UNDERSTANDING THE PHENOMENA OF INSTITUTIONALIZED RECYCLING AND COMPOSTING PROGRAMS

by

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ABSTRACT

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Institutionalized Recycling and Composting Programs

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Recycling and composting programs, as an effort towards sustainability, have recently become commonplace in institutionalized settings. Despite their mainstream adoption in college and university campuses, institutionalized recycling and composting programs are loosely defined and carried out in a multitude of ways. For example, what is considered success in a given program and how is that success measured? This research explored the history of recycling, the development of sustainability on college and university campuses, as well as social marketing as a tool for behavior-change. These elements were put into the context of three institutionalized recycling and composting programs: South Puget Sound Community College, The Evergreen State College, and Pacific Lutheran University. Using phenomenology-based inquiry, data from multiple sources included physical artifacts and texts, interviews, and observations across all three campuses. Interviews with program managers examined each program's experiences of success as well as challenges in the implementation of their recycling and composting programs. This multiple-case study compared each institutionalized recycling and composting program to each other and against an envisioned ideal. Both similarities and differences were found and led to the conclusion that these programs vary in focus, metrics, and expansiveness, among other contextual factors, while inarguably attempting to do the right thing in their contribution towards sustainability.

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1. INTRODUCTION

Practicing sustainability is inarguably *the right thing to do*. While it is sometimes difficult to justify the initial investment in new practices to be more sustainable, there are often incentives and positive feedback to take part in such practices. The opportunity to integrate sustainable practices exists in every sector as well as across the board and on all scales. In this study, I researched institutionalized recycling and composting programs as a sustainability effort on college campuses.

Increased recycling and composting practices is not only *the right thing to do*, but often provides an incentive for savings in terms of waste management costs. In terms of the costs of handling and disposing of waste, recycling and composting appropriate materials costs less than disposing of them as garbage. Because institutionalized recycling and composting programs on college campuses are increasingly becoming a norm, I was interested in investigating their design as well as implementation. As a client of a college's dining center, I produce waste and thus, partake in their recycling and composting practices. As a researcher, I went beyond reading the signs on how to sort my waste and studied the institutional composting programs at three sites: South Puget Sound Community College, The Evergreen State College, and Pacific Lutheran University. My goal was to investigate and compare the various dimensions of their institutionalized recycling and composting programs.

Beyond "doing the right thing," are these campus composting-programs successful? What is considered success? Are the programs evaluated? These

were just a few of the questions I attempted to answer. Using a phenomenology-based inquiry, I conducted a comparative case study by completing a literature review on sustainability and gathering data about the three composting programs from multiple sources, including physical artifacts and texts, interviews, and observations. In the process, I learned about components of institutionalized recycling and composting programs I would have never thought about as a casual observer or dining client participating in sorting my wastes.

My research revealed that an ideal program with high participation is characterized by a campus-wide sustainability culture; commitment to environmental and sustainability studies; as well as a waste sorting system that successfully uses behavior-changing strategies through social marketing and effective prompts for action. While no institutionalized recycling and composting program in any of the three cases holistically met this ideal, each had positive traits in at least some of the idealized components.

This thesis covers the literature review conducted, discusses the methodologies used, summarizes the data collected, and then discusses the conclusions as well as recommendations resulting from the data analyzed. My research found that institutionalized recycling and composting programs as a whole within the three cases studied have similar goals but also have some differences in terms of carrying out their sustainability efforts. Diverse contexts, such as the number of dining student staff and number of students residing on-campus of each college studied kept cases unique. I conclude my study by

comparing each case to an envisioned ideal, each case to each other, and provide recommendations for each program's next steps for improvement.

2. RECYCLING AND COMPOSTING: BACKGROUND AND CONTEXT

My literature review of institutionalized recycling and composting programs revealed many facets of these approaches. In this chapter, I include the concept and evolution of sustainability; recycling practices, including composting; and the various forms of information, education, and marketing that encourage people to recycle.

2.1. THE CONTEXT: SUSTAINABILITY

Sustainable Development to Sustainability

"Sustainable development" was an initiative internationally introduced in 1987 by the United Nations' (UN) World Commission on Environment and Development (WCED) as *meeting the needs of the present without compromising the ability of future generations to meet their own needs* (WCED 1987). The report pointed towards a new paradigm and way of thinking but was not specific enough in terms of providing the means in which sustainable development could be realized. As a result of the vagueness in this definition, many different groups have conceived sustainable development in a wide array of interpretations.

Sustainable development is a revolutionary concept that explores the working relationships between economy and environment as well as between the present and future (National Research Council 1999). While Earth's fate is the shared value among those in favor of sustainable development, its foci differ among its practitioners. Points of concern include what is to be sustained, what is

to be developed, as well as the timeframes and the linkages between each point of concern.

The 1992 UN Conference on Environment and Development (UNCED) in Rio de Janeiro built on the concept of sustainable development by discussing the human race's well-being as well as increasing disparity within and between nations. The UNCED produced a major action plan, Agenda 21, which stated in its preamble that sustainable development under a global partnership can "lead to the fulfillment of basic needs, improved living standards for all, better protected and managed ecosystems, and a safer, more prosperous future." The 40-chapter action plan addresses the multitude of factors associated with sustainable development: social and economic dimensions; conservation and management of resources for development; strengthening the role of major groups; and means of implementation.

The term, *sustainable development,* is more often associated with developing countries whose primary needs relate to economic development. In Western countries, especially the United States, which is already highly developed, the discrete term, *sustainability*, is more commonplace. Sustainability as it is known in the developed world is what will be referenced from this point on in my thesis.

The Natural Step Framework

A popular approach for incorporating sustainability concepts is *The Natural Step Framework*, a comprehensive model for planning in complex systems. Swedish scientist Karl-Henrik Robert led the development of this framework

following the publication of *Our Common Future*. The Natural Step framework is an open-source publication, free for all to use; it offers principles and strategies to help organizations as well as communities to "backcast from the principles of sustainability" (The Natural Step 2011). "Backcasting," as opposed to *forecasting,* focuses on envisioning a success, working backwards from that vision to the present-state, and figuring out how to put the pieces together, much like a jigsaw puzzle. Backcasting in The Natural Step framework is based on basic sustainability principles, which are reworded from four science-rooted system conditions in mind. The following table from The Natural Step's organizational website lays out the four system conditions and four sustainability principles (2011).

Table 1: The Natural Step Framework

The four system conditions characterizing the Natural Step framework.

The Four System Conditions	**…Reworded as The Four Principles of Sustainability**
In a sustainable society, nature is not subject to systematically increasing:	To become a sustainable society we must...
1. concentrations of substances extracted from the earth's crust	1. eliminate our contribution to the progressive buildup of substances extracted from the Earth's crust (for example, heavy metals and fossil fuels)
2. concentrations of substances produced by society	2. eliminate our contribution to the progressive buildup of chemicals and compounds produced by society (for example, dioxins, PCBs, and DDT)
3. degradation by physical means	3. eliminate our contribution to the progressive physical degradation and destruction of nature and natural processes (for example, over harvesting forests and paving over critical wildlife habitat); and
4. and, in that society, people are not subject to conditions that systemically undermine their capacity to meet their needs	4. eliminate our contribution to conditions that undermine people's capacity to meet their basic human needs (for example, unsafe working conditions and not enough pay to live on).

Violating any of the four principles is detrimental and not conducive to success because doing so is equated to the roots causes of un-sustainability (The Natural Step 2011). While the exact conditions of success, ultimately a sustainable society, are not known, the Natural Step program argues that following these four principles of sustainability will lead organizations on a more sustainable path.

The Natural Step framework has become a popular practice towards sustainability because it includes strategies that still keep businesses profitable (Castle 2001). Using The Natural Step framework, a vision for sustainability in the automotive services industry was created and prepared for the State of Oregon's Department of Environmental Quality in 2001. An analysis conducted revealed that of all the automobile services industry's many practices, materials, energy, and waste had the greatest environmental impacts. In such a case, goals are developed for each impact in terms of their relation to the four principles of sustainability. For example, all businesses create waste and all waste created must be utilized, so it should no longer be acceptable to send any waste to landfills.

While approaches to sustainability vary, many fundamentals from each approach are inextricably linked. Take The Natural Step framework's example from above, where all waste created must be utilized, referring to the concept of a closed-loop system and that Earth cannot endure to serve as a landfill for waste. In particular, the Natural Step framework is conceptually similar to the *cradle-to-cradle design*, "…a framework in which the effective, regenerative cycles of nature provide models for wholly positive human designs" (McDonough and Braungart 2003).

The Emergence of Sustainability on Campus: A Growing Trend

The growing trend of environmental awareness and action on college campuses is a phenomenon that began in the latter half of the 20th century. Earth

Day, beginning in 1970, and the subsequent energy crisis of the mid-1970's stimulated widespread environmental consciousness within the public and particularly on college and university campuses (Bartlett and Chase 2004). Students and staff began their rallying efforts for more on-campus environmental resources such as the preservation of more green space, the establishment of environmental studies programs, and the promotion of outdoor recreation activities and ecology clubs, among others.

Institutionalized sustainability efforts on college campuses continued to develop in the 1990s. An international conference in Talloires, France in 1990, convened by the leadership of Tufts University, drew together 22 university presidents from throughout the world. They discussed and defined the role of the university in the following way:

> *"Universities educate most of the people who develop and manage society's institutions. For this reason, universities bear profound responsibilities to increase the awareness, knowledge, technologies, and tools to create an environmentally sustainable future" (Report and Declaration of the Presidents Conference (1990); source cited in 2008).*

This conference resulted in the Talloires Declaration, which has now been signed by over 400 college and university institutions. The Talloires Declaration is a ten-point action plan for institutions that are committed to promoting education for sustainability and environmental literacy. It has served as a model for other sustainability plans and models that followed (ULSF 2001).

Colleges and universities are increasingly committing themselves to a number of national as well as international efforts towards sustainability, including the Talloires Declaration. Dr. Anthony Cortese, an environmental

advocate, was part of the international meeting leading up to the Talloires Declaration and went on to co-organize numerous other sustainability programs in higher education. Dr. Cortese was the co-founder for the Association for the Advancement of Sustainability in Higher Education (AASHE), an organization responsible for the Sustainability Tracking Assessment & Rating System (STARS).

STARS is a "…transparent, self-reporting framework for colleges and universities to measure their sustainability performance" (AASHE 2011). The self-reporting in STARS covers metrics from every aspect of an institution including, but not limited to offerings of sustainability-centered courses, opportunities for staff and faculty development, and minimization of waste, among others. Nearly 900 institutions of higher education and over 250 organizations including businesses as well as non-profits are registered members of STARS, while nearly 700 institutions of higher education have signed the American College & University Presidents' Climate Commitment (ACUPCC). The ACUPCC, another highly visible effort towards sustainability on college and university campuses, focuses on addressing climate change by achieving carbon neutrality. Activities associated with being an ACUPCC signatory include conducting an emissions inventory and reducing greenhouse gas emissions, among others. STARS requires its members to pay an annual fee while most members of the ACUPCC voluntarily pay annual dues.

Campus sustainability initiatives at colleges and universities today are now the norm rather than the exception, regardless of an institution's independent

efforts or its affiliation with a program such as the Talloires Declaration, STARS, and ACUPCC. These sustainability initiatives encompass issues ranging from campus green space to energy and waste planning to faculty and organizational development. A common issue addressed is waste reduction, perhaps because it is more quantifiable than a metric such as organizational development. Increased recycling, decreased landfilling, and the integration of composting have become major strategies for campus sustainability programs.

2.2. RECYCLING AND COMPOSTING: EVERYDAY PRACTICE TO ORGANIZED PROGRAMS

Recycling has been one of the most significant and common practices in caring for the environment because it reduces the need for landfilling and incineration of waste materials that can otherwise be made into new products (EPA 2010). Recycling is the practice of processing used materials normally considered waste to create a new, usable material or product. The direct and indirect benefits that result from recycling include the conservation of natural resources, reduction of energy usage, reduction of air pollution, and reduction of water pollution, among others.

Evidence shows that recycling is far from a new concept: materials such as soiled paper have been processed into new materials beginning hundreds of years ago. At certain times in history, economic incentives have played a large role in the importance and popularity of recycling. For example, when resources were scarce during war, recycling became heavily adopted; however, as resources

became increasingly available again, waste disposal in landfills increased and recycling became a less attractive alternative (Blunt 2011).

The environmental movement in the 1970s stimulated a greater consciousness and public awareness of environmental issues. This time, recycling was well on its way to a long lasting practice as recycling drop-off centers and processing plants became much more common. Local municipalities as well as individual states in the U.S. began to implement mandates on recycling in the 1980s. Recycling has grown to be an important practice and is often less costly than sending material waste to landfills. In communities where mandates on recycling do not exist, voluntary programs are common and fill the void. Today, commonly recycled materials include paper of most types, cardboard, plastic, glass, and metals, among others.

Today's recycling programs have broadened their scope through the integration of composting foods scraps as well as biodegradable plates, cups and flatware, particularly in residential households, restaurants, and dining facilities. This practice at college institutions' dining centers is a growing trend in the larger constellation of sustainability strategies. While institutionalized composting programs offer new tools for waste-stream reduction on college campuses, these strategies require proper infrastructure, management, coordination, participation, and education to fulfill its potential and approach goals for reducing waste.

Composting is viewed both as an art and science. Decomposition naturally occurs most efficiently when there are the right levels of organic matter,

oxygen, temperature, moisture, and soil pH to break down organic materials into simpler molecules. People who use composting practices at any scale try to establish those same ideal conditions for decomposition. Before this can all take place, however, the responsibility falls on the producers of compostable waste (also referred to as "compost feedstock") to transport sorted food waste and other biodegradable materials to the location of the composting process, be it a residential backyard or large-scale facility.

The mainstream adoption of biodegradable plastic utensils, an alternative to conventional plastic utensils, is a recent phenomenon in the last decade. Conventional plastics are non-recyclable and especially serve as environmental hazards not only because of their derivation from petroleum, bio-based polymers but also because of their contribution to solid waste pollution when not disposed of properly (Thompson et al. 2009). Biodegradable plastic, termed "bioplastics," are made up of many different sources and materials. In the biodegradable utensils market, the majority of bioplastics, nearly 90%, are made of starch-based plants (Bastioli 2000). Corn and potato in particular were the common materials making up utensils used in the institutionalized recycling and composting programs that I studied.

Utensils at each institutionalized recycling and composting program that I studied were not only biodegradable but also *certified* compostable. The technicalities that distinguish compostables and biodegradables from each other are the following standards under a certification process conducted by the American Society for Testing and Materials (ASTM 2011):

> Certified biodegradable plastics are: *Plastics that will degrade from the action of naturally occurring microorganisms (such as bacteria, fungi, and/or algae) under specific environmental conditions (such as soil, compost, and/or marine) over a period of time.*
>
> Certified compostable plastics are: *Plastics capable of undergoing biological decomposition in a compost site as part of an available program, such that the plastic is not visually distinguishable and breaks down to carbon dioxide, water, inorganic compounds, and biomass, at a rate consistent with known compostable materials (e.g. cellulose) and leaves no toxic residue.*

It is important to take note that certified compostable plastics are characterized by additional regulations requiring that they break down into no toxic residue and that they decompose within a specific time window (60% biodegradation within 180 days). For these reasons, certified compostable plastics are a much more desired product than their certified biodegradable counterparts.

There was no indication from the research that compost facilities experience difficulty in composting certified compostable utensils. However, if these utensils contribute to pollution by way of littering or end up in landfills, they most likely will never break down and be equal to conventional plastics in terms of the global waste problem. From this point forward, *certified compostable utensils* will be shortened and referred to as "**compostable utensils.**"

Before transporting materials to undergo composting, wastes provided must be managed and monitored so that the feedstock has limited to no contamination. At-home composters are able to limit their waste contamination much more efficiently than institutionalized composting programs, which have more moving parts to consider. On college and university campuses, the process of collecting wastes requires compliant participation from students, faculty

members, visitors, and staff, all of whom make up the dining facilities' clientele. Clientele participation includes properly sorting their post-meal waste such as food scraps and biodegradable utensils while dining staff sort their compostables during food preparation. This sorting alleviates the added costs in labor for sorting efforts at the receiving compost facilities.

In an institutionalized recycling and composting program, members of the dining staff play a role just as important, if not more important than other clientele. Members of the dining staff have the responsibility to encourage dining clientele to sort their landfill, recyclable and compost waste correctly. As a member of the dining staff, they sort waste including compostables in the food preparation, serving, and cleaning areas. Additionally, members of the dining staff play the role of dining clientele whenever they decide to have a meal at the facility. The compliance and success of such programs heavily rely on the actions as well as behavior while sorting waste of all clientele, including members of the dining staff. From this point forward, "**composting program**", will be used in place of *institutionalized recycling and composting program*.

