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# Peer to Peer Sustainability Outreach Programs: the Interface of Education and Behavior Change

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PEER TO PEER SUSTAINABILITY OUTREACH PROGRAMS:  
THE INTERFACE OF EDUCATION AND BEHAVIOR CHANGE

A Dissertation Presented

by

Christina Erickson

to

The Faculty of the Graduate College

of

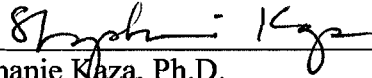
The University of Vermont


In Partial Fulfillment of the Requirements  
for the Degree of Doctor of Philosophy  
Specializing in Natural Resources/Rubenstein School of Environment and Natural  
Resources

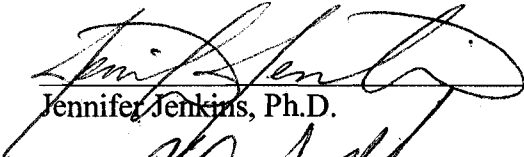
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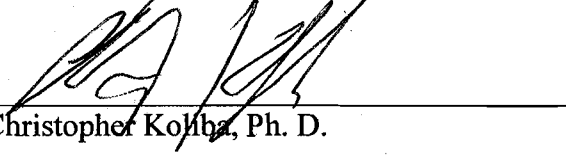
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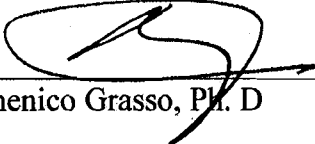
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## **ABSTRACT**

The current climate change crisis demands immediate and creative approaches for systemic shifts in our culture and actions. In the past several decades, education has played a role in bringing awareness regarding environmental issues, but has not necessarily resulted in all the needed behavior changes. A newer approach combines psychological theories with outreach and marketing techniques. This is the rationale behind a new kind of campus activism, peer to peer sustainability outreach programs – the subject of this research.

This dissertation research aims to identify current peer to peer sustainability outreach programs and their operations; develop process and outcome evaluation protocols for the programs; clarify administrative procedures and their relationship to a program's success; and gain an understanding of how these programs contribute to the growing field of sustainability education and related human behavior change. Methods used include: case studies, peer surveys, interviews and focus groups, and program record analysis.

These studies found that programs across the U.S. employ a variety of organizational models and delivery methods that are best suited to individual campuses' needs and resources with common motivations and desires for assessment techniques. An in-depth evaluation of one program found strong educational and cultural impacts, positive ecological and financial impacts, with a need for broadened outreach approaches and feedback loops. Combining findings and literature from social psychology, peer education, and program evaluation, this research concludes by identifying elements of successful and effective programs.

## ACKNOWLEDGMENTS

This work is a culmination of four years of experience as a scholar and practitioner of Eco-Reps Programs, at the University of Vermont (UVM). My experience would not have been possible without the inspiration, dedication, and advocacy of one individual—Gioia Thompson—the Director of Sustainability at UVM. Gioia was a major source of inspiration for me to consider coming to UVM for my doctoral work and made it financially possible by shaking each and every budget bush within reach. Since that time, she has made it possible for others interested in sustainability work to have funding as Graduate Fellows for the Office of Sustainability—a source and opportunity that did not exist when I began in 2006.

I would also like to recognize Erica Spiegel, Supervisor of the Recycling and Solid Waste Department, who began the Eco-Reps Program at UVM in 2004. Her vision and tireless efforts striving for a zero waste campus have been largely motivating for me. The program would not be where it is today without Erica's efforts, along Stacey Miller, Director of Residential Life, who has continued to provide the funding for Eco-Reps. Of course, I must also acknowledge the student Eco-Reps who have made my experience very gratifying. I am relieved that you are the leaders of tomorrow (and today!)

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## PROLOGUE

As far back in my schooling as I can recall, the phrase “education is key” has been used time and time again, from issues spanning from environmental to social, from knowing what to recycle to getting people to vote. The basic premise is that if people know about something, they’ll do something about it. From my days as an undergraduate studying environmental studies and sociology to being a naturalist and outdoor guide, to earning a master’s degree in ecological education and being active in the campus sustainability movement for the past ten years, my approach has always been from the education point of view. Nearly everything I read or saw or heard reinforced the idea that if people were educated, they would make better choices about their time on this planet—how to live better lives for themselves, for the earth, and for future generations. And yet, the more that I have studied and had experiences in the field, the more that I have found that that is not necessarily the case. At the same time, I have not abandoned the concept that education is important, or even an essential part of the equation. In thinking of what it means to have a sustainable world, it is clear that human behavior needs to move in a different direction – from a negative imprint to regenerative solutions. Education is, in fact, “key”, but is only part of a greater formula.

