

Norris Dorm Recycling Project

Final Design Report
Global Sustainability

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Norris Dorm Recycling Project

Table of Contents

Abstract	2
Introduction	3
Development and Implementation of Design	4
Conclusion	10
Future Work	11
Lessons Learned	12
Appendix	
Bibliography	14
Information Sheet Given to Residents	15
Questions from Initial Survey	16
Questions from Survey on Information Reception	16
Flyers	17-18
Pictures	19-22

Abstract

Our project worked to improve the recycling done in on-grounds housing. Specifically, we sought to increase awareness of what and how to recycle on-grounds, as well as why recycling is important. Through education we hoped to improve our singular target group's recycling habits, and determine the most successful approach so that future groups may continue our project with other on-grounds housing. We decided to focus on a singular floor of Norris in Hereford dorms in order to work more closely with the residents and RA.

We worked to identify the current recycling habits of the residents through a waste audit and survey. As we preformed the audit, we worked to inform the residents of what they were correctly or incorrectly recycling, and answering any questions on recycling, both at the University and in general. Following the audit we compiled data on the residents' current recycling habits, presented them to the residents, and then worked to further increase awareness and interest in recycling through flyers, posters, emails, and other forms of communication with residents.

Through the audit we were able to increase the residents' awareness of their own recycling habits, and explain more about recycling at the University. We were also able to answer any questions they had, which promoted interest and awareness of recycling beyond the information that was being supplied to them through the audit. Continuing to promote awareness through flyers, emails, and other communication created a more lasting impression.

We consider our project a success in that we were able to raise awareness about recycling among the residents, although our project was not done to the extent and range we had hoped. We are also hopeful that other groups can use our project to spread awareness beyond our selected group.

Introduction

People across the world are becoming increasingly aware of the issues of sustainability and environmental impacts. Recycling is a widespread and common response to the realization that earth's resources are finite. Through recycling, materials that would otherwise become waste are turned into valuable resources. There are many other benefits of recycling—financial, environmental, and social in both the local and global scene.

It is commonly understood that recycling has many positive effects. However, many people remain unaware of the extent and range of these effects, and how a single person can help improve a global issue. Also, many people do not know what they can recycle, or do not recycle everything that they can. Our goals for this project were to increase awareness of the benefits of recycling and ensure that people are aware of what they can recycle in order to improve recycling habits. Although we were not able to directly determine that the residents' recycling habits improved as a result of our project, we were able to spread knowledge and awareness. We believe that this will lead directly to an improvement in recycling habits, as the residents pay more attention to what they are throwing in the trash and/or recycling. Also, we hope that by increasing the residents' interest in recycling, and sustainability, we might influence their future involvement and interest in issues of sustainability, and that they might further affect other people, so that the overall number of people interested and involved with the issue increases.

It is the residents who were directly affected by our project who were the primary stakeholders. They were the ones we worked with, and they determined the success of our project by their interest. We feel however, that the impact of this project extends beyond the residents we worked with directly. Every item recycled helps to conserve resources, reduce land use for landfills, decrease pollution caused by manufacturing, saves energy, and has many other

effects. Everyone is a stakeholder when it comes to the world's available resources, and therefore everyone is affected, even if it is indirectly and to the slightest degree.

Development and Implementation of the Design

When we originally became a group, we were unsure as to how we wanted to implement or project, although we had the general purpose of improving On-Grounds recycling. We looked at both improving recycling in the dorms, as well as increasing the number of recycling bins around grounds to encourage recycling. With the increasing of recycling bins, we thought to put bins next to most, if not all, trashcans already in place. However, we decided that the housing project would enable us to work more closely with the students to promote good recycling behaviors.

Once we had decided on improving the recycling in the dorms our group came up with many ideas as to how to approach this problem. One way would be to educate the residents of the dorms about what can and cannot be recycled. UVA students come from all over the country and what can be recycled is different everywhere. Many residents may just be unaware of exactly how many different things the University is able to recycle. Another part of this education aspect could also be explaining the benefits of recycling. Everyone knows it is good to recycle but it might be beneficial for the students to hear numbers and facts about recycling that actually pertain to them and their own daily lives. Ways we could reach out the residents would be to use flyers, emails, and simply talking to them. Instating a hall meeting talking to the residents about recycling and our project would be the most effective way of communicating this to them, as emails and flyers can be easily ignored. We also contemplated having a contest to see who can improve their recycling the most or have the highest percent of recyclable material

Norris Dorm Recycling Project

recycled correctly in order to get the residents excited about our project. By working face-to-face with the residents we hoped to get them more active in improving recycling among their hall, but also outside of their dorm.