2.3. GETTING PEOPLE TO RECYCLE: INFORMATION, EDUCATION, AND SOCIAL MARKETING

To influence people to recycle as well as compost, organizations have used various strategies including information-awareness campaigns, education programs, and social marketing tools. Each strategy used has a similar intent: getting people to recycle and compost, but are different in the way their efforts are

carried out. This section will review the different strategies used and some of their practical applications locally and nationally.

Information Campaigns: A One-Way Street

Addressing issues of waste minimization is made possible through the transfer of information. Environmental information includes facts and opinions about specific environmental issues. These communications of one-way, information campaigns vary in depth and in the magnitude of their propagation for a given issue.

Information campaigns are often thoughtful, mature, and promote a specific issue to people, often a mass population. The time, financial resources, and personnel required to coordinate effective informational campaigns makes it a costly effort (Maibach 1993). Numerous information campaigns making up the broader sustainable seafood movement in recent years has particularly been successful. For example, the Seafood Watch program offers people regional pocket guides that raise consumer awareness about ocean conservation issues. The Seafood Watch program collaborates with many organizations, including universities, zoos, aquariums, restaurants, and seafood suppliers (Monterey Bay Aquarium 2011). Pocket guides offer information on seafood's consumer list of "best choices," "good alternatives," and "avoid." The information is based on factors such as the state of a fish's population, environmental impacts, and toxicity to human health, among others. The Seafood Watch program is an

example of an effective information campaign because it has raised awareness of ocean issues and garnered a lot of interest as well as participation from the public.

Although it serves a purpose in putting environmental issues on the forefront, some information campaigns can also be extremely advocacy-driven. These biased efforts have the potential to be counterproductive and turn people off. Extreme advocacy with strong bias for one idea, such as the Nuclear Energy Institute's campaigns focused on increasing nuclear power as a strategy to get the United States off fossil-fuel dependence and on the path to cleaner energy may find it difficult to be an effective information campaign. While energy is a polarizing issue, this example is not to negate the concept of nuclear power but rather to offer an example of strong bias in an information campaign.

Environmental information campaigns are numerous and highly variable. Information today is extremely accessible, especially online through organizations' websites and personal blogs. The shortcomings of awareness campaigns is that they generally depend on one-way messaging that may or may not succeed in influencing their audience, and that they are often shallow.

Environmental Education

Environmental education generally aims to teach environmental concepts and problem-solving skills through face-to-face interaction and dialogue. People are taught about environmental issues and then encouraged to discuss, act on, and solve problems as well as make decisions on important issues. Important issues such as initiatives on climate change, solid as well as toxic waste prevention, and

natural resource depletion, require critical thinking, which includes new awareness and sensitivity; knowledge and understanding; attitudes; skills; and participation to facilitate the dialogue (EPA 2009). The components of critical thinking are often incorporated into environmental education programs. Environmental education programs historically have had a difficult time integrating into established curricula such as the K-12 school system because of the longstanding, "laundry list" of standards and topics already put in place for teachers to cover. However, the importance of environmental education is continually reverberated by individuals to foster pro-environmental change as well as decrease society's top-down reliance on environmental leaders and experts to solve environmental problems. It is believed that a stronger public understanding of environmental science and related issues is a growing necessity, and an enriching environmental education is the answer that makes sense (Coyle 2004). While the barriers to integrating environmental education content into school curricula are numerous, programs do find their way into some traditional classrooms and informal settings such as parks and youth programs. Environmental education programs have a particularly strong following on the community level to educate youth and adults.

The Large Effort in Keeping America Beautiful

One of the largest campaigns in the United States took place in the 1950s when Keep America Beautiful (KAB), an environmental organization, was established. The efforts of KAB are mostly one-way-message, information campaigns to promote its core issues of preventing litter, reducing waste, and

beautifying communities. In order to address the litter problem, business leaders of package and beverage industries jumpstarted the campaign to get community members all over the country to clean up litter. KAB's focus on community-based litter cleanup and opposition to proposed bottle bills raised suspicion among the public in regards to the organization's interest in such a large environmental campaign. Bottle bills are container deposit laws that require "a minimum refundable deposit on beer, soft drink, and other beverage containers in order to ensure a high rate of recycling or reuse" as well as put more responsibility on industry (CRI 2010).

KAB's Great American Cleanup, an annual event, continues to recruit millions of volunteers each year to improve and beautify communities all over the U.S. through tree plantings, waterway cleanup, and recycling collections, among many other activities. Despite its strong following, KAB continues to experience criticism from groups and individuals. Environmental organizations such as the Sierra Club find KAB's focus on people cleaning up pollution suspect because KAB seems to imply that the sole responsibility is on the consumer (CRI 2010).

Recyclemania, described as "a friendly competition and benchmarking tool for college and university recycling programs to promote waste reduction activities to their campus communities", is a popular program managed by KAB (2006). In the spring, participating schools perform annual audits through the evaluation of their waste streams by reporting numbers on the amount of landfill trash produced, the amount of recyclables produced, and the rate of recycling, among others. While many of KAB's efforts are confined to the realm of

information campaign strategies, they do offer some environmental education resources for teachers and after-school programs. KAB remains highly active today, with many regional chapters all over the United States.

Information Campaigns and Environmental Education in Washington State

In Washington State, municipal and county governments have program initiatives that address issues ranging from energy conservation to the need for increased carpools and waste reduction. Thurston County offers a Masters Recyclers program for adults, where community members participate in a 19-hour training program and then serve 30 hours the following year as volunteers who encourage waste reduction and recycling in their local neighborhoods, schools, and work offices. In addition, Thurston County has managed to integrate environmental education programs beyond reduce, reuse and recycle to K-12 schools with a lunchroom composting program. The program, "Food to Flowers," recycles leftover food scraps and food-soiled paper at local K-12 schools by educating and training staff, volunteers, and students. Thurston County also provides the infrastructure such as compost bins as well as signs and information materials for proper sorting of cafeteria waste. The "Food to Flowers" program has helped reduce participating schools' kitchen and cafeteria landfill waste by 75 percent (TC Public Works Department 2011). Other education opportunities offered by the county's Public Works Department include information presentations by county employees and field trips to the local waste collection facility.

King County, nearly eight times more densely populated than Thurston County, has similar programs. In particular, the county has a highly interactive program for K-12 schools, called the "King County Green Schools Program." Participation in the program requires interest from a team of students, parents, and staff at a given school. Acceptance into the program is dependent on an application process and completion of the level one requirement, which entails reaching specific benchmarks of waste reduction and recycling. Upon successful completion of the level one requirement, schools can choose to move to level two and three, energy and water conservation, respectively, while continually improving on the previous levels' benchmarks. The program has multiple benefits due to its collaborative effort among the county, parents, students and staff. King County provides assistance and resources, including recycling containers; schools have the opportunity to save money on waste, students are learning about environmental issues, taking action and developing leadership skills; parents become more involved and can improve their recycling practices at home; and finally, schools are recognized for their hard work as a "green school" model. Ninety-three schools in King County completed Level One, Level Two and/or Level Three in the 2009-10 school year (King County 2011).

Social Marketing

Beyond environmental awareness and education is action and personal behavior change, but how is that addressed? Through social marketing strategies, applying behavior-change techniques to achieve desired actions from participants has been a growing practice. In the 1970s, marketing experts Philip Kotler and

Gerald Zaltman developed social marketing to improve the wellness of society. Social marketing is different from standard marketing in that it attempts to "sell" ideas, attitudes, and behaviors, not necessarily physical products (Weinrech 2010). Increased breast cancer screening, seatbelt usage, recycling and composting are just a few issues that have been addressed by social marketing campaigns. Promoting behavior through social change campaigns using social marketing strategies requires the group organizing the effort, the change agent, and the group intended for persuasion, the target adopter (Kotler and Roberto 1989). Social marketing campaigns require careful planning that incorporates numerous tools to increase its likelihood of success, wherein the target adopter begins to adopt or practice a desired behavior.

The first set of tools a social marketing campaign uses are a mix of the four Ps: product, price, place, and promotion. Additionally, personnel, presentation, and process are three newer Ps identified as tools. In the planning of a new campaign, social marketers are responsibly for strategically allocating the program budget as they have at least seven Ps from the mix to choose from, among other tools. It is important to not only consider outreach to target adopters, but also distribution outlets and channels where social products will be available.

The second set of necessary tools are the five factors in regards to the target adopter group: (1) the force, the target adopter's level of motivation towards the target behavior and degree of stimulation in the change agent's message; (2) the direction, the target adopter's ability to carry out the campaign's desired objectives; (3) the mechanism, the target adopter's accessibility to

resources that will provide motivation and move them into action; (4) adequacy and compatibility, the change agent's degree of efficacy in its own objective; and (5) distance, the amount of energy and required cost perceived by the target adopter to change their behavior or attitude toward the desired outcomes of the change agent (Kotler and Roberto 1989).

Once a campaign plan is developed, piloting the program is key to evaluate its effectiveness on the targeted population. Social marketers must collect baseline data from both a control and experimental group. After applying the social marketing campaign to the experimental group, data is collected and compared to the baseline data. The before-and-after results are focused on the target group's actual behavior change rather than simply its awareness. If results show that the campaign was not effective, social marketers must redesign their plan and use different behavior-changing strategies until successful results are both defined and met in the pilot program.

Community-Based Social Marketing

Community-based social marketing (CBSM) incorporates new dimensions to information-intensive as well as traditional social marketing campaigns on large populations. CBSM aims to deliver programs on a community level, a strategy thought to be more effective in changing people's behavior. The objective of CBSM is to create long-term environmental change and sustainability (McKenzie-Mohr and Smith 1999). CBSM moves away from universal application, builds on the tools characteristic of traditional social marketing

campaigns, and aims to create more specialized programs specific to intended communities in an effort to maximize effectiveness. The philosophy of CBSM approaches program development by focusing on a specific group and then systematically identifying barriers to target sustainable behavior; using behavior-changing tools to break down these barriers; piloting small programs to understand contexts of barriers as well as opportunities for target behaviors in intended communities; and finally, evaluating programs for refinements. These steps ideally involve face-to-face communications between the social marketing team and the target population.

Force field analysis, a tool unique to CBSM and absent in traditional social marketing protocols, takes into consideration contextual factors of the intended community such as their awareness of a sustainable behavior and the convenience of the target behavior. The force field analysis was developed by Kurt Lewin in 1951 and is widely used to inform decision-making, particularly in planning and implementing change management (Hovland 2005). Applied to CBSM, it is a powerful method for gaining a comprehensive overview of the different forces acting on a behavior-change issue. The following table is from McKenzie-Mohr and Smith's (1999) book and uses a simple matrix to illustrate the forces (competing behaviors) playing a role against the desired behavior (new behavior) of *walking to work* (p. 6):

Table 2: The Active Forces in Achieving a Desired Behavior
Benefits and barriers characterize competing behaviors. In this example, transportation alternatives to work are described.

	New Behavior: Walk to work	**Competing Behavior 1:** Take a Taxi	**Competing Behavior 2:** Take a Bus in Winter
Perceived Benefits	-Helps environment	-Time with family	-Cheaper than taxi
Perceived Barriers	-Lose time with family	-No alternative -Costly -Bad for environment	-Loses more time with family

Using the force-field analysis, social marketers can continue to find ways to *increase* the perceived benefits of walking to work and *decreasing* the perceived barriers for taking a taxi as well as taking the bus.

In the case of composting programs, if community-based programs are a new concept in a particular community or region, social marketers might develop a campaign with greater foci on education and building of familiarity with waste minimization concepts to provide the intended community with proper knowledge and increased their perceived benefits of participating in a program of recycling and composting more. CBSM particularly has a sizeable amount of literature focused on recycling and composting practices. Research in this field includes studying the effects of signed commitments, psychological constructs, visual prompts, and increased incentives, among others on the compliance of appropriate waste sorting.

What is it about sorting recyclables, compostables, and garbage from each other that results in rather high non-compliance? A study in 2008 examined whether or not recycling compliance by clientele in public settings was affected by the use of specialized lids on waste receptacles (Duffy and Verges). The study concluded that visual prompts from the use of specialized lids on waste receptacles could reduce the cognition required and potentially improve the affordances of non-native English speakers for appropriate waste sorting behavior.

In another case, The Milwaukee Irish Fest, an annual festival promoted waste reduction efforts by offering attendees an incentive: soda refills at a discounted price so long as they purchased a reusable souvenir cup. The festival used waste reduction as the theme through their event displays, games, and prizes. Visual prompts in the form of signs reminding attendees to use reusable and recyclable cups were also used. The program was a success as all 7,500 souvenirs cups produced for the event was sold and an estimated 20-25% reduction in waste was achieved compared to the previous year. While I have given two examples of cases experiencing some success using CBSM, there are also many cases out there that have failed.

3. METHODOLOGY/RESEARCH DESIGN

My research design integrated a comparative case study methodology with phenomenology to investigate composting programs as they exist on college campuses. Multiple data sources, including physical artifacts and texts, interviews, and observations were used and interpreted to create each case study. Each of the three cases was unique and analyzed as an independent entity. Then, the cases were compared to one another, with contextual factors in mind.

3.1. BRIEF OVERVIEW OF THREE INSTITUTIONS STUDIED

The three institutionalized composting programs studied were at South Puget Sound Community College (SPSCC), Pacific Lutheran University (PLU) and The Evergreen State College (Evergreen). All three schools have similarities: their location relative to one another in the Thurston-Pierce County region and their dining facilities. At the same time, there are some notable differences among the colleges. SPSCC is a public educational community college offering up to an Associate's Degree and serving about 6,000 students. PLU is a private university, which offers up to a Master's Degree and serves about 3,600 students. Evergreen is a public regional liberal arts college that offers up to a Master's Degree and serves about 4,300 students. *Table 1* in Chapter 4 of this thesis provides an overview comparing each institution in terms of its general profile and waste management practices.

3.2. RESEARCH QUESTIONS

The research questions for my thesis study were the following:

1. In what context has each composting program developed in order to carry out its design and implementation at their respective institution?
    a. How does each program compare to one another in these terms?
2. What is the culture on campus like in terms of recycling/composting? Does behavior reflect attitudes?
    a. How does each program compare to one another in these terms?
3. If each composting program is evaluated, what are the metrics in terms of success and challenges?
    a. How does each program compare to one another in these terms?
4. What tools and strategies might be used to improve the success of each of these composting programs?
    a. How does each program compare to one another in these terms?

The question, "How does each program compare to one another in these terms?" was used for comparative purposes among the individual case studies.

3.3. METHODS OVERVIEW

As stated earlier, this thesis research was on institutionalized recycling and composting programs ("composting programs") at different college campuses in Thurston-Pierce County, the quintain of this study. *Quintain* is an esoteric term for the object, phenomenon, or event being studied (Stake 2006). My study investigated how such programs generally occur and operate by studying these three cases. The respective, individual programs occurring at SPSCC, PLU and Evergreen make up the culminating investigation of the quintain in this multiple case study to instrumentally learn about composting programs in a college

campus setting. I looked broadly at each respective program to obtain an improved understanding of these programs. Each case was explored through investigation of each program's mission, goals, objectives, history, and practices. Data was triangulated and gathered from observations through text, physical artifacts, interviews, and direct observations.

3.3.1. Case Study Methodology

Case study methodology is "empirical inquiry that investigates contemporary phenomena within its real-life context, when boundaries between phenomenon and context are not clearly evident, and in which multiple sources of evidence are used" (Yin 1984, p.23). A qualitative case study methodology was appropriate for this study as it sought to holistically investigate programs and bring out details through direct observation and to create an understanding of the complex interrelations taking place. In addition, some data include numerical, quantitative metrics.

Case study research methods, often organized into successive steps, were incorporated into this thesis study. My literature review helped determine and define the research questions, a critical first step. Gathering information on past and current composting programs through the scaffolding of multiple literature resources created a foundation for this research and ultimately, the questions needing to be addressed. Once research questions were defined, data sources and collection techniques were determined to seek the best outcomes for this study.

The final step of case study research was the production as well as dissemination of a case study report itself.

The struggles and successes of a recycling program could not simply be explained by factors in a cause-effect relationship that might be revealed through some experimental investigation. Instead, my data collection sought to understand phenomena from numerous people's experiences. The chronologies and details tell the story of the complex interrelationships within a case and following further analysis, between cases. Interpretation methods were holistically integrated in the research design with the recognition of its lack in a value-free period, a strategy to keep variables experientially defined. Traditional quantitative research designs operationally defined variables by using interpretive methods in only the hypothesizing and analysis stages of research, limiting the potential for considerations of developing events and ongoing revelations, all of which are important to learn about the quintain. This constructivist philosophy enabled my study to compile the experiences of the interviewee and direct experience of the researcher to capture each case, interpret it, contextualize it, and explore situational conditions rather than treat them as erroneous, producing the story of each respective case.