My studies of sociology taught me to seek the causes of our societal and environmental issues. As our world is seemingly headed into more uncertain times, I ask the question, *Why?* What is the root of these problems? My involvement in the environmental field as a naturalist, an advocate, and an educator taught me that when people care about a place, they are more apt to take care of it. But, what makes people

care? How can we get people to care about taking care of a place? To take care of each other? To take care of themselves? What is the best way to encourage people to make decisions that benefit the common good, and not just meet individual needs? What is the most effective venue for affecting positive change? What kind of education is the most successful for modifying behavior?

I began my Eco-Reps experience in the fall of 2006 when there was an opening for the Program Coordinator position at the University of Vermont. I found this to be the perfect opportunity to put my bigger life questions to the test; the perfect marriage of study, practice, and application—or, praxis. Building on my education background, I wanted to learn more about the human and social psychology of individuals' behavior. I wanted to know more about providing leadership and training opportunities for interested students who wanted to take action about our global environmental problems. I also wanted a greater understanding of how one begins to measure the impact of education and outreach efforts. In the past four years of simultaneously running the UVM Eco-Reps Program and studying similar programs nationally, I've learned a great deal and have been able to immediately apply that knowledge in my working life.

I wouldn't, by any means, say that I have figured out how to be a perfect sustainability educator, but I can honestly say that I understand the complexity of it all much more. As a result of this dissertation I know more about the psychology of human behavior and how to incorporate that into program design and implementation. My goal is to share that with other practitioners.

## CHAPTER 1: INTRODUCTION

Simply stated, it is widely accepted that the Earth and its human residents are in ecological and social peril.

...we are consuming renewable resources faster than they can regenerate. Forests are shrinking, grasslands are deteriorating, water tables are falling, fisheries are collapsing, and soils are eroding. We are using up oil at a pace that leaves little time to plan beyond peak oil. And we are discharging greenhouse gases into the atmosphere faster than nature can absorb them, setting the stage for a rise in the earth's temperature well above any since agriculture began (Brown, 2006).

These changes in the natural world can mean devastating situations for humans globally. In the United States, we have individuals who no longer know how to connect with their communities (Putnam, 2000), and that loss of social capital has far-reaching implications directly on human communities, but indirectly on the natural world. We are faced with a global crisis that depends on humans coming together to create solutions. People need the ability to reach out to their neighbors to work on these issues together. Here in the U.S., we find problems of over consumption, or "affluenza" (De Graaf, Wann, & Naylor, 2002), yet with this sense of buying more, more, more, people are not finding happiness (McKibben, 2007). McKibben (2007) recognizes the need for a fundamental shift in this regard, and puts out the call that we, particularly Americans, need to make major changes in our living habits—especially our sense of what know as 'progress'.

People are not oblivious to these major problems. Public opinion polls of the late 1980s and early 1990s showed that people in the United States are interested in environmental issues and yet had not made many significant changes in their lifestyle on behalf of environmental protection (Dunlap, 1995; Dunlap, Gallup, & Gallup, 1993;

Dunlap & Scarce, 1991). However, recent Pew Research Center polls show a sharp drop in the environment being a top policy priority for Americans (The Pew Research Center for the People & the Press, 2009).

According to Kempton, Boster and Hartley (1995), there is a general cultural consensus among Americans that is pro-environment. Environmental values in the United States have basis in religion/spirituality, human-based/utilitarianism, and biocentricity. What the authors found inconsistent, however, is the lack of action that goes along with the value systems. Values do not act alone and have not been found to be the sole motivation for behavior change. Individuals may hold values and beliefs, but other barriers exist for changing behaviors. An in-depth look at motivations and behaviors to behavior change will follow in the next chapter.

So what are people to do? Recognition of global environmental and social problems exists, and there are those who care about these issues and have aligning values. There are others who are taking a more active stance. After years of receiving business cards from thousands of individuals who work for various progressive causes, Paul Hawken (2007) decided to undertake a huge cataloging of the environmental, social justice, and indigenous peoples' rights organizations found all over the globe. His findings included a high number of people and organizations existing without any one leader or one umbrella cause. Hawken declared this a movement in itself, but one of a much different nature than other movements of our time. Social movements defined are, “a diffusely organized or heterogeneous group of people or organizations tending toward or favoring a generalized common goal (Random House, 1991).” Hawken (2007) wrote,

Maybe the best way to understand the future implications of the movement's daily actions is to remember [Ralph Waldo] Emerson's moral botany: corn seeds produce corn; justice creates justice; and kindness fosters generosity. How do we sow our seeds when large, well-intentioned institutions and intolerant ideologies that purport to be our salvation cause so much damage? One sure way is through smallness, grace, and locality (Hawken, 2007).

These mini-movements are springing up in communities all over the United States and throughout the world, many focusing on their particular locale, but with a greater purpose in mind.

