Disposable Mentality:

Evaluating the Reusable Container Program at WPI

Author:
Emma Brimdyr
Advisors:
Patricia Stapleton
Thomas Balistrieri
Stephan Sturm

WPI

Abstract

The Reusable Container Program (RCP) at Worcester Polytechnic Institute (WPI) presents students and faculty with an easy way to reduce their disposable plastic use on campus by replacing the disposable plastic food containers with reusable containers. This project evaluates the RCP through archival research and interviews to understand the motivation behind the programs creation and its current operation and use. The project provides insights and recommendations into the current program and future possibilities.

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Introduction

Plastic contributes significantly to waste pollution, and is a struggle that challenges the world. Millions of pounds of plastic are produced each year, overflowing landfills, and causing destruction to marine environment. Disposable plastics, items thrown away after minimal use, constitute the majority of this harmful waste. Consumers often choose disposable plastic out of convenience. They do not think before grabbing it, nor do they realize how often they use it daily life. Recently, a project was completed on how to change consumer behavior towards a more sustainable plastic use by understanding the psychology of behavioral change. This was a degree requirement project completed in two parts. The first phase of research was completed in Hong Kong by four students, Natalie Bloniarz, Emma Brimdyr, Dan McKay and Kelly McMahon, entitled "Disposable Mentality: Consumer behavior surrounding disposable plastic" (http://gordonlibrary.wpi.edu/vwebv/holdingsInfo?searchId=67&recCount=10&recPointer=0&bibId=3643122). The second part was completed by Emma Brimdyr at Worcester Polytechnic Institute (WPI). Taken together, the two parts of this research project satisfy the requirements for a Major Qualifying Project (MQP) for the Society, Technology, and Policy major, and includes both the research performed in Hong Kong and a supplementary research project completed on-campus at WPI. In this document, Brimdyr builds on the knowledge obtained through the research completed by the student team in Hong Kong, by investigating existing policies in place at WPI focused on reducing the use of plastic waste. Currently, there is an initiative at WPI to replace disposable plastic containers with reusable containers. This project reviewed and evaluated this initiative, in the context of other, existing sustainability initiatives at WPI.

Background

The History, Use, and Concerns of Plastics[1]

Since its creation in 1907, plastic has become a popular and widely used material. Every year, over 300 million tons of plastics are produced worldwide, and an average North American uses 220.452 pounds of plastic (Gourmelon, 2015). Since the creation of plastic, "over 8.3 billion metric tons of plastic have been produced" (Wassener, 2011 as cited in Bloniarz, Brimdyr, McKay, McMahon, 2018, p. 2). Plastic's durability and low production cost makes it a suitable choice for a variety of products, especially disposable items. Disposable items are intended to be used once and then discarded. Two examples of single use disposable items with significant use are plastic bags and straws. Every year 1 trillion plastics bags worldwide and 18 billion plastic straws are used in the United States are used, and many end up in landfills and oceans ("Plastic as a Resource," n.d.; Blundy, 2016).

"Though initially plastic was viewed as favorably utilitarian, its negative impact on the environment was later recognized" (Bloniarz et al., 2018, p.3). In the 1960s, plastic particles were first observed in the ocean and environmental concern grew. However, the concern did not stop plastic production as it continued to rise during the next fifty years (Gourmelon, 2015). Estimates say that 8 million tons of plastic are added to the marine environment each year, and that altogether 5.25 trillion pieces exist in the ocean (Besley, Vijver, Behrens, & Bosker, 2017; Eriksen et al., 2014). "The pollution is the result of plastic waste that was not properly disposed of, and is carried by wind or rain into drainage systems that flow into the ocean" (Bloniarz et al. 2018, p.3). Ocean

[1] This section's information is pulled from Chapter 2.1 of "Disposable Mentality: Consumer Behavior surrounding disposable plastics" (Bloniarz, Brimdyr, McKay, McMahon). For more information, see pages 2-4 of the IQP Report.

currents move this waste, resulting in the formation of waste islands. Currently in the North Pacific, one island is one million square miles of particles (Montanari, 2017). Figure 1 displays a boat floating in an ocean plastic patch (Evon, 2015). Much of plastic pollution is microscopic because, as time progresses, plastic undergoes a chemical process where it decomposes into microplastics. And, there is little chance of it disappearing anytime soon since plastic can take 400 years to fully degrade (Parker, 2017). Microplastics are harmful to marine life, since they are easily ingested. Recent studies have found that 90% of seabirds' stomachs are filled with ocean plastics, which is illustrated in Figure 2 (Montanari, 2017; U.S Fish and Wildlife Services, 2009). Over 50% of fish species also consume plastics, resulting in human health concerns when the fish are consumed (Savoca, 2017). While plastic may be cheap to make, its durability ends up causing harm to marine life and the environment.

