



Wood Hall's

Wood Recycling Containers



Todd Herbst

Envs 4100
April 16, 2008
Dr. Glasser



Table of Contents

Introduction	Pg 3
Data and scope of project	Pg 4
Data conclusion	Pg 7
Best practices on WMU campus	Pg 7
Best practices other campuses	Pg 8
Discussion	Pg 9
Limitations and Future work	Pg 10
Conclusion	Pg 11

Appendix:

Contact list: names, numbers and emails	Apx A
References	Apx B
Container Design	Apx C
Hcob recycling tripod snow	Apx D
Hcob email with Doralee	Apx E
Recycling Info WMU	Apx F
Sign design, containers	Apx G
Pictures and R&D of Containers	Apx H

Introduction:

The buildings on campus and the path between them are important places for students to learn in and live in. A considerable amount of time is spent indoors, either in classrooms, residence halls or other buildings. There are many building systems and services that keep the student body at Western Michigan University happy and motivated to learn. Comfort and cleanliness are taken for granted by many students because the systems and operations are behind the scenes, and have always been in place. Keeping the buildings and classrooms clean is done with the hard efforts of many departments on campus. The custodial, maintenance and recycling staff make sure students only have to focus on learning and not worry about anything else. All buildings are not created equal on campus and it's this inequality that changes how much work the staff must do to meet those standards.

The College of Health and Human Services has a system integrated into its design that I hadn't seen anywhere before on campus. (Apd H) Built into the walls was a simple yet effective way of centrally locating the recycling needs of the students and staff. A place where one could deposit bottles and cans, and paper without trying to hunt down a hallway bin. These built in containers never move from their location and there are signs to educate visitors about what can be recycled in them. That simple design set in motion what I wanted to do for the two buildings I spend the majority of my time at while on campus. I wanted Wood Hall and the Haworth College of Business to benefit from having centralized waste management. Not just for recyclables but trash as well. The Haworth College of Business didn't like my approach to waste management and so I focused my energy and time to Wood Hall. (Apx E)

The build cost had to be low and the construction time had to be fast in order to survey the student body's response to the addition of the new containers. With a budget of 200 dollars and a couple weeks to build, I decided to build two containers and put one on the lower level or commons area and the other on the second floor. The idea to change student's behavior by implementing an obvious and easy to use waste management container was my goal. The signs above the holes describing what can be recycled might help educated students in better practices on campus and at home. I wanted to improve recycling on campus because watching students throw away their bottles and cans in the trash really upsets me. I knew it was a matter of both convenience and education, and this project was aimed to fix both.

The project success relied heavily on the help of fellow students and friends during the construction phase. The advice of Carolyn Noack, manager of recycle and waste reduction, and custodial staff really helped in the initial design of the containers. Simplicity and bold styling were key to catching students' attention and helped keep the construction costs down. Another important factor was to make sure that current trash bins and yellow paper bins fit inside the containers. This reduced the cost further by not needing to buy additional bins to fit the wooden containers.

It would be difficult to quantify the effectiveness of adding two new recycling containers to Wood Hall. I devised a plan to survey all the trash cans, yellow bins and bottles/cans bins before placing the new containers in the hallways. By taking the lids off cans and making observations I got an overall idea of the current situation. Many of the small trash cans just inside the classrooms (often used to prop the door open) were usually not full of trash, but rather contained bottles and cans. In this trash can, there was 3 aluminum cans, 1 plastic bottle, a coffee cup, a cigarette box and some paper. Unfortunately this was a common sight in trash cans near classrooms. Upstairs on the top floor the department offices were much better than the student dominated floors below. Education and the element of convenience needed to be addressed to change student behavior to recycle more.