Campuses have historically been places of activism from civil rights to anti-war. The campus greening movement, and now a larger movement around global scale problems such as climate change, also find their roots on college campuses. Starting with efforts in waste management and energy conservation in the 1970s, which were not often linked together, the campus sustainability movement of today is a flourishing, global network of people and institutions working together on projects and policies that work toward ecologically sound, economically equitable, and socially just ends. Recent examples include: 350.org (350.org, 2009), an international day of climate action; Powershift (Energy Action Coalition, 2009), a convergence for young people held in Washington, DC, rallying around finding solutions for climate crisis; and Focus the Nation, a nationwide teach-in around global warming solutions for the United States (Focus the Nation, 2007) . These events represent the groundswell of the sustainability movement. It should be noted that this groundswell is coming from a combined effort among faculty, staff, and students. These events and campaigns are building strength because they are building networks among campuses, communities, the non-profit sector,

for-profit businesses, and government. This growing network has a number of supporting organizations enveloping it, on both a student and professional level. The Association for the Advancement of Sustainability in Higher Education (AASHE), founded in 2006, has become the preeminent professional organization for campus sustainability practitioners and acts as a clearinghouse for a wealth of resources. Other notable organizations include National Wildlife Federation with its Campus Ecology program and the Energy Action Coalition.

Such collaborative movements have been noted by Isham and Waage (2007) as significant for the rebuilding of social capital. “In this way, small, humble efforts are more important than they may first seem, and as the climate movement grows, this process of face-to-face persuasion and collaboration is building robust social networks (Isham & Waage, 2007, p. 19).” Small collaborating movements have power because they use the ripple effect.

A ripple effect works because everyone influences everyone else. Powerful people are powerful influencers. If your life works, you influence family. If your family works, your family influences the community. If your community works, your community influences the nation. If your nation works, your nation influences the world (Shields, 1994, p. 15).

But do these movements have lasting power? Will they create the solutions, be successful in changing individuals’, corporations’, and governments’ actions? In short, will they “stick”? Brothers Dan and Chip Heath (2007) explore this idea in their book *Made to Stick: Why Some Ideas Survive and Others Die*. This book follows up Malcolm

Gladwell's (2000) *The Tipping Point*, which explored the idea of change and how it can be at times, epidemic. “There is no 'formula' for a sticky idea... But sticky ideas do draw from a common set of traits, which make them more likely to succeed (Heath & Heath, 2007, p. 15).” The common set of traits follows the Heath brothers’ six principles of simplicity, unexpectedness, concreteness, credibility, emotions, and stories. These traits are characteristic of behavior modification efforts such as Community Based Social Marketing, a concept that will be explored further in the next chapter.

All of this helps set the scene for a relatively new type of program found on college and university campuses across the United States and Canada today, a program that seeks to shift student culture around pro-environmental behaviors through education and outreach. The first of these peer to peer sustainability outreach programs (often referred to by the commonly used name “Eco-Reps Programs”) emerged at Tufts University in 2000 (Rappaport & Creighton, 2007). The main motivation for the creation of this program, and for the more than 45 programs that exist today, was a desire to extend outreach around issues such as waste reduction and energy conservation to a broader student audience, beyond those students that were already “eco-minded.”

These programs aim to connect peer education with behavior change—but do they work and how do we know they work? That is focus of this research. More specifically, my overarching research question is: *What does a study of peer to peer sustainability outreach programs tell us about the effect of education and outreach initiatives on human behavior change?*

Before continuing it is important to note, for the sake of full disclosure, that I am the Program Coordinator of the University of Vermont Eco-Reps Program. Therefore, as I play dual roles in this research as both program coordinator and researcher, I will be including both analysis and reflection on this work, as is the way in Action Research (Herr & Anderson, 2005). The benefits and limitations to this approach will be discussed further in the Methodology chapter.

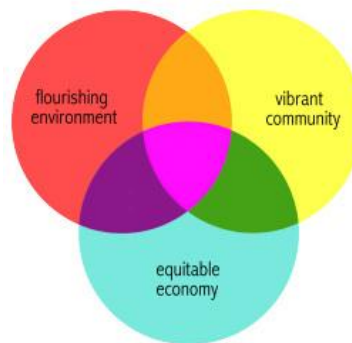
With the overarching research question in mind, this research occurred in stages that built upon each other. First, I conducted an examination of the current Eco-Reps Programs—who they are, what they do, and how they do it, which also explored program coordinators’ views on best practices and key challenges faced by their program. This stage included a survey of program coordinators across the United States and Canada asking about the logistics of their programs. This initial examination was followed by an in-depth look at four particular programs, which studied the impact that programs’ administrative structure and institutional support has on program outcomes. This stage included four case studies of each program as well as a cross-case analysis and applied the cases to a program sustainability framework.

The second stage included a program evaluation of the University of Vermont Eco-Reps Program, which investigated the perceived value of the program, residential student behavior change, and ecological impact. This stage included a survey of residential students, interviews and focus groups with key stakeholders, and a review of campus utility statistics.