Figure 1: A boat floating in the Great Pacific Garbage Patch (Evon, 2015)

Figure 2: Plastic consumed by seabird (U.S Fish and Wildlife Services, 2009)

Throwaway Culture[2]

Before the rising popularity of plastics, items were constructed out of fragile, but repairable, materials such as metal, wood, and paper (Santhanam, 2016). Since the items were cheaper to repair than replace, repair shops were common (Sison, 2015). However, when plastics rose to popularity, the repair mentality started to shift.

Plastic provided a (seemingly) superior alternative to these materials. Plastics allowed food to have a longer shelf life, as a result of better seals that keep air and moisture away from food (American Chemistry Council, 2017). Plastic was cheap due to its low cost-effective ability to mass produce (National Molding, n.d.). Ease of plastic production meant items were designed to be disposable: "used only once or a limited number of times and then thrown away" (Dictionary

[2] This section's information is pulled from Chapter 2.2 of "Disposable Mentality: Consumer Behavior surrounding disposable plastics" (Bloniarz, Brimdyr, McKay, McMahon). For more information, see pages 3-5of the IQP Report.

by Merriam Webster, n.d. as cited in Bloniarz et al. 2018, p. 4). The introduction of plastics brought in a new way of living – 'Throwaway Living' – where people opted to replace instead of repair.

The term 'Throwaway Living' was first used in the 1950s LIFE magazine to announce that "disposable items epitomized the height of modern living" (Cosgrove, 2014 as cited in Bloniarz et al. 2018, p. 4). Production of items shifted to follow this new environmentally damaging trend. Products were designed and manufactured to have a limited lifespan, a concept termed 'planned obsolescence' (Fitzpatrick, 2011). Planned obsolescence can easily be seen with cell phone culture. When phones are no longer one of the newest models, consumers will buy a new phone instead of repairing their old one. Companies such as Apple encourage this behavior by making new updates incompatible with older phones, pushing consumers to buy newer products and dispose of the older products (Gibbs, 2017).

While ease of production makes it more convenient for consumers and producers, there are many negative effects, including an abundant increase in the amount of waste being produced. Items such as Styrofoam, paper, and plastic containers have both the intention and implementation of single use, instead of the multiple uses from items such as metal and wood.

Waste, Recycling and Alternatives[3]

Two billion tons of municipal solid waste (MSW) were generated in the world in 2012, a 400% growth since 1997 (Karak, Bhagat, & Bhattacharyya, 2012). "MSW refers to the combination of domestic, commercial and industrial waste," and poses a problem as resources are

[3] This section's information is pulled from Chapter 2.3, 2.4.1 and 2.4.2 of "Disposable Mentality: Consumer Behavior surrounding disposable plastics" (Bloniarz, Brimdyr, McKay, McMahon). For more information, see pages 5-7 of the IQP Report

used up, and space for landfills becomes limited (Karak, Bhagat, & Bhattacharyya, 2012 as cited in Bloniarz et al. 2018, p. 5). The increase of waste has led people to explore new alternatives. One idea is to increase the use of recyclable products, however not all recyclable items are able to be recycled. For example, if materials contain food residue, then they are unable to be recycled and instead become waste (MacKerron, 2015). In addition, China, the worldwide importer of "scrap" plastic, is tightening their regulations on what recycled materials they will accept, further increasing the amount of recyclable products that will end up in landfills (Hong Kong has Nearly No Space for its Garbage, 2017).

Another way to reduce waste is by increasing the use of alternatives to disposable plastics. Initiatives have been started by large food corporations with this intention. Dunkin' Donuts has taken steps to change the material of their cups, so they may be more compostable and biodegradable (Dunkin' Donuts, 2017). Starbucks was the first company to offer a discount to customers who brought a reusable cup, a policy adapted by other large food corporations (Starbucks, 2017). Unfortunately, this policy has faced obstacles, due to consumer's lack of knowledge about program and the convenience of a plastic cup (Dunkin' Donuts, 2017). Therefore, in addition to corporations, consumers must also change their behavior.

Psychology of Behavior Change[4]

In the past century, numerous studies have been conducted to better understand the psychology behind behavioral change. This research includes understanding the different stages

[4] This section's information is pulled from Chapter 2.5, 4, 5.2 of "Disposable Mentality: Consumer Behavior surrounding disposable plastics" (Bloniarz, Brimdyr, McKay, McMahon). For more information, see pages 8-13 of the IQP Report

through which an individual progresses as they change their behavior, exploring where individuals gain knowledge, and developing leadership styles that encourage change.