Data and observations:

Container Survey/Audit before adding the Wood containers										
	Hallways			Rooms			Total			Bldg Total
	LL	2nd	Top	LL	2nd	Top	LL	2nd	Top	
Survey 3/26/08										
# of Trash cans	9	19	3	1	1	19	10	20	22	42
# of Yellow paper bins	5	9	0	0	1	16	5	10	16	31
# of Pop bottle/ can bins	2	1	0	0	0	1	2	1	1	4
# of Styrofoam bins	0	0	0	0	0	1	0	0	1	1
Survey 3/31/08										
# of Trash cans	16	12	3	4	7	48	20	19	51	90
# of Yellow paper bins	7	7	0	1	3	31	8	10	31	49
# of Pop bottle/ can bins	2	1	0	0	0	1	2	1	1	4
# of Styrofoam bins	0	0	0	0	0	1	0	0	1	1
After container installed										
Survey 4/14/08										
# of Trash cans	15	9	na	7	10	na	22	19	na	41
# of Yellow paper bins	5	4	na	3	5	na	8	9	na	17
# of Pop bottle/ can bins	2	1	na	0	0	na	2	1	na	3
# of Styrofoam bins	0	0	na	0	0	na	0	0	na	0

Note: The large fluctuation in Bldg Totals is mainly due to classrooms being locked or classes in sessions that prevented me from looking through the trash bins. The totals however do not change the overall observations of the trash cans and recycling bins.

Note: This survey was conducted before the addition of the wood triple containers. To get an idea of the impact these two large waste management containers would have. Once in place I am not going to remove any of the current trash cans, paper recycling bins or bottle/can bins to see if there is any change in the student's behavior. The goal was to gauge if students remembered to not use the first trash can in sight and instead walk the extra effort over to the wood containers.

Observations of Top Floor:

- The hallways had only trash cans and these cans had the most recyclable material of any hallway trash can. Paper, cans and bottles to plastic from food.
- The offices were surprisingly good, almost all bins were properly sorted and the trash more times than not had no recyclable material in them.
- Only 1 large trash can was used for recycling cardboard. There might be a good reason why the trash can was full of cardboard.
- The Styrofoam recycling container was located in the meeting area where people eat food.

Recommendations:

- Add a yellow paper bin and a bottle bin to the top floor hallway. While walking through the hallway your only option is to use a trash can. By adding recycling containers the option opens up giving people at least the chance to recycle.

Observations of 2nd Floor:

- Many of the rooms were locked preventing me from accessing them one day, but the later that week I got lucky and was able to audit over double the room trash cans.
- It was very common to find 1 or 2 bottles/cans in the small trash cans just inside the classrooms. These little trash cans often had little or no trash in them, but were the students' first chance to dispose of their morning soda pop, energy drink or bottled water. All of these products are for sale from the vending machines.
- The hallway trash cans had two styles of lids. One style was a high top with the spring loaded door and the other style was a concave dished lid that had a small hole in the middle. The lids with the holes had twice as many cans in them compared to the trash cans with the door.
- Bottles and cans in the trash occurrences outnumber the times newspaper or other paper was present in the trash.

Recommendations:

- Reduce the number of small trash cans in the classrooms to prevent students from using them as the first means of disposing of items, recyclable or not.
- Better label the trash can lids with the concave hole to prevent them from looking like bottle and can bins.
- Update labels for the 1 existing bottle and can bins.

Observations of Lower Level:

- The large lecture halls presented the worst place in Wood Hall. Outside of these rooms the little trash cans had 6 bottles/cans. The paper bin was overflowing with newspapers and the trash cans near the lecture halls also had bottles and cans.
- The commons area was on par with the rest of the building. The small trash cans had more bottles and cans while the larger trash cans sometimes had one or two.
- The bottles and cans bin had 18 bottles and cans the first survey and a few more the next survey. It seems that it wasn't being used a lot.

Recommendations:

- Reduce the number of small trash cans in the classrooms to prevent students from using them as the first means of disposing of items, recyclable or not.
- Update labels for the 2 existing bottle and can bins.

Observations after containers added to Wood Hall:

- A reduction in bottles and cans in both the small trash cans in classrooms and in the larger trash cans in the hallways.
- The trash cans with the concave circle lid had similar bottle and can counts as before.
- Yellow paper bins unchanged in the hallways and in the rooms.
- The trash can inside the container had no very low recyclable content when compared to the trash cans before the addition of the containers.