Before progressing any further, however, it is important to be clear about what is meant by sustainability and understand the underlying values supporting it. The field of sustainability, a still relatively new field and one that is rapidly evolving, has a number of values that are associated with it. “Values are abstract ideals, such as freedom, equality, and sustainability....Values define or direct us to goals, frame our attitudes, and provide standards against which the behavior of individuals and societies can be judged (Leiserowitz, Kates, & Parris, 2006).” While there may be disagreement over specific wording, three core values that help direct, frame and provide standards for sustainability include, according to a review of literature conducted by the U.S. National Academy of Science, nature, life support systems, and community (Leiserowitz et al., 2006).

These three values are often seen in a Venn diagram as the three interlocking circles. In the case of Figure 1 below, “flourishing environment” associates with “nature”, “vibrant community” equates with “community”, and “equitable economy” likens to “life support systems.”



*Figure 1. Sustainability Diagram (Jones, 2000)*

These three values are also known as the “three Es” of ecology/environment, economy/employment, and equity/equality (Edwards, 2005). Sustainability advocates and

philosophers continue to develop sub-values, principles, and practices for each of these three core values.

The first E, referring to environment/ecology/nature, broadly calls for sustaining the Earth, biodiversity and ecosystems (Leiserowitz et al., 2006). These values draw heavily from key ecological concepts such as relationships, study of form and pattern, networks, self-organization, and flexibility and diversity (Capra, 2004). Edwards (2005) defines this as needing to think in a more systemic, long-term perspective that truly considers the concept of limited resources and how much ecosystems can withstand human impact. Human existence is dependent on major ecosystems functioning in order to provide clean air and water that make all other life possible. This is the major premise behind the concepts of limits to growth (Meadows, Randers, & Meadows, 2004) and ecological footprinting (Wackernagel & Rees, 1996). Further, beyond human survival, or finding instrumental value in the Earth's resources, is that of the Earth's intrinsic value—that it is valuable for itself and not just for its uses (Des Jardins, 2001).

The second E, referring to economy/employment/life support systems, broadly calls on sustaining the ecosystem services and natural resources necessary for human survival while developing economies that can support life (Leiserowitz et al., 2006). This value shows a divergence from traditional environmentalism in that it also recognizes the need to provide, “secure, long-term employment without jeopardizing the health of ecosystems (Edwards, 2005)” rather than solely preserving natural resources. This value is a key concept behind the principle of natural capitalism, which focuses on high resources productivity and efficacy; design using concepts of biomimicry (Benyus, 1997)

and cradle to cradle (McDonough & Braungart, 2002); and management practices that enhance human and natural capital (Hawken, Lovins, & Lovins, 1999).

The third E, referring to equity/equality/community, calls for sustaining cultures, groups and places and improving social capital and institutions (Leiserowitz et al., 2006). This value contains recognition for the well-being of individuals and communities and that the two are interdependent. It also calls for an equitable distribution of resources and addresses concepts of discrimination, poverty, and access to goods and services (Edwards, 2005). This third area shares many values of United Nations initiatives, such as the Millennium Declaration which called for fundamental values including freedom, equality, solidarity, tolerance, respect for nature and shared responsibility (Leiserowitz et al., 2006). Unfortunately, as these are much broader concepts and ideals, they seem to be harder to act upon than those in economy and environment.

Two interconnected philosophical premises that are found in sustainability include ecological world-views and systems thinking. Rather than studying a single specie or theory or concept, sustainability attempts to understand the relationships and interconnections between a subject or issue. It is therefore going beyond knowledge of a subject, but seeking to find understanding of a subject. To truly *understand*, it means that we can explain, interpret, apply, have perspective, empathize, and have self-knowledge of that subject (Wiggins & McTighe, 2001). These philosophical premises also go beyond a reliance on science and technology to find answers, but also include a deeper call to include ethics and values (Des Jardins, 2001).

In his work as a physicist, Fritjof Capra (Capra, 1983) found that the traditional mechanistic world view of Cartesian-Newtonian science no longer fit for studying current complex modern issues. Instead, he sought a new vision that was based on interrelatedness and interdependence of all phenomena, including physical, biological, psychological, social, and cultural – or, an ecological world view. In his words, “The universe is no longer seen as a machine, made up of a multitude of separate objects, but appears as a harmonious indivisible whole; a network of dynamic relationships that include the human observer and his or her consciousness in an essential way (Capra, 1983, p. 47).”

Whole systems thinking relies heavily on this shift from mechanistic thinking to ecological thinking. To be clear,

...ecological thinking is not simply thinking about ecology or about ‘the environment,’ although these figure as catalysts among its issues. It is a revisioned mode of engagement with knowledge, subjectivity, politics, ethics, science, citizenship, and agency that pervades and reconfigures theory and practice (Code, 2006, p. 5).