Prochaska and DiClemente (1983), and later on Prochaska and Velicer (1997), studied the psychology of behavioral change and surmised that all behavior is value based. A value is something a person has "thought about, feels strongly about, chooses freely, believes in, communicates to others and acts skillfully on over time. Value based behavior refers to the deliberate actions stemming from a clear set of values" (Balistrieri, 2017 as cited in Bloniarz et al. 2018, p.8). Prochaska also realized that there are distinct stages through which an individual moves when changing behavior and created the model Transtheoretical Model of Change (TTM), to reflect this understanding ("Transtheoretical Model," n.d.). How strongly an individual adheres to their distinct set of values can have significant implications for how quickly they progress through Prochaska's TTM.

Prochaska et al. (1983, 1997) identified five different stages in the TTM. The first stage is *Precontemplation,* where an individual is unaware or under informed of an issue. In the second stage, *Contemplation,* an individual is informed about the issue, but while they understand the benefits of changing, they see too many challenges to start changing their behavior. In *Preparation,* the third stage, an individual begins to prepare to change their behavior, and starts to make small adjustments to their lives. In the *Action* stage, an individual is actively changing and modifying their lifestyle and behaviors. In the final stage of *Maintenance,* the individual continues to work towards building these changes into everyday life so they become habits. At this point, the individual has completed the TTM, and has changed their behavior ("Transtheoretical model [or Stages of Change]," n.d.).

While the process of change stays constant for every individual, the timing needs might vary from person to person due to their experiences. Some individuals may have little experience with the issue and change quickly, and others may take decades due to how strongly-held their values are. Therefore, depending on the stage an individual is in, and the strength of their values, the intervention method to encourage a shift to the next stage must vary from individual to individual. Often times, this is not able to be accomplished through a single event intervention ("Transtheoretical Model," n.d.).

For their degree requirement project, Bloniarz, Brimdyr, McKay, and McMahon (2018) surveyed a portion of the Hong Kong population about their use of disposable plastics and placed individuals on an adapted Prochaska model. In their model, Bloniarz et al. removed the last stage, *Maintenance,* and added two additional stages, enhancing specificity and precision. In addition, they created a greater ability to quantify each stage by identifying an array of thoughts, feelings, and behavior, such that as an individual progresses their thoughts, feelings, and behaviors become stronger. Their adapted model is illustrated below in Figure 3.

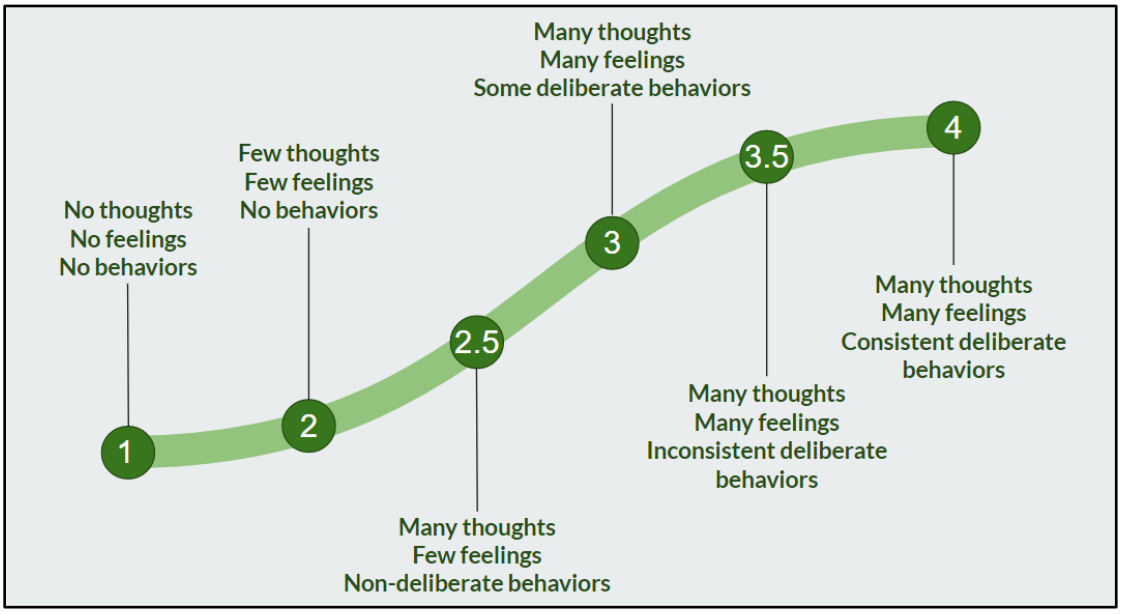

Figure 3: Adapted Model of Change

In their adapted model, an individual moves from having no thoughts or feelings and non-deliberate behaviors to having many thoughts, feelings, and consistent deliberate behaviors. They defined non-deliberate behaviors as a "lack of mindfulness, and usually done out of convenience or habit," e.g., carrying a reusable water bottle out of habit instead of carrying it to reduce the use of disposable plastic (Bloniarz et al. 2018, p. 19). Consistent deliberate behaviors were defined as how frequently an individual follows through with their actions. By creating these additional stages, Bloniarz et al. were able to establish if an individual had strong values and was truly trying to reduce their waste with their actions, or if it was just by happenstance that they were reducing their waste.

