without greater efforts in longitudinal engagements for the goal. These efforts may need to include more systematic levels of educational opportunities through workshops and other feedback driven approaches (i.e. integrated website for comprehensive sustainability issues, blogging sites from personal experiences on campus sustainability living, including budgeting, shopping and cooking, or Facebook pages for campus food services with evidence of energy waste reduction with accompanying nutritional information).

In addition, recording and providing feedback system may be assisted through mobile devices and applications.

Further research will be imperative in identifying and verifying more effective and efficient approaches for food waste reduction intervention. To achieve these objectives, the next step study may be designed by looking at specific food waste patterns and distinguishing and determining corresponding appropriate intervention approaches.

Continuous education and engagement on healthy food consumption and environmental consideration will be indispensable for our long term and meaningful changes that would ultimately satisfy the objectives of sustainability at SUNY campuses and beyond.
Appendix 1. An example of IRB Report at Brockport

SUNY BROCKPORT INSTITUTIONAL REVIEW BOARD
Human Participant Research Review Form
Proposal #
(# will be inserted by IRB)

Please follow these steps to submit your application.
1) Use these two pages as the first pages of your application.
2) If a Category 1 review send just the original, if a Category 2 send the original and one copy, if a Category 3 review send the original and eight copies (if faculty member/graduate student); only three copies and an original if an undergraduate student.
3) Deliver or mail to IRB Administrator, Grants Development Office, 6th Floor Allen, SUNY Brockport, 350 New Campus Drive, Brockport, N.Y. 14420. (585) 395-2779, irboffice@brockport.edu; fax number is (585) 395-2006.

Please type or neatly print.
1. Investigator(s) name(s):
   o Dr. Joon Yong Seo (Business Administration), 585-395-5532, jseo@brockport.edu
   o Dr. Kyongsei Sohn (Accounting, Economics, Finance and MIS), 585-395-2054, ksohn@brockport.edu
   o Ms. Hilary Mosher (Environmental Science and Biology), 585-395-5966, hmosher@brockport.edu

2. Project Title: Food waste study in dorms on SUNY campuses

3. College Status (for each investigator):
   Faculty/Staff: Joon Yong Seo and Kyongsei Sohn
   Professional Staff/Instructional Support: Hilary R. Mosher

4. If the principal investigator is a student, list name, department, and local telephone number of faculty supervisor. Please note that the Faculty/Staff Supervisor must indicate knowledge and approval of this proposal by signing this form.
   Faculty /Staff Supervisor's name: ____________________________
   Department and phone number: ______________________________

5. Check appropriate category of research project (complete after reviewing guidelines):
   Category 1 (Exempt Review) ___; Category 2 (Expedited Review) ___X___
   Category 3 (Full Review) __________________

6. The Principal Investigator must sign this form. (If the P.I. is a student, their faculty/staff supervisor must also sign this form).
I certify that: 1) the information provided for this project is accurate; 2) no other procedures will be used in this project; 3) any modifications in this project will be submitted for IRB approval prior to use; 4) I have successfully completed the required online IRB training program.

Hilary R. Mosher
Joon Yong Seo
Kyongsei Sohn

<table>
<thead>
<tr>
<th>A. Signature of Investigator</th>
<th>Date: 2-11-2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>Signature of Investigator</td>
<td>Date: 2-11-2013</td>
</tr>
<tr>
<td>Signature of Investigator</td>
<td>Date: 2-11-2013</td>
</tr>
</tbody>
</table>

B. Faculty/Staff Supervisor: 1) I certify that this project is under my direct supervision and that I am responsible for insuring that all provisions of approval are complied with by the principal investigator. 2) I have successfully completed the required online IRB training program. 3) My signature indicates I have reviewed this proposal and agree it is in final form and ready to be submitted to the IRB.

Signature of Faculty/Staff Supervisor

Date
1) Project description:

The purpose of this research is to develop and evaluate food waste reduction strategies in dorms on campuses. We seek to create pro-environmental behavioral changes in three SUNY campuses (Brockport, Fredonia, and Albany). The project will consist of three stages: pre-intervention, intervention, and post-intervention. Each stage will take approximately 2 weeks. Participants’ food waste will be collected and weighed for a total of six weeks.

All participants will be presented with informed consent and asked for voluntary participation in the study (see informed consent in Appendix B). During the six-week period all the participants will be asked to place their food waste in a designated compost bin. The bin will be lined with a compostable bag and located in (or near, if necessary) the residential area (e.g., kitchen). The compostable bag will be weighed by a student worker over a specified period of time (i.e., every 2-6 days). The collected food waste will be placed in a large compost bin fashioned from used, washed, waste drums available from facilities on each campus. The bin will have a hinge placed on it to allow for easy opening and shutting so that compostable food waste can be placed in the bin. Soldier fly larvae (*Hermetia illucens*) will be used to compost this waste during the project. The soldier fly larvae have been found to be an effective waste reducer with little to no odor or nuisance. Additional controls will include working with facilities staff to determine if regular garbage has been contaminated with food waste.

The first two weeks will be the pre-intervention stage in which we will collect baseline food waste data. Prior to the pre-intervention stage, participants will be given a survey about recycling behavior, attitudes about recycling and food waste, food consumption pattern, demographic variables, etc. (see Appendix C).

The next two weeks (week 3 and 4) will be the intervention stage where we will divide the sample into three groups and apply different interventions to different groups. Food waste weights will be measured as in the pre-intervention stage. Participants will be randomly assigned to one of the three groups and will receive interventions in the form of a weekly letter through email or mail. The weekly letters will consist of the following information.

<table>
<thead>
<tr>
<th>Information provided in weekly letters</th>
<th>Group 1</th>
<th>Group 2</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>Facts about food waste in the US</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Food waste reduction tips</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Public benefit of food waste reduction (e.g., environmental protection)</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Individual benefit of food waste reduction (e.g., saving food cost)</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

The weekly letters will also include an educational pamphlet (see Appendix D) which participants will post in their kitchen or dining area in dorms as well as a link to an online survey regarding their progress in food waste reduction.
The last two weeks (week 5 and 6) will be the post-intervention stage. This stage will include two weeks of food waste collection with the intervention removed. After the post-intervention stage, a post-intervention session survey will be delivered to the participants to determine the effectiveness and level of food waste prevention information gained from the workshops. Then, we will conduct statistical analyses of the data to compare the weights of the food waste pre-, during, and post-intervention among the groups and across the three campuses.