Systems thinking is a framework for problem-solving that looks at all components of a related system rather than focusing on isolated pieces. Systems are dynamic, with energy, materials, and information flows (Atkisson, 1999; Capra, 1996; Meadows et al., 2004). One key concept in systems thinking is that of nested systems, or holons. Using the analogy of Russian nesting dolls, nested systems give an understanding that all systems are sub-systems of a greater whole (Sterling, 2001). Systems thinking draws knowledge

and understanding from a variety of fields and multiple perspectives, and often uses flowcharts and models to help visualize the interconnections. This is a contrast to the reductionist, linear model suggested in traditional science that tends to show problems and solutions as fragments, rather than how they connect to other pieces around them (Capra, 1983).

These philosophical premises are similar in their approaches as they rely on multiple perspectives, holistic methods, and imitate key ecological principles of relationships, study of form and pattern, networks, self-organization, and flexibility and diversity (Capra, 1999).

By clarifying the values and philosophical premises about the larger concept of sustainability, I will now continue with an exploration of the areas of literature that pertain to my particular research.

## CHAPTER 2: LITERATURE REVIEW

The literature review for this research came from three fields of study: sustainability in higher education, psychology as it relates to human behaviors, and peer education. Literature regarding sustainability in higher education shows the quick growth in a new field, which has been influenced by past efforts in environmental education. Several branches of psychology are dedicated to understanding human behavior as it relates to the environment. By selecting a few, we begin to see a framework for why people partake in certain behaviors as well as how to modify behaviors. As this research involved program evaluation of a peer education program, I looked both for examples of evaluation methodology as well as exploring the general characteristics of peer education programs. As this research focused on a particular group of peer programs, the review includes literature about American college student development, which helps to illuminate the target audience and participants of Eco-Reps programs. Finally, the literature review also includes a section on campus activism and how it has connected with the contemporary sustainability movement on campuses.

### 2.1. Sustainability in Higher Education

An early call for higher education to be a leader for the ecological age came from Thomas Berry in 1988. In a chapter entitled “The American College in the Ecological Age” in his book *The Dream of the Earth*, Berry wrote his idea of what college should be.

College should be a center for creating the more encompassing visions as well as for communicating such visions to students. The college student in this late twentieth century needs to be involved in a significant historical as well as a

significant personal process. Neither of these can function effectively without the other. College students should feel that they are participating in one of the most significant ventures ever to take place in the entire history of the planet. (Berry, 1988, p. 97).

This level of human engagement, in this case with college students, is a key aspect of sustainability education, which developed out of traditional environmental education.

### **2.1.1. From Environmental Education to Sustainability Education**

Environmental education has evolved in the past several decades, particularly in its goals, theories, and practice (Clover, 2000). The reasons for this evolution are many, but mostly stem from learning of what has and has not worked; what gaps have been left unfilled. A few key documents have guided this evolution of environmental education into a broader scope, including more aspects of human welfare and human behaviors, rather than just environmental protection.

Many United Nations programs have focused on environmental education, with a similar goal of educating the global populace in hopes that they will do their part to slow down environmental destruction and degradation (Clover, 2000). In 1987, *Our Common Future* (also known as the Brundtland Commission) was published by the United Nations World Commission on Environment and Development (WCED). It acknowledged the critical role of environmental education but claimed that it needed many improvements, including making it more inclusive of social, political, and cultural impacts and less based on science, management, and control over nature (Clover, 2000). *Our Common Future* was followed by Chapter 36 of *Agenda 21*, the United Nations document written after the 1992 Conference on Environment and Development. *Agenda 21* "...implicitly

and explicitly acknowledges that human well-being and the health of the planet are inseparable, and it seeks to reform educational systems and practices so that students can understand and act upon this truth (Federico, et. al., 2003, pp. 10119).” Chapter 36, entitled “Promoting Education, Public Awareness and Training” focused on three program areas:

- a) reorienting education towards sustainable development;
- b) increasing public awareness; and
- c) promoting training (United Nations Division for Sustainable Development, 2004).

Following *Agenda 21*, the Decade of Education for Sustainable Development (2005-2014) was adopted by the United Nations General Assembly in December, 2002, with UNESCO (United Nations Educational, Scientific, and Cultural Organization) designated as lead agency. The aim of the Decade is to encourage education for building a more sustainable society and to have aspects of sustainable development brought into all levels of education. An important aspect of the Decade is that it does not subscribe specific methods for all countries. Instead, UNESCO will work with countries to define their own activities appropriate to their needs to reach a common goal (UNESCO, 2004).

According to Baraaza, Duque-Aristizabal, and Rebolledo (2003), a critique of environmental education on an international level is that it has failed in promoting an active sense of participation among the population and hasn't raised the quality of life in lesser developed countries. Because of the varying needs all over the world,



environmental education needs to be specific to the particular context, and will be defined differently in each of those contexts (Baraaza, Duque-Aristizabal, & Rebolledo, 2003).