Other psychology models have also been created to understand behavioral changes. Robert Kegan's Developmental Theory illustrates that as individuals move through life, there is an evolution of consciousness (Reis, 2010). In other words, individuals progress through stages of understanding of who they are in relation to society. Hersey-Blanchard's Situational Leadership model illustrates different leadership's styles an individual can take based on the groups readiness to change (Hersey & Blanchard, n.d.). Bloniarz et al. recommend that to help change consumer behavior, organizations utilize psychological understandings of behavior change to create a better result.

Sustainability at WPI

WPI has demonstrated a leadership role in relation to campus based sustainability, with awards including a STARS Gold rating – the Sustainability Tracking, Assessment & Rating System, which measures and encourages sustainability in all aspects of higher education (WPI, n.d). WPI has effectively changed student, faculty, and staff behavior and implemented suessful sustainable projects, dedicating time, resources and thought into these programs. Many of its

sustainable projects are the results of student initiatives and on-campus IQPs. For example, some previous projects include the Bike Share program, the Food Recovery Project, and the Reusable Container program.

The "Bike Share Plan for Worcester Polytechnic Institute" was an IQP completed in 2015 by Kevin Ackerman and John Colfer. The project was created after a previous IQP had found that the majority of undergraduates and graduate students would be interested in a campus bike program, due to the distance between the main campus and Gateway Park. The IQP team assessed benefits and challenges to bike sharing at WPI, the use of bikes at WPI and in the City of Worcester, and existing rental systems. They conducted interviews of WPI administrators and students, Worcester government and officials, bike advocacy groups, and other college campus operators. From this, they created a set of implementation plans for the WPI (Ackerman, Colfer, 2016). This project turned into a Green Team initiative, and in the spring of 2016, Gompei's Gears launched. This program quickly started to flourish on campus. In the fall of 2017 there were 1,237 registered members, and within the first 7 weeks there were 2,014 bike rides (Gompei's Gears, 2017). A potential reason for its success could be because there was an original study establishing the need, and understanding students' interest in a bike share program.

In addition to the Bike Share IQP, a group of Global Problems Seminar (GPS) students investigated food scarcity for the homeless in Worcester in the fall of 2015. Alyssa Konsko, Alex Kuros, Ben Leveille, Nathan Pietrowicz, and Austin Shrewsbury researched the challenges homeless shelters face to provide nutritional and high quantity food to the homeless in Massachusetts. For their project, the students proposed working with the Food Recovery Network, a national not-for-profit organization that fights food waste, to transport food from WPI's dining hall to Friendly House, a nearby shelter (Konsko, Kuros, Leveillee, Pietrowicz, 2015). This idea

became a student initiative, and has recently turned into an on campus organization. Currently, they deliver food twice a week from the kitchens of the on-campus dining hall to the Friendly House, with an average of about 40-50 pounds of food per delivery (G., Jatz, personal communication, April 2018). However, this program has also faced challenges. While the program is still functioning, they have struggled to find people to drive the food and to keep the organization running. This could be due to the lack of awareness on campus for the program.

A more recent student initiative was the Reusable Container Program (RCP) established in the fall of 2016 by Kayleah Griffen and Nicole Luiz. The goal of this program is to reduce the use of disposable plastic containers from the Rubin Campus Center food court (Campus Center), by introducing reusable containers. For the RCP, students deposit $5 and receive a green carabiner, which they can swap out to receive a reusable container at the food court. Students may bring the container off campus, and when they are finished they return the container to the food court to be washed, and obtain a new green carabiner. The students worked with the Office of Sustainability, and the on-campus Dining Hall services to create this sustainable program (K. Griffen & N. Luiz, interview, April 2018).

Methodology

The purpose of this project was to understand and evaluate the RCP at WPI. To accomplish this, I first conducted archival research and document reviews to understand the RCP. I then interviewed WPI faculty and students who helped create the RCP, employing a semi-standardized interview method.[5] A semi-standardized interview approach allows the interviewer to ask participants structured questions, as well as specification or follow-up questions based on participants' responses. A complete list of questions can be found in Appendix A. With this information, I evaluated the collected data and developed insights into and recommendations for both the effectiveness of the RCP in its current form and opportunities for future research teams to improve the RCP through the application and implementation of the adapted Prochaska model.

[5] Received WPI Exemption: HHS IRB # 00007374, IRB file 18-0316.

Results

Program Overview

I conducted archival research and document reviews to create a basis of understanding behind the operation of the RCP. The poster depicted in Figure 4 below outlines the RCP (WPI Dining Services, 2015). I found this poster online, but it is also located in front entrance of the Campus Center.