Another approach to solving the problem would be making recycling more accessible for the Hereford residents. UVA distributes two-sort recycling bins to On-Grounds housing, but in many dorms there are not enough of the bins to supply one to each room or suite. Our group believes that if each person were to have their own two-sort bin in their room, recycling would become much easier and more people would do it. If UVA had to create more bins, one thing they could do is actually print what can be recycled on each side of the two-sort bins. That would provide a good combination of education as well as accessibility to the recycling bins. Along the lines of accessibility, we were also been informed that there is a larger recycling bin placed in many Hereford hallways. While this seems like a great idea, apparently the bins often overflow and are rarely emptied. A way to combat that problem would be to have each hall could even write up their own schedule so that they could rotate through which takes out the recycling every week.

The main criteria important in choosing how we addressed this problem were the time frame we were working with, cost, longevity of impact, ability to generate excitement, as well as the availability of resources. Using that set of criteria we were able to decide which plan of action will be most feasible for our group. Making recycling more accessible by providing additional two-sort bins was problematic. There simply are not enough bins available for each person to have their own in their room. It would also be costly to the University to have more made. In addition, the single rooms in Hereford are not very big and residents expressed concerns about not having enough room for the bin anyway.

Norris Dorm Recycling Project

Based on these issues with our other ideas for approaching the problem, our group determined that educating the residents would be the best option for the focus of our project. Creating the flyers and getting information about recycling out to the residents would not take much time. That is definitely a selling point considering it is a project that can easily be continued on into the following semesters by other groups. It would also be of no significant cost since all we would have to pay for is the paper and ink we use to make flyers. Using education in this manner would also most likely have a longer impact on those involved. Instead of just giving the residents another way to recycle, we are actually talking to them providing them with valuable knowledge that could affect their recycling habits for years to come. For all of these reasons we decided to stick with educating the residents as a way to help increase how much they recycle.

Once we had determined the approach we would take, we began to look at what residential hall we would work with. We discovered that Hereford already works to promote sustainability, and there have been several projects implemented by residents to make On-Grounds living more sustainable. Because of this interest, we decided that Hereford would be a good place to find residents who are interested in improving their recycling habits and gaining more knowledge about recycling in general. Our mentor, Nancy Takahashi, got us in contact with Tasniya Sultana, the RA of the 2nd floor of Norris. Although we had originally thought to work with an entire dormitory hall for this project, we decided that a singular hall would enable us to work more closely with the residents and the RA, and to identify more accurately in what areas we could improve the recycling habits of the residents.

We further decided that, in order to observe current recycling habits and to judge the success of our educational campaign, we would need to perform a preliminary survey and audit.

Norris Dorm Recycling Project

The survey allowed us to identify what the residents already know about UVA recycling, as well as their current habits and what sort of recycling background they have (i.e. if they recycled at home, and if so, what they were able to recycle at home). The audit would provide data by document the weight of what is thrown in the trash, and what is recycled over the course of a week by the Norris residents. Then we will be going through the trash and recycle to see what is being improperly recycled.

When arranging the audit, we ran into our main problem. It became difficult to set a date and time to do the audit, because of conflicts between the schedules of our group, the RA, and the residents. This caused the audit to be pushed back much further in the semester than we had hoped. Once we had determined when to do the audit, we worked to get details on how it would be done. We borrowed a scale from UVA Recycling in order to weigh the waste. We weighed both the individual residents' waste, as well as the hall bins, and then went through both the recycle and the trash in order to determine what was incorrectly sorted. While going through the bins, we made sure to inform the residents of specific recyclables we noticed were frequently thrown away, and other information that would help them to recycle properly. We also answered any general questions that the residents had concerning recycling at UVA, as well as recycling in general. We recorded the data collected for each individual and bin in tables similar to the one below.