Recommendations:

- Continue to educate the student body on waste that is recyclable and non recyclable.
- Reduce or eliminate the small trash cans in classrooms.

Data Conclusion:

I believe the method used to collect the data I got was only justified by the scope of the project. To better defend the observed outcomes a longer time would be needed to audit the trash cans and record actual numbers of recyclables in the cans and their location with respect to the containers. High traffic areas generally get the most exposure to students on a day to day basis, and this is one reason why data collection was also difficult. Often times classrooms were locked or in session, restricting my ability to audit or survey certain cans. Factors such as test days could also affect the data because through my own experience, more students bring “energy drinks” on days during exams. Conditions of my observations were also noted during trash can audits, however applying the data demonstrated to be un-accurate because of the number of trials. To correct for these shortcomings, more time and more student research would be needed to better survey the outcomes of adding the containers to the hallways.

Best practices on WMU’s campus:

I had seen the problem all over campus and it wasn’t restricted to buildings either. Walking on campus I would see the brown metal mesh bins on a pole with a bottle or two in them and some trash. I guess it was better than just pitching it onto the ground, but I thought there must be a better way. The outdoor recycling triples are another system that I borrowed design from. (Apd D) The outdoor triples have paper recycling, bottles and cans and a trash. It was this mix of recycling and waste management and the design in the College of Health and Human Services that really pulled together everything into the



design. The outdoor triples, considering their age of nine years have served the campus very well. The brown mesh bins also serve a good purpose to keep litter off the ground. The scope of my project didn’t reach outside of the interior of buildings, but the education on the containers through the signs might change some student’s behavior the next time they encounter a brown mesh garbage can.

The student organization, Students for a Sustainable Earth, campaign focus this year was promotion of RecycleMania. “We’re trying to promote RecycleMania, trying to do better than last year, through an advertising campaign and education: where to do it, how to do it, and teaching people why recycling is a good idea” (Western Herald, Vol. 92, issue 99). As campaign committee chair, I and the members of SSE were excited to help educate Western students about recycling and get them excited for

the friendly 10 week competition. Over 400 colleges and universities take part in this friendly competition with the same goal in mind, be better than last year. (recyclemania website) This year Carolyn Noack believes WMU will do much better because we now are using a more accurate calculation method that is on par with other schools. In 2007 WMU ranked 65 of 77 schools in the grand championship at 15.34% cumulative recycling rate. In 2008 WMU ranked around 16 out of 79 schools in the grand championship with a 35.63% cumulative recycling rate (takes our percentage and locates it full campus category and not just the partial campus category.) Note: In 2008 WMU was considered a partial school and with our new calculation method, our number changed drastically.

Each university has a unique set of situations and sometimes drastically different methods of accounting for waste and recyclable material. Overall WMU improved over previous years and Carolyn Noack pointed out that “we have always been good at waste minimization.” RecycleMania is a growing competition and as it catches on and becomes more popular a better set of rules and regulations are likely to follow. Until then, RecycleMania should be about bettering the university you attend and not comparing yourself to other universities.

Other Universities:

At Colorado University a group of students has gotten together and formed “green teams.” These teams of students go around the campus and educate other students in various areas of be ecologically sustainable. “Mainly, the Green Teams help give recycling information to residents of off-campus households. Since many students are living on their own for the first time, Green Teams help get them off to the right start. Hopefully, they’ll keep good habits in future houses too.” (CU recycling, edu.) Similar to the SSE student group we have at WMU, but it sounds like the “green teams” devote all their efforts to educating the students to better practices. When students take charge and lead the initiative, I believe the outcomes are always better.

At California State University San Marcos a similar recycling idea is used to centralize the efforts of both recycling and waste management. An outdoor container that looks like it could be installed indoors without being way over built. Each state and city for that matter has differences in what materials they can handle. Some require pre-sorting, while others sort after all the waste is collected on trucks. Since each situation is has its own variables, neither situation is better than the other.