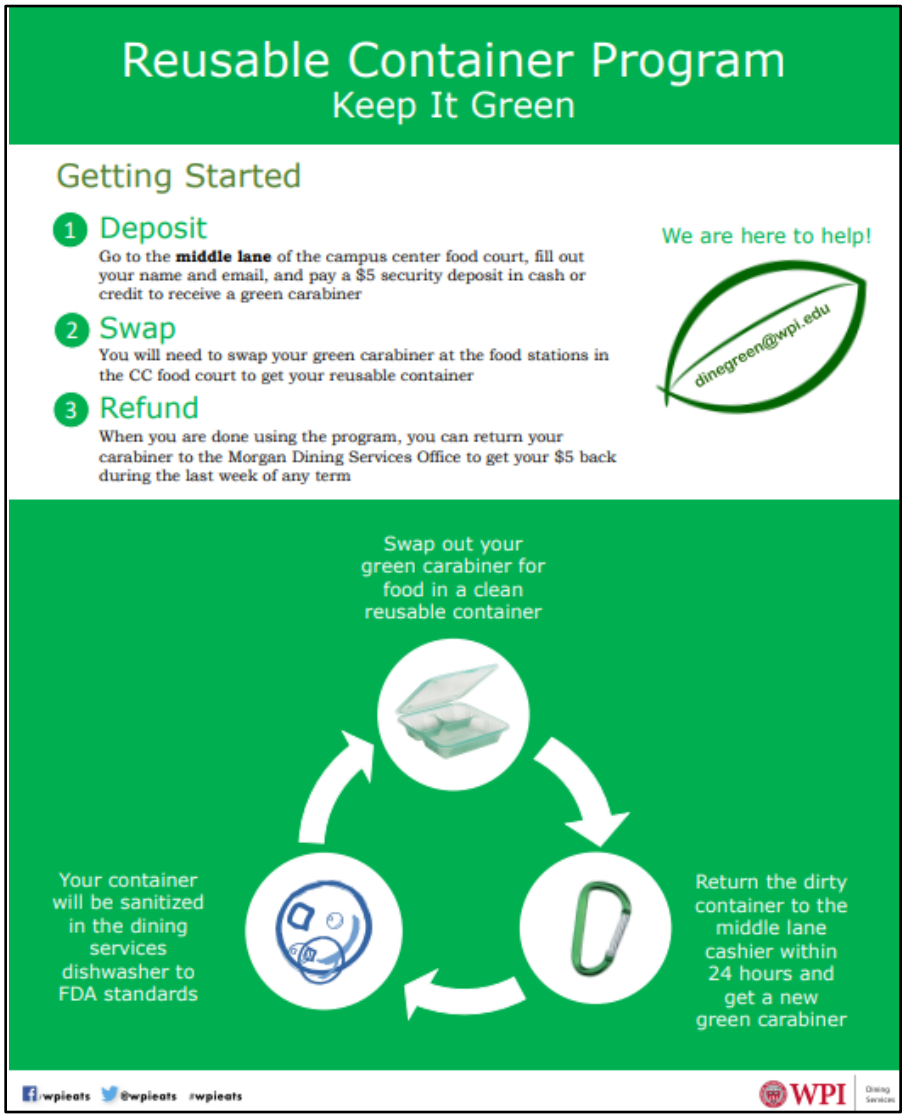

Figure 4: RCP Poster (WPI Dining Services, 2015)

Individuals deposit $5 and write their name and email on a paper sign-up slip to join the RCP. In return, they receive a green carabiner which signifies acceptance into the program. Before ordering at the Campus Center, an individual gives the server their carabiner, ensuring their meal is placed into a reusable takeout container. Unlike standard dishware, the only other non-disposable food container offered, the reusable container may be brought out of the campus center premises wherever the student wants to eat. When participants are finished, they bring the reusable container back to the Campus Center cashier in exchange for their green carabiner. The container is then washed by kitchen staff with other Campus Center dishware and re-entered into the RCP cycle. When the individual is finished with the program, they may hand in their green carabiner and receive their $5 back.

Program Assessment

Using this archival research as a foundation, I interviewed Liz Tomaszewski, the Associate Director of Sustainability at WPI, Joe Kraskouskas, Director of Dining Service at WPI, and the two students who created the program, Kayleah Griffen and Nicole Luiz. These interviews focused on understanding motivations to create the RCP, current program operation, and current program use.

I obtained information about the program's creation from Griffen and Luiz. Griffen and Luiz were rising juniors in the summer of 2016, interning at WPI's Office of Sustainability, when they become motivated to create the RCP. They were frustrated by the quantity of disposable plastic used on campus, specifically at the Campus Center. At WPI, the majority of food is packaged in and consumed from disposable plastic, greatly contributing to overall campus waste. Out of numerous "to-go" meal packaging options, only certain plastic containers with lids are recyclable. Other food containers, such as paper plates and plastic and paper clam shells are not

recyclable. This is primarily due to food residue, but the issue is compounded by WPI's lack of structural capacity to recycle number 6 plastic waste. Griffen and Luiz explored other college campuses to discern if they had similar waste problems, and found other campuses had reduced their waste by implementing reusable container programs (K. Griffen & N. Luiz, interview, April 2018).