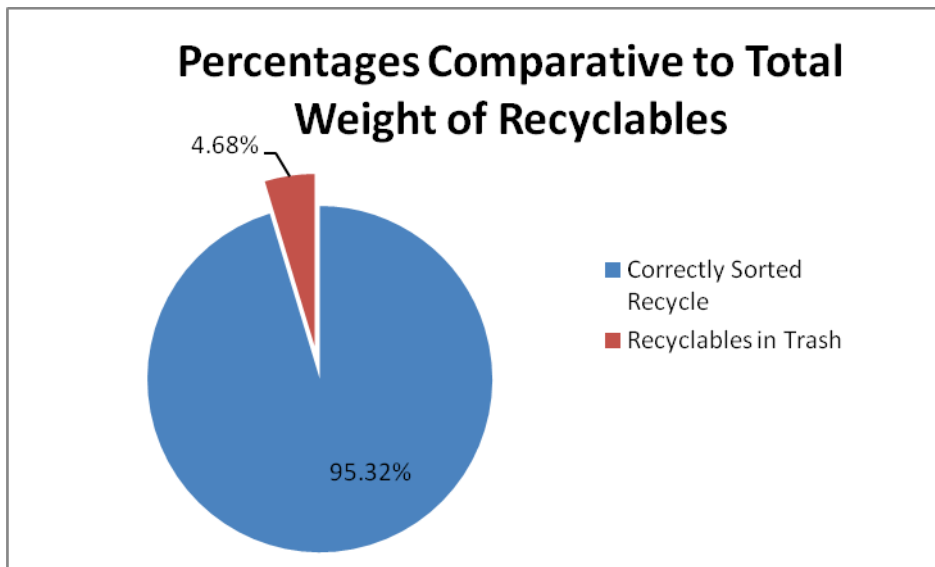
	Category	Weight in Lbs.		
		Individual Bins	Hall Bins	Overall
	TRASH BIN	3.2	0.0	3.2
	Recycle in Trash	0.8	0.0	0.8
	RECYCLE BIN	8.0	8.5	16.5
	Trash in Recycle	0.0	0.2	0.2

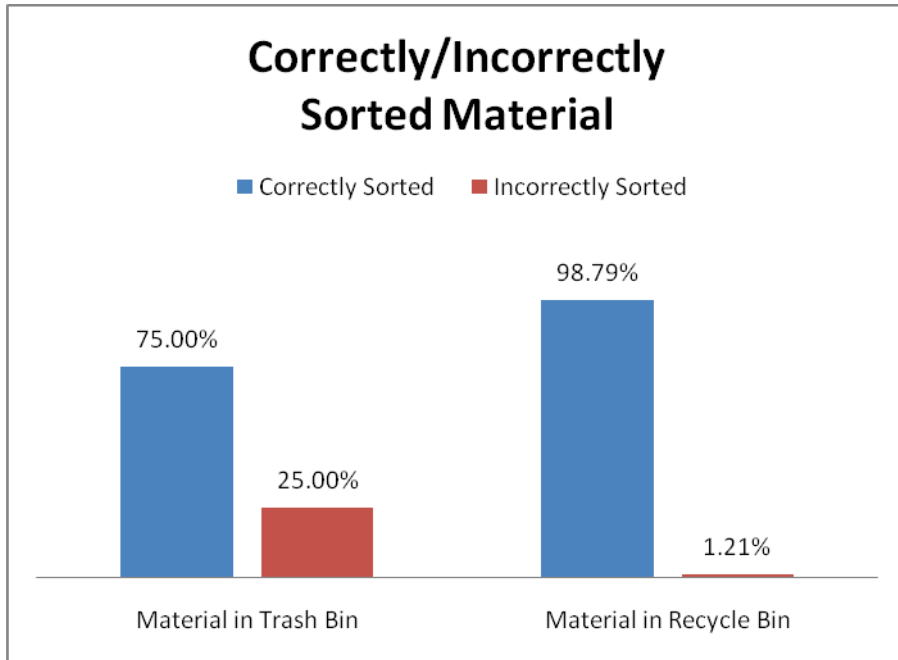
Norris Dorm Recycling Project

	Total weight of bin	11.2	8.5	19.7
	Total Trash	2.4	0.2	2.6
	Total Recycle	8.8	8.3	17.1

Percentages:			
<i>Recyclables being Recycled</i>	90.90%	100.00%	95.32%
<i>Recyclables in Trash</i>	9.09%	0.00%	4.68%
<i>Of recycled material that is not recyclable</i>	0.00%	2.35%	1.21%

Once we had compiled the data, we were able to determine percentages of correctly and incorrectly sorted materials. This information was then relayed to the residents when we continued to work to raise awareness and overall knowledge about recycling. Through our identification of things that were commonly thrown away when they could be recycled (mostly various plastics and paper) we were able to focus our attention on areas where the residents could still improve. We were also pleased to see that overall the residents of Norris already had good recycling habits.





Our data was slightly skewed by the residents having very little trash to go through. We were able to determine that approximately 25 percent of the material in the trash was actually recyclable, but because there was not much trash, we were unable to say that this reflected all of the waste products that Norris residents throw away. Because there was a wide range of recycled materials, we inferred that the Norris residents were aware of many of the things that can be recycled, and that the frequently incorrectly sorted materials were mostly a result of habit.