In the United States, traditional methods of teaching environmental education include a course supplement approach (such as Project Learning Tree or Project Wet/WILD) for K-12, a standalone course (such as a college/university level environmental education course), by infusion (such as bringing an environmental perspective into several subjects), and issue-based (most commonly recycling, endangered species, and forests and wetlands) (Elder, 2003). Strengths identified with these methods include the breadth of material covered, the diversity of approaches, and the strong grassroots approach. Weaknesses include the sense that the material is disconnected and shallow and that it does not result in an “environmentally literate” populace and that there is a significant lack of leadership, institutions and collective strength beyond the grassroots level (Elder, 2003). Others would argue that what is missing is a critical analysis of culture, particularly Western culture, and the need for a transformation shift away from the status quo (Smith & Williams, 1999). Another common critique of environmental education is that it does not result in behavior change.

Hungerford and Volk (1990) explored this very topic. Their main thesis was that environmental education must go beyond knowledge and awareness strategies for actual behavior changes to result. The authors pointed to six critical components for education that would result in behavior change, as seen in Figure 2.

1. Teach environmentally significant ecological concepts and the environmental interrelationships that exist within and between these concepts;
2. Provide carefully designed and in-depth opportunities for learners to achieve some level of environmental sensitivity that will promote a desire to behave in appropriate ways;
3. Provide a curriculum that will result in an in-depth knowledge of issues;
4. Provide a curriculum that will teach learners the skills of issue analysis and investigation as well as provide the time needed for the application of these skills;
5. Provide a curriculum that will teach learners the citizenship skills needed for issue remediation as well as the time needed for the application of these skills; and
6. Provide an instructional setting that increases learners' expectancy of reinforcement for action in responsible ways, i.e. attempt to develop an internal focus of control in learners.

*Figure 2.* Six critical components for environmental education (Hungerford & Volk, 1990, p. 14)

Lynette Zelezny (1999) undertook a meta-analysis project looking at the effectiveness of environmental education on behavior change. She reviewed and summarized current classroom and nontraditional setting intervention efforts, compared (quantitatively) the effects of the interventions on pro-environmental behavior, looked for trends as they related to active participation and involvement, and evaluated research methods of environmental education studies that aimed to improve environmental

behavior. Zelezny (1999) found that classroom interventions, with typically younger populations, had a positive effect on behavior change, while non-traditional programs, often with an adult population, saw change in approximately half of the situations. These findings challenged earlier arguments that educational interventions were ineffective (Cone & Hayes, 1980).

Smith and Williams (1999) described a holistic type of education that they feel will better respond to current needs—what they call ecological education. Their seven key principles of ecological education, showing the interconnections between humans and natural systems, include: personal outdoor experiences, developing a sense of place, community participation, knowing practical skills, expanding occupational options, having strong citizen engagement, and critiquing cultural assumptions. Ecological education represents the shift from the mechanistic paradigm to the ecological paradigm—one that is based on whole systems thinking (Caduto, 1998; Sterling, 2001).

Similar to ecological education, but with even stronger social and equity components, is sustainability education. The newest iteration of education has been called many names, each with a slight variation and each with its own proponents, something Steven Sterling (2001) examined in *Sustainable Education*. Sterling noted the importance of finding new language to match a new educational paradigm. He wrote,

The term ‘sustainable education’ implies whole paradigm change, one which asserts both humanistic and ecological values. By contrast, any ‘education for something’, however worthy, such as for ‘the environment’, or ‘citizenship’, tends to become both accommodated and marginalized by the mainstream. So while ‘education for sustainable development’ has in recent years won a small niche, the

overall educational paradigm otherwise remains unchanged (Sterling, 2001, p. 14).

In his critique of traditional environmental education, Sterling (2001) called the field both broad and fragmented. While trying to put multiple fields under one umbrella, such as environmental studies, conservation education, urban studies, in combination with parallel and related movements in social change such as peace education, world studies, and human rights education, the term environmental education no longer encapsulates and connects these issues. Hence, a new term is needed that is large enough to be catch-all.

Additionally, Sterling (2001) addressed the issue of desired behavior change from environmental education. He called this an “over-optimistic” goal, as it ignores the realities of modern society, including a larger mainstream educational system that “cancels out” more radical approaches, a larger social system that shapes the educational system rather than vice versa, and the strong influences of mass communication. Sterling therefore called for a re-claiming and re-visioning of what education is and what purpose it serves.