2) **Number of participants and relevant characteristics:** Forty to one hundred students will participate from each campus, split evenly in three groups. Anybody who is an adult and regularly shops, stores, and consumes food will be eligible to participate in this study. However, efforts will be made to recruit students who have access to and regularly use a full kitchen, because they tend to generate more food waste, and interventions will be more effective.

3) **Selection Process (how participants will be selected):** The participation will be solicited through bulletin boards located in the dorms, Resident Advisors/Directors, and/or other similar routes. Participation is voluntary.

4) **Status of Research Assistants (background/qualifications):** A student worker from each campus will be hired to collect and help analyze food waste data. Resident Advisors and Resident Directors will be asked to participate in the program and subsequent training sessions. The student worker at Brockport has completed IRB online training, and her certificate is attached.

5) **Source of Funding:** This research has been selected for award under “Sustainability Fund-Small Grants for Ideas that Might Further the Power of SUNY” in the amount of $6342.

6) **Start - Completion dates:** Feb 2013 – Sep 2013

7) **Attach copies of all questionnaires, testing instruments, or interview protocols, and any cover letters or instructions to participants.** Please see Appendixes

8) **Attach a copy of your certificate of completion for the online training course. If you don't have it indicate that you completed it and records will be verified by the IRB Administrator.** The principal investigators’ certificates are attached.

9) **Anonymity/Confidentiality (how you will protect participants so they are not identified with their responses):**

   Every effort will be made to avoid connecting personal information to participants’ responses. The data will be coded in a non-identifying manner and stored, for example, using date and participant number information (e.g., 20133-A1). In the event that results of this research are published or presented to others, participants’ names will not be linked to the data, and group
average and overall statistics will be reported. Data will be locked safely in the researchers’ cabinet or computer protected with password. Only the researchers and RA will have access to the data. The data will be shredded at the end of the project.

10) **Consent form:** See Appendix

11) N/A

12) N/A

**APPENDIXES**

Appendix A: Participation Solicitation Document
Appendix B: Informed consent form
Appendix C: Sample survey questions and scales
Appendix D: Educational pamphlets
Appendix E: References
Appendix A: Sample Participation Solicitation Document

RESEARCH PARTICIPANTS RECRUITEMENT

Research Title: Food waste study in dorms on SUNY campuses

Compensation: As a token of appreciation for your time and effort, small amount of compensation will be offered in the form of a gift card which will be up to $10.

Research Description: This study involves academic research on food waste on SUNY campuses. The purpose is to understand college students’ food waste patterns and to develop food waste reduction strategies. The study will take approximately six weeks in total (March-April 2013). You will be presented with instructional material on the topic of food waste and may be asked to change your practices. Over six-week study period, you will be asked to place all your food waste in a compost bin lined with a compostable bag (offered by the researchers) which will be located in or near your residential area (e.g., kitchen). A student worker will collect the compostable bags and measure food waste regularly. Before and during the study you will receive a weekly letter which will include instructions and a link to an online survey. The survey will ask about your food consumption and waste along with your perception of the effectiveness of instruction material. Each survey should take less than 20 minutes to complete. All data collected in the process of this study will be kept strictly confidential. If you are interested in participation, please contact any of the researchers.

Joon Yong Seo, School of Business Administration and Economics, 585-395-5532, jseo@brockport.edu
Kyongsei Sohn, School of Business Administration and and Economics, 585-395-2054, ksohn@brockport.edu
Hilary Mosher, Environmental Science and Biology, 585-395-5966, hmosher@brockport.edu
Appendix B: Informed Consent Statement

INFORMED CONSENT AGREEMENT TO PARTICIPATE IN RESEARCH
The College at Brockport

This study involves academic research on food waste on campuses and is conducted by a group of researchers at The College at Brockport. The purpose is to understand college students’ food waste patterns and to develop an effective way to manage campus food waste. The study will take approximately six weeks in total. During the study you will be presented with instructional material on the topic of food waste and may be asked to change your practices. Prior to the study you will be asked to complete a survey that collects your demographic information, food consumption and disposal patterns, involvement in sustainable practices, etc. It will take less than 10 minutes to complete. Over six-week study period, you will be asked to place all your food waste in a compost bin lined with a compostable bag which will be located in or near your residential area (e.g., kitchen). A compost bin and compostable bags will be offered as needed. A student worker will collect the compostable bags and measure food waste regularly. For two weeks we will deliver a weekly letter which will include instructions and a link to a short online survey. The survey will ask about your food consumption and waste along with your perception of the effectiveness of instruction material. After six weeks, you will be asked to complete another similar survey. Each survey should take less than 10 minutes to complete. You have the right to refuse to answer any questions in the surveys.

In order to participate in this study, your informed consent is required. You are being asked whether or not you want to participate in this study. If you wish to participate, and you agree with the statement below, please sign in the space provided at the end. You may change your mind at any time and leave the study without penalty, even after the study has begun. You can inform the researcher in written form if you wish to cease participation at any time during the study.

We know of no significant risks or discomforts associated with this study other than the time it will take to collect your food waste and complete the questionnaires. Benefits include knowledge of how to reduce food waste, and more generally you may be contributing to a better understanding of food consumption and how to help people reduce food waste.

Approximately 60-100 students will be invited to participate in the study. All data collected in the process of this study will be kept strictly confidential. Once all the data have been collected, identifying information will be deleted from the dataset. Your responses will not be linked to your name. The data will be coded in a non-identifying manner and stored, for example, using date and participant number information (e.g., 20089-A1). In the event that results of this research are published or presented to others, participants’ names will not be linked to the data.
Every effort will be made to avoid connecting personal information to participants’ responses. The data will be coded in a non-identifying manner and stored, for example, using date and participant number information (e.g., 20133-A1). In the event that results of this research are published or presented to others, participants’ names will not be linked to the data, and group average and overall statistics will be reported. Data will be locked safely in the researchers’ cabinet or computer protected with password. Only the researchers and RA will have access to the data. The data will be shredded at the end of the project.