Each case was instrumental in understanding composting programs as a whole at the three different campuses in Thurston and Pierce County, Washington. I chose these three campuses to represent different higher educational sectors (two-year public, four-year public and four-year private institutions) of approximately the same size. Each institution is committed to

sustainable practices but carry their efforts out in different ways. These campuses may not be representative of campuses through the United States because the Pacific Northwest has a heritage of being environmentally active. Furthermore, I learned that each campus has been supported in their recycling and composting practices by regional waste haulers.

3.3.2. Phenomenology

The role of learning in this research was phenomenological in inquiry, studying experience from the perspective of individuals, which is important in understanding subjective experience and gleaning insight about people's motivations and actions. This approach attempts to go beyond assumptions and conventional wisdom (Lester 1999). This paradigm values personal knowledge and subjectivity, which is advantageous in aiding the understanding of each case as well as in the broader quintain sense. While phenomenology is in alignment with other approaches of qualitative research, it focuses on people's lived experience. Furthermore, the deeper meaning of that lived experience can be learned.

Because understanding rather than explanation is sought, the epistemology of phenomenological research does not begin with hypotheses or preconceptions; it attempts to begin perspective-free (Husserl, 1970). The nature in which phenomena is experienced by case study informants is more important than the nature of the phenomena itself. In this study, my informants were those who manage recycling programs at each campus' dining center. The interpretations of

these experiences informed me about the recycling programs in their current, everyday existence at SPSCC, PLU and Evergreen.

Phenomenology's ability to glean out a subjective experience helped address normative and subjective assumptions. For example, Inc. Magazine, a business publication, featured an article on starting an office recycling program and implied going green is not as simple as it might seem, even in small settings: "You can do everything you can to educate employees and make it easier for them to contribute, but don't assume the rest of the parts you can't see are going to do it the right way too" (Vanden Boss 2010). This concept can be applied to composting programs; the implementation of a university campus' large-scale recycling program deserves praise, yet starting a program does not automatically reveal details on how successful such a program is in actuality. Only learning from the program managers' perspectives can we begin to understand the phenomenon.

3.3.3. Triangulation

A triangulated research strategy also characterizes this study. Such a strategy allows results from a study lacking significant quantitative data to be gleaned with more confidence. Triangulation is an effective technique used to help validate data through comparison by cross-verifying results between multiple sources (Bogdan & Biklen, 2006). Validation in these cases can be reached when multiple sources of data observe similar results. For example, an interview with a dining manager can bring out his or her observation of dine-in customers' lack of

good habits to clean up after themselves, while the interviewer later directly observes that same lack of habit from customers; this regularity gleaned from the cafeteria manager's observations and the researcher's personal observations creates a sense of validation in a study's data. In other instances, different results can be revealed and provide subtle nuances within the program.

Sociologist Norman Denzin has identified four basic typologies of data triangulation. The previous example of an interviewee's observations coupled with the researcher's direct observations represents (1) methodological triangulation, where two or more methods are used under one research design. Denzin's other types of triangulation include: (2) data source, where multiple sources of data found in time, space and person are used; (3) investigator, where data gain more credibility through observations from multiple observers, interviewers, coders, or data analysts; and (4) theoretical triangulation, where a phenomenon is examined under multiple theories or hypotheses (Denzin, 1970).

Multiple triangulation methods were adopted in this study by pairing data source with methodological triangulation. According to researcher Todd D. Jick, unique findings, increased confidence in research findings, and multi-perspective as well as lucid understandings of the phenomenon are benefits of combining triangulation strategies (1979). Data collected from Evergreen, SPSCC and PLU to learn about the quintain triangulated data sources while conducted interviews and direct observations triangulate methodologies.

3.3.4. Typologies and Interpretation of Data

Each case study in my research was made up of triangulated data, illustrating a comprehensive picture of the composting program. The typologies of data used were: physical artifacts of texts, revealing the program implementation as it is in place; interviews, providing the context and mindset in which the program is operating from; and observations, revealing the behavior of the participants that the program targets.

Physical Artifacts and Texts

Methods used for handling physical artifacts and texts were taken from Robert Stake's 1995 publication, *The Art of Case Study Research*. Data collection began with document review, which included studying physical artifacts and texts, the written materials providing snapshots of each program's working relationships. As a part of the research's groundwork, studying physical artifacts and texts helped frame the important questions needing answers to better understand each case as well as quintain. Qualitative research experts see document review as providing key insights on the foundations and conditions of a case. It is important to note that texts and artifacts were not faulted but rather analyzed in their representation and for their effects on the institutionalized composting program, a strategy to focus on understanding the phenomenon (Silverman 2006). Some things to consider for this study were the recycling programs' implementation in relation to its design and business plan as well as graphical signs' effect on clientele during recording of unobtrusive observations.

Interviews

The second source of data for this study was interviews with each program's head of operations, often the director of residential and dining services. Qualitative interviews attempt to understand the subject's perspective of the world and more importantly, their lived experience (Kvale 1996). Interviews in this study were additional fingerprints to the case where subjective perspectives illustrate the programs' direct approach in operating a recycling program. A major advantage of qualitative-centered interviews over their quantitative counterparts is their ability to gather more in-depth information that often includes personal details and opinions.

Qualitative interviews in this thesis were semi-structured and conducted with a general interview guide. Topics of interest and questions characterized the guide; however, the interviews themselves were flexible and allowed for open, yet focused dialogue. The structure included in these flexible interviews ensured cross-case comparability among data (Wengraf 2004) from SPSCC, PLU and Evergreen. It is important to note that flexibility here did not constitute an absolutely informal, conversational interview but rather implied the interviewer's ability to change the order of questions as well as word choice so long as each interview covers the same main concepts for research data purposes.

My interviews were open-ended in order to understand the attitudes and values of those individuals leading sustainability initiatives through institutionalized composting programs. Interviews were recorded for post-

interview transcription and used as a reference for data analysis. Interviews were founded on emotionalism, to be collaborative and to involve equal participation from both parties to bring out authentic experiences that serve as particular representation and accounts of the interviewee's views and opinions. Refer to *Appendix A* for a glance at the interview guide used in this study.

Unobtrusive, Direct Observations

Composting programs on college campuses not only include those individuals running the program but also the behavior of clientele (or in social marketing terms, the "target population") who utilize campus-dining services. The experiences of food recycling program individuals such as dining center clientele were manifested by unobtrusive observation, a data collection technique generally taking place in the participant's natural setting – for example, their workplace, home or a recreation facility. In order to avoid influencing a participant's behavior for data collection, researchers blend in with the "natural setting" during unobtrusive observation (Lee 2000), a strategy which I followed.

Unobtrusive observations were conducted and recorded focusing on behaviors and compliance of campus dining services clientele's interaction with post-consumer[1] waste sorting bins. Waste sorting binds included one specified for composting food scraps and biodegradable utensils as well as others for recycling and landfill trash. Although participants were not aware that they are

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[1] *Post-consumer* refers to matter that are produced at the end of a material's use, in this case – food that is leftover from a consumed meal.

being observed, the events taking place were not considered controversial and this study did not anticipate any issues arising from an institutional review board regarding this form of research methods. Unobtrusive observations provided an avenue for data collection where participants' actions were observed and recorded while they were naturally going about their lives.

Comparison of Case Studies

As stated earlier, the group of cases was bound within the Thurston-Pierce County region with each case being strategically selected. While each case was important as a stand-alone study, the three cases, as a group study was also significant to the quintain because it provided the opportunity to conduct a comparative case study. Studying three unique cases – a two-year public, a four-year public, and a four-year private institution provided information not on only how composting programs function at each specific institution but also at college institutions as a whole within the Thurston-Pierce County region.

For my comparative case study of the group of three composting programs, I analyzed each individual case carefully and found similar, recurring themes. With these themes, I made research-based conclusions on the phenomenon of composting programs at college campuses within the Thurston-Pierce County region.

4. RESULTS/PRESENTATION OF DATA

Chapter 4 presents the data I prepared for this thesis study. I derived these results from the raw data I collected in my primary research. Data is organized by typology, which then includes the results from each institutionalized composting program's case study.

4.1. DESCRIPTIVE INFORMATION REQUEST

4.1.1. Profile of the Three Institutions Studied

As stated earlier, there are numerous similarities as well as differences among South Puget Sound Community College (SPSCC), The Evergreen State College (Evergreen) and Pacific Lutheran University (PLU). *Table 1: An Institutional Profile*, **below**, illustrates the fundamental characteristics of each school and their dining program. Information below were retrieved during the interview process and followed up by communication after I had sent out my *Descriptive Information Request* via e-mail; the *Descriptive Information Request* sheet can be found in *Appendix B.*

Table 3: An Institutional Profile

A snapshot at each institution for the 2010-11 academic year (below). Following the table, text elaborates in detail each institution's profile.

	SPSCC	Evergreen	PLU
Institutional Type	Two-year, public	Four-year, public	Four-year, private
Total Enrollment	~6,000	~4,300	~3,650
Residential Enrollment	0	~917	~1,500
# of Institutional Staff	~300 FT, ~400 PT	~500	~825
# of Dining Staff	23	35	~242
# of Meals Served/Day	~300	~1,200	~3,000
Waste Handling Costs	<$15,000	>$7,500/year	>$4,000/year
Budget Type	Single[1]	Multi[2]	Multi[2]
Composting Site/Hauler	Off-site/City of Olympia	Off-site/LeMay	Off-site/LeMay
Recycling Site/Hauler	Off-site/LeMay	Off-site/LeMay	Off-site/LeMay
LF[3] Trash Site/Hauler	Off-site/LeMay	Off-site/LeMay	Off-site/LeMay
# of Years of Composting	5	3	6
Talloires Declaration	No	No	Yes
AASHE STARS	No	Yes	Yes
ACUPCC	Yes	Yes	Yes
Recyclemania	Yes	Yes	Yes
Compost Client FW[4]	Yes	Yes	Yes
Compost Kitchen FW[4]	Yes	Yes	Yes
Compost Napkins	Yes	Yes	Yes
Compost Cups	No	Yes	Yes
Compost Plates	No	Yes	Yes
Compost Flatware	No	Yes	Yes
Compost Straws	No	No	Yes
Styrofoam Use	No	Sometimes	Sometimes
Sustainability Language[5]	No	Yes	Yes
Sustainability Group(s)[6]	Yes	Yes	Yes
Campus Participation[7]	Fac, Stud, Staff	Fac, Stud, Staff	Fac, Stud, Staff
Curriculum[8]	Some	Yes	Yes

[1]Budget type labeled as "single" refers to the program's financial support coming from one entity; for example, a recycling program being solely funded by dining services rather than from more than one entity such as both dining services as well as facilities.
[2]Budget type labeled as "multi" refers to the program's financial support coming from more than one entity; for example, a recycling program being funded by dining services as well as facilities, rather than being solely funded by dining services only.
[3]"LF" is an abbreviation used for "landfill".
[4]"FW" is an abbreviation used for "food waste".
[5]Sustainability language refers to an institution's mission and value statements – specifically if sustainability terminology/concepts are used or expressed.
[6]Sustainability groups(s) refer to the existence of active groups dedicated to efforts of sustainability on campus – whether made up of student, faculty and/or staff.
[7]Campus participation refers to faculty, student, and/or staff participation in on-campus efforts towards sustainability other than through dining service, as this is an important part of campus culture. (Fac = faculty; Stud = student)
[8]Curriculum refers to an institution's commitment to environmental and sustainability studies.

4.1.2. A Closer Look at South Puget Sound Community College

South Puget Sound Community College (SPSCC) is a public institution that provides up to an Associate's Degree as well as many professional/technical degrees and certificates with an enrollment of approximately 6,000 students. There are no residential students, as is typical of most community colleges. Total campus enrollment is about 6,000 students. Approximately 300 institutional staff members are full-time, while 400 are part-time. The dining staff consists of 23 members: 12 students, six assistants, and five full-time staff. The dining program serves approximately 300 meals per day.

Institutionalized composting at SPSCC has been in place for the past five years and will continue. The majority of composting takes place within dining services, which coordinates with custodial staff for proper waste sorting techniques. SPSCC dining is unique in that many of their employees are actually

students in a culinary arts program. Waste costs for the 2010-11 year were not available; however, it is known that the budget for the 2011-12 year is about $15,000. The program's budget is funded solely by campus maintenance and operations. Outside contracts make up a sizeable portion of program costs. Compost, recyclables and landfill trash are all hauled to off-site locations. Compost is hauled by the City of Olympia to a holding station then eventually to Silver Springs Organics (located in Rainier, WA), or straight to Silver Springs Organics. Recycling and landfill trash are hauled by LeMay, the major private waste hauling company for the South Puget Sound region. Clients in the dining area and dining staff in the back-kitchen take part in composting food waste. Paper napkins are also composted. Compostable cups, plates, flatware, and straws are not used. According to the program's interviewee, styrofoam is not used.

4.1.3. A Closer Look at The Evergreen State College

The Evergreen State College (Evergreen) is a public liberal arts and science college that primarily serves undergraduate students, but also offers three Master's programs. There are over 900 residential students living on campus with a total campus enrollment of about 4,300. The college employs about 500 institutional staff. The dining staff consists of 35 employees. In total, the dining program serves approximately 1,200 meals a day.

Institutionalized composting at Evergreen has been in place for the past three years and will continue. Additionally, composting has occurred on campus

for at least the past 10 years in the residence halls; however, this was inconsistent and dependent on a number of factors such as dedication of students living in the residence hall and the on-campus Organic Farm's capacity for compostable waste at any given time. Residential and Dining Services (RAD) pays for the waste handling hauling fees. Job duties for dining staff include handling of all waste materials, which cuts down on direct costs that would otherwise fund a position solely focused on this service. In the 2009-10 academic year, dining paid $500 a month for waste disposal while compost charges were approximately $210 a month, totaling up to over $7,500 per year in RAD's waste handling costs. Costs for recycling were not available. The waste budget comes from multiple sources, including RAD's operating budget and campus' facilities budget. Outside contracts make up a sizeable portion of program costs. Compost, recyclables and landfill trash are all hauled to off-site locations by LeMay. Composting is directly transported to and takes place at Silver Springs Organics. Clients in the dining area and dining staff in the back-kitchen take part in composting food waste. Napkins, cups, plates, and flatware are also composted. Compostable straws are not used. According to the program's interviewee, styrofoam is a part of the institution's waste stream, as it is included in packaging from food suppliers.

4.1.4. A Closer Look at Pacific Lutheran University

Pacific Lutheran University (PLU) offers a unique blend of academically rigorous liberal arts and professional programs that provide up to a Master's Degree. There are about 1,500 residential students living on campus with a total campus enrollment of over 3,600. The college employs over 800 institutional

staff. In 2010-11, the dining staff was made up of 42 full-time staff and 200 student workers. In total, the dining program serves approximately 3,000 meals a day.

Institutionalized composting at PLU has been in place for the past six years and will continue. On average, $4,000 is spent a year just on food composting. The university saves about $5,000 a year on landfill trash because of waste diversion towards composting. Costs for recycling and landfill trash were not available. The waste budget comes from multiple sources, including dining and campus facilities. Campus facilities initially pays for all of the university's waste, then bills each respective department on campus. Dining pays for waste costs in a total of two buildings on-campus. Compost, recyclables, and landfill trash are all hauled by LeMay to LRI Landfill (located in Puyallup, WA). Clients in the dining area and members of the dining staff in the back-kitchen take part in composting food waste. Napkins, cups, plates, flatware, and straws are also composted. According to the program's interviewee, styrofoam is a part of the institution's waste stream, as it is included in packaging from food suppliers.

4.2. PHYSICAL ARTIFACTS AND TEXTS

In addition to the *Descriptive Information Request,* I had requested physical artifacts and texts that included: plans, reports, signs, and handouts, whether on paper or Internet from each institution on their program. None of the sites provided physical artifacts or texts of any program plans. I personally gathered most of the physical artifacts and texts, which all came in the form of

photo captures during my site visits. Photos were taken of compost, recycling, and garbage (landfill trash) bins as well as the tray/dish return station. In addition, photos of current signage were taken.

Similar as well as different themes exist among the physical artifacts and texts across the three cases studied. Physical artifacts and texts are attributes of their respective programs and thus, expressive of what is expected from all those involved in dining's recycling as well as composting. In this section, I describe the expectations of clientele as they go through the waste sorting process. I then follow up with data illustrating each program's applied effort in getting clientele to behave in such a way that meets waste sorting expectations.

4.2.1. SPSCC's Food Composting System

SPSCC's dining facility is a tray-use program, where students use a tray to carry all purchased items to the dining area for consumption. Upon finishing a meal, clientele are expected to take their trays to the waste sorting station and then appropriately sort their waste, according to the prompts provided by illustrations, texts and signs complementing bins. When clientele are done sorting waste, they are expected to take their trays, reusable dishes and reusable flatware to the tray/dish return station. They are also expected to sort reusable dishes and flatware by soaking them in dining's water-filled bins, all labeled, for dishwasher preparation. SPSCC is the only dining center with two waste sorting stations, so clientele's first step in sorting waste is to go to Waste Sorting Station 1 or Waste Sorting Station 2. *Figure 1*, **below**, shows Waste Sorting Station 1, located on an

island, in the middle of an open wall separating the commons from the dining area.