In defining education for sustainability for primary schools and colleges alike, Susan Santone (2003) found five key characteristics of this type of education, including: infusing curriculum with concepts that show the interconnections of all systems, using technology appropriately, showing respect for all, nurturing compassion, creativity, and cooperation, and having sustainable practices in school facilities. Santone noted that this more holistic, adaptive form of education seeks to answer the question, “What kind of

education do we need to create the future we want (p.61)?” Sustainability in higher education practitioners attempt to address this question, but not just for the *kind of* education. Rather, they go beyond curricular issues to include practical knowledge of physical facilities and operations and do this by conducting outreach in a number of venues.

The question of resulting behavior change from educational efforts remains. Do new iterations of education, such as sustainability education, result in greater behavior change than traditional environmental education? Some say that there is not sufficient data to provide evidence for an answer, that it depends on what is meant by changed behavior, and if it is even the right question to ask (or goal to have for education) (Elder, 2003). Others suggest that perhaps education is not the only solution to creating pro-environmental behaviors, but part of an integrated approach including social-based marketing, governmental regulation, and the use of moral and ethical appeals that might address some of the gaps left by education (Elder, 2003; Gardner & Stern, 2002).

### **2.1.2. Campus Sustainability—A New Movement**

David Orr’s (1992) *Ecological Literacy* is a celebrated piece of early work in the sustainability for higher education movement, which, simply stated is the collective work of individuals, organizations, and institutions working on increasing the sustainability of colleges and universities. Orr’s premise was that every student should be ecologically literate, and be informed by “...the comprehension of the interrelatedness of life grounded in the study of natural history, ecology, and thermodynamics (p. 93).” Additionally, a rethinking the purpose of liberal arts is needed—to help develop

balanced, whole persons that study integrated curricula rather than disconnected subjects. Beyond the curriculum changes required to create an ecologically literate and practically competent populace, Orr implored colleges and universities to model the behavior and practices that it takes to move to a sustainable world through their buildings and grounds.

Campuses should be grounds for learning institutional flows, where students know the sources of foods in the dining hall, know how their electricity is generated, and understand where their garbage goes. Campus studies could be coupled with designing effective, clean alternatives. Orr supported the idea that studies of institutional flows could result in a set of sustainability policies to govern management practices, a rejuvenated curriculum that addressed issues of human survival, and an opportunity for campuses to show real leadership. "...colleges and universities are leverage institutions. They can help create a humane and livable future, rather than remaining passively on the sidelines, poised to study the outcome (Orr, 1992, p. 108)."

Thinking of the transformation needed for institutions of higher education, David Orr (2004) expanded on his ideas of the problems with current education and what education could be in a collection of essays gathered in *Earth in Mind: On Education, Environment, and the Human Prospect*. Educators, particularly those in higher education, should be transforming and evolving their curricula to the current issues and problems. As Orr (2004) stated, "We are still educating the young as if there were no planetary emergency (p. 27)." Leith Sharp (2002) also addressed the need for colleges and universities to become learning organizations in order to find effective solutions to

sustainability issues that are still evolving. Further, institutions need to be ‘change agents’ as well as teach their students how to be agents of change (Rowe, 2002; Sharp, 2002).

Earth Day 1970 and the energy crisis of the late seventies led to the creation of many environmental studies/science departments on campus and other actions on campuses (Bartlett & Chase, 2004). The early years (starting in the late 1970s) of sustainability in higher education were known for “campus greening” projects. Campus greening generally is thought to comprise of practices and projects related to improving the ecological-soundness of campus operations, management, and curriculum. Recent years have seen a shift on campuses from greening the operations, such as starting recycling programs and increasing energy efficiency, to taking a more holistic approach and examining social justice and equity, economic soundness, as well as environmental integrity.

One of the first organizations to formally address the arena of campus greening was the National Wildlife Federation, that founded the Campus Ecology program in 1989. A membership organization with campus and individual members, Campus Ecology provided resources and training to interested students, faculty, and staff. Offering incentives such as fellowships and contests, Campus Ecology continues to engage students in practical projects that show results. The organization also concentrates on sharing best practices and stories from campuses in their annual Yearbook (National Wildlife Federation, 2008). Additionally, in the early 1990s independent organizations such as Universities Leaders for a Sustainable Future (ULSF) and Second Nature formed, and proclamations like the Talloires Declaration came into existence (Bartlett & Chase,

2004). ULSF, founded in 1992, is a support organization that conducts projects and research in areas such as campus assessments, effective strategies for campus greening, and organizational change for sustainability. It is also the Secretariat for signatories of the Talloires Declaration, a “ten-point action plan committing institutions to sustainability and environmental literacy in teaching and practice (Association of University Leaders for a Sustainable Future, 2008).” Second Nature, founded in 1993, works with senior college and university leaders in, “making healthy, just, and sustainable living the foundation of all learning and practice in higher education (Second Nature, 2010).”