This project has been approved by The College at Brockport's Institutional Review Board. Approval of this project only signifies that the procedures adequately protect the rights and welfare of the participants.

As a token of appreciation for your time and effort, small amount of compensation will be offered in the form of a gift card which will be up to $10.

Please note that absolute confidentiality cannot be guaranteed due to the limited protections of Internet access, however every attempt to keep confidentiality will be kept.

Dr. Joon Seo (585-395-5532/jseo@brockport.edu), Dr. Kyongsei Sohn (585-395-2054/ksohn@brockport.edu), or Ms. Hilary Mosher (585-395-5966/hmosher@brockport.edu) will gladly answer any questions you may have concerning the purpose, procedures, and outcome of this project. You may also contact Colleen Donaldson, IRB Administrator, 6th Floor Allen Administration Building (585-395-2523) should you have any questions or concerns about this study.

_I am 18 years of age or older. I have read and understand the above statements. All my questions about my participation in this study have been answered to my satisfaction. I agree to participate in the study realizing I may withdraw without penalty at any time during the survey process._

___________________________________________ ______________________
Signature of participant /Date
Appendix C: Sample survey questions and scales

Demographics Scale

Participant Code: ________

Dorm building:

Gender:  ☐ Female ☐ Male

Age: _____

Year at the college: Freshman, Sophomore, Junior, Senior

Major(s): _______________   Minor(s): _______________

Food Purchase, Consumption, and Disposal Scale

Do you have access to a full kitchen in your dorm? Yes    No

How often do you cook your meal or snack? (       /week)

On average how often do you go grocery shopping? (             /month)

On average how much do you spend per your grocery shopping? ($        )

How do you dispose of your food waste?
   1) Put in a garbage can along with other garbage
   2) Put in a compost bin

Food Waste Reduction Behavior and Intention Scale

Indicate the degree to which you agree or disagree with each of the following statements. (1=strongly disagree, 2=moderately disagree, 3=neither agree or disagree, 4=moderately agree, 5=strongly agree)
-My food waste reduction efforts contribute to environmental protection.
-My food waste reduction efforts contribute to our economy.

Indicate the extent to which you have been complying with the given instructions on food waste disposal. (1=I have not been complying with the instructions at all, 5=I have been complying with the instructions very well)

Indicate the extent to which your food waste has reduced since your participation in this study. (1=my food waste has not reduced at all, 5=my food waste has reduced a lot)
Indicate the extent to which your food purchase has reduced since your participation in this study. (1=my food purchase has not reduced at all, 5=my food purchase has reduced a lot)

Indicate how hard you have worked to reduce your food waste since your participation in this study. (1=I have worked very little, 5=I have worked very hard)

Evaluate your effort to reduce your food waste since your participation in this study. (1=very little effort, 5=very much effort)

Over the next several weeks, I plan to reduce my food waste (1=never, 5=at every opportunity). (Taylor and Todd, 1995)

Within the past (____) weeks, I have reduced my food waste (1=never, 5=at every opportunity). (Taylor and Todd, 1995)

Attitudes toward food waste reduction (Taylor and Todd, 1995)

I (1=dislike, 7=like) the idea of reducing my food waste.

Reducing my food waste is a (1=bad, 7=good) idea.

I have a (1=negative, 7=positive) attitude towards reducing my food waste.

Perceived behavioral control and complexity (Taylor and Todd, 1995)

Whether or not I reduce my food waste is entirely up to me (1= strongly disagree, 5=strongly agree).

I have complete control over the amount of food waste reduction that I do (1= strongly disagree, 5=strongly agree).

Whether or not I reduce my food waste effectively is completely within my control (1= strongly disagree, 5=strongly agree).

Reducing my food waste is difficult (1= strongly disagree, 5=strongly agree).

Reducing my food waste does not fit with my daily routine (1= strongly disagree, 5=strongly agree).

Reducing my food waste is inconvenient (1= strongly disagree, 5=strongly agree).

I do not have time to reduce my food waste (1= strongly disagree, 5=strongly agree).

For me, reducing my food waste takes too much effort (1= strongly disagree, 5=strongly agree).
**Personal Relative Advantages** (Taylor and Todd, 1995)

I will personally benefit from reducing my food waste (1= strongly disagree, 5=strongly agree).

Whether or not I personally benefit from reducing my food waste is a (1=very unimportant, 5=very important) part of my decision whether to engage in this behavior.

**Recycling Behavior and Attitudes Scale** (Biswas et al. 2001)

Indicate the extent to which you recycle each of the following types of waste (1=never recycle, 5=always recycle): aluminum, glass, steel cans, newspaper, and cardboard.

Indicate the degree to which you agree or disagree with each of the following statements. (1=strongly disagree, 2=moderately disagree, 3=neither agree or disagree, 4=moderately agree, 5=strongly agree)

- When I recycle, I feel good
- When I fail to recycle, I feel guilty
- When I imagine myself recycling, I feel good
- Recycling is an important issue
- Recycling is an important issue to me personally

**Perceived Social Norms** (Biswas et al. 2001)

If I recycled on a regular basis, most people who are important to me would ( )

1=disapprove, 5=approve
1=not appreciate it, 5=appreciate it
1=find it undesirable, 5=find it desirable
1=not support it, 5=support it.
Your Scraps Add Up: Reducing food waste can save the EARTH!
A large portion of that waste is caused by consumers. Developing habits to save food now could dramatically reduce food waste and the need for increased food production in the future.

What does wasting food cost us? We’re contributing to climate change
Nearly all of the food waste ends up in landfills where it decomposes and releases methane, a heat-trapping greenhouse gas that is 21 times more potent that carbon dioxide. In 2010 food waste in the United States accounted for slightly more than 100 metric tons of methane originating from landfills. At the European level, the overall environmental impact is at least 170 metric tons of CO2 equivalent emitted per year (close to the total greenhouse gas emissions of Romania or of the Netherlands in 2008 and approximately 3 percent of total EU27 emissions in 2008). This calculation includes all steps of the life cycle of food waste (agricultural steps, food processing, transportation, storage, consumption, and end-of-use impacts).