Figure 1: Waste Sorting Station 1 – SPSCC
The first of two locations for clientele's first step in sorting waste at SPSCC dining.

Station 1's setup consists of three bins for waste sorting in the follow order (left to right): (1) compost, labeled "Food Recycling Plus!" (2) recyclables, labeled "Plastic Bottles Aluminum Cans"; and (3) garbage, which is not labeled at all. A PVC pipe structure serves as a stand for hanging laminated signs that complement each waste bin. Three identical green-colored compost signs hang above a green-colored compost bin, a blue-colored recycling sign hangs above a blue-colored recycling bin and a red-colored garbage sign hangs above a gray-colored garbage bin. Station 1 experiences less frequent traffic from clientele sorting waste than

Station 2 because of its island location and greater distance from the tray/dish return station.

Figure 2, **below**, shows Waste Sorting Station 2, located next to a wall, in the dining area that is just several feet from the tray/dish return station.

Figure 2: Waste Sorting Station 2 – SPSCC
The second of two locations for clientele's first step in sorting waste at SPSCC dining.

Station 2 experiences more traffic due to its proximity to the tray/dish return station and its setup is similar to Station 1 with the exception of the order of bins, which is different. As seen above, the station has numerous potentially moving parts, where bins and signs are set up next to but not attached to each other as one unit. Waste bins are in the following order (left to right): (1) recyclables, labeled "Plastic Bottles Aluminum Cans"; (2) compost, labeled "Food Recycling Plus!"; and (3) garbage, which is not labeled at all. A PVC pipe structure serves as a

stand for hanging laminated signs that complement each waste bin. A blue-colored recycling sign hangs above a blue-colored recycling bin and three identical green-colored compost signs hang above a green-colored compost bin; however, there is no sign hanging above the garbage bin, as it is entirely unlabeled. In addition, Station 2 includes two signs that Station 1 does not: a hanging sign that says, "Please place items in correct bins" as well as a large bi-fold stand introducing the waste sorting station with, "Your cafeteria RECYCLING PROGRAM is here!"

Once clientele stop at either Station 1 or Station 2, they face the next step: a task of sorting multiple kinds of waste. Assuming that some clientele are not familiar with how to sort their waste, the stations attempt to guide clientele through the process with color-coded signs that also state what materials should be put in each bin. *Figure 3*, **below**, shows the signage specifically complementing compost bins. This is an example of an illustrated and text-rich sign that prompt clientele to sort their waste appropriately, in this case – compost.

Figure 3: Signage Complementing Compost Bins – SPSCC
A look at the design and implementation of compost bin signage at SPSCC.

The sign for compost is simple and green-colored. A set of three signs accompanies each green-colored compost bin. Signs are laminated as well as clean, free of stains and debris. As seen above, the sign is not cluttered nor filled with so much information that it forces the font size to be miniscule. Clearly stated is the bin's acceptance of food scraps, including bones and paper of all kinds for composting. The picture, which takes up the majority of the sign's area exhibits what the contents of the compost bin should look like: filled with various compostable items including banana peels, strawberries, tomatoes, paper napkins,

and milk cartons. Signs are clear enough to expect a good level of compliance in sorting waste, so long as clientele take the time to pay attention to signs. After the sorting process, clientele move toward returning their dishes and flatware.

After sorting waste at Waste Sorting Station 1 OR Waste Sorting Station 2, the clientele's final step in the waste sorting process is returning their dishes and flatware, if any, to the tray/dish return station. *Figure 4*, **below**, shows the tray/dish return station.

Figure 4: Tray/Dish Station – SPSCC
A look at SPSCC's tray/dish return area.

SPSCC's tray/dish return station, just several feet away from Waste Sorting Station 2, is a simple and low-tech operation. Dishes, flatware and trays are separated in preparation for being washed. According to information provided by

the interviewee during this research's interview process, kitchen staff sort wastes such as food scraps and paper napkins left on plates appropriately.

4.2.2. Evergreen's Food Composting System

Evergreen's dining facility, The Greenery, is a trayless program, where students carry food by the plate to their tables for consumption. Food is buffet style, marketed as "all-you-care-to-eat" and small plates are used to discourage excess food waste. Upon finishing a meal, clientele are expected to take their plates to the waste sorting station and then appropriately sort their waste, according to the prompts provided by illustrations, texts and signs complementing bins. When clientele are done sorting waste, they are expected to take their reusable dishes and flatware to the dish return station. Evergreen's program is unique because their dining center, The Greenery, only has bins for compost as part of their waste sorting station. *Figure 5*, **below**, shows Evergreen's waste sorting station, located in a corner of the dining center and directly next to the dish return station.

Figure 5: Waste Sorting Station – Evergreen
The first step in sorting waste at Evergreen dining is bringing your wastes to this station.

The station's setup consists of two bins for waste sorting. As seen above, the bins are receptacles with circular openings within a countertop. This waste sorting station is one unit, has no moving parts and the third would-be receptacle is covered as it is not in use. Signs are not present at this station and bins are completely unlabeled, giving a plain look to the overall aesthetics. As clientele arrive at waste sorting station, there is no visual or instruction on what to do, so they must use their own knowledge or be informed by someone nearby for a prompt to appropriately sort waste.

Because compost is the only choice in waste sorting here, it seems simpler than the other programs; however, it can be misleading as any clientele who are at all knowledgeable of waste sorting most likely is familiar with multiple sorting

options, including compost, recyclables and garbage. Evergreen's program has been engineered in such a way that everything used and served are either reusable or compostable, so in theory, compost bins tray/dish return should be sufficient. However, because there are no dedicated bins for recyclables or landfill trash, there is not an obvious way to control what might happen to non-compostable products from outside the dining center that are brought in, such as plastic bottles and styrofoam. Clientele most likely will do one of three things with these non-compostable products: contaminate compost bins with them, leave them in a random location in the dining center or exit the dining center with them in hand. *Figure 6*, **below**, shows the contents of The Greenery's only type of waste sorting bin – composting. As stated earlier, the program's waste sorting is essentially a single-stream system. Because signs are not used at the waste sorting station, I instead took a look into the unlabeled compost bin:

Figure 6: A Glimpse Inside An Unlabeled Compost Bin – Evergreen
A look inside the unlabeled compost bin at Evergreen's dining center, The Greenery.

The contents of the compost bin included but were not limited to paper basket liners, french fries, bread, lettuce, tomatoes, condiments, and soil paper napkins. The second compost bin, not pictured, looked identical to what is seen in *Figure 6*. Contamination was not observed in these two instances; however, it was not feasible to capture a profile of each bin. Additional data on potential instances of contamination is provided in the *Direct, Unobtrusive Observations* section of this chapter, which focuses on clientele compliance. After the sorting process, clientele move toward returning their dishes and flatware. The Greenery uses

conveyer belt system that rotates alongside an open wall separating the dining area and kitchen dish room. *Figure 7* **below**, shows the tray/dish return station.

Figure 7: Tray/Dish Station – Evergreen

A look at Evergreen's tray/dish return area.

Evergreen's tray/dish return station is perpendicularly located next to the waste sorting station in the same corner. Green trays move along the conveyer belt for clients to set dishes, flatware and cups on. As *Figure 7* shows, food scraps and soiled paper napkins are also placed on the trays, even though the dining's program prefers these items to be sorted into the compost bin. According to information provided by the interviewee during this research's interview process,

members of the kitchen staff take leftover wastes such as food scraps and paper napkins unsorted by clientele and put it into compost bins.

4.2.3. PLU's Food Composting System

PLU's dining facility is a tray-use program, where students use a tray to carry all purchased items to the dining area for consumption. Upon finishing a meal, clientele are expected to take their trays to the "Dish Return and Recycling Station", which is made up of bins for recyclables sorting and a conveyer belt system for returning trays/dishes.

Figure 8, **below**, shows the large sign for PLU's Dish Return and Recycling Station, which is secluded in its own space and is accessible by two doorless entryways, near the dining center's exit. Upon entry into this station, clientele will find themselves facing the conveyer belt system for returning trays/dishes, while bins for recyclables sorting will be behind them. As the sign states, clientele are expected to bus their own tables, thus, bringing all their meal items including but not limited to: trays, food scraps, napkins, dishes, flatware and recyclables, among others, to the station.

Figure 8: Sign for "Dish Return and Recycling Station" – PLU
The sign for PLU's dedicated center to bussing your own dining tables.

Clientele's first task at this station is to decide how they want to sort their waste. PLU's program is unique in that it actually encourages its clientele to leave everything on their tray and staff in the dish room will "take care" of them by doing the sorting, a message communicated to clientele by formal and informal announcements as well as word of mouth. Signs in the dining center specifically prompting this preference of clientele behavior were not found. However, *Figure 9*, **below**, shows the signage used in the Dish Return and Recycling Station prompting clientele on what to specifically do with trash.

Figure 9: Signage Complementing the Station – PLU
A look at the sign giving clientele choices on what to do with trash at PLU dining.

Located adjacent and immediately to the right of the conveyer belt system (*Figure 11*, pictured **further below**) for returning trays/dishes, the sign prompts clientele with the message: "Throw it away OR Leave on your tray." In addition, finer print provides details on what is considered trash for the landfill and what materials are accepted for recycling. This sign implies that clientele have a choice of having members of kitchen staff "take care" of their waste by leaving it all on the tray or sorting it on their own. Clientele who reach this point of the waste sorting and clean up process will more than likely leave their trash on trays along with dishes, cups, flatware, and assorted wastes all on the conveyer belt, a

practice that the program prefers. In terms of clientele expectation, compliance is met if they leave everything on their tray because of PLU dining's unique program. So long as dining employees sort wastes in the back dish room correctly, compliance in terms kitchen staff is high and waste contamination will be close to none, if any.

If clientele decide to sort their own wastes after seeing this sign, it would require them to backtrack, making it a more inconvenient process. Recyclables are self-sorted in the bins, pictured **below** in *Figure 10*, which are located opposite of the tray/dish area in the station. Sorting trash at this point is even more out of the way because their respective bins are located outside of the Dish Return and Recycling Station and instead, in the main dining area.

Figure 10: Recyclables Sorting Area – PLU
The recyclables area for self-sorting clientele at PLU dining.

The setup of PLU dining's recyclables area consists of five bins, each with "Recycle Here" signs for sorting, in the follow order (left to right): two consecutive plastics/glass, each labeled "Recycle all plastics #1-7" as well as "Please remove lid = TRASH" cans; newspapers; and paper. As seen above, the bins are receptacles with openings within a countertop. Plastics, glass and cans have receptacles with circular openings while newspaper and paper have elongated, rectangular openings. The recycling area is one unit and has no moving parts. Signs are laminated, clean and clear in terms what items are expected in each respective bin. While the program does not use pictures to visually exhibit what items are accepted in each bin, the recyclables area remains organized and aesthetically pleasing to look at. However, this area is seldom used due to the convenient choice for clientele to "leave it on the tray." *Figure 11*, **below**, shows the tray/dish area where clientele "leave it on the tray."

Figure 11: Tray/Dish Area – PLU
A look at PLU's tray/dish return area, where clientele are encouraged to "leave it on the tray".

PLU's tray/dish return area uses a conveyer belt to rotate trays in-between a wall separating clientele's drop off point, the Dish Return and Recycling Station from the back dish room, where members of the kitchen staff retrieve items to "take care" of by sorting wastes. As *Figure 11* shows, items returned on the conveyer belt system include soda cans, paper boxes, reusable plastic cups, soiled paper napkins, paper liners, and food scraps, among others. According to information provided by the interviewee during this research's interview process, members of the kitchen staff are well-trained in correctly sorting items and waste left on trays.

4.3. UNOBTRUSIVE, DIRECT OBSERVATIONS

At each research site, dining services' clientele were observed during peak lunch hour, 11:30AM-1:00PM, while they were performing post-consumer duties such as returning their meal trays and ridding them of their leftover waste. Leftover waste included but was not limited to: food, metals, plastics, and paper items. The exact location for observation points varied among each site but none were any more than 20 feet away from waste sorting stations. Observation points were dependent on the location of recycling station and tray/dish return station, areas that were adjacent to each other at all three institutions studied. I had a meal in front of me during each observation session as an added effort to minimize my research subjects' sense of being observed and decreasing any likelihood of bias.

However organized, sporadic, developed, or undeveloped an institutionalized program is, there is a vision of what it might look like once implemented. Visions express the hoped-for outcomes and are unique to each

program based upon their intended goals. My objective was to observe clientele's level of compliance and behavior as they sorted their waste. Because programs are unique and compliance has different meanings among them, observations were based on each program's definition of the term, *compliance*. It is important to note that during the waste sorting process, certain clientele may have had all types of wastes to sort (e.g. recyclables, compost and trash) while others may have had only one to sort (e.g. trash). My observations addressed the following questions: (1) How well do clientele sort waste? (2) Do clientele pay attention to signs containing information and prompts on how to properly sort waste? (3) What are the general behaviors of clientele as they sort their waste? Clientele's compliance in each program was described as one of the following: fully, partly, or not at all. *Table 2*, **below**, describes each program's definition of compliance.

Table 4: Levels of Compliance
Described are the various definitions of compliance by program.

	Fully Comply	**Partly Comply**	**Not At All**
SPSCC Sorting bin options: (1) Recycling (2) Composting (3) Trash	*Sorting all waste in their respective bins correctly*	*Sorting at least one item in its respective bin correctly* BUT *also failure to sort at least one thing in its respective bin correctly*	*Doing no sorting* OR *failing to do any correct waste sorting*
Evergreen Sorting bin options: (1) Composting	*Sorting all compostable waste in its respective bin correctly*	*Sorting at least one compostable waste item in its respective bin correctly* BUT *also failure to sort at least one item correctly*	*Doing no sorting* OR *failing to do any correct waste sorting*
PLU Sorting bin options: (1) Plastics/glass (2) Cans (3) Newspaper (4) Mixed paper	*Leaving all waste on tray* *AND/OR* *sorting all waste in their respective bins correctly*	*Leaving some waste on tray* *AND/OR* *sorting at least one item in its respective bin correctly* BUT *also failure to sort at least one item correctly*	*Sorting all waste on tray* HOWEVER *resulting in the failure to do any waste sorting correctly*

4.3.1. South Puget Sound Community College (SPSCC)

Post-consumer activity was observed in SPSCC's dining center, which is a square-shaped room with an open view. I was seated near both the recycling and tray/dish station with clear views of activity for observations. An estimated 50

consumers were in the dining area at all times during this 90-minute observation period. SPSCC observations were recorded only at Waste Sorting Station 2, as Station 1 experienced very little traffic. While a table labeled "Recycling Coordinator's Work Station" was next to Station 1, it was unoccupied, leaving the station unattended, the status quo of all sorting stations observed in my research study. Twenty-six dining clients in total utilized Station 2 with mixed results in their levels of compliance. All individuals utilizing Station 2 in the 90-minute observation period are included in my sample; this was possible due to the slower clientele traffic of SPSCC's dining center. Recorded observations were analyzed to quantify levels of compliance and find patterns of the general behavior regarding each level of compliance. The following statistics resulted from observing this sample of 26 clients:

1. Nineteen percent (19%), or 5 of the 26 clients, observed were **fully** in compliance with SPSCC's institutionalized recycling and composting program.

Although all wastes were sorted correctly, each individual of the fully compliant group did so without referring to the signs; in fact, they paid them no attention. All these clients went straight to the bins they needed to, without any visible external prompts or hesitation. While the pace among all clientele varied, the recurring similarities leads me to believe that clients at SPSCC who sort all waste correctly know how to do so on their own, or have been previously trained, as they do not pay attention to signs.

2. Sixteen percent (16%), or 4 of the 26 clients, observed were **partially** in compliance with SPSCC's institutionalized recycling and composting program.

Although the partly compliant group did pay attention and refer to the signs, they only sorted a portion of their waste correctly. I found all these clients intentional as they read signs and sorted their waste based on the information they gathered. With the exception of one client, all people observed took their time. While clientele seem to make an attempt at sorting waste properly by referring to the bins' complementary signs, this leads me to believe that signs have room for improvement in terms of clarity in its information provided.

3. Sixty-five percent (65%), or 17 of the 26 clients, observed were **not at all** in compliance with SPSCC's institutionalized recycling and composting program.

Each individual of this noncompliance group paid no attention to the signs as they failed to do any correct sorting of waste. These clients went directly to garbage bins at Station 2 as if recycling and/or composting were not available as options and without any visible external prompts or hesitation. The general behavior of everyone in this group could be described as hasty, nonchalant, and careless—nothing in between. This all leads me to believe that they are either in a rush and/or careless about properly sorting waste. Because signs were ignored or not seen, no inference can be made in the effectiveness of information on signs.

Over fifty percent (>50%) of my sample make up the group of people whom did not all attempt to comply with the program's waste sorting process, despite information and prompts provided by signage.