Discussion:

The best teachers in the world cannot teach if their classrooms and buildings are overrun by stinky trash and red bulls from students. Operations that make our stay in campus buildings possible are often overlooked simply because they have always been there and done for us. My idea was to educate the students to dispose of their items in the most appropriate way possible, while not disrupting the systems already in place. I would have loved to remove the small trash cans from the classrooms and further studied those effects. As with the food waste survey, removal of a convenience item can drastically affect many other things. Would students start leaving trash in classrooms because the small trash cans were removed in favor of larger waste management systems? A question I wish I could have explored.

I believe my bins were a huge success for multiple reasons. First, they were so large that they had to draw attention to students passing by. The decision to use a natural wood finish versus painting also adds to the overall effectiveness of the containers. Second, my observations showed a decrease in the number of bottles and cans in the trashcans near the containers themselves. The containers had only been in service for little under two weeks before the post deployment audit was taken. Third, the combined promotion of SSE members and students alike really got the word out this year for RecycleMania. Hopefully that translated into student behavior shift from using the trash as a waste sink, to thinking consciously about items they dispose of. Even better if those thoughts change their buying habits at stores when they purchase goods; maybe to look for recyclable packaging or containers with less packaging.

At the very least Wood Hall now has one more innovation than the other buildings on campus. Originally I had tried to deploy one of the containers in the Haworth College of Business, but to no avail. (Hcob email, Doralee) In my personal opinion, taking classes in a business college should incorporate at least these two ideals. One, be on the cutting edge and be innovative enough to accept new ideas and practices. If you play by the status quo rules you are going to get left behind in the business world. Secondly, businesses should see the “green” momentum building. Why not take advantage of a market trend that favors both you and the environment that ultimately supports you and your business. I had hoped in conversations and emails with Doralee DeRyke, Director of Services & Operations Haworth College of Business, that I could convince her adopting better recycling practices would in the long run benefit her building. Start implementing these actions now, that way in the future you can point out your “green actions” have been in place for years.

Here is the alternative to installing lots of large recycling containers that are made from wood purchased through a large chain supplier and not grown locally. All building renovations and new buildings must undergo a waste management design strategy to incorporate systems to better manage recycling and waste. When Sangren is renovated in the near future, a design should be constructed to best

fill the needs of the students and the staff who use the building. To locate three bins similar to the design at the College of Health and Human Services would be a good step in the right direction. This coupled with education of students as they enter the university for the first year will drastically improve the situation I have so many times seen. Change will take time, but the correct tools and social support will eventually turn the tides in favor of better practices across the campus as a whole.

Limitations, Obstacles and Future Work:

Many challenges faced this project from day one and turned out to be the biggest downfall of my project. It was a large project really requiring the work of three students and shouldn't have been taken on solo. During the construction phase a few speed bumps slowed progress and a freak snow storm totally locked up one weekend. On the upswing, I did all this construction without owning a truck, and without getting any injuries worse than a splinter. The help of fellow students made this project possible and the energy they carried during the build kept my spirits high.

There was never a shortage of ideas or improvements to be made during the build, but time was always a limiting factor. If I wanted a higher quality container, then I needed to sacrifice the time the container would be installed in the building. Trade offs were made during the construction. Originally I wanted to use only glue and dowel pins, but soon realized that time would require me to screw it together. The observations and audits of Wood Hall's trash cans had to be fast and effective. I didn't have the time or energy to sort all the outgoing waste from the building for a week, and then audit the outgoing waste again after the containers had been installed.

In the future many things could happen to both my containers and the policies that drive recycling and waste management on campus. Pam McCartney, Administrative Assistant, Building coordinator of Wood Hall, said the containers could stay for another full year to allow further study and to see if they stand the test of time. Hopefully a larger more effective outcome is a campus wide policy change in the favor of better building design and implementation of student brain power in that design. The Staff of both Carolyn Noack and Shelley Grant should also not be overlooked during the design phase of the containers. I had good input from Carolyn, but failed to make contact with Shelley Grant during the design phase. Her hard working staff however had great things to say about the bins the day I was putting them in. Looking back, things went exceptionally well and I couldn't be happier with the outcome of the project. I wanted a physical structure to represent what could happen when students worked together to fix a problem.