Easy Steps to Reducing Your Food Waste and Saving Economy

**Shop Wisely**—Plan meals, use shopping lists, buy from bulk bins, and avoid impulse buys. Don’t succumb to marketing tricks that lead you to buy more food than you need, particularly for perishable items. Though these may be less expensive per ounce, they can be more expensive overall if much of that food is discarded.

**Buy Funny Fruit**—Many fruits and vegetables are thrown out because their size, shape, or color are not “right”. Buying these perfectly good fruit, at the farmer’s market or elsewhere, utilizes food that might otherwise go to waste.

**Mine Your Fridge**—Websites such as www.lovefoodhatewaste.com can help you get creative with recipes to use up any foods that might go bad soon.
Use Your Freezer—Frozen foods remain safe. Freeze fresh produce and leftovers if you won’t have the chance to eat them before they go bad.

Request Smaller Portions—Restaurants will often provide half-portions upon request at reduced prices.

Eat Leftovers—Ask your restaurant to pack up your extras so you can eat them later. Freeze them if you don’t want to eat immediately. Only about half of Americans take leftovers home from restaurants.

Compost—Composting food scraps can reduce their climate impact while also recycling their nutrients. Food makes up almost 13 percent of the U.S. waste stream, but a much higher percent of landfill-caused methane.
Your Scraps Add Up: Reducing food waste can save your MONEY!
A large portion of that waste is caused by consumers. Developing habits to save food now could dramatically reduce food waste and the need for increased food production in the future.

What does wasting food cost us? We’re literally throwing MONEY away
The cost of wasted food is staggering. In the U.S., we waste around 40 percent of all edible food, worth around US$48.3 billion. The average American throws away between $28-43 in the form of about 20 pounds of food each month. This discarded food adds up to approximately US$2,200 annually of a household’s food bill. Wasted food is wasted energy. The calories in wasted food are never consumed, and the money and energy that went into growing the food, processing it, packaging it, transporting it to the consumer, and discarding it is also wasted. Each year, U.S. food waste represents the energy equivalent to 4 percent of total U.S. oil consumption enough to power the whole country for a week. Consider these cost estimates of all the food that never gets eaten in the U.S., and imagine just how much we can save by wasting less food: 1) 25 percent of all freshwater used in U.S., 2) $100 billion per year dedicated to producing food that never gets eaten, 3) $750 million per year just to dispose of the food, 4) 33 million tons of landfill waste.

Easy Steps to Reducing Your Food Waste and Saving Economy

Shop Wisely—Plan meals, use shopping lists, buy from bulk bins, and avoid impulse buys. Don’t succumb to marketing tricks that lead you to buy more food than you need, particularly for perishable items. Though these may be less expensive per ounce, they can be more expensive overall if much of that food is

Buy Funny Fruit—Many fruits and vegetables are thrown out because their size, shape, or color are not “right”. Buying these perfectly good fruit, at the farmer’s market or elsewhere, utilizes food that might otherwise go to waste.
Learn When Food Goes Bad—“Sell-by” and “use-by” dates are not federally regulated and do not indicate safety, except on certain baby foods. Rather, they are manufacturer suggestions for peak quality. Most foods can be safely consumed well after their use-by dates.

Mine Your Fridge—Websites such as www.lovefoodhatewaste.com can help you get creative with recipes to use up anything that might go bad soon.

Use Your Freezer—Frozen foods remain safe. Freeze fresh produce and leftovers if you won’t have the chance to eat them before they go bad.

Request Smaller Portions—Restaurants will often provide half-portions upon request at reduced prices.

Eat Leftovers—Ask your restaurant to pack up your extras so you can eat them later. Freeze them if you don’t want to eat immediately. Only about half of Americans take leftovers home from restaurants.

Compost—Composting food scraps can reduce their climate impact while also recycling their nutrients. Food makes up almost 13 percent of the U.S. waste stream, but a much higher percent of landfill-caused methane.
Appendix E: References


Appendix 2. An example of Study Description and IRB Proposal, SUNY at New Paltz

Food Waste Study
At SUNY New Paltz’s Hasbrouck Dining Hall
November 2013

About the Study Site

This study will be tracking changes in post-consumer food waste behavior at SUNY New Paltz’s Hasbrouck Dining Hall, the only traditional dining hall at SUNY New Paltz. All other dining facilities on campus have retail-style operations in which operate as a particular brand with a cashier at each location where paid for a la carte. Hasbrouck Dining Hall is an all you can eat dining hall. In most locations at the dining hall, students help themselves to however much they would like to eat, however this year servers are now being stationed during lunch and dinner time in the main meal area where meat is served. Meat is the most expensive food served at the dining hall. Additional information about the stations and types of food served in the dining hall will be provided at the completion of the study.

Entities Involved

Sodexo manages the dining services at SUNY New Paltz. They are contracted to Campus Auxiliary Services (CAS). CAS is contracted by the university to provide a range of services, including dining services, to the campus. SUNY New Paltz’s Office of Campus Sustainability provides support to Sodexo and CAS on sustainability initiatives, including food waste reduction initiatives. Royal Carting weighs the food waste and hauls it to a nearby composting facility.

Quantitate Data Collection

- **Post-Consumer Food Waste** generated by students at Hasbrouck Dining Hall. Measured in pounds. These figures include edible food waste (ie. remaining food), inedible food waste (fruit peels, bones), and nonfood compostable waste (napkins). This data does not include the weights of non-compostable food items such as foils and plastic wraps. It also does not include liquid food and beverage waste such as soda, juice, milk, or soup.