Following the audit, we began our educational portion. Because the audit pushed back our schedule so far, we were not able to implement as many things as we had hoped. We created flyers, and sent out the information collected during the audit. We will continue to send out emails and set up flyers to make the residents aware. However, we have determined that the face-to-face meetings we had hoped to implement are not truly feasible in our remaining time. We had hoped to gather groups of interested residents to provide more information on recycling and answer more questions, as well as to obtain their help in increasing awareness among their fellow residents. We believed this would be the most effective way to increase awareness and improve

recycling habits. Despite this disappointment, we are hopeful that our work at the audit and the continuing information we are supplying will continue to increase the knowledge of the reasons to recycle among the residents, and cause them to be more aware of what they are throwing away versus recycling.

We are also hoping to arrange for a second audit to be performed by another group in the spring semester, after we have finished our educational campaign with the residents. The second audit could be used to identify improvements in the residents' recycling habits by comparing percentages of properly or improperly recycled waste.

Conclusion

So far we have performed the first audit and started educating the residents on recycling. During the audit we were able to meet with the residents individually and discuss with them their views on recycling and how they could improve their own recycling habits. The residents who participated in the audit are now fully aware of what they can recycle here at UVA and how to properly do so. An especially important part of meeting with the residents and going through their trash and recycling is that we were able to pinpoint what each resident had trouble with recycling, such as throwing away recyclable yogurt containers, or not breaking down cardboard boxes. We were also there to answer general questions the residents had about recycling and sustainability as well. Aside from performing the waste audit, we have also created and distributed flyers about what can be recycled and facts about why people should recycle here at the University. This way, we were able to reach out to all Hereford residents instead of only making an impact with those whom we met in person.

Norris Dorm Recycling Project

We have laid a foundation for our project to succeed by working so closely with the Norris residents. A question that remains is whether our audit and educational campaign will in fact increase the rate of recycling in Norris. We measured and documented our work by recording all the weights of the recycling and trash as well as the material recycled or thrown away incorrectly. We used this information to calculate the percentages of material recycled or thrown away correctly and incorrectly. In order to fully assess the success of our project we will need to compare the results of the first audit to the results of the second audit that is to be performed next semester.

Future Work

Our main barrier as we approach the end of the semester is finding an organization on Grounds to take up the second audit in 2011. We have been in discussion with Hereford's Sustainability Committee about possibly performing the second waste audit next semester, but have not officially found someone willing to take it on. The only resource one would have to acquire to complete this audit would be to get a scale from UVA Recycling. These scales are free to borrow as long as timely notice is given and others have not already requested it for the date.

After completing the audit for this project, it would be excellent to see this idea of performing waste audits move to other dorms on Grounds. This project has the potential to start a campaign of school-wide awareness about recycling at the University. This would be a relatively simple project to perform around Grounds because of the few resources it requires, and if perhaps each audit is scheduled by RAs, the audits themselves would not be too overwhelming or time consuming.

Lessons Learned

The first barrier we encountered during the semester was the fact that our group was formed because the three of us had not yet had a topic and group to work with. Because of this, we were just getting together while most of the other groups had a project in mind. This setback in the very beginning kept us behind schedule for quite some time. Our goals at the beginning of the semester included providing two-sort bins to every dorm room in Hereford and performing two dorm-wide waste audits. We quickly found out that given only a semester, this was a bit of a stretch as to what we could feasibly accomplish. First off, we realized that providing two-sort bins to all the rooms in Hereford would prove to be quite costly considering many more would have to be made. We also realized that the Hereford singles are quite small and many of the residents did not feel they had room for the two-sort bins anyway. Because of this, we decided to focus more on education as a way to increase the recycling in Hereford as opposed to just providing everyone with the two-sort bins. We also realized that communicating with all of Hereford in planning the waste audits was just not practical. Everyone has different schedules coordinating with so many individuals would just be too difficult. We resolved this problem by deciding to focus only on the second floor of Norris. By the time we were able to narrow down who we were actually going to work with, much of the semester had already passed. We were rapidly approaching Thanksgiving Break, meaning we had to perform our first audit the week we returned. Scheduling the first audit this late meant that many of the residents of the hall were unable to make it due to the amount of end of the semester work rush. That caused our audit to be on a much smaller scale than we had imagined. During the audit itself we also realized that while they still had their hall recycling in the bins, the hall trash had already been taken out that day by housekeeping. That will greatly skew our data because of the fact that in the end we had

Norris Dorm Recycling Project

much more recycling to work with than trash, and not because of a lack of trash, but due to the fact that the hall trash bins are managed by the University. Lastly, performing the first audit so late meant that the second audit could not be performed this semester. While this is not too big of a problem, it does not allow our group to compare the results of the second audit to the first after our instating educational campaign with the residents of Norris.

