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Recycling Team Project Summary

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Recycling Team

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Sustainability Capstone Course
University of South Dakota
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Introduction

Students and staff at the University of South Dakota have demanded a recycling program for years, and finally the university has responded. In 2015, USD hired Verdis Group, a sustainability consulting agency based out of Omaha, to help the campus assess its waste profile and develop a recycling program. Throughout this process, six students from the sustainability capstone course were present to supplement Verdis Group's work wherever possible and necessary.

verdis GROUP

Survey

The first project that our team was involved with Verdis Group was the recycling and sustainability survey. Verdis Group wanted to get a picture of the current climate and attitude about sustainability and recycling on campus by administering a survey to student and staff. First, the survey needed to be designed from start to finish. A Verdis Group staff member met through video calls with the president's sustainability subcommittee on several occasions to discuss the finer points of the survey. Members of our team were also invited to participate in these meetings. The initial survey that was proposed was close to twenty minutes long, and it was agreed that keeping the survey short (close to ten minutes) was going to be an important way to gain as many complete survey responses as possible. This required cutting down on the number and length of questions.

Reducing the length of the survey was difficult because the teams were also concerned with keeping the questions concise and unbiased. The committee, Verdis Group, and members of the team spent several weeks deliberating about which questions to include and how to phrase them in order to get the most valuable information without fatiguing our respondents or guiding their answers. Finally, a final draft of the survey was agreed upon and ready for distribution.

It was unanimous that the most effective way to distribute the survey was to send out mass emails to every student and staff member who spent time on campus. Getting people to open their emails and actually take the survey, however, required further discussion. The university was willing to donate money to purchase gift cards to use as prizes to incentivize people to take the survey. After some deliberation, the team suggested using the money to purchase Vermillion Bucks instead of gift cards. Vermillion Bucks are backed by the Vermillion Chamber of Commerce and could be used at any location in Vermillion. This would hopefully be valuable enough to students and staff to be a sufficient encouragement to take the survey. At the same time, using Vermillion Bucks would help ensure that more money circulate throughout the local economy which helps our bottom line of increasing sustainability. In addition to sending out multiple emails to members of the campus community, the recycling team tabled in the Muenster University Center in order to gain survey responses. Tabling not only resulted in more survey responses, but also provided an opportunity for the team to advertize their project to people on campus, including members of the student government.

By the end of the two week survey period, over a thousand people took the survey. The survey revealed that despite the university's present lack of a recycling program, a significant majority of survey respondents indicated that recycling and sustainability was important to them.

Survey (cont.)


RECYCLING
SURVEY
Enter for a chance
TO WIN
$20


CURRENT WASTE PROFILE AT USD
recycling
7%
landfil
93%

Dumpster Peek

To better understand the system for waste at USD, the capstone recycling team conducted a “Dumpster Peek” for Verdis Group. The goal of this was to know how much waste the university is throwing away each day and to see how full the dumpsters are the end of the day. Currently, USD hires a waste service to empty the dumpsters every morning. They wanted to understand if this system is efficient for the University and if the dumpsters are being utilized properly. This involved the team locating, numbering and mapping out all of the dumpsters on campus and university properties. They then assigned a day of the week to each member in the team to go and peek into these dumpsters. Because the majority of the waste from the day emptied into the dumpsters by 8pm, they collected information from the dumpsters after this time. The team decided that they could infer that if the data was collected between 8-11pm 50% should be added to the total, but if after 11pm the percentage could stay the same. After collected the team then compiled the information, including the percentage full they found the dumpsters, into a spreadsheet to share with Verdis Group.

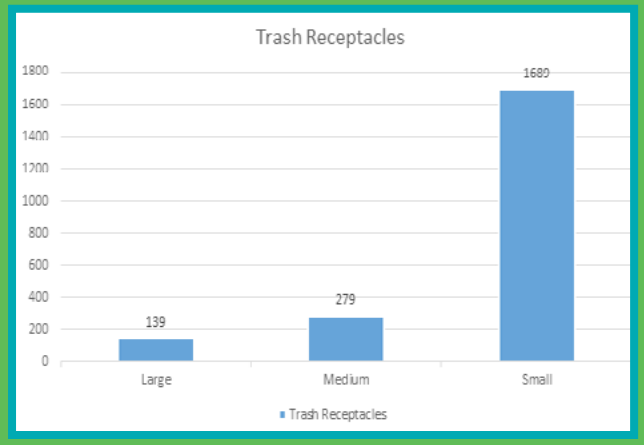
The results of the Dumpster Peek showed that the majority of the dumpsters are over collected by the waste service. The majority of the 30 dumpsters surveyed were less than 50% full when collected. The dumpsters by the MUC and the residence halls were the most utilized dumpsters and showed a need to be emptied every day.

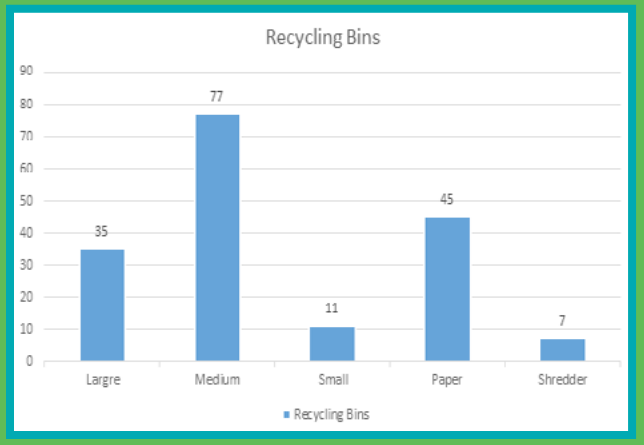
Floor Plans

Throughout the process of trying to better comprehend the University's waste management system, the Verdis Group collected floor plans for every building on campus. The purpose was to determine the location and type of waste receptacles in each University building. The group then disseminated this information to the recycle team and some helpful volunteers from our sustainability capstone class. The newly assembled team walked around to locate and record the position of every waste bin, recycle bin, and paper shredder in each building. The bins were categorized as follows:

W1= Large Waste Receptacle
W2= Medium Waste Receptacle
W3= Small/Individual Waste Receptacle
R1= Large Recycling Bin
R2= Medium Recycling Bin
R3= Small Recycling Bin
P= Paper Recycling Bin
S= Paper Shredder

The purpose of categorizing bins and their respective sizes was to get an idea of where there are too many bins and areas bins can be added to. This will cut down on bins not being used and centralize larger bins so they are used more effectively. The examination results were quite definitive, the University is using a large amount of smaller bins to accommodate for the staff and students waste. The results also shows the lack of recycling bins and the University's commitment to a more sustainable culture on campus. Applying the knowledge acquired through these steps, the University can become a more effective and efficient campus while stating its pledge for a greener future.





Waste Audit

A very important step in understanding USD's overall recycling in comparison to what could be recycled was the waste audit. The purpose of the waste audit was to show how much of the school's trash can be recycled or what it is made up of. The first step of the waste audit was to select the trash bags that best represent campus as a whole. A difficult task because each building on represents a different part of campus. For instance a trash bag from the MUC a popular eating location for students would contain lots of food in its trash. A building such as Old Main or any of the other classroom building would contain lots of paper. Locations such as North Complex or any other residential living area would be comprised of more equal assortment between food, cans, paper, and other products considering that would be more at home garbage. What Verdis group decided to do to properly represent campus and its overall waste was to select different trash bags from major buildings on campus.

The sorting portion of this process was conducted in groups of three. Each group had separate buckets categorized as; trash, glass, non-recyclable plastic, food scraps, compostable fibers, reusable items, recyclable plastic, mixed paper, and aluminum. Each trash bag was carefully sorted into each category. Each bucket was weighed and labeled with the building name to allow a better understanding of what is thrown in the trash at separate locations. Verdis group concluded that USD only recycles 6.9% of everything we throw away. In comparison to other colleges this number is incredibly low and after the waste audit was completed it showed that a large portion of the trash is recyclable. In fact 28% is recyclables ranging from mixed paper to aluminum, 29% of everything that was discovered was true trash and non-recyclable plastic, food scraps make up 21%, while compostable fibers make up 15%, and finally glass made up 7%. These percentages show a lot of room for growth, future recycling programs and material targeting. The waste audit was a very helpful activity for the campus in order to understand the possibilities of recycling if they decide to adopt an official recycling program for the University.

IdeaFest

Aside from our work with Verdis Group, individually we compiled information for research papers to be compiled into a presentation for IdeaFest. IdeaFest is an annual event that celebrates academic research being done at USD. Students from all disciplines present their work during a two day festival of performances, presentations and poster sessions. The research papers and corresponding presentation related to creating a culture of sustainability at USD.

Three of the research papers examined recycling. One focused on different types of plastics and the recyclability of each type. Another research paper concentrated on the advantages and disadvantages of dual-stream recycling, while the third paper pertaining to recycling analyzed the pros and cons of single-stream recycling.

IdeaFest (cont.)

Some of the key points that came from the recycling-centered research papers and presentation were:
Plastics #1 &#2 make up 98% of all plastics recycled in the United States
Plastics #3-7 usually end up in landfills, oceans, or shipped overseas to countries like China and India
Dual-stream recycling works better in small communities and results in lower contamination
Single-stream recycling is costly to initiate and results in more frequent contamination, but has a higher rate of consumer compliance

The research of another student concentrated on using social pressure as a tool for encouraging people participate in pro-social behaviors, like recycling. The paper gave three cheap and easy examples of ways other studies have shown to increase compliance of pro-social behavior. The first referred to a study where it was found that placing a picture of "watchful eyes" in low traffic areas decreased crimes like bike theft. The second example that was given was the use of signage to convey local norms. When people were informed of the tendency of others nearby to conform to pro-social behavior, they were much more likely to comply themselves. Finally, another study concluded that the influence of key group members in social circles can have a large and positive impact. On a campus, some of these key group members would be well liked professors, students that are well known, and head members of campus organizations. All of these concepts could be useful as USD moves forward with campus wide recycling.

Another student focused their research on successes and failures encountered when implementing sustainable practices. For example, the University of Vermont banned the sale of bottled water on campus in an effort to curb sugary beverage consumption and plastic waste on campus. The results were surprising. After one semester, the consumption of both sugary beverages and plastic bottles was up significantly. Efforts to suppress the use of plastic bags was also discussed. The city of San Francisco banned plastic bags only to see a steep rise in paper bags in landfills, which take up much more space. In comparison, the country of Ireland posed a tax of $0.21 per plastic shopping bag, resulting in a 94% decrease in plastic bag use.

The final research paper and presentation was a case study on what makes cities sustainable, specifically, Copenhagen. A few of Copenhagen's big achievements that set it apart from other cities are its extremely high use of bicycles for transportation. The city infrastructure is geared toward cyclists, which is something that is starting to be seen in the United States and something that Vermillion could easily adopt. Copenhagen also makes use of wind energy, getting over 40% of their energy from the wind. South Dakota has only started to tap into wind energy and has a great potential, making this another attainable way to increase access to sustainable resources locally and reduce the negative impact USD has on the environment.

Conclusion

This semester, the university has taken the first steps towards developing a recycling program on campus. Working together, Verdis Group, the President's subcommittee on Sustainability, and the Recycling Team have assessed the university's campus climate and current waste profile in order to move towards the implementation phase of a comprehensive recycling program.