- **Student Swipes at Hasbrouck Dining Hall.** Sodexo has provided our food waste study team with data for the total number of students per day that “swipe in” to eat at Hasbrouck Dining Hall. The data also demonstrates how many students per day swipe in during the following meal times:
  - Breakfast (7am to 11am)
  - Lunch (11am to 3pm)
  - Light Lunch (3pm to 5pm)
  - Dinner (5pm to 8pm)
  - Late Night (8pm to 10pm)

- **Number of Servers at lunch and dinner time.** To reduce food waste, Sodexo assigns staff to serve food to students during lunch and dinner times to LOCATION OF SERVERS

Qualitative Data Collection
- Student food waste research Nathaniel Pickering will record his observations of the types of food waste that is generated at different times of the day each of the weeks of the food waste study. Nathaniel will be stationed in the dishroom that processes all of the food waste.

**Data Collection Methodology**

Three types of food waste are currently picked up daily at Hasbrouck Dining Hall:

1. Food waste from Oscars, the late-night eatery in the same building as Hasbrouck Dining Hall. This food waste is out of the scope of this study. This food waste is collected in a separate bin marked with silver tape. Charlie from Royal Carting notes the weight of this particular bin on his reporting sheet so we can exclude Oscar food waste from our totals.
2. Food Waste generated from the kitchen at Hasbrouck Dining Hall. This food waste is measured in two separate ways. Sodexo invested in a LeanPath system where staff weight back-of-the-house food waste on a special scale that collects data about the type of food waste for weekly food waste reporting and analysis. After this food is weighed, it is disposed of in a food waste bin labeled with red tape. Charlie from Royal Carting notes the weight of kitchen food waste bin on his reporting sheets. We have LeanPath data from the beginning of the fall semester and Charlie’s data for back of the house food waste from the beginning of the baseline period of this study.
3. Food waste generated by students collected in the dish room of Hasbrouck Dining Hall. This is the remaining food that students have chosen not to eat and are “throwing away.” Since the beginning of the baseline period for the study, these bins are weighed and recorded by Charlie on a daily basis. These weights include edible food waste, non-edible food waste (i.e., orange peels and bones) as well as non-edible, non-food waste (napkins).

Other quantitative data collected include:

1. Total number of students who swipe in to eat at Hasbrouck Dining Hall on a daily basis. The numbers are also broken down by meal time. These meal times include breakfast, lunch, light lunch, dinner, and late night. When students enter the dining hall, they swipe their ID cards at the cash register. These data is recorded by Sodexo and provided to our student Food Waste Researcher each Friday for the prior seven days.
2. Number of food servers. Sodexo staffs its main food area with servers during lunch and dinnertime to control portions that students take. Servers are not available every day. Our student food waste researcher and Chef Michael Hoysradt will be providing data of the number of servers per day to determine if there’s a correlation between number of servers and total amount of food waste.

**Food Waste Study Timeline and Methods**

*Week One – November 4 - 10, 2013*

The first week is our baseline week. We will collect data only and used no intervention methods.

*Week Two – November 11 - 17, 2013*
During the second week our only intervention will be introducing signage to the Hasbrouck Dining Hall. This is the signage that was used:

The signage was placed in the following locations:
- Napkin dispensers on 100+ table in the dining hall each had one food waste sign
- Three 3’ x 4’ signs will be hung in the dining hall in the stairwell up to the dining hall, the wall next to the main food area, and next to the dish return.
- Six computer monitors will have the food waste signage cycling through during this period.

The same food waste messaging will be featured in Sodexo’s Facebook account (with 1,379 likes) and Twitter account (with 98 followers).

**Week Three – November 18 – 24, 2013**

During the third week all of the signage from the first week will continue. The following additional interventions will occur as well:

- Monday, November 18 from 10 am to 1:30 pm – A student-led food waste demonstration in which students will pile all their food waste in a central location in Hasbrouck Dining Hall in plastic swimming pools. The demonstration is a visual, impactful statement about how much food the students actually waste during one lunch period. The food waste will be separated into three separate piles:
  - Edible food waste
  - Non-edible food waste (orange peels, bones)
  - Non-edible non-food waste (napkins)
Each pile will be weighed separately. At the same time, students will have the opportunity to guess-the-weight of the food waste by writing their name, email and phone number on a piece of paper. The student guesses the closest to the actual weight will receive a free dinner for two to the Farm-to-Table Harvest Dinner at Hugo’s, New Paltz’s new fine dining restaurant.
- Wednesday, November 20 at 10am and 2pm – A Food Waste Ted Talk. CAS, Sodexo, and the Office of Campus Sustainability will host a viewing of Tristam Stuart’s Ted Talk entitled The Global Food Waste Scandal followed by a discussion. We hope to engage the students in meaningful conversation about the local and global problems of food waste. Here is a link to the TED Talk: [http://www.ted.com/talks/tristram_stuart_the_global_food_waste_scandal.html](http://www.ted.com/talks/tristram_stuart_the_global_food_waste_scandal.html)
- Monday, November 18 to Friday, November 22 – Food Waste Peer-to-Peer Education. During lunch and dinner time during the third week, students sit at a table next to the dish return area of Hasbrouck Dining Hall where they drop off their dishes potentially carrying food waste. These students will engage their peers in one-on-one education about food waste. A scale will be available for students to weigh their own food waste. Students may be given the opportunity to sign a “food waste pledge.”
STATE UNIVERSITY OF NEW YORK AT NEW PALTZ  Protocol #
Human Research Ethics Board  Approval Date:

Application for Research Proposal Review

Note: Incomplete applications will be returned. Refer to HREB guidelines & policies available on the web at
www.newpaltz.edu/sponsored_programs/humansub.html

Allow a minimum of 15 days for processing of your application (if it is delivered to the Office of Sponsored Programs by noon Monday
through Thursday. Allow more time if delivered on Thursday p.m. or Friday.) You will receive e-mail notification of approval or of
modifications required.

For proposals falling under the categories of Expedited and Exempt, the original, one hard copy and one electronic copy via e-mail
attachment must be submitted to the HREB secretary. Please submit the hard copies to: Human Research Ethics Board, 6 Office of
Sponsored Programs, HAB 604 and the electronic copies to: hrebsecretary@newpaltz.edu. The hard copies must include the signed
cover sheets and all relevant materials, i.e., consent form(s), questionnaire(s), advertisements, etc. The protocol submitted as an
electronic attachment should include the unsigned cover sheets and the same relevant materials as a single file in MS Word or PDF
format. After the signed hard copies are received by the HREB secretary, the secretary will then forward the electronic proposal to the
HREB Chair and one HREB member for review. For Full Board Review applications, submit 12 hard copies of your application to the
HREB secretary. Applications will be distributed for review at convened meetings. For all proposals submit two copies of grant/contract
proposals, if any.