4.3.2. The Evergreen State College (Evergreen)

Post-consumer activity was observed at Evergreen's dining center, The Greenery, which is an L-shaped room with many blind spots for an observer – in this case, me. I was seated near the recycling station consisting of only compost, of which I had a clear view. However, the tray/dish station was behind an island-wall. I was not able to record observations beyond this island-wall but still gathered data focused sorting waste at the recycling station. An estimated 100 consumers were in the dining area at all times during this 90-minute observation period. Most of the individuals utilizing the recycling station in the 90-minute observation period are included in my sample; just a handful of clientele were not observed as it was not possible to keep up with each individual due to the fast, clustered clientele traffic of Evergreen's Greenery. Recorded observations were analyzed to quantify levels of compliance and find patterns of the general behavior regarding each level of compliance. The following statistics resulted from observing this sample of 54 clients:

1. Seventy percent (70%), or 38 of the 54 clients, observed were **fully** in compliance with Evergreen's institutionalized recycling and composting program, The Greenery.

Although there were no signs of information or prompts to sort waste, a good portion of clientele were fully compliant and sorted all of their wastes correctly. These clients went straight to the compost bin and cleared their plates of waste, all of which was compostable. Their pace varied but most did it in an ordinary, normal-paced manner with little to no visible thinking involved in the process and promptly returned their non-compostables to the tray/dish return station. This nonchalant behavior that produced compliance indicates that most clientele have knowledge on how to properly sort waste at The Greenery. Clientele's knowledge of correct sorting may have come from a previous educational program, through word-of-mouth, or from some other form of communication.

2. Eight percent (8%), or 4 of the 54 clients, observed were **partially** in compliance with Evergreen's institutionalized recycling and composting program, The Greenery.

Clientele here sorted food scraps and soiled paper napkins into compost, but left their plates and flatware on the counter of the receptacle bins. One of the four clients additionally left a recyclable plastic soda bottle on the counter while all clientele had a normal, nonchalant pace. These clientele's similar behavior of being nonchalant, normal-paced while doing their waste sorting while still leaving dishes and flatware on the counter (when it is obvious that it is not the place to leave such items), coupled with the tray/dish return center being located immediately behind them, infers that they may just be careless.

3. Twenty-two percent (22%), or 12 of the 54 clients, observed were **not at all** in compliance with Evergreen's institutionalized recycling and composting program, The Greenery.

Each and every one of these clients went straight to the tray/dish return station to return their dishes and flatware along with leftover food scraps and soiled napkins, leaving the sorting work for kitchen staff. All these clients went straight to the station without any visible external prompts or hesitation. There was no visibility of any rush-pace from these individuals; instead, they seemed rather normal/nonchalant, leading me to think that they may just be careless.

Nearly eighty percent (80%) of my sample make up the group of people whom sorted at least some of their waste, despite the lack of signage that are traditionally used to provide information and prompts on how to do so. The majority of this group sorted everything correctly.

4.3.3. Pacific Lutheran University (PLU)

As stated earlier, PLU's Dish Return and Recycling Station is secluded in its own space and is accessible by two doorless entryways, near the dining center's exit. Observing in this small room and in close proximity to my targets of study would have greatly induced the Hawthorne Effect, the phenomenon that describes human's change of behavior in response to knowing they are being watched. Instead, I was only able to focus my observations on dining service clientele as they stepped out of the secluded station. Rather than input observations from PLU dining, I have decided to omit them as to avoid any

unnecessary unparallel data in this thesis. However, I will mention that more than 100 consumers were present in the dining area at all times during this hour-and-a-half observation period.

4.4. INTERVIEWS: VIEWING THE PROGRAM FROM INSIDE-OUT

My informants at each site held different position titles; however, all were similar in that they serve an important role in their institution's recycling program. Responses to the 10 sets of questions are grouped by category (e.g. background of interviewee, history of program, etc.) and presented by institution to search for patterns in interviewees' responses in terms of their own program as well as other institutions' programs. Each interview conducted had a length of approximately one hour and was based on the interview guide, found in *Appendix A*.

4.4.1. South Puget Sound Community College (SPSCC)

SPSCC Interviewee(s) Background

The semi-structured, qualitative interview at SPSCC included two interviewees, who were the dean of facilities and operations (Interviewee 1) and the campus-wide custodial services manager (Interviewee 2). Combined, the interviewees have 20 years of working experience at SPSCC. Interviewee 1 has previous experience managing capital projects on campus while Interviewee 2 has worked directly under dining services as a custodian.

History of the SPSCC Program

SPSCC started its program 17 years ago, just following the State of Washington's mandate on recycling. Interviewee 2 explained that while it was required to start a recycling program, the staff member who took the lead on jumpstarting it was passionate about doing so. Interviewee 2 took over the program once her predecessor moved on about 16 years ago. Composting was voluntarily integrated into SPSCC's recycling program 5 years ago through collaboration with Thurston County and LeMay Inc. in a composting program called Food Recycling Plus.

When asked about the campus' extent of composting, I learned that Food Recycling Plus is mainly practiced in the dining center but smaller bins for composting have been finding their way into staff and faculty breakrooms. Both interviewees volunteered additional information by bringing up the issue of sustainability and how it is a part of the institution's set of core values. They took pride in SPSCC's LEED (Leadership in Energy and Environmental Design) certified buildings and use of EPA-approved, green cleaning products.

When asked about the initial goals of the program, Interviewee 2 referred back to Washington's mandate on recycling but also expressed the consensus of SPSCC wanting to do the right thing. Interviewee 2 was a colleague with a LeMay employee, which granted SPSCC the opportunity to integrate composting into their program. Interviewee 2 expressed much joy when speaking about

SPSCC's role in the collaboration, serving as the pilot site, which put a spotlight on the institution for about a year.

Logistics of the SPSCC Program

Because materials go to the large-scale, thermophilic[2] Silver Springs plant, SPSCC is able to collect both pre- and post-consumer waste that is compostable. Items collected for composting include but are not limited to: food scraps, pizza boxes, paper napkins, paper cups, coffee cup sleeves, and cardboard. Locations of bins for collecting compostable materials are the dining center and some breakrooms on campus. Custodial staff takes compostable waste in each building to one main area while two regular male volunteers pick these up and take them to the centralized waste area on campus in preparation for hauling by City of Olympia to take off-campus to Silver Springs, which takes place once a week.

As the program has improved in reducing and diverting wastes, costs have decreased. Program costs consist of the following: garbage, about $1,200/month; recycling, about $600/month; cardboard, about $100/container/month; and compost, about $200/month. There is continued dialogue between my interviewees and other administrative staff about strategic efforts to increase savings and decrease program costs. One strategic effort currently in practice is the investment and use of a recycling compactor to decrease loads, which decreases the number of hauling trips needed. Interviewee 2 believes that the

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[2] *Thermophilic* refers to the temperatures between 113 and 252 °F – in this context, Silver Springs practices thermophilic composting, where high temperatures kill off pathogens, producing compost materials that are safe to apply.

program is cost-effective and elaborated on this by reiterating the program's current success in diverting waste. Future plans include the removal of unutilized waste containers that are being hauled and charged for, which will save even more money. Explicit numbers were not provided in characterizing how monetarily cost-effective SPSCC's program is, as my interviewee had only comments in the qualitative sense.

Success of the SPSCC Program and Evaluation

Interviewee 2 expressed the importance of being a great recycler and saw success as diverting everything possible out of the waste stream. Increased recycling and composting stood out in the conversation as the major means to meet this kind of success. Waste education for student clientele is a hoped-for strategy as college populations are transient, especially at a two-year institution such as SPSCC.

Specific targets for success are not explicitly quantitative, although the program does wish to lower its costs. The program also hopes to find more success by garnering sustained support and interest through participation in events such as Recyclemania, Earth Day, and the ACUPCC. The program wishes to keep recycling in a constant spotlight rather than have it be an episodic endeavor that peaks and wanes. Major challenges that the program experiences are dining center clientele sorting waste incorrectly because of carelessness or lack of attention to signage and the inability to expand composting practices campus-wide due to lack of manpower.

Targets for success are tracked to a "certain extent", said Interviewee 2. Waste audits are done "every now and then," including for Earth Day, which is sometimes used in conjunction with the yearly report to the President's Climate Commitment.

When asked about the dissemination of information on the program such as information about evaluation, both interviewees laughingly admitted, "We communicate…to each other." An education and outreach program is in the works to provide both students and visitors to the campus with information on SPSCC's progressive efforts such as waste reduction. As program evaluations are completed, the program would like to adopt more waste reduction practices that will help manage items such as shrink-wrap and styrofoam.

Glitches and Challenges of the SPSCC Program

Thus far, the program seeks to improve itself after receiving evaluation results by communicating primarily with SPSCC's culinary arts students. Because these students do everything from preparing to serving food as well as cleaning up the dining center, Interviewee 2 finds that integrating proper recycling and composting practices into the culinary arts' beginning-of-the-quarter orientation is most effective. If things were not being done right, Interviewee 2 would revisit the students first thing in the morning prior to their class starting to review proper practices. However, these follow-up visits are reliant on Interviewee 2's work schedule. Otherwise, follow-up visits will not occur but

sometimes this information can be passed down to the kitchen manager who can then communicate it to the students.

As the program has evolved, adjustments have been made to improve the program and to keep things going as smoothly as possible. Five locations on campus for waste pickup by LeMay have been lessened to two for a more convenient hauling process. In addition, there are now two regular workers whom the program relies on to operate an 18-foot trailer as a means to consolidate waste at these two central pickup locations on campus. In the dining center, a student volunteer serves as the "recycling coordinator" at SPSCC's Waste Sorting Station 1 during the two-hour lunch rush. This 11-1PM monitoring period allows for the student volunteer to ensure clientele are compliant with the recycling and composting program by properly self-sorting wastes into composting, recycling and trash bins. It is important to note that this interview took place in April 2011 and during my two subsequent visits to SPSCC's dining center in September as well as November 2011, a clearly labeled workstation for the recycling coordinator was left unattended and the student volunteer mentioned in the interview was not seen. In my follow-up communication with SPSCC dining, I learned that the recycling coordinator position was left unfilled in the 2011-12 year.

Compliance Patterns Among the SPSCC Program's Clientele

When asked about the compliance patterns among those utilizing SPSCC's dining center, Interviewee 2 believes dining staff do it best, followed by

campus faculty as well as other institutional staff, while students are the worst. The gauge of dining staff is that the three head chefs are on board with the program, provide a great level of compliance in proper sorting in terms of pre-consumer waste and do a good job at trying to get other dining staff members to do it correctly. It is believed that half of the students are compliant in sorting waste and non-compliance is most likely due to people being in a rush as well as thoughtlessness.

Staff and faculty are believed to comply more than students but less than dining staff. By increasing the attention paid to recycling, the program plans to integrate more compost bins in staff and faculty break-rooms. The hope is that the strategy will create a greater sense of normalcy in sorting numerous types of waste, make clientele more conscientious, and translate to greater compliance in the dining center.

Regardless of the inconsistent compliance experienced from dining clientele, the program does receive some positive comments from people on their effort in partaking in composting. At the same time, the program sometimes also receives e-mails and phone calls from clientele reporting excess contamination in bins. These informal feedback comments shows that while some clients sort waste incorrectly for a multitude of reasons including carelessness, there are also people who care enough to report excess contamination in bins.

Communication of Composting and Sorting Food Waste to SPSCC Staff, Faculty, and Students

To garner participation from dining clientele to properly sort waste, the program uses advertising techniques with stickers and signs complementing waste bins, all of which were seen during my periods of data collection by direct observation. The program moves encouragement forward by participating in educational events such as National Chemistry Week[3] as opportunities to inform more people about its efforts. Participation in the 2010 National Chemistry Week was through a tabling event that highlighted composting as a practice on campus and the chemistry principles along with it as a scientific process. In the future, campus as well as faculty and staff newspapers will serve as outlets to encourage more people to participate in the recycling program.

Marketing Techniques at SPSCC

While there was mention of advertising, a common tool in the broader field of marketing, used in the program, interviewees did not seem too familiar with the term *social marketing*. When asked if they knew what the term meant, Interviewee 2 responded by saying "To a certain extent." Per their request, I briefed them through a handout providing an overview of social marketing (SM) and also explained community-based social marketing (CBSM).

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[3] *National Chemistry Week* refers to the annual event that takes place in the United States to raise public awareness of the importance of chemistry in everyday life. It is coordinated by the American Chemistry Society (ACS) and brings together businesses, schools, and individuals

Social marketing techniques have not been necessarily practiced in a conscious manner to encourage participation in SPSCC's recycling and composting program. However, Interviewee 1 believes it is something they need to do (use more SM in their program) and elaborated on this by expressing the need to "get it out there," "talk about it more," and "get people talking to us more." Once SM allows for this increased dialogue regarding SPSCC's recycling and composting program, Interviewee 1 said, "There is going to be a lot of culture change happening." Interviewee 2 sees the potential of practicing SM to a "certain extent with guilt" where dining clientele can be shamed with their noncompliance by looking at the level contamination in waste bins and being notified that even kids in SPSCC's Head Start program are on board with the recycling and composting program.

As our conversation in regards to SM was coming to a close, Interviewee 2 assured me of their confidence in the potential of using SM as well as CBSM to break down barriers for better compliance, especially through education.

Other Forms of Sustainability Practiced

Interviewee 1 was honest to me about the need for the dining program to be financially self-sustaining. Consequently, the program has a small budget so it is not feasible to purchase the more expensive biodegradable plates, cups, and utensils. However, the program uses other best practices where they can, such as recycling shipping materials and repurposing as well as reusing non-recyclables (i.e. styrofoam). SPSCC dining does use napkins that are compostable and serves

smaller food portions on smaller plates. Interviewee 1 indicated that marketing and cost-reduction are the program's intentions for smaller food portions on smaller plates and he admitted that the production of less food waste is a positive, unintended consequence.

Final Comment at SPSCC

"Keep your eye on it (SPSCC's composting program) because we are going to do good in the future – I can guarantee it."

> –Interviewee 2's response when asked about any additional comments on their program.

4.4.2. The Evergreen State College (Evergreen)

Evergreen Interviewee Background

The semi-structured, qualitative interview at Evergreen was with the director of dining and residential services. The interviewee has been a staff member at Evergreen for four years and serves solely in this position. The interviewee's experience included serving as the assistant dean of residence life at Reed College in Portland, OR, a small and private liberal arts school.

History of the Evergreen Program

Recycling has been taking place for some time now at Evergreen and composting unofficially began 10 years ago through interested students who resided on campus, "in the back of the house" with dining and the campus' organic farm (OF). Practicing composting during this initial phase was not

optimal as successful operations were heavily reliant on the OF's waste load capacity and concurrent students' level of interest for investing time in such efforts. Several years ago, a student in Evergreen's Practicing Sustainable Agriculture academic program served as an intern for Aramark. Aramark is the food service provider for Evergreen and their contract includes funding for a student sustainability internship.

The student intern located a small, local farm that would use dining services' pre-consumer food waste as food for their pigs; however, this was during the same time period that dining services integrated biodegradable corn silverware and paper plates. This ended up not being a good solution because these biodegradable products would be co-mingled with food waste. Pigs could have a difficult time with digestion of the biodegradable utensils made of corn products.

Shortly after this predicament occurred and after continued explorations on how to manage compost waste, Evergreen's official institutionalized composting program started, which is now just over three years old. Evergreen took advantage of Thurston County's implementation of the Food Plus Recycling program, of which SPSCC is also a part, by joining in on the collaboration. Evergreen's sustainability initiatives, the student intern's dedication and the hope to save money on garbage, among other factors, all played a role in establishing this composting program.

Because residential and dining services, not campus facilities, are in charge of the program, composting bins are confined to dining services facilities and residential halls. It is not feasible to integrate composting everywhere on campus because that would require major program expansion and additional staff to transport compost from other campus buildings to a central campus location for hauling by LeMay. On-campus students benefit most from the program, as they are able compost during their meals in the dining centers and at home, in the residential halls.

The program's initial goals were informally shared based on waste reduction and to simply see if they could "do it." By *do it*, the interviewee meant successful coordination in getting wastes to centralized locations on campus and prepared for LeMay to haul away as well as minimal contamination in compost bins that are also neither too wet nor too dry. Despite the program's success in reaching these goals to a certain extent, the interview sees composting as a labor or love, adding, "…composting is a lot of containers and a lot of time."

Logistics of the Evergreen Program

My interviewee believes that participating in Thurston County's Food Recycling Plus program is especially advantageous for the ease of composting because materials such as bones, normally not accepted in other programs, are acceptable. Compostable items at Evergreen also include but are not limited to biodegradable utensils, paper all kinds so long as it is not wax-lined, food scraps, and liquids.