After her experience assisting with the first in the nation comprehensive campus environmental assessment at UCLA, April Smith (1993) wrote *Campus Ecology: A Guide to Assessing Environmental Quality and Creating Strategies for Change*. Aimed at a student audience, this guide provides a framework of assessment with background information, specific assessment questions, research sources, brief case studies, recommendations, and resources. Divided into four main sections—wastes and hazards, resources and infrastructure, the business of education, and taking action—this guide was the first significant printed resource on this topic.

In 1994, Yale University hosted 450 faculty, staff, and student delegates for the Campus Earth Summit, the first gathering of its kind. The conference resulted in a set of recommendations for colleges and universities to work on sustainability issues, called *Blueprint for a Green Campus* (1995). This collaboratively written document laid out ten recommendations for faculty, staff, administration, and students, with more specific activities to work towards these goals. Recommendations addressed: strengthening



curricular offerings by using the environment as an integrating theme, experiential and practical opportunities for students, conducting environmental audits, and implementing changes in purchasing, waste, and energy, among others. Each recommendation came along with a summary; a basis for the recommendation; recommendations for high-level campus officials, staff, faculty, and students; a case study of success; and ways to coordinate with allies.

Shortly after the Yale gathering, Julian Keniry (1995) wrote *Ecodemia: Campus Environmental Stewardship at the Turn of the 21<sup>st</sup> Century*. The book offered a sampling of case studies of campus greening projects from college and university campuses across the United States. This book was an important resource for those involved in these types of projects, showing success stories in everything from university purchasing to transportation to energy and utilities. *Ecodemia* served as *the* main source of best practices for nearly a decade.

Another important national gathering on this topic occurred in 1996 at Ball State University in Indiana. The biennial Greening of the Campus Conference sought to be an interdisciplinary gathering for the integration of sustainable practices and teaching in a university environment. The conference gathered over 200 people from 25 states and five countries (Ball State University, 1996). The conference held its eighth meeting in 2009.

In a follow up report to *Ecodemia*, David Eagan and Julian Keniry (1998) showed the actual numbers behind some of the case studies in *Green Investment, Green Return*. Eagan and Keniry recognized that for institutions to fully buy into campus greening projects, they need to see the economic rewards. However, by demonstrating the

financial power that college and universities have, the authors showed what a significant impact those projects can have.

Many of the people whose decisions profoundly affect the future of the planet today attend America's colleges and universities. With yearly enrollments now topping 14 million [on roughly 3,700 campuses], the potential for influencing tomorrow's executives, teachers, and politicians and global decision-makers is enormous" (Eagan & Keniry, 1998, p. 9).

There is an estimated \$186 billion spent each year by these institutions with another \$75 million invested in endowment funds. Additionally, students spend around \$45 billion each year. But, it is not all about the money. The educational benefits of campus greening are also enormous (Eagan & Keniry, 1998).

Addressing topics from infrastructure to student involvement, *Greening the Ivory Tower* by Sarah Hammond Creighton (1998) was another important contribution to the literature around sustainability and higher education issues. Using case studies from Tufts University, Creighton reiterated the need for colleges and universities to lead other communities and organizations toward more sustainable practices in their infrastructure and behaviors. Creighton recognized the important role that students play in this work. "On most campuses students feel freer than faculty and staff to criticize administrative decisions and actions. This freedom allows them to serve as a university's environmental conscience (Creighton, 1998, p. 259)."

At the same time, Creighton noted that while students have interest and concern in environmental issues, they often have the difficulty of connecting their personal actions to the environment. This brings up the issue of motivation and the need to connect

environmental protection with students' passions. Additionally, as many environmental initiatives seek to change behavior through education, students could be effective in reaching their peers with these messages (Creighton, 1998). It should be noted that two years after this book was published, Tufts University, where Creighton works, launched the first Eco-Reps program, building on the idea that peer education is an effective model.

Creighton followed up this book with another nearly ten years later, *Degrees That Matter*, which has a more directed focus on issues around climate change (Rappaport & Creighton, 2007). In the chapter about personal action initiatives, the Tufts Eco-Rep program is described in detail.

The literature on college and university sustainability issues contains a wealth of knowledge and experience from a number of practitioners and case studies. *Sustainability and University Life*, edited by Walter Leal Filho (1999), provides examples from North America and Europe. One chapter, by Richard M. Clugston and Wynn Calder, both of Washington, D.C.-based University Leaders for a Sustainable Future (ULSF), addressed developing indicators for evaluating sustainability in higher education. In "Critical Dimensions of Sustainability in Higher Education" Clugston and Calder (1999) laid out the indicators for sustainable institutions and critical conditions for determining success in sustainability initiatives. These indicators enhanced the previous work in campus environmental assessments and helped lay the groundwork for evaluating related programs and policies. The seven indicators for sustainable institutions addressed things such as: written commitment statements, integration of sustainability in all fields,

students knowing institutional social and ecological systems, rewarding faculty contributions to the field and providing professional support, reducing ecological footprints, institutional support for campus student