

Trash to Cash

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My proposal is a game that would incentivize recycling in on-campus dorms and apartments. The proposed game involves the use of an app on students' phones that would keep track of the amount they recycle, and would compare their stats to other students in their same building. At the end of every two-week period, top leaders would receive a monetary prize, and the game would reset at the beginning of the next two-week period. The goal of the game is to increase the amount recycled per student at the university, which would increase energy savings as a result. When recyclables are used to create products, the amount of energy necessary is significantly less as compared to using raw resources. Other benefits of the implementation of this game include an improved public image in terms of Rutgers' environmental awareness as well as decreased pollution and green house gas emissions. Overall, the game helps work towards Rutgers' goal of becoming carbon neutral by 2030 in a way that makes recycling more fun and appealing to students living on-campus.

Introduction

I have identified a problem here at Rutgers in regard to on-campus recycling in dorms and apartments. I currently live in the Easton Ave Apartments, and it has come to my attention that much too often the instructions on how to recycle are ignored, and many people simply do not recycle at all. As a result, I would like to propose a solution that encourages students to recycle on a more individual and daily basis, especially those living in on-campus dorms and apartments.

According to an article from Boston College, the average college student produces 640 pounds of solid waste each year (bc.edu). Students living in on-campus dorms or apartments tend to produce more waste, especially when it comes to food. Many food-related containers are used and discarded, whether they are plastic boxes from take-out or aluminum cans and glass bottles from students in apartments cooking for themselves. Much of this waste, if not recycled, ends up in landfills or as pollution in our oceans. The processes and energy used to create materials from raw resources, as opposed to recycling materials, increases our dependence on fossil fuels, increases greenhouse gas emissions, and further pollutes our air and water. For these reasons, along with many others, it is imperative that we try to recycle as much as we can as it is more beneficial to both the environment and ourselves.

My solution tries to provide students with a meaningful incentive to recycle on a more regular basis. My idea is to implement a program where students are able to keep track of how much/what they recycle, and are then rewarded based on top leaders – all through an app on their cellphones. The program would be similar to a game, with the

projected outcome being an increase in the amount that students recycle as well as an increased awareness of the benefits of recycling and why it is important.

My Solution

My solution can be broken down into a few steps. These steps include introduction to the program, advertisement, participation, and reward. The introduction is an extremely important factor in making the program successful.

In order to make the program known, it would have to be introduced to students prior to their arrival on campus and their move-in to their dorm or on-campus apartment. This could be done through email, stating that the program will be initiated upon the students' arrival in the fall. Upon arrival for move-in, students would sign up with their RA or AA for the program, and receive instructions on how the game works and how to download and use the app on their phone. The students would create a profile on the app, and learn how to record how much they recycle as well as how to compare their standings to other students living in the same building. After this initial introduction to the game and the app, the next step would be advertising.

The advertising step partially began in the introduction, when the students were made aware of the game and the app. However, another key aspect of the advertising step would be updating the posters in the recycling rooms in the dorms and apartments. I want to design a poster that makes separating recyclables extremely clear – I would add pictures, colors, and more bullet points as opposed to long sentences. I would also create a poster stating the instructions of the game – again, with concise phrases, colors, and a

few pictures. After creating posters that are clearer, the next step would be students' participation in the game.

In order to participate in the game, students would need to record and document what they recycle. Students would measure their recyclables on a scale, take a picture, and then record and upload the weight and picture to the app on their phone. These statistics would be visible on the students' profiles and would add up each week as the student continues to recycle and record. The students would also be able to see where they are ranked compared to other students participating in the building. There would be a leaderboard, and it would reset every two weeks. The reset is a key element because students who may not have started participating in the game earlier on will not avoid doing so because they feel they are too far behind other participants, or as though there would be no point in joining late because they cannot attain the rewards. This ties in to the last step, which is rewarding the students.

At the end of every two weeks, the top two students on the leaderboard would receive a reward. These students could receive an amount of money, such as \$10, on their RU Express card. This way the student could put the money towards laundry, since those living on campus pay \$1.25 for each wash and dry. However, the student could ultimately use the money anywhere RU Express is accepted.

Overall, each of these steps helps work toward a successful implementation of the game, with the final result being that more students recycle regularly in their dorm or apartment. I believe this will work because money is consistently a great incentive when you are working with college students, and the students can participate without even having to leave their building. Also, almost every student has a smartphone and is

extremely familiar with apps and games, so it would be a familiar concept. Lastly, many people are competitive, especially among their peers, so turning recycling into a game among students' and their roommates/friends would help trigger that competitiveness and cause students to participate.

Costs & Benefits

There are a few costs associated with the implementation of this program, as demonstrated in the chart below. The most expensive cost would be purchasing the scales. There are a total of 50 on-campus dorms/apartments across all five campuses, and my goal would be to have at least 2 scales in each building. The scales cost \$200 apiece, so the total would come out to about \$20,000 (globalindustrial.com). There would also be the costs associated with designing and developing the app. During my research, I found that the costs of developing an app were extremely varied. However, I was able to come up with an estimate of \$5,000-\$10,000. This cost includes a quote from a professional developer, marketing, and documentation of the app (forbes.com). Another cost would be the monetary reward for the student leaders. If the game were to reward the top 2 students in each dorm every two weeks, the cost would come out to \$7,000 per semester (14 weeks in a semester). Lastly, there would be the cost for the new posters in the recycling rooms. If purchased in bulk, 100 posters (2 for each of the 50 buildings) would cost around \$800 (uprinting.com). I did not factor in a cost for training maintenance staff, since they would not have to do anything differently. I also did not factor in a cost for RAs or AAs, since they would only need a quick debriefing about the program. Overall, the total cost for the program would be \$32,800-\$38,000.