As stated earlier, compostable items are collected in residence halls and dining services facilities. Compost bins are in each on-campus apartment while they are on every other floor in residence halls and if students wish, they may have a bin for their room. Compost is also collected in dining services facilities including cafes and the main dining center, The Greenery, for pre- as well as post-consumer waste. Those on campus who would like to compost while in an area lacking compost bins have to be dedicated, because they need to hold onto compostables until they find a bin in a residence hall or dining center facility.

The group of individuals who handle compost at Evergreen varies and is dependent on where bins are located. Residents of apartments and those who have personal compost bins in residence hall rooms are responsible in transporting their waste to a centralized location that is designated for their building. Student volunteers who reside in the halls are responsible for handling compost bins located on every other floor. Staff members take care of all compost bins within the dining service facilities. LeMay then hauls Evergreen's compostables directly from the centralized, on campus locations to Silver Springs once a week.

My interviewee expressed the unfortunate fact that the program is currently not cost-effective, but it is "definitely the right and great thing to do." Because compost is cheaper than garbage to handle, it has the potential to create cost-savings for Evergreen. However, garbage fees are charged per container, of which there are many in dining services' facilities. If the number of garbage

containers is lessened and more waste can be diverted to recycling and composting, the interviewee believes cost savings is more attainable.

Success of the Evergreen Program and Evaluation

While the program does not have a lot of written goals, sustainability has always been a part of the institution's mission. My interviewee saw program success as having compost bins everywhere on campus, a waste stream that is truly integrated and a population that is knowledgeable on how to comply with proper sorting. Because food is being produced and consumed beyond residence halls and dining services facilities, this vision will help the campus divert more waste away from the landfill.

In lieu of having the funding to fill an ideal position dedicated to evaluative measures, the program relies on interns and volunteers. Waste audits are performed during Recyclemania to check both the compliance and contamination levels of each bin. These results are reported back to the college in both formal and informal settings. In particular, on-campus resident populations receive this information as feedback on their ability to sort waste correctly.

My interviewee believes that a cyclical system, where people are constantly being educated on how to manage waste, is needed. The program's targets for success change over time as it gains experience of progress as well as setbacks. Results from the previous year's waste audit showed that about 70 percent of items in garbage bins were either recyclable or compostable. During

the time of interview, my interviewee's overall goal was to reduce this contamination level of waste from 70 down to 10 percent.

Glitches and Challenges of the Evergreen Program

Informal and continuous evaluations take place as my interviewee continually focuses on the program's daily happenings through qualitative measures. A strategy of minimizing the number of waste bins in The Greenery has found some success but has continued to bring on some confusion as how to properly sort waste despite there being only one compost bin available. On-campus events that use catering through dining services also pose a challenge as clientele there may be large groups of transients who are unfamiliar with sorting wastes.

With resources in mind, the program looks for feasible means of improvement based on results from the continuous evaluations. Education continues to be a huge leverage point, especially for on-campus residents who may lead the way, serve as assertive "new eyes" and try to fix improper sorting behavior. It is in the program's best interest to assume clientele do not have any knowledge about waste sorting to ensure everyone is receiving identical information and prompts. An ideal would be to designate a position to monitor waste bins to ensure proper waste sorting, but this is very expensive. My interviewee admits to being a "do-er" and when time allows, volunteers to monitor waste bins during large catering events.

Compliance Patterns Among the Evergreen Program's Clientele

When asked about the compliance patterns among those utilizing The Greenery, my interviewee believes dining staff does it best followed by everyone else on campus. This difference in compliance patterns among clientele exists despite the majority of all waste being compostable. While far from perfect, dining clientele as a whole is continuously improving in terms of their compliance with the composting program. My interviewee observed that dining staff is easier to train in proper sorting behavior because they are a smaller clientele group than institutional faculty, staff and students.

My interviewee has noticed that even though institutional faculty and staff members' proclaim their confidence in proper waste sorting, they are noncompliant at campus events. Continuous reminders and waste bin monitors during large events, such as those hosted by catering, seem to have improved the compliance of clientele. Students, on the other hand, seem to improve with time after the school year begins and are more likely to put compostable materials in the landfill trash bin rather than landfill trash materials in the compost bin.

The program continues to receive informal feedback that indicates the clientele's support of its recycling and composting practices. Beyond the program's likeability, many clientele wonder why compost bins are not everywhere on campus, while my interviewee said, "Zealots wished the campus

had a closed-loop waste system[4]." As stated earlier, these ideals are not currently feasible due to resource limitations of such a large program expansion. For instance, finding a market for the excess soil amendment produced in the form of compost on campus would be a challenge, an issue that businesses like Silver Springs Organics continues to face, my interviewee informed me.

Communication of Composting and Sorting Food Waste to Evergreen Staff, Faculty, and Students

Residential and Dining (RAD) practices sustainability by integrating composting whenever and wherever possible. "How-to" posters are in residential-dining facilities and e-mails are sent to faculty as well as staff. In addition, admissions counselors inform prospective students about the college's composting program. My interviewee ensures dissemination of RAD's campus sustainability progress as part of their work as chair of Evergreen's student affairs division.

The program uses feedback from informal evaluations and waste audits to move the program forward. LeMay provides informal evaluations, which serve as warnings, to the program in instances of particularly high levels of contamination in a given waste stream. Waste audits conducted during Recyclemania also focus on contamination levels in each waste stream. The difference between LeMay's evaluations and Evergreen's Recylemania waste audits is that the former can be a

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[4] *Closed-loop waste system* in this context refers to a system where recyclables and compostables on-campus are maintained on campus during their lifecycle(s). For instance, recyclables are recycled or reused through repurpose and an on-campus composting system would process and breakdown compostable materials to create compost product; none of these materials would leave the campus (in which case, it would be a "open-loop waste system" – the majority of all waste systems for institutions).

factor in LeMay no longer accepting waste from Evergreen due to an excess in contamination while the latter is a completely voluntary, institutional activity. Results from evaluations and waste audits completed are used as baselines for points of improvement.

Marketing Techniques at Evergreen

My interviewee showed that the program has used social marketing and social media as strategies to get clientele to participate in waste sorting compliantly; however, she admitted that they were not quite familiar with the term "community-based social marketing." My interviewee said that brainstorming has been an ongoing activity in which staff try to think of new ways to "…make programs more conducive to different crowds" by "…break(ing) down some of those barriers." Hearing these two statements from my interviewee indicated that while "CBSM" was an unfamiliar term, its tools were unconsciously being used.

Freshman students are strong targets for the program because the majority of them reside on campus. In addition, freshmen are seen as the infants of college, holding the greatest potential for learning and sticking with proper waste sorting behavior. Students living in residence halls, primarily freshmen, are regularly given informal report cards with letter grades from their resident advisors on how they are doing in sorting recyclables and compostables. My interviewee stated that although Evergreen as an educational institution does not give letter grades in their academic programs, residential students enjoy receiving

them in terms of waste sorting compliance and seem to become more accountable given the feedback. The hopes of targeting freshmen are that they will move out to apartments or houses with strong intentions to continue properly sorting compostables, recyclables and other wastes.

Social marketing and CBSM thinking has helped the program in a number of ways but there is room for improvement. Results from a survey conducted by a past student intern reports that about 80 percent of residential students rated sustainability as of high importance to them. However, the high importance was not reflected in their behavior as contamination of compost as well as recycle bins were high and compliance was low. The lack of information or ignorance of signage serves as barriers to better compliance. My interviewee believes that however informative, clear, and flashy a sign is, it serves no purpose if clientele decide to ignore it altogether. Barriers to better compliance must continue to be uncovered and addressed.

Other Forms of Sustainability Practiced at Evergreen

RAD has integrated many cutting edge products for their program, including biodegradable utensils, plates, cups, and paper napkins. Styrofoam is not purchased but sometimes is a byproduct of package shipments. Because The Greenery is a buffet-style facility, food is served with reusable utensils, plates and cups. However, biodegradable materials are used at other facilities, such as RAD's numerous on-campus cafes and a la carte markets. Compostable paper napkins are used at all of RAD's facilities. Additional sustainable efforts

practiced by RAD are promoting less food waste, sourcing more local as well as organic, and being strategic on ordering food with containers that are recyclable or reusable.

Final Comment at Evergreen

"No, I think that covered it."

> –My interviewee's response when asked about any additional comments on their program.

4.4.3. Pacific Lutheran University (PLU)

PLU Interviewee Background

The semi-structured, qualitative interview at PLU was with its sole manager of The Commons, the institution's main dining facility operated by Dining & Culinary Services. My interviewee has been employed by PLU's Dining & Culinary Services for 21 years and been in her current managerial position for just over a year. Prior to working at PLU, the interviewee served as director for Marriott at the Frank Russell building and as bookkeeper for Weyerhaeuser. My interviewee's current job as sole manager is her first position in dining services management.

History of the Program

Six years ago, the building that houses PLU's main dining facility went through a five-month renovation that forced The Commons to serve food in an older building with no dishroom. Dining & Culinary Services learned that

reusable wares could not be utilized under the guide of the health department due to their lack of access to a dishroom. The most quick and logical response that came to mind was utilizing all paper and plastic wares but the thought of increased landfill trash deterred PLU from settling on this solution.

As a consequence, PLU collaborated with their waste management company, LeMay, to start a composting program as a remedy to avoid the increase in landfill trash. A small, temporary dishwashing machine was installed for washing reusable cups and silverware. Compostable coffee cups, plates and napkins were used, serving as inputs for the newly integrated compost bins. For dining clientele who wish to take their food to go, compostable boxes and plastic flatware were provided. PLU permanently adopted these composting practices when Dining and Culinary Services returned The Commons' back to its newly renovated building.

Composting has now been in place at PLU for over six years. The program's initial goals were formal: to simply limit landfill trash produced in The Commons' temporary facility. The increase in composting waste has led to landfill trash being emptied from PLU's loading dock every week to about once every four weeks. This decrease in number of trash pick-ups has also been credited to PLU's investment in a trash compactor. Over time, program goals have changed and PLU is currently seeking to keep their progressive nature by adopting new products as they become available. Using compostable paper straws and being strategic by ridding of unnecessary items such as stir-sticks for coffee are examples of PLU's efforts in adopting new products.

Logistics of the Program

PLU participates in Pierce County's recycling program, led by the local waste management company, LeMay. The county program collects landfill, recyclable, yard, and other compostable wastes from residential as well as business establishments. Compostable waste is collected five days a week from PLU's loading dock and hauled to Land Recovery, Inc. (LRI) in unincorporated Pierce County.

Numerous items are collected for composting, which include but are limited to: food scraps, biodegradable wares, paper straws, soiled paper napkins, paper soufflé cups, pizza boxes, corrugated cardboard, and milk cartons. Compost on PLU's campus is relatively widespread with receptacle bins available in each campus buildings' break-room, select offices and select residence halls in addition to the dining center's food preparation, serving, tray return, and dishroom areas. Events such as conferences hosted by catering also integrate these composting practices.

A combination of staff, student, volunteers and LeMay contractors handle the compost materials at PLU. Designated students and staff members bring compostable waste from their respective residence halls as well as building units to PLU's loading dock. Members of dining and environmental services staffs handle the waste from all dining facilities across campus while environmental services solely handle the compostable coffee grounds from break-rooms.

The costs of PLU's composting program mainly come from pick-up fees, which are overall less expensive than pick-up costs of landfill trash. Because compost handling relies on volunteers and on-campus staff members who do it as a part of their normal position duties, there are no extra costs paid to staff personnel. My interviewee believes that the program is cost-effective as it is in place now. After asking for elaboration, I received a response emphasizing the diversion of compostable materials from landfills and the monetary savings of at least $5,000 a year.

Success of the Program and Evaluation

The program's success in terms of its goals is reflected in waste reduction and high-compliance in the process of sorting waste. Diverting substantial waste from the landfill, staff members' ability to sort waste correctly and the reduction of food waste were identified by my interviewee as current indicators of program success. My interviewee also highlighted the campus' established culture among student, staff, and faculty on sustainability issues including composting practices. Regular walk-throughs are conducted in dining facilities to ensure members of the dining staff are correctly sorting waste. If non-compliance is observed, my interviewee personally follows up with individuals to serve as a reminder and keep them accountable. My interviewee continually evaluates the program daily in an informal manner to bring out new information and points of improvement through the feedback gained. Recyclemania, run through the campus' sustainability office, conducts audits on contamination levels of each waste stream while my interviewee informally evaluates garbage bins for potential

compostables and recyclables. Both of the audits and informal evaluations provide a snapshot of progress in terms of successes as well as challenges, which then can serve as a guide for future improvement of the program.

Based on the program challenges learned, targets for success might change over time to ensure future incremental and achievable progress. In some instances, targets for success are efforts that work towards the larger university sustainability mission, such as reducing the production of landfill trash. As stated earlier, PLU has signed a number of sustainability documents including the Talloires Declaration and the President's Climate Commitment and participates actively in the STARS program, which in part serves as a guide for Dining and Culinary Services' own sustainability objectives. My interviewee sits on the sustainability committee and expressed the fact that Dining and Culinary Services as a whole entity collaborates closely with the rest of the campus.

The program has experienced numerous changes since my interviewee started her work at PLU. Just 20 years ago, the program included only recycling of paper, plastics, and cans, while reducing and reusing were not yet adopted practices. Although reusing, reducing and composting are all now practiced, the program continually seeks incremental but important improvements such as can crushers to compact recyclable loads and reuses for plastic bottle caps.

Glitches and Challenges of the PLU Program

When asked about the challenges experienced by the program, my interviewee focused on the "customer" end. The focus was specifically on

clientele who were visitors to PLU. Because recycling and composting is so ingrained in the campus' culture, most on-campus clientele are believed to not pose a significant barrier to compliance. In order to be proactive and avoid non-compliance from campus visitors, my interviewee or a PLU student ambassador usually takes a couple minutes to inform them about Dining and Culinary Services' sustainability efforts. Campus visitors are asked to leave all their waste on dining trays so members of the dining staff in the dishroom can take care of all the waste sorting for them. My interviewee believes that informing visitors of PLU's overall sustainability efforts may bring on inspiration and even be an important factor in a prospective student's decision on what institution to attend.

Food waste is also a challenge for Dining and Culinary Services. My interviewee expressed the need to be strategic in producing enough food to meet demand without creating excess. The program's daily observations for evaluative purposes are helpful on the quantity of a certain food item to produce. For instance, if 30 chicken breasts were produced with only a demand of 20, the dining staff may decide to produce just 25 the next day to minimize food waste. Like other facets of the program, my interviewee relies on daily evaluation and follow-ups through verbal communication as well as education as a means of improvement.

Compliance Patterns Among the PLU Program's Clientele

When asked about the compliance patterns among dining clientele, my interviewee reiterated and continued to emphasize that PLU has developed a

composting and recycling culture. While there is no quantitative gauge of overall compliance, the tone of the interview implied that compliance is very good because of the perceived strong cultural on campus. My interviewee commented that the culture tends to be cyclical and in part spread by knowledgeable students who graduate, become admissions counselors, and spread PLU's sustainable efforts to prospective as well as new students.

While the majority of work done by members of the dining staff, mostly student workers, is behind-the-scenes, they play a large role in making this culture significant. Because clientele are prompted to leave all their waste on trays, allowing for all members of the dining staff to "take care" of it for them, the program ensures their employees are compliant with waste sorting techniques. As stated earlier, non-compliance by members of the dining staff results in follow-up reminders carried out by my interviewee. The program receives informal feedback in the form of notes and verbal comments from clientele, especially from campus visitors who express their enjoyment and pride in such good work.

Communication of Composting and Sorting Food Waste to PLU Staff, Faculty, and Students

The PLU program initially focused on spreading the word about its composting practices through general advertising, tabling events and the institution's website, among other communication outlets. Now that those efforts have paid off, reliance leans on the campus' established culture as the spearhead of communication to clientele. Temporary adjustments are applied as needed such as in the instance that a large group of visitors dine at The Commons where

landfill trash bins are blocked off and in their place, extra signs serve as a reminder to prompt clientele to leave all waste on trays. As mentioned earlier, encouragement is moved forward as needed through follow-up reminders.

Marketing Techniques at PLU

My interviewee was not familiar with the standalone term "social marketing" but quickly understood what it was after I briefly presented a handout on the concept's overview. From this, there was a realization that PLU Dining and Culinary Services' program was unconsciously using both social marketing and CBSM as strategies to garner participation. The program's major captive audience is a student so my interviewee has been strategic on how to make it easiest for them to adopt composting and recycling behavior whether on campus or at home.

PLU has a community gardens program that serves as an outreach and education program for residential populations around campus. Students who live off campus are welcomed and encouraged to bring their compostables to the community garden for backyard composting. This service helps address the barrier in instances where clientele perceive composting off campus is inconvenient or not possible. In addition, my interviewee grants student requests to bring in their compostable materials, adding it to Dining and Culinary Services' compost waste stream.