☐ Fall  ☐ Expedited Category  ☒ Exempt 45 CFR 46.101  
(all international studies)

Note: If this study qualifies as an Exempt Survey please use the abbreviated Survey Research Application instead.

Title of Study: Food Waste Study

Date of Submission: October 29, 2013

Principal Investigator Name: Lisa Mitten

Specify:  X Faculty/Staff  Graduate Student  Undergraduate Student  Other

Local Mailing Address: Service Building 8, SUNY New Paltz, New Paltz, NY

Department: Office of Campus Sustainability  Division: Facilities Management  Phone: x3325  email: mittenl@newpaltz.edu

If PI is a Student

Name of Faculty Sponsor:  Department:  Phone:  email:

Co-Investigator's Names: Joon Yong Seo

Specify:  X Faculty/Staff  Graduate Student  Undergraduate Student  Other

Institutional Affiliation (if not SUNY at New Paltz): SUNY Brockport

To complete the required CITI human subjects training program, go to www.miami.edu/citipro. This training must be completed prior
to submission of application. Please note that if your research involves any of the issues below, you are required to take the
corresponding CITI modules. Please check all that apply:  ☐ International Research  ☐ Vulnerable Subjects – Women, Fetuses
☐ Vulnerable Subjects – Groups/Communities  ☐ Res. using internet  ☐ Records Based Research  ☐ Genetics Research
☐ VA Research  ☐ HIPAA

Principal Investigator: Lisa Mitten  CITI completed? Yes ☐ No ☒

Study Team: List all individuals who assist the PI in the design or conduct of the study. Attach additional pages as needed.

Name: Emily Ferencik  Department: Campus Auxiliary Services  CITI completed? Yes ☐ No ☒

Name: Nadziel Pickering  Department: Office of Campus Sustainability  CITI completed? Yes ☐ No ☒

Name:  Department:

Revised 7/12/13
Rates of Pay to Subjects, if applicable: none

Funding Source(s) and Application Deadline(s) (if applicable): Sustainability Fund – Small Grants for Ideas that Might Further the Power of SUNY. Already awarded to SUNY Brockport. Sub-awarded to SUNY New Paltz already.

Agency/Organization: SUNY Brockport
Is this project expected to continue for more than one year? □ Yes X No Application Date: _______ Anticipated completion date: Late fall 2013

Approval for Expedited projects is valid for one year only. Investigators must request a continuation of the approval yearly if the activity is ongoing for more than one year. The Application for Continued Approval located on the HREB website is to be used for this purpose.

For completed studies: A research project no longer involves human subjects once the investigators have finished obtaining data through interaction or intervention with subjects or obtaining identifiable private information about the subjects, which includes the using, studying, or analyzing identifiable private information. Once all such activities described in the HREB-approved protocol are finished, the research project no longer needs to undergo continuing review. If this is the case, e-mail the HREB Chair (hrebchair@newpaltz.edu) copying the HREB Secretary (hrebscereetary@newpaltz.edu) stating that your study is complete. Be sure to include the title of your study and protocol number in your e-mail.

Signature of Principal Investigator (PI)
Signature certifies that the information in this application is correct and that the research will be conducted in full compliance with SUNY New Paltz policies and federal regulations. The period of approval is determined by the HREB and continuing review is required in order to maintain approval status. The PI must submit progress reports for this review. Adverse events must be reported to the HREB according to the guidelines and changes in the study must be approved by the HREB prior to implementation.

Signature of Principal Investigator Date

Statement of Assurance for Investigators Applying for Full or Expedited Review

Disclosure of Financial Relationships and Interests in Research

Do you, your spouse, or dependent child(ren) have any financial relationships that may create financial interests in research studies that may bias the design, conduct, or reporting of the research or that may adversely affect the rights and welfare of subjects?

Yes □ No X Signature

Principal Investigator(s) and Faculty Sponsor (If a student investigator) must sign the following Statement of Assurance if the research proposal is being submitted for Full or Expedited Review Procedures.

I (We) understand the SUNY New Paltz policy concerning research involving human subjects and agree to:

1. Accept responsibility for the scientific conduct of this project;
2. Assure that the information in this application is correct;
3. Obtain informed consent of all subjects, provide subjects with copies of consent forms and maintain consent forms for the required three years, unless these procedures are waived by the HREB. (Faculty sponsors will keep consent forms on file for student investigators below the thesis level.)
4. Assure that all key personnel have completed the SUNY New Paltz educational requirements for human subject research prior to assuming duties;
5. Use only an HREB approved and stamped copy of the consent form.

Revised 7/12/13
6. Obtain prior approval from the HREB before amending or altering the scope of the project or implementing changes in the approved consent form and utilize only the revised, stamped copy of the consent form.

7. Maintain research data and consent documents under appropriately secure conditions in order to protect subject confidentiality.

8. Report promptly to the HREB any injuries to hu

9. man subjects or any problems which involve risks to the human subjects or others, which become apparent during the course of or as a result of experimentation and any actions taken.

10. Cooperate with the HREB with the continuing review of this project including submission of the Application for Continued Approval/Final Report.

11. Report promptly, both to subjects and the HREB, significant new findings developed during the course of the research which may relate to the subjects' willingness to continue participation.

12. Comply with all HREB decisions, conditions and requirements.

13. Report to the HREB any serious or continuing noncompliance with the requirements of the SUNY New Paltz human subjects policy or determinations of the HREB.

13. Train and supervise study personnel who are obtaining consent.

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<th>Printed Name of Investigator</th>
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<td>Printed Name of Faculty Sponsor</td>
<td>Signature/Approval of Faculty Sponsor</td>
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Statement of Assurance for Requests for Certification of Exempt Status

Principal Investigator(s) and Faculty Sponsor (if a student investigator) must sign the following Statement of Assurance.