While exploring the solutions implemented on other college campuses, Griffen and Luiz learned about the token solution. In these programs, a token was used to signify involvement with a program. Griffen and Luiz liked the idea, and decided to use a carabiner as the WPI token, because it could easily attach to backpacks, keys, and wallets, helping to ensure that the user always had their token with them. Additionally, a green carabiner could advertise the program to the rest of campus when it is visibly clipped to a backpack. The carabiner system benefits students who stay on campus most of the day, including commuter students. The Campus Center is a student hub on campus, so most often student will return there after class. Rather than carrying the reusable container throughout the day, students can stop by the Campus Center and exchange it for a more convenient carabiner (K. Griffen & N. Luiz, interview, April 2018).

Griffen and Luiz reached out to Liz Tomaszewski, the Associate Director of Sustainability, who then encouraged them to work with Joe Kraskouskas, the Director of Dining Services, to implement a RCP on the WPI campus. Griffen and Luiz's goal was to reduce the amount of disposable food containers in the Campus Center, and they set a benchmark of 250 participants as a measure of sucess. The number 250 was chosen because Dining Services budgeted for 300 reusable containers (K. Griffen & N. Luiz, interview, April 2018).

The original RCP was started at the Campus Center in fall of 2016, and in the spring of 2018 was implemented at the Class of 1970 Library Café and the on-campus Goat's Head

restaurant (K. Griffen & N. Luiz, interview, April 2018). Due to the programs expansion to these sites, Dining Services has purchased 200 more reusable containers (J. Kraskouskas, interview, April 2018). Figure 5 below illustrates this timeline.

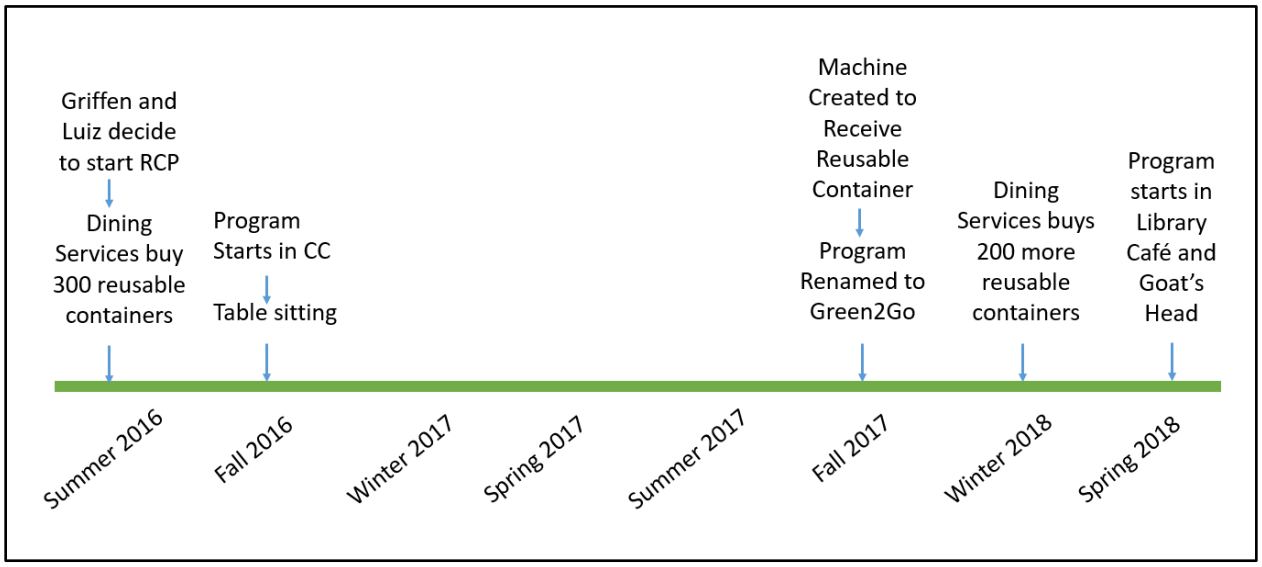

Figure 5: Timeline of Implementation of the RCP

In addition to figuring out the creation of the program, I also asked questions about the programs current use. According to Griffen and Luiz, in the fall of 2016, a group of students raised awareness for this program by sitting outside the Campus Center engaging passerby with informative posters and sign-up sheets. After a little less than a semester of table-sitting, a Campus Center cashier became responsible for participant registration. And, with the new implementation of the program at the Goat's Head, individuals are also able to sign up with a Goat's Head cashier (K. Griffen & N. Luiz, interview, April 2018).