When asked about social marketing and CBSM's effectiveness, my interviewee expressed her belief in it as a tool to get clientele to adopt sustainable

behavior, especially if they are incoming students. Thus far, many students have complied with composting practices on campus and taken up offers to compost off campus materials, but room for improvement remains. My interviewee believes that lack of education and carelessness are two issues that continue to pose as barriers in the program's hope to reach a higher potential.

Other Forms of Sustainability Practiced at PLU

Dining and Culinary Services at PLU works hard to stay up to date as well as be a leader in terms of sustainable practices. The program continues to test and invest on cutting edge products such as biodegradable gloves for members of the kitchen staff. As stated earlier, biodegradable cups, to-go boxes and napkins are already being used on campus. My interviewee works with LRI Landfill to ensure that the facility's compost technology is able to handle and break down new biodegradable products with ease. Package-shipment of foods has been improved by coordinating with vendors to pack food in recyclable or reusable plastic boxes when possible. However, the program has an unavoidable but small presence of styrofoam from the shipment of certain products, an occurrence for every program studied in this research.

The value of food is also a focus of the overall program as best practices are sought in terms of its sourcing and serving. My interviewee emphasized PLU's efforts in trying stay seasonal with produce and sourcing food from local companies. Members of the dining staff are strategic in serving food such as keeping the salad bar sufficiently stocked but not overfilled to avoid a case where

clientele sees food in excess, which may increase the occurrence of food waste. Continuous evaluations on all of the program's practices take place as my interviewee said future plans are: "To always look forward and to always do better."

Final Comment at PLU

"I guess it's great when a student comes back and tells you 'thank you' for making their life better."

> –My interviewee's response when asked about any additional comments on their program.

5. DISCUSSION

The phenomenon of institutionalized composting programs at college and university campuses is an emerging one. My thesis research to better understand composting programs has revealed the reality of their diverse applications. Composting programs vary in focus, metrics, and expansiveness, among other factors. Using knowledge learned from my literature review, observations, and interviews, I have identified thematic components in which I feel are significant in a composting program to create a theoretical, idealized vision of one. The three cases studied in this research were then compared to my envisioned ideal of a composting program. Given the envisioned ideal, I conclude this section with recommendations to the cases studied.

5.1. ENVISIONING THE IDEAL

While it is clear that context plays a major role in the success of composting programs, I believe that there are essential components, or "themes", in the design and implementation among the practical applications of them. Below, I have listed the essential components and my rationale as to why each was chosen as a significant element of the envisioned, idealized composting program.

Sustainability Culture

The sustainability culture on a college or university campus with an institutionalized composting program is extremely important and should be thriving. A strong sustainability culture on campus seems to be strongly

correlated with greater instances of sustainable behavior practiced and adopted by those individuals occupying the college.

Behavior-changing Strategies

As we have learned, attitudes do not necessarily reflect behavior; thus, it is important for composting programs to have intentional and organized efforts to get people on their college campus to adopt sustainable behaviors that include acting in such a manner that is in compliance with their recycling and composting process.

Prompts for Action

Waste sorting stations used in programs include receptacle bins such as recyclables and composting. As clientele sort their waste between numerous receptacle bins, they find that the desired actions expected from them are not so intuitive. The integration of prompts for action, usually in the form of photographs and text, can guide individuals on how to sort their waste compliantly and in a manner that is simple, minimizing the level of cognition required.

Compliance

The visible cue of a composting program, apparent through the observation of waste sorting stations, brings a sense of celebration for sustainability, but, too often, questions of its success and efficacy are not raised. Composting programs can be unique and the measures of success are defined

within its own entity. In order to produce an effect, composting programs must have high compliance from the individuals who play a role in their processes such as faculty, staff, and students. Compliance is dependent on what a composting program desires from its clientele and the defined measures of its success.

Program Evaluation and Metrics

Continued evaluation and well-established metrics are important for composting programs to define their targets for success as well as improve efficacy. Not only are qualitative measures important but also quantitative targets. The lack of such components would leave a program to simply exist with no sense of intended direction. While an implemented program with no intended direction can produce positive outcomes, it is not in the best interest of an institution to fund such a large effort that lacks a well-thought out plan.

5.2. THE REALITY OF CASES UP AGAINST THE "ENVISIONED IDEAL"

The cases studied in my thesis research were individually unique in that they each met certain elemental components of the "Envisioned Ideal," but they also revealed instances of where specific elemental components were not met. As a promising practice, composting programs must be thoughtful and well crafted. Their directors must take into consideration the components listed in the tables below. Each component and element proved to be complex, and it is their effective integration that achieves results. For instance, the creation of signs that prompt action and proper waste sorting is a simple activity; however, ensuring

that the content of texts and photos used on signs will decrease the cognition needed to comply with waste sorting and thus, result in high compliance, is much more difficult. As my research to define the "Envisioned Ideal" accumulated, I developed and used ideal program characteristics to evaluate the actual realities of three composting programs, represented by the cases studies presented here.

Below is a set of tables that lay out the five components as well as their respective elements of the "Envisioned Ideal" composting program. The tables show instances where individual cases meet as well as fail to meet certain elemental components that are characteristic of and reflect the "Envisioned Ideal" composting program.

Table 5: Sustainability Culture

***Components* of the "Envisioned Ideal"**	**SPSCC**	**Evergreen**	**PLU**
Transparency through diverse means such as the use of sustainability terminology, website, handouts, etc.	• Sustainability language is non-existent in the mission and values page of the institutional website but found on the library's page referring to minimizing paper use as an effort to contribute to the "college's goal of sustainability" • A Spring 2008 issue of the campus magazine was found on an online archive with a focus on sustainability on campus	• Sustainability language is present in much of the institutional website; "environmental stewardship" and "sustainability" are used twice on the mission page of Evergreen's website; the concept of sustainability is also on the institution's Office of Sustainability as well as Residential and Dining webpages; in addition, a webpage is dedicated to sustainability resources at Evergreen, in higher education, and also at regional, national, as well as	• Sustainability language is present in much of the institutional website; "environment" in reference to the natural world is used twice in the educational philosophy, mission, and vision page of the website; a webpage I dedicated to sustainability on campus in terms of the initiatives, campus groups that are currently active, events, and even the academic courses that have a focus on sustainability • Electronic copies of the campus newsletter, *Sustainability*, were

		international levels • A Fall 2007 issue of the campus magazine was found on an online archive with Evergreen's sustainability efforts in focus	available online; at least 5 issues were published in 2010
Commitments such as being a signatory of the Talloires Declaration and active participant in ACUPCC, STARS, Recyclemania	• A signatory and participant in ACUPCC; participates in Recyclemania • Not a signatory of the Talloires Declaration; not a participant of AASHE STARS	• A signatory and participant in ACUPCC; a participant of AASHE STARS; participates in Recyclemania • Not a signatory of the Talloires Declaration	• A signatory of the Talloires Declaration; a participant of AASHE STARS; a signatory and participant in ACUPCC; participates in Recyclemania
Staying current with developing technologies and practices in term of waste reduction	• Composting program in dining began 5 years ago • Small dining budget does not allow program to integrate cutting edge, biodegradable utensils and	• Composting program in dining began 3 years ago • Has integrated biodegradable napkins, cups, plates, and flatware for composting	• Composting program in dining began 6 years ago • Has integrated biodegradable napkins, cups, plates, flatware, and straws for

	materials; however, all paper is accepted for composting		composting
Participation from faculty, staff, and students in sustainability efforts	• Environmental Sustainability Committee – a group of interested and passionate staff, faculty and students formed in 2007; recent activity has been limited to students due to the economic climate for staff and faculty	• Sustainable Task Force – made up of faculty as well as staff and is still active • Clean Energy Committee – led by students and is still active	• GREAN – student group dedicated to environmental issues • University Sustainability Committee – led by faculty and staff
Commitments in the curriculum to environmental and sustainability studies	• Regularly offers environmental science courses	• Diverse curriculum offerings with environmental and sustainability themes • Commitment to academic programs with themes of ecological agriculture, design, energy, and systems within the context of sustainability since the institution's	• Offers an environmental studies major • Many courses have a focus on sustainability concepts • Participates and hosted South Sound Sustainability Summit – Pierce County college and university students,

		inception • Recent establishment of faculty planning unit called "Sustainability and Justice"	faculty, staff were invited; a conference on sustainability issues in higher education

Table 6: Behavior-changing Strategies

***Components* of the "Envisioned Ideal"**	**SPSCC**	**Evergreen**	**PLU**
Utilizing multi-disciplinary tools such as SM and CBSM to garner participation and achieve behavior change	• Program has familiarity with the concepts SM and CBSM • While the SPSCC program believes these multi-disciplinary tools have the potential to garner greater participation and achieve behavior change, they have not yet been practiced	• Program was familiar with SM but not CBSM; however, Evergreen was unconsciously practicing these tools to garner greater participation but believes there is room for improvement in their efforts • *See box **below** for Evergreen's application of these tools*	• Program was familiar with the concepts of SM and CBSM but not their technical terms as both were unconsciously being practiced to garner greater participation • *See box **below** for PLU's application of these tools*
Make explicit, targeted efforts to learn what the largest barriers are to on-campus clientele complying with waste sorting and break down those barriers by increasing simplicity of doing the behavior	• This component was not apparent during my research of SPSCC	• Targeting freshman students by integrating composting in the residence halls as a learning tool and catalyst for them to be compliant with composting outside	• Targeting off-campus students by offering them the opportunity to bring compostable items from home to campus as residential areas are not offered curbside

		the residence hall – in this case, the dining center • Having specialized programs that educate foreign exchange students on composting practices at the dining center, as the language as been identified as a barrier to compliance	composting in addition; recyclables that are otherwise not accepted in curbside programs can be brought on-campus for recycling • The program uses the above strategies to catalyze students in better complying with on-campus waste sorting, as well as fostering sustainable behavior in their clientele's everyday life
Increasing incentives to desired behavior; showing the impact value of such desired behavior	• This component was not apparent during my research of SPSCC	• Freshman students in residence halls were given weekly letter grades from their resident advisor, which made composting a larger point of interest to students as to gain the incentive of getting a positive grade	• While more tangible incentives such as letter grades were not given, high program compliance contributed to the strong sustainability culture on campus, which the institution takes pride in

Table 7: Prompts for Action

***Components* of the "Envisioned Ideal"**	**SPSCC**	**Evergreen**	**PLU**
Using signs and illustrations that are clear, simple, and decrease the degree of cognition required from clientele to comply with sorting waste	• Stickers, photos, and texts are used as to garner participation as one sign states: "Please place items in correct bins"; signs for each waste type had text stating which items were expected in the respective bin along with a photo for illustrative and clarification purposes	• General "how-to" signs are dispersed throughout the dining facility on the program's recycling and composting efforts as well as what items are accepted respective to each type of waste to garner participation; however, this information is absent at the main dining area's waste sorting station – The Greenery, where only composting is available	• Signs on the program's preference of having clientele leave their waste on the tray (for dining staff to sort for them) are dispersed throughout the dining center, along with other messages regarding sustainability efforts practiced by dining such as composting and recycling; the waste sorting station is makes it clear with signs of "leave it on the tray" in reference to clientele's waste
Color coding and specialized lids such as circles for cans, widened	• Receptacle bins and their complementing signs were color	• The two receptacle bins were both for composting, located	• In the case that clientele wanted to sort their own waste,

slits for paper, etc. to help clientele visualize the type of waste expected in each receptacle bin, contributing to greater compliance	coded for each type of waste and identical in both waste sorting stations at the dining center: green for compost, blue for plastic bottle/aluminum can recycling, green for composting, and gray for garbage (which however, did not have a complementing sign) • A specialized, circle lid was used for plastic bottle/aluminum can recycling receptacle bin • Compost and garbage bins were left uncovered without any type of lid; the compost bin had a large rectangular opening	within a black countertop, and did not have any complementing signs • The receptacle openings were circular • Color coding and specialized lids were not used as only one type of waste – composting was accepted as it was the only type of waste produced by the dining center	receptacle bins are available for: plastics/glass, cans, and newspaper; however, garbage and compost items still need to be left on trays as those materials are handled by dining staff in the back kitchen • While signs complementing the receptacle bins are neat and clear, they are not color coded and do not include photos • Receptacle bins had specialized lids: circles for plastics/glass as well as cans and widened slits for newspaper

	and the garbage had a large square opening		

Table 8: Compliance

***Components* of the "Envisioned Ideal"**	**SPSCC**	**Evergreen**	**PLU**
Experience high compliance with little to no contamination in the respective waste sorting/receptacle bins	• Interviewee believes that dining staff do it best, followed by faculty, then students; also believes that 50% of students are compliant with waste sorting	• Interviewee believes that dining staff do it best, followed by everyone else; also believes that faculty and staff are not as good as they think in being compliant with waste sorting	• Interviewee believes that there is a strong sustainability culture on campus, which includes the compliance of waste sorting at dining, primarily by dining staff (student works) because of the program's request of clientele to leave their waste on trays
Compliance is great enough where no more than 10% contamination is experienced in receptacle bins dedicated to compost	• While there is no data on % contamination in compost receptacle bin, I gathered observational data on clientele's general behavior during the waste sorting process, *results are described **below***	• While there is no data on % contamination in compost receptacle bin, I gathered observational data on clientele's general behavior during the waste sorting process, *results are*	• There is no data on % contamination in compost receptacle bins • No data was gathered on clientele behavior as the location of PLU's waste sorting station did

	• 19% (5/26) clients observed were fully in compliance with SPSCC's institutionalized recycling and composting program; this group was compliant without needing to refer to the signs/prompts, implying that most clients at SPSCC who sort waste correctly know how to do so on their own/from previous accords • 16% (4/26) observed were partially in compliance with SPSCC's institutionalized recycling and composting program; this group tended to pay attention to the signs and prompts that complemented bins; however, their ability to sort correctly was	*described **below*** • 70% (38/54) clients observed were fully in compliance with PLU's institutionalized recycling and composting program; this group was nonchalant during their waste sorting process and compliance with the program (no signs/prompts used), implying that most clients at Evergreen who sort waste correctly know how to do so on their own/from previous accords • 8% (4/54) observed were partially in compliance with PLU's institutionalized recycling and composting	not allow for unobtrusive observation

	mixed; this implies that signs and prompts have room for improvement in terms of getting people to sort waste correctly • 65% (17/26) observed were not at all in compliance with SPSCC's institutionalized recycling and composting program; this group tended to be in a rush and/or careless as they ignored signs and recycling/compost bins as they went straight to the garbage to input all their waste (even if it was a material that could be recycled/composted) • Overall, bad compliance as over 50% of my sample make up the group who did not at all	program; this group sorted waste into the compost bin but also left items around such as plastic bottles or left items on the tray; the dining center does not have bins for items such as recyclables because they do not sell such items; however, may consider signs/prompts or infrastructure for recycling such items because they cannot control it is clientele bring them from outside the dinging center • 22% (12/54) observed were not at all in compliance with PLU's institutionalized recycling and composting	

	attempt to comply with the program's waste sorting process	program; this group tended to be careless as they ignored compost bins as they went straight to the tray center to place their trays on the conveyer belt containing all their waste • Overall, as full compliance was met by nearly 80% of my sample despite their being no signs or prompts; this success could be due to sense of campus culture?	

Table 9: Program Evaluation and Metrics

***Components* of the "Envisioned Ideal"**	**SPSCC**	**Evergreen**	**PLU**
Targets (quantitative metrics) set for program success such as: largest maximum % of contamination allowed in each type of waste receptacle bin (composting, recycling, landfill trash, etc.)	• Targets (quantitative metrics) for program success were not established and/or disclosed • Qualitatively, success was envisioned as "diverting everything possible out of the waste (landfill garbage) stream by increasing recycling and composting	• Targets (quantitative metrics) for program success were not established and/or disclosed • Qualitatively, success was envisioned as having compost bins everywhere on campus, a waste stream that is truly integrated and a population that is knowledgeable on how to comply with proper waste sorting	• Targets (quantitative metrics) for program success were not established and/or disclosed • Qualitatively, success was envisioned as diverting waste from the landfill, food waste reduction, high compliance in the process of sorting waste by dining staff, and a strong culture of sustainability by all those on the PLU campus
Periodic audit or evaluation exercise to measure program success, and then to consciously use program evaluation data as a means for	• Intentional, periodic audits/evaluation exercises to lay out metrics achieved/not achieved relative to program goals are	• Intentional, periodic audits/evaluation exercises to lay out metrics achieved/not achieved relative to program goals are	• Intentional, periodic audits/evaluation exercises to lay out metrics achieved/not achieved relative to program goals are

improvement	nonexistent • Waste audits are done "every now and then" in conjunction with Earth Day and helps gauge compliance and waste patterns on campus; however, it is not clear how the resulting information is disseminated or used	nonexistent • Interns and volunteers are relied on for more quantifying metrics during Recyclemania to check compliance and contamination levels of each waste bin and the resulting information is reported back to college in both formal and informal settings, then used as a catalyst to encourage program improvements	nonexistent • My interviewee conducts walkthroughs frequently, usually several times a week to qualitatively gauge dining staff's waste sorting and verbally follow-up with them should glitches such as contamination occurs; Recyclemania is the outlet used to check compliance and contamination levels of waste in terms of quantitative metrics and these results are reported back then used as a baseline to improve the program
Observe clientele's general behavior when sorting waste and conduct surveys to get a gauge of the complementary	• No data found on this elemental component	• No data found on this elemental component	• No data found o this elemental component

prompts for action (photos, text, etc) or lack thereof next to bins to specifically find if they are a barrier or not to compliance			
Experience no more than 10% contamination in compost (10% was the number revealed in my research that represents the maximum percentage of contamination allowed by LeMay in Evergreen's composting stream)	• No data found on this elemental component	• No data found on this elemental component; however, interviewee stated that 2009-10 year experienced garbage bins with up to 70% of the materials being compostable or recyclable	• No data found on this elemental component

5.3. PROGRAMS COMPARED

As represented in the above tables, both similarities and differences exist across the three campuses studied as well as between each campus and the envisioned ideal. This section elaborates further on these characteristics and provides a clearer understanding of how these composting programs are phenomenologically occurring. Some components are carried out well by all campuses, but in some cases, one campus does much better than the two others. Finally, in the context of the envisioned ideal as defined by my research, I make recommendations for how each campus could improve their composting program.