There are multiple benefits associated with this program as well. The most important benefit would be the energy savings. Recycling saves energy because the products being recycled require much less energy to be turned into usable materials, as opposed to using raw resources. The amount of energy saved depends on what is being recycled, but the largest energy savings are generally for metals (americangeosciences.org). The second chart below includes the energy savings per each type of recyclable. Rutgers also participates in Recyclemania, which is an intercollegiate recycling competition. In 2016, Rutgers students averaged a recycling rate of about 13.5 pounds per person. This is a significant decrease from the rate in 2011, which was 55 pounds per person (Rutgers University Libraries). My goal with this program would be to have the average recycling rate increase to 50 pounds per person within the first year of implementation, and surpass 55 pounds per person by the second year. Although the energy savings would vary depending on what is recycled, this increased rate would help Rutgers in attaining its goal of being carbon neutral by 2030, as well as increase the school's standings in other categories in Recyclemania. This program would also positively affect Rutgers' public image, and would increase the awareness of the importance of recycling among other universities. If successful, the program would demonstrate that recycling programs are a feasible solution (even on campuses as huge as Rutgers) and it would hopefully motivate other universities to take action and implement similar programs. Exhibiting this kind of effort in regard to improving the university's environmental impact would attract future students, faculty, and university partners as well. Recycling programs also help communities save money and create jobs. Recycling actually creates 4 jobs for every 1 job created in waste management and disposal

industries (recycling-revolution.com). This program would not only benefit Rutgers, but the state of New Jersey as a whole. Lastly, recycling helps reduce air pollutants, water pollutants, and greenhouse gas emissions, which all translate to a cleaner and healthier environment for us all.

	Cost	Reason
Designing & Developing App	\$5,000-\$10,000	Game is centered around the use of the app
Scales	\$20,000 (\$200 per scale)	To weigh recyclables so student can record
Posters	\$800-\$1,000	Display rules of game in recycling room
Rewards	\$7,000 (per semester)	Incentive / Reward top 2 students in each building every two weeks

Recyclable	Energy Saved by Recycling	Carbon Emissions Prevented
Aluminum	96%	10 tons CO2 / ton aluminum
Polyethylene Plastic	76%	1.7 tons CO2 / ton polyethylene
Newsprint	45%	2.5 tons CO2 / ton newsprint
Glass	21%	0.34 tons CO2 / ton glass

Implementation

The decision that I want to change is the amount of trash that students decide to recycle in their dorm or apartment. I think that implementing this program would incentivize recycling to the point where students would actively participate in the game and the amount of trash recycled in these buildings would increase. However, in order to implement this program and change students' decisions, I would need to contact, work with, and get the approval of certain decision-makers at Rutgers.

To start, I would get in contact with Residence Life, because Resident Assistants and Apartment Assistants would be the ones helping to explain the game to students and implementing the program in their buildings. I would want their feedback on how they would feel with this responsibility, and what they think the best way to get students to participate would be. I would also get in contact with University Facilities, particularly Project Services. Project Services is in charge of renovations in current facilities, and we would be “renovating”/updating the current trash rooms by adding a scale in the rooms as well as changing the posters. We would most likely work with Contract Services, as they manage projects under \$2 million. Lastly, we would need to work with upper administration in order to get costs approved and actually begin implementation of the program. In this model, the most important factors for these decision-makers are time and money, as well as how this program would impact the students, Rutgers as a whole, and the environment. If costs were to be approved, then the program would likely follow the implementation timeline below.



Contacting and working with an app developer would be the longest and most complicated part of the process. After the app is successfully created and tested, scales

could be purchased and placed in the recycling rooms. Posters would also be redesigned, printed, and placed in the recycling rooms as well. Over summer break there would be a waiting period, as most of the program would be in place already. Throughout August, RAs and AAs would be debriefed regarding how the game works and how to explain it to students. Maintenance would also be informed during this time period as well. Finally, move-in would occur in September and the program could officially begin in the 2018 fall semester.

Conclusion

In conclusion, this program is designed to encourage students to change their recycling habits through a fun and competitive game. Oftentimes, people who care about the environment do not take action because they think the people around them do not care. However, games (such as the one I am proposing) can help reveal that most of the people around you actually do care about the environment. Once this realization takes place, people are more likely to take action and do their part to reduce their impact on the environment. Outcomes of this program would include an increase in the amount recycled per capita, an increase in energy savings, and an improved public image in terms of our university's environmental awareness. Most importantly, it would be a step towards Rutgers becoming a carbon neutral university by 2030. Changes in recycling behavior would occur, as students would be recycling more aluminum, plastic, newsprint, and glass in their dorm or apartment building. This would translate to a positive environmental impact as increased recycling results in improved air and water quality,

less greenhouse gas emissions, and a decrease in pollution. This program would ultimately be beneficial to Rutgers, students, and the environment as a whole.

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