Griffen and Luiz created a spreadsheet to keep track of students and faculty registered for the program. Currently, about 270 people have registered. However, Griffen and Luiz point out this might not be an accurate number. While there was originally only one spreadsheet, there are currently at least three separate spreadsheets, which were created when different students were in charge of managing the spreadsheet. However, even this information might not be accurate -sign-

up slips have the potential to be lost. Presently, only student volunteers are able to add information to the spreadsheet, even though it is the Campus Center cashiers who are now receiving the sign-up slips. Since this program is run by student volunteers, they do not regularly collect the sign-up slips from the cashiers to add individuals to the database. Additionally, while the Goat's Head Cashiers are able to register people into the program, they do not use the same sign-up system. At the Goat's Head, individuals are allowed to deposit $5 and receive the carabiner, with no information recorded. This leads to more individuals missing from the spreadsheet. (K. Griffen & N. Luiz, interview, April 2018).

There is also a potential discrepancy of "active" members. Kraskouskas believes, despite many graduating seniors, only 5 individuals officially left the program last year, though it is believed there were more seniors in the program who graduated (J. Kraskouskas, interview, April 2018). Altogether, these inconsistencies have led to a lack of certainty about how many individuals are actually current participants in the RCP.

Moreover, although an individual might be signed up for the program, they might not be actively participating. Kraskouskas said a trustworthy cashier who daily receives the reusable containers estimates only about "15 a day" are used (J. Kraskouskas, interview, April 2018). It is unknown if these are unique users or repeat customers. Regardless, it is only a small percentage of the number of individuals participating in the program.

Overall, Griffen, Luiz, and Kraskouskas think that the program is under-performing. While they are happy that the concept of the RCP, and that the program now exists on campus, they think the program could be strengthened and have identified areas for improvement.

Identified Areas for Improvement

Griffen and Luiz have many hopes and ideas for RCP in the future. In order to create smoother and faster transitions for returning the reusable container, two interested Mechanical Engineering students created a machine that collects the reusable containers and returns a carabiner. This eliminates the need for this to be processed through a cashier. This machine was placed outside the Goat's Head restaurant in the spring of 2018. Griffen and Luiz hope in the future an additional machine will be created to receive reusable containers that can be placed near the Campus Center. In addition, they hope to attach a counter to the new one to allow for better data collection (K. Griffen & N. Luiz, interview, April 2018).

Kraskouskas suggests some individuals might have forgotten about the program's existence. Since students are no longer table-sitting in an easily observed area selling carabiners, individuals might forget to sign up for the program, and others might not use the program without the encouragement. Students' lack of knowledge about the program and lack of drive to sign up makes the program "not sustainable" (J. Kraskouskas, interview, April 2018). While there are signs reminding students to sign up, as seen in Figure 4, which hangs in the Campus Center, the signs are not encouraging student to join the program. As stated by Kraskouskas, "the signs themselves aren't doing it" (J. Kraskouskas, interview, April 2018). Kraskouskas suggests that to increase the use of the program, someone needs to "teach students to understand why it's important," and then they would be more likely to use this program (J. Kraskouskas, interview, April 2018).

Another suggestion by Kraskouskas was to send out surveys to the individuals registered for the program. The survey would ask if they were still registered for the program, as well as other general information about how the program could improve. Kraskouskas recommended that a lot

of detail and thought be put into a survey before sending anything out, since students constantly receive surveys and therefore might not want to complete it (J. Kraskouskas, interview, April 2018).

Tomaszewski identified a lack of knowledge about the program on campus as an opportunity for improvement. She mentioned that, when using the reusable container, faculty often would come up and ask what she was using and where she got it. If more people knew about the program, or what it was, more people might be interested in joining (L. Tomaszewski, interview, April 2018).

There are also ideas that have been scheduled for implementation by the Dining Hall Services. One is to make signing up easier for students by including a registration option for upperclassman when they buy a voluntary meal plan online (J. Kraskouskas, interview, April 2018). Another is to rebrand the program from RCP to Green2Go. Griffen and Luiz feel like this name is more suitable and fitting for the program, and provides more information to those who might not be knowledge about the program (K. Griffen & N. Luiz, interview, April 2018). Additionally, each year the Office of Sustainability conducts a waste audits on campus. In 2016, they recorded the weight of the plastic clam shells, and plan on continuing to keep track of their use in the coming years. They hope to see a decrease in the plastic clam shell use as student's transition over to using the reusable containers (L. Tomaszewski, interview, April 2018).