Conclusion and Recommendations:

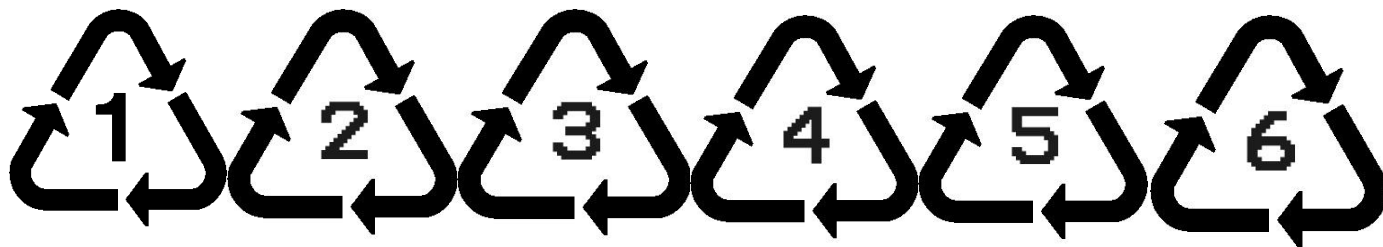
In my eyes, this project demonstrates that money and power are not necessary to bring about positive changes on campus. The opposite is true. Socially communication within a university can tie together so many departments and motivated people that good things are bound to happen. “Young people today place a high value on environmental sustainability. Knowing that their university does as well is one more reason to become and remain a bronco.” Lowell Rinker said during a WMU board of trustees meeting. Incoming students are beginning to look for the universities that are taking the initiative to be eco-culturally sustainable now. (Dr. Glasser, class) The universities adopting these practices now will be looked at in the future by others as innovators and role models for other campuses to follow. Western Michigan University shouldn’t wait until regulations force us to recycle more, or wait to reduce our carbon emissions by switching energy systems. This is the time to act, or window of opportunity is open now. It is cliché to say green is the new hip and cool thing to do because it downplays the real importance of doing all these actions.

Student organizations such as SSE have spent lots of time and effort promoting not only recycling but sustainable ideas on campus. The Talloires Declaration is a shining example of good ideas and if put into practice could really benefit the university in a number of areas. I have noticed as a student here for 4 years that the Western Herald this year had more articles dealing with environmental and social issues than I have ever seen before. Young people are starting to take notice and action about things that concern the entire world and not just the campus community. By teaching students about sustainability and better practices in business, graduating students can enter the world slightly more prepared to face the challenges of tomorrow.

Bottles & Cans



**Please
Recycle
Bottles &
Cans here!!!**



Container Survey/Audit before adding the Wood containers

	Hallways			Rooms			Total			Bldg Total
	LL	2nd	Top	LL	2nd	Top	LL	2nd	Top	
Survey 3/26/08										
# of Trash cans	9	19	3	1	1	19	10	20	22	42
# of Yellow paper bins	5	9	0	0	1	16	5	10	16	31
# of Pop bottle/ can bins	2	1	0	0	0	1	2	1	1	4
# of Styrofoam bins	0	0	0	0	0	1	0	0	1	1
Survey 3/31/08										
# of Trash cans	16	12	3	4	7	48	20	19	51	90
# of Yellow paper bins	7	7	0	1	3	31	8	10	31	49
# of Pop bottle/ can bins	2	1	0	0	0	1	2	1	1	4
# of Styrofoam bins	0	0	0	0	0	1	0	0	1	1
After container installed										
Survey 4/14/08										
# of Trash cans	15	9	na	7	10	na	22	19	na	41
# of Yellow paper bins	5	4	na	3	5	na	8	9	na	17
# of Pop bottle/ can bins	2	1	na	0	0	na	2	1	na	3
# of Styrofoam bins	0	0	na	0	0	na	0	0	na	0