5.3.1. Comparing Components Across the Three Cases Studied

Sustainability Culture

Sustainability culture across all three cases was evident in that each campus has made numerous conscious efforts that contribute to sustainable thinking and practices. All cases have had on-campus magazine issues dedicated solely to sustainability; have had three years of experience of implementing an institutionalized composting program; participate in Recyclemania; are signatories of the American College & University Presidents' Climate Commitment (ACUPCC); have dedication from faculty, students, and staff in campus sustainability efforts through organizations as well as committees; and have regularly offered courses in environmental studies.

While there were great similarities across all cases, there were also some great differences in terms of campus sustainability culture. In particular, I found

Evergreen and PLU to be further along than SPSCC in terms of deepening their commitment to building a sustainability culture on campus as they have had sustainability terminology integrated into multiple areas of their institutional website; have participated in the Sustainability Tracking Assessment & Rating System (STARS) through the Association for the Advancement of Sustainability in Higher Education (AASHE); have integrated biodegradable materials into their dining program; and have made the commitment to integrate themes of sustainability into all academic courses.

In conclusion, I found PLU to have a slight edge over Evergreen because of the institution's additional commitment to the Talloires Declaration, followed by SPSCC in terms of sustainability culture.

Behavior-changing Strategies

Behavior-changing strategies seem to be one of the more complex components to integrate into composting programs. While the concepts of social marketing (SM) and community-based social marketing (CBSM) were familiar to all interviewees within each case, only Evergreen and PLU utilized these tools to promote the adoption of specific compliance behaviors with their respective recycling and composting processes. Both Evergreen and PLU mainly targeted students to get them to improve their ability to properly sort waste by marketing strategies such as lowering barriers and increasing incentives to partake in such behavior. While SPSCC sees the potential of behavior-changing strategies such as SM and CBSM, their program has not yet been able to invest in these practices.

In conclusion, I found that both Evergreen and PLU are further along than SPSCC in terms of consciously practicing behavior-changing strategies in their programs.

Prompts for Action

While each case studied has a composting program that requires specific actions and behaviors in terms of complying with their waste sorting process, prompts for action were an evident component only at SPSCC and PLU. Signage in the form of stickers, photos, and texts are used throughout their dining centers, in particular around the waste sorting stations within those dining centers. The posted signs all attempt to prompt dining clientele to properly sort and handle their waste according to each respective program. Evergreen most likely did not dedicate the use of signage to prompt clientele on how to sort their waste because their program only provides the option for compost at their main dining center, The Greenery.

While SPSCC and PLU had different expectations in terms of action as well as behavior from their dining clientele, both case's use of signage in respect to their unique programs was appropriate. Furthermore, SPSCC used color codes for their assorted waste bins and complementing signage as well as some specialized lids to further strengthen their prompts for action. While PLU did not use color codes, their bins were very organized, clean, and utilized specialized lids.

I could not conclude that any one campus stood out over the others because each program expected different actions and behaviors from their respective dining clientele.

Compliance

Compliance in this research was viewed from the perspective of each case's interviewee and my own perspective through direct observation. From the interviews conducted, the dining staff from each campus was believed to be the most compliant with their respective recycling and composting sorting processes, followed by faculty and then students. This common perspective made sense because of dining staff's daily exposure to their respective campus' waste handling goals and strategies, and for some, a means to their livelihoods.

Through my observation, dining clientele at each campus exhibited a variety in levels of compliance. Compliance in each case was different and defined in respect to their dining center's expectations of clientele. Observations from PLU were omitted because of the unique circumstances of the waste sorting station as well as the expectation of dining clientele to simply leave their waste on trays rather than sort it themselves. Overall, compliance was impressive at Evergreen, with nearly 70% of the clientele observed being fully compliant with the composting program. Compliance at SPSCC was much less impressive, with only 19% observed to be fully compliant.

While PLU produced no direct observations, I conclude that PLU experiences the best compliance out of all cases, followed by Evergreen and then

SPSCC. This is based on the assumption that dining clientele at PLU simply leave their wastes on trays for dining staff to sort. PLU's request for dining clientele to leave their wastes on trays is a much less complex expectation than for the self-sorting of wastes taking place at SPSCC and Evergreen. The request for clientele to leave wastes on trays is unique to PLU's program. By definition, compliance in the composting program is met when clientele follows the simple task of leaving their wastes on trays. While compliance at PLU is high, it was not clear to me in terms of how much of a monetary investment is made towards funding positions dedicated to properly sorting waste.

Program Evaluation and Metrics

In terms of program evaluation and metrics component of composting programs, all cases seemed to struggle. Diverting as much waste as possible from landfill garbage to recycling and composting streams was part of the vision towards success in all cases. The interviews revealed that waste audits are done sporadically, usually when it is convenient, such as in conjunction with Earth Day or Recyclemania. In addition, my interviewee from PLU was dedicated in her periodic walkthroughs to qualitatively gauge the dining staff's compliance and conduct follow-ups if necessary.

However, well-established quantitative metrics were not evident in any of the cases in terms of defining targets for success such as setting a maximum percentage of contamination allowed within a specific waste receptacle bin. While prompts for action are an important component for programs to get dining

clientele to behave a specific way with waste, there was also no evidence of attempts to evaluate the effectiveness of signage used to complement waste receptacle bins.

Although this component required composting programs to integrate quantitative metrics as targets for success which is absent in all cases, I found PLU's dedication to conduct walkthroughs periodically, several times a week, respectable, a practice that neither Evergreen nor SPSCC carry out.

5.3.2. Approaching the "Envisioned Ideal": Final Thoughts and Recommendations

In this section, I briefly summarize the efforts of each case's composting program and made recommendations based on the "Envisioned Ideal" defined in this thesis research. While some cases fare better than others, I applaud any institution that takes on the effort to implement a waste-minimizing program, as it is a complex ordeal often with dynamics beyond one's control. My recommendations focus on what I found to be the leverage points for each case towards the "Envisioned Ideal." A list of recommendations for any of the cases had the potential to become long and arduous, so I was selective in the concluding suggestions regarding each program's next steps.

South Puget Sound Community College (SPSCC)

SPSCC was a leader of colleges in its local region in terms of waste management as it piloted Thurston County's composting program over five years ago. This two-year college has integrated good infrastructure for their dining

clientele to sort their leftover wastes. Waste receptacle bins were separated by compostables, recyclables, and garbage. Bins were color coded by waste type and have complementing signs with identical color codes that serve as prompts for action.

Despite the limitations such as having a more transient student population and the smaller budget it experiences as a two-year institution, SPSCC's efforts in improving its waste stream through increased composting are admirable. However, the gap between my interviewee's perception of at least 50 percent of students being fully compliant and my direct observations of a combined only 35 percent of students being fully or partly compliant was strikingly large. Given what I have learned about SPSCC's composting program in respect to its budget, I first recommend that more attention be paid to the compliance of waste sorting by evaluating the contents of receptacle bins. From there, the composting program can polish its current infrastructure and logistical processes and then work on being strategic in the next steps for improved compliance and overall program expansion. In the case that SPSCC dining's budget grows, other changes can be implemented such as the investment in biodegradable flatware as well as the research and development of SM and CBSM programs that could help improve the sustainability culture on campus and waste sorting behavior of dining clientele, particularly that of the transient student population.

The Evergreen State College (Evergreen)

As an institution, Evergreen has been a leader in environmental studies and sustainability education and continues to make transparent efforts toward sustainability. The Greenery, Evergreen's main dining center, has implemented a composting program that leaves the choice only for composting. The program is systematic by producing only compostable food items as well as utilizing only biodegradable or reusable plates and utensils. This strategy is consistent with and rationalizes their choice of only providing composting bins and a tray/dish return station to their dining clientele. The Greenery's plan not only encourages increased composting but also promotes less waste because disposable materials are not available for dining clientele to use. As dining clientele sort their leftover food waste as well as soiled napkins in the provided composting bins and then return their reusable plastic trays, they find themselves being fully compliant with the composting program.

While the strategy to serve only compostable items and to provide just compost bins for handling waste is well intended, it is not without its drawbacks. The Greenery has no control over dining clientele's freedom to bring in items such as cans of soda, plastic bottles of water, and glass bottles of juice; this is a problem. There seems to be an assumption by The Greenery's composting program that these occurrences are negligible or that it is an exogenous variable, which can be overlooked. Compliance with the composting program is more difficult for dining clientele who bring in outside items such as plastic bottles and aluminum cans because once they sort their leftover food waste in composting,

there is so place for recyclables. This lack of choice forces dining clientele to dedicate themselves to hold onto recyclable items until they find a bin for them. Furthermore, this situation has the potential to promote greater landfill waste or contamination of compost bins.

Evergreen seems to have a good degree of sustainability culture within its campus but I would like to see some improvements made in the composting program in The Greenery. I recommend that the Greenery integrate signs that complement compost bins, which would include the prompt for "compost only" as well as a sign that informs dining clientele on where to sort recycling and garbage, should those items be brought into the dining center. As an alternative, The Greenery can also continue to produce as well as provide items that are compostable and biodegradable to dining clientele while introducing smaller receptacle bins dedicated to recycling and garbage to address the sorting of those items as they inevitably make their way into the dining center.

Pacific Lutheran University (PLU)

PLU has a great history in the commitment to sustainability, including its role in the Talloires Declaration, a less transparent yet important commitment created by university administrators that set the stage for PLU to become an environmental sustainability leader in higher education. The campus continued its momentum by signing other sustainability commitments such as American College & University Presidents' Climate Commitment (ACUPCC). During my research, I found that the composting program implemented by PLU is well-

integrated, with support from faculty, staff, and students. Dining staff who are students particularly play a large role in keeping compliance of waste sorting high because they are specially trained to do so and because waste sorting is part of their livelihood duties. Efforts at PLU go as far as inviting students who reside off-campus to bring in items for sorting into the campus' recycling and composting stream.

While the presence of the sustainability culture at PLU is undeniable, I would like to see some evaluation of it on the dining clientele side. The composting program is set up so clientele simply leave their wastes on trays to meet compliance; there is little to no opportunity for clientele to *not* comply with the program. With PLU dining's strong focus on creating a sustainability culture on campus, I find it important to not only see how well dining clientele comply with the "leave waste on trays" prompt but to also get a gauge of their understanding of how to appropriately sort waste, in the case that they had to do so on their own as most recycling and composting programs in any setting is a self-sorting system.

I recommend that PLU dining invest in learning if their dining clientele are able to properly sort waste on their own. This process will not necessarily improve compliance in the composting program as it is set up now, but create an understanding of how much depth there is in the campus sustainability culture in terms of waste handling. In addition, I recommend that PLU establish specific quantitative metrics as targets for success. In the case that compliance becomes

nearly perfect after continually meeting high standards of targets for success, the composting program can move on to identify other methods to improve.

6. CONCLUSION

Efforts towards environmental sustainability on the local, national, and international levels continue to grow steadfastly, regardless of sector. From the implementation of recycling programs to initiatives on green power and manufacturing of more efficient automobiles, sustainability comes in all forms and on all scales. While my research was on the relatively small-scale sustainability effort of composting programs on college and university campuses, it revealed some points of positive recognition as well as of concern.

College and universities are institutions of higher education that can have considerable influence not only on their faculty, staff, and students, but also on the broader population. As implied by the Report and Declaration of the Presidents Conference in 1990 (known as the Talloires Declaration), institutions of higher education serve as a catalyst and vessel for creating an environmentally sustainable future. The culture of a college campus is an important factor as well as indicator of the institution's scope of sustainability practices but, as I have learned in this case of composting programs, the story is much more complex.

Composting programs on college campuses serve as a model for integrating new waste practices as a sustainability effort, but I did not find an ideal program in any of the three cases studied. Through my research, I gathered a vision of an ideal composting program, which is characterized by a campus-wide culture of sustainability; commitment to environmental and sustainability studies in the curriculum; as well as a waste sorting system that successfully uses behavior-changing strategies through social marketing, effective prompts for

action, and realizes its targets of high compliance. While I do not believe there is an exact, one-type-fits-all solution, each ideal component listed is important for *doing the right thing* and establishing the success of any composting program, regardless of its context.

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APPENDIX A

Interview Guide:

1. Interviewee Background
    a. How long have you worked here in the job that you have now?
    b. Did you have a previous position in the dining services program here before taking on your current job?

2. History of the Program
    a. When did your institution begin the program?
    b. Who jumpstarted the program?
    c. In what context did this program develop? In other words, were waste reduction efforts on campus part of a larger college/university sustainability initiative, or was it something else?
    d. Is the composting program just in the dining centers, or is it part of a larger campus-wide waste stream reduction effort?
    e. What were the initial goals of the program? Were they formally written goals, or just informally shared goals?

3. Logistics of the Program
    a. What items are collected for composting?
    b. Where are the compostable items collected (bins?)?
    c. Where do the compostable items go after being collected?
    d. How often are the compostable items collected?
    e. Where are the compostable items transported to undergo the composting process (on-campus composter, off-site composter)?
    f. Who handles the compost material (staff, volunteers, compost contractors, etc.)?
    g. What are the program costs like in terms of infrastructure and staff personnel?
    h. Is the program, as it is in place now, cost-effective?

4. Success of the Program and Evaluation
    a. What does success look like in terms of the goals you have for the program?
    b. Do you have specific targets for success and if so, what are they?
    c. Have these targets changed over time?
    d. How is the program evaluated? Are certain targets measured?
    e. What steps follow program evaluation and how are results used or communicated?

5. Glitches and Challenges of the Program
    a. What challenges or problems have you encountered?
    b. What is done with this information?
    c. What adjustments have you had to make as the program has evolved?

6. Compliance Patterns Among the Program's Clientele
    a. How well do dining staffs perform in sorting food waste (pre and post-consumer)?
    b. Do you have a gauge of how well faculty and staff perform in sorting food waste and if so, what is it like?
    c. Do you have a gauge of how well students perform in sorting food waste and if so, what is it like?
    d. Have you gotten any informal feedback from people who use your dining services about the composting program and if so, what has it been?

7. Communication of Composting and Sorting Foot Waste to Staff, Faculty and Students
    a. How is participation garnered?
    b. How is encouragement moved forward?

8. Marketing Techniques
    a. Do you know what the term social marketing or community-based social marketing (CBSM) means?
    b. Has your program consciously used social marketing techniques to encourage participation in the composting program?
    c. Has your program consciously used CBSM?
    d. What have you seen as barriers to better compliance in composting and properly sorted food wastes?
    e. Has using social marketing (and CBSM) thinking helped your program in any way?

9. Does the food service program practice other forms of sustainability?
    a. Are biodegradable utensils used?
    b. Are biodegradable plates used?
    c. Are biodegradable cups used?
    d. Are special napkins used?
    e. Is Styrofoam used?
    f. Are there any other sustainability-practices in place in the dining service?
    g. Are there any other sustainability related practices in your future plans?

10. Miscellaneous/Other
    a. Is there anything else you would like to tell me about the program?

APPENDIX B

Descriptive Information Request

- # of enrolled students
- # of residential (on-campus living) students
- # of staff (faculty members) at each campus
- # of staff (faculty members) eating at food service center(s)
- # of meals served/day
- size of dinging services staff
- waste handling cost
    - Does money come from dining services or elsewhere to pay for waste handling?
    - Do you have specific details on the budge for waste handling (budgest from residential and dining services, facilities, campus)?
- Landfill (non-compostable) waste contractor
    - Who hauls it and how often?
- Compostable waste contractor
    - Who hauls it and how often?
- Recyclable waste contractor
    - Who hauls it and how often?

ARTIFACTS REQUEST

- Written Plan(s) – on paper or on a website
- Report(s) – on paper or on a website
- Sign(s)
- Handout(s)