The proposed investigation involves the use of human subjects. I am (we are) submitting this form with a description of the project prepared in accordance with institutional policy for the protection of human subjects participating in research. I have ensured that all items on the Research Proposal Checklist are included.

X I (We) understand the College's policy concerning research involving human subjects and agree to:

1. Accept responsibility for the scientific conduct of this research;

2. Assure that the information in this application is correct

3. Assure that all key personnel have completed the SUNY at New Paltz educational requirements for human subject research prior to assuming any duties;

4. Obtain parental permission for all subjects (if required) and maintain permission forms for the required three years, unless these procedures are waived by the HREB. (Faculty Sponsors will keep permission forms on file for Student Investigators below the thesis level.).

5. Maintain research data and permission documents under appropriately secure conditions in order to protect subject confidentiality;

6. Report to the HREB any unanticipated effects on subjects which become apparent during the course or as a result of experimentation and any actions taken;

7. Obtain prior approval from the HREB before amending or altering the scope of the project or implementing changes in the approved consent form.

Revised 7/12/13
8. Comply with all HREB decisions, conditions and requirements.

Signature of Investigator

Date

Approval/Signature of Faculty Sponsor

Date

Completing the Application for Research Proposal Review

General Considerations:

There may be some questions on this form, which you consider do not apply to your application. For those questions, state, “Does not apply” if it is clear that it does not apply. If it might be subject to question, then give a rationale for why you do not believe this question pertains to your study. If you leave a question unanswered, the HREB will consider that you forgot to answer the question and will return your application with the request for further information. Refer to pages 2-12 for instructions pertaining to the questions below.

Category A: Brief Description of Proposed Research:

Question 1: State the purpose of your research.

The purpose of this study is to explore how to introduce changes in food waste behavior at university dining facilities. During the second week of the study, we will test effectiveness of simple message-type interventions that require little resource or administrative support. During the third week of the study, we will test the effectiveness of direct education about food waste through various educational and outreach initiatives that may include (1) a physical demonstration of all the food waste generated during one lunch period, (2) a Ted Talk on the problem of Global Food Waste shown in Hasbrouck Dining Hall and (3) peer-to-peer education about food waste. This study will assess whether interventions that use simple messages will elicit changes in food waste behavior. These messages will educate eaters about various (e.g., environmental, economic, social, etc.) benefits of cutting food waste and encourage waste reduction behavior. The study will also assess the effectiveness of simple, low-cost messages and more extensive, higher-impact, more time consuming direct outreach.

Question 2: State the major hypotheses, research question and/or the aims of your study.

What interventions are the most effective at reducing food waste?

Question 3: Provide a brief review of literature including citations.

In the US about 30% of food is wasted (Buzby & Hyman, 2012; Hall, Guo, Dore, & Chow, 2009). Commercial food operations, including college dining halls, are major contributors to the vast amounts of food waste. Food waste generated by universities each year is estimated at 540,000 million tons. Transportation of food waste to landfills, processing waste into the sewer system through garbage disposals, and composting create challenges for foodservice providers and local and state governments. Food waste reduction will decrease carbon footprint and help us use our resources more efficiently. However, the change in food consumption waste will require coordinated efforts, including changes in supply-chain operation, increased public awareness and adjustments in consumer behavior (NRDC, 2013).

Category B: Description of Subjects/Participants

Question 4: State the source of the participant population.

Participants for this study will be students who eat at Hasbrouck Dining Hall during the 3-week data collection period. Results will be reported in aggregate form.

Question 5: State the approximate number of subjects.

Revised 7/12/13
All of the 2,887 on campus residents are required to have a meal plan. Of that total, 1,235 on campus residence have the carre blanche meal, so they are only allowed to eat at Hasbrouck Dining Hall. The remaining 1,652 students have a more flexible meal plan that allows them to eat at Hasbrouck Dining Hall or the other retail dining facilities in the Student Union and other satellite retail spaces.

Question 6: Discuss the characteristics of participants as individuals and as a pool (including age, gender, student status, disease conditions, behavioral abnormalities and affiliations or memberships).

Study participants are college-aged SUNY New Paltz on campus residents. They range in age between 18 and 22 years old.

Question 7: If your research involves non-English speaking subjects or subjects from a foreign culture, include contact information for someone who can act as a cultural consultant for your study, i.e., name, address, telephone number, and email. (The cultural consultant should be familiar with the culture of the subject population and/or be able to verify that translated documents are the equivalent of the English version of documents submitted.)

Not applicable.

Question 8: State criteria for including subjects in the study or excluding them from the study.

All post-consumer food waste generated by students eating in Hasbrouck dining hall will be collected and weighed.

Question 9: Provide a rationale for the inclusion or exclusion of vulnerable subjects.

Not applicable.

Question 10: Describe how you will recruit subjects for the study. Include all relevant materials, e.g., advertisements, fliers, scripts, translations, psychology pool sign-up sheets, etc. (Student researchers using the Psychology Pool are to include a blank copy of the sign-up sheet and departmental authorization for use of the pool.)

All post-consumer food waste generated by students eating in Hasbrouck Dining Hall will be collected and weighed.

Question 11: Discuss other matters pertinent to human participants.

Category C: Procedures

Question 12: Specify the location of the study. (If this is an external agency or organization, a letter of cooperation is necessary.)

SUNY New Paltz’s Hasbrouck Dining Hall

Question 13: List and briefly describe all variables to be studied.

- Quantity of post-consumer food waste collected, pre and post-intervention
- Total number of times students eat at Hasbrouck Dining Hall each day
- Average post-consumer food waste generated per day

Question 14: Describe Procedures including:

(a) Describe the methods of study administration in detail (Attach a complete copy of all instruments).