Works Cited and References

1. University of Michigan Recycling website
Waste management services, materials recycled on campus,
Update Aug. 2007, viewed Mar. 2008
http://www.recycle.umich.edu/grounds/recycle/recycling_bin_guide.html
2. RecycleMania website
Results, Tools
<http://www.recyclemania.org/>
Telephone : 202 903 0851
3. Recycling containers website
Outdoor recycling container, the woodie
© 2007, U.S. Only, viewed Apr. 1, 2008
<http://recy-cal.stores.yahoo.net/woodrecsys.html>
4. Uline Recycling containers.
Facilities maintenance > trash cans, tilt trucks > recycling containers
© 2008, U.S. Only, viewed Apr. 1, 2008
<http://www.uline.com/ProductDetail.asp?model=H-1385&ref=6766>
5. Talloires Declaration website.
Association of University Leaders for a Sustainable Future
Update 1994, Electroglyph © 2008, viewed Apr. 4, 2008
http://www.ulsf.org/programs_talloires.html
http://en.wikipedia.org/wiki/Talloires_Declaration
6. DeRyke, Doralee, Director of Services & Operations at Haworth College of Business
Personal interview, Office in bldg, Kalamazoo, Mi. Feb. 27, 2008
7. DeRyke, Doralee, Director of Services & Operations at Haworth College of Business
“Re: Recycling at Hcob.” Email to Todd Herbst. Feb. 25-26, 2008
Appendix email—Hcob eMail
8. Noack, Carolyn, Manager of Recycling & Waste Reduction
Personal interview, Physical Plant Office Rm. 210, Kalamazoo, Mi. Apr. 4, 2008
9. Noack, Carolyn, Manager of Recycling & Waste Reduction
“Re: Last minute questions.” Email to Todd Herbst. Apr. 14, 2008
10. Naar, Jon - Skurka, Norma Design for a Limited Planet
Ballantine Books, NY 1976
11. Mell, Andrew. “Laziness should not keep people from recycling.” Western Herald
Feb. 25, 2008, opinion sec.

12. Anderson, Garrett. "WMU named a 'Green Campus'." Western Herald
Mar. 19, 2008 Vol. 92, issue 107
13. Clark, Max. "SSE helps make the WMU campus green." Western Herald
Feb. 27, 2008 Vol. 92, issue 99
14. Tieng Yee Lau. "Recycle Mania kicks off at WMU." Western Herald
Feb. 4, 2008 Vol. 92, issue 85
15. Porritt, Meg. "Green-friendly practices benefit the bottom line." Western Herald
Feb. 20, 2008 Vol. 92, issue 95
16. Murtha, Rebecca. "Recycling program needs to be revamped." Western Herald
Apr. 18, 2007 Vol. 91.
17. Schwerin, Nick. "RecycleMania begins this week." Western Herald
Jan. 1, 2007 Vol. 91
18. Senge, Peter – Laur, Joe – Schley, Sara – Smith, Bryan. Learning for Sustainability
Cambridge, MA. SOL 2006.
19. Edited: Chase, Geoffrey – Barlett, Peggy. Sustainability on Campus
Cambridge, MA. The MIT Press. 2004
20. National Recycling Coalition
"NRC partnerships for product stewardship and waste reduction"
Updated 2007
<http://www.nrc-recycle.org/>
21. Holysz, Tim, Director of Landscape Services
"Re: Snow removal needed" Email to Todd Herbst, Feb. 13, 2008
22. University of Colorado recycling dept.
Education and outreach, 2005
http://recycling.colorado.edu/education_and_outreach/index.html
23. Barney, Stephanie
"Comparison of the Relative Efficacy of Information and Incentives in Improving
Residence Hall Recycling Rates." WMU student paper 2005
24. Chevalier, Michelle – Davis, Andy – Kohrt, Andy
"Residence Hall Recycling; A step in the right direction." WMU student paper 2001
25. California University of San Marcos recycling homepage
"we recycle" inform, educate.
www.csusm.edu/facilities/Recycle.htm