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Appendix--Information Sheet Given to Residents



Norris Recycling Project Synopsis

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PURPOSE:

This audit is being done to identify the recycling habits of the Norris Dorm, as a case study for the recycling habits of the Hereford Dorms. This is the first part of a project working to improve recycling in on-grounds housing. We will be working with your hall, providing information on recycling within the University and otherwise promoting proper recycling habits through emails, flyers, and face-to-face discussions. The project is being initiated as a Global Sustainability class assignment for the Fall 2010 semester, and we hope it will continue on into the Spring semester with a different group, who will identify whether the efforts made have improved recycling habits within the test group.

PROCEDURE:

This project will begin with a preliminary audit, which will take place on December 2, 2010 from 4:00-5:30pm. We ask that you keep one week's worth of trash and recycle, divided as you usually do, and bring it to the audit. We will weigh the trash and recycle to determine what current recycling habits in your hall are. There will also be a short survey that we ask that you complete prior to the audit. We will go through the trash and recycle to identify what recyclables are not being properly recycled. We would like you to remain while we weigh and check your trash. However, we understand that you might be busy and unable to stay.

Following the initial audit, the group will begin to interact with your hall in various ways in order to target problem areas that are noted in the initial audit. This will continue for the rest of the semester. The project will likely be passed off to another group during the second semester, who will likely perform a second audit to find out whether these problems with recycling have been rectified and recycling habits have improved.

REMEMBER:

- Do NOT change your usual habits for this project. We want to see the current situation in the Norris Dorm in order to better rectify it. We don't want you to act in a different manner than usual and affect the results with false data.
- You do not need to collect trash or recycle that is you might throw away while not at your dorm.
- Keep your trash for the week of November 29th.
- Come to the audit with both your trash and recycle on **December 2, 2010** between 4:00 and 5:30 PM. This will not take much of your time, and it is necessary for the project. At the very least, please drop off your trash and recycle, even if you cannot stay to see it weighed. If you cannot make it between those times, let us know in advance and we will try to arrange an alternative.

Appendix--Questions from Initial Survey

1. Do you recycle at UVA? Why or why not?
2. What do you think can be recycled at UVA?
3. What do you recycle?
4. On average, how much do you estimate you throw away and/or recycle in one week?
5. What makes up the majority of your trash? (i.e. paper, containers/wrappers, food waste, etc)
6. Do you have a bin designated for recycling in your room?
7. Do you recycle at home?
8. What do you recycle at home?
9. What problems do you see with the recycling program at UVA and/or within the Hereford community?

Appendix--Questions from Survey on Information Reception

1. Have you received any emails about recycling at UVA over the course of this semester?
2. Have you read any emails about recycling over the course of this semester?
3. First years and transfer students—have you learned anything new or unexpected about recycling at UVA?
4. Do you believe the UVA does a good job of promoting their recycling program?
5. Have you seen/read any posters or posted announcements concerning recycling in the past semester?
6. Have you received any pamphlets about University sustainability or recycling?
7. What would be the most effective means of providing information to you:
 - a. Pamphlet
 - b. Poster
 - c. Email
 - d. Face-to face discussion
8. Would you be interested in helping to spread knowledge about UVA recycling?

Appendix—Flyer

What can be recycled at UVA?



Aluminum



All Numbers of Plastic



Mixed Paper
(including the
staples)



Glass (except blue
and lab glass)

Why should you recycle?

- Manufacturing recycled paper uses 60 percent of the energy needed to make paper from new materials
- Recycling steel and tin cans saves 74 percent of the energy used to make them
- Americans throw away enough aluminum every month to rebuild our entire commercial air fleet
- Approximately 88 percent of the energy is saved when plastic is made from plastic rather than from the raw materials of gas and oil

Information found at <http://www.benefits-of-recycling.com/interestingrecyclingfacts.html>

Appendix—Flyer 2

What can be recycled at UVA?



Glass (except blue and lab glass)



All numbers of plastics



Mixed Paper
(including staples)



Aluminum

Why should you recycle?

- Enough plastic bottles are thrown away in the United States each year to circle the Earth four times
- Recycling one aluminum can saves enough energy to run a 100 watt light bulb for 20 hours, a computer for 3 hours, and a TV for 2 hours
- A steel mill using recycled scrap reduces water pollution, air pollution, and mining waste by about 70 percent
- The process of recycling paper instead of making it from new materials generates 74 percent less air pollution and uses 50 percent less water

Information found at <http://www.benefits-of-recycling.com/interestingrecyclingfacts.html>

Norris Dorm Recycling Project

Appendix—Pictures



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