Total daily food waste data will come from the food waste hauler, Royal Carting. This data is provided to Sodexo on a daily basis as well as on the final monthly report. Charlie, the Royal Carting food waste driver/hauler will track which bin came from Oscar’s late night restaurant, which is excluded from this study. The total amount of daily pre-consumer food waste (kitchen food waste) is tracked through Sodexo’s LeanPath system. Sodexo Chef Matthew Hill will provide this data to the food waste study team. Sodexo will provide data from their dining management data systems on the total number of students that eat at Hasbrouck Dining Hall each day. We will track the total amount of food waste generated per person per day using data from Sodexo’s meal ordering system. The student food waste researcher will be responsible for collecting, tracking, and inputting this data into an excel spreadsheet.

The student food waste researcher will visually observe food waste trends by watching what food is composted as students place their food on the dish return or as the Sodexo employee scrapes food into the composting bin.

Revised 7/12/13
(b) Describe the methods of record-keeping

We will collect spreadsheet data from Sodexo’s LeanPath system to measure pre-consumer food waste. We will use Royal Carting’s daily food waste data to determine the total food waste generated each day. We will download data from Sodexo’s meal ordering system to determine the total number of students who ate in the dining hall each day to determine the total amount of post-consumer food waste generated per person each day.

(c) Describe the methods you will use to analyze the collected data.

We will analyze food waste data using Excel and take note of trend analysis and look for impacts that the intervention has had on the amount of food waste generated. The student food waste research will take note of food waste trends by observing patterns of food waste.

(d) Document authorization of use or permission to modify a copyrighted instrument, or document access in the public domain of non-copryrighted instruments.

Not applicable.

Question 15: Describe all activities involving participants, including:

(a) Frequency of each activity.

Data is collected daily during the 3-week study period.

(b) Duration of each activity.

Data is collected for all meals while Hasbrouck Dining Hall is open, from breakfast to late-night.

(c) Participant’s total time commitment.

Data about total food waste will be collected during the 3-week study period.

(d) Instructional script for administration of the study.

This study is non-interactive, and there will be no interviews with participants. No questionnaire or cover letter will be used. No activities will be taken place.

Question 16: Describe all equipment used with participants, if any.

Not applicable.

Question 17: Specify what factors will lead to cessation of procedures causing physical or emotional stress. Outline procedures for stopping or interrupting the protocol.

Not applicable.

Question 18: Describe biological samples to be taken, the method for their handling and the qualifications of individuals taking samples.

Not applicable.

Question 19: Provide debriefing method, rationale for deception (if applicable) and debriefing protocol.

Not applicable.

Question 20: Discuss any other aspects of the procedures.

Not applicable.

Category D: Risks to Participants

Revised 7/12/13
Question 21: Describe potential risks and assess the likelihood, severity, duration and effects of each. (Consider risks of physical injury, psychological trauma or stress, social/economic harm, legal risks and loss of confidentiality. Could any of the questions be more offensive than those encountered in a participant’s everyday life? Note “no known risks” if none are anticipated.)
Not applicable.

Question 22: Describe methods for minimizing risks. For example, document how potential psychological distress will be addressed, by whom, and with what credentials.
Not applicable.

Question 23: Describe other methods, if any, that were considered alternatively and why they will not be used.
Not applicable.

Question 24: State any other matters relative to risk to participants.
Not applicable.

**Category E: Anticipated Benefits to Participants**

Question 25: Describe the anticipated direct benefits to these participants because of their participation.
Not applicable. Our hope is that through the intervention, students will waste less food.

Question 26: Describe the anticipated benefits accruing to the class of participants these individuals represent.
This research may inform other SUNY campuses and colleges and universities about how to develop effective strategies to reduce food waste on campus.

Question 27: Describe the anticipated benefits accruing to society-at-large or other.
Greater awareness of the problems of food waste. Reduction in food waste at Hasbrouck Dining Hall.

Question 28: State any other aspects of anticipated benefits to participants.
Not applicable.

**Category F: Consent Procedures**

Question 29: Describe how potential participants will be informed about the project activities.
Not applicable.

Question 30: Attach consent form and assent form/script, if appropriate. (Use reading level and terminology understandable to participants. If participants are non-English speaking, include translations of all consent/assent documents and certification of the validity and reliability of the translation in relation to the English language documents. See Question 7.)
Not applicable.

Question 31: Discuss any other aspects of the consent process.
Not applicable.

**Category G: Privacy and Confidentiality Procedures**

Question 32: Describe the method(s) used to protect the identity of individual participants.
Revised 7/12/13
Not applicable.

Question 33: Describe your plans for maintaining data after the study is complete.

Not applicable. Results will be reported in aggregate form.

Question 34: Describe how the federal requirement for consent forms to be retained for three years following the conclusion of the project will be met. (If an institution/organization requires retention of consent forms on site, then the investigator may request a waiver of this requirement.)

Not applicable.

Question 35: If you are audiotaping, videotaping or photographing, specify tape/film storage, use, and when and how disposition of the tapes/film will take place.

Not applicable.

Question 36: Discuss any other aspects of confidentiality.

Not applicable.

Category II: Justification of Request for Exempt or Expedited Review Processes

Question 37: Give a full justification for an exemption or expedited review request. (Refer to p. 13 in Manual.)

Include the category of exemption (Appendix A) or expedited review (Appendix B) you are requesting and discuss the relationship of your study to the criteria for the specified exemption/expedited review category.

I am requesting an exempt review process under the following category of exemption:

(2) Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures or observation of public behavior, unless:

The information being collected (weight of food waste) cannot be linked to specific human subjects. Plates with food waste are placed on a dish return system and are rotated to the dish room area. Sodexo staff screen all food waste into a composting bin. The food is not identified with particular subjects. All data is collected in aggregate. The study is tracking public behavior.

Category I: Justification for Request for Waiver of Informed Consent Process and/or Documentation

Question 38: Give a full justification for a request for waiver of the informed consent process. (Refer to p. 13 in Manual)

This study is not tracking individual behavior, only aggregated behavior of students in the Hashbrouck Dining Hall. The only record linking the subject and the research would be the consent documents. The research presents no more than a minimal risk to students in the Hashbrouck Dining Hall. The research could not practicably be carried out without the waiver or alteration.

Question 39: Give a full justification for a request for waiver of documentation of the informed consent process. (Refer to p. 13 in Manual)

See response to Question 38.

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