Recommendations

RCP has the potential to significantly reduce plastic waste on campus. However, there is significant room for improvement. Overall, I recommend that the RCP needs a more formal structure and students need more encouragement through Prochaska's concepts of deepening thoughts and feelings to join and use the RCP. In addition, I would recommend an IQP team conduct a study on improving the RCP's use through understanding Prochaska's adapted model of change, and applying different implementation strategies to encourage more individuals to join the program.

Structure

While conducting the interviews, all parties mentioned the structure of the RCP could be improved. At the moment, the program lacks a formal structure; it does not maintain records of the registered participants, and there is a question of who should oversee the program. Other sustainable projects on campus, like the Bike Share and Food Scarcity programs, were conceived and then an organization was created to help organize and run the program. I would recommend a similar process to oversee the RCP. However, I believe that this program requires a well-established organization, as the startup Food Scarcity program encountered difficult in ongoing management.

Education

Presently, RCP participants represent a very small proportion of the student population of 4,000 undergraduates. In order to encourage more students and faculty to join, I would recommend more consideration be given to educating students and faculty about why they should change their behavior. One reason why students might not be actively participating in this program is because

it requires a change in behavior. Asking an individual to change from using a convenient plastic container that gets tossed in the nearby trash can, to joining a program that involves remembering to carry and hand over the green carabiner and then actively bringing the reusable container back to swap for another carabiner, is a considerable difference. According to Prochaska and Bloniarz et al.'s Hong Kong's adapted research, this requires a significant shift in thoughts, feelings, and behaviors. In order to create a behavioral change, an individual must have many thoughts and feelings about their plastic use. And as Kraskouskas mentioned, many students might not understand why this shift to reducing plastic is important.

Further Research

Therefore, I would recommend creating marketing strategies that inform students and faculty about the plastic waste of both on campus and off, to encourage them to change their behavior by reducing their plastic waste through joining the RCP. Marketing is an important piece of starting up a program, and as previously mentioned by Tomaszewski, students also might not be participating due to lack of awareness of the program. In the past, the RCP's marketing strategy has been table-sitting for about a semester and putting up posters at the entrance to the Campus Center, as well as an imminent rebranding of the RCP to Green2Go. Besides table-sitting at the beginning of the program, posters and rebranding are one-time events. According to Prochaska, often times encouraging change in behavior is not accomplishable through a single event. If individuals have little experience with the plastic waste issue, it will take a while for them to change their values and behavior. Therefore, a more structured, long-term intervention must be implemented in order for people to change their values and behavior. The suggested next steps from this study could be accomplished by a future IQP team.

This future IQP team could research student and faculty values on campus and create an intervention to encourage more people to use the RCP and reduce their plastic use. I would recommend that an IQP team surveys the student population, and in addition to asking them questions proposed by Kraskouskas, the survey poses questions identifying students' strength of thoughts, feelings, and behaviors. These questions might be similar to the questions asked on the survey from the Hong Kong's research (Bloniarz et al. 2018, Appendix C). Based on the data, the IQP team could better understand at what stage a respondent is placed, which would allow for a more direct intervention.

Conclusion

The RCP has the potential to reduce the use of disposable plastic on WPI's campus. Disposable plastics are not only a WPI problem, but a global problem, leading to overflowing landfills and causing detrimental harm to the marine environment and wildlife. The RCP program works to eliminate the plastic takeout containers by introducing a reusable container. While almost 300 students and faculty are currently enrolled in the program, there are many ways the RCP can be improved. I recommend: 1) creating a more formal oversight structure, 2) better educating the students and faculty as to why it is important to reduce the use of disposable plastic, and 3) performing future research on creating interventions to encourage people to use the program. Overall, Griffen and Luiz were able to prove through the RCP initiative that there is a way to reduce the use plastic on campus, in turn paving the way for others to help develop it and make it a better program.

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Appendix

Appendix A: Interview Questions

General Questions for Everyone:

- What is the reusable container program at WPI?
- How does it work?
- Where did this idea come from?/ Was it based off another initiative?
- Are there others like it on WPI's campus or at other campuses?
- What was your motivation behind helping to start this program?/ What purpose were you trying to fulfill?
- Why did you choose this program?/Why reusable containers?
- How do you think the program is working?
- Are you doing anything to check its progress and use? If so, what?
- Do you know if there is any data on the program as a whole as to how it's doing?
- Are there changes being made to the program in the future? If so, what are they?
- Do you know of anyone else who is currently interested in it/working on the program?

Joe Kraskouskas

- ✓ What appeals to you about this program?
- ✓ Why were you interested in helping to start this program on campus?
- ✓ What convinced you to implement this program?
- ✓ How do you think the program is received by students?

Kayleah & Nicole

- ✓ Why did you push and help to implement this program?
- ✓ What was the largest pushback you received? /Where?
- ✓ How do you think the program is received by students?

Liz Tomaszewski

- ✓ What appeals to you about this program?
- ✓ Why were you interested in helping to start this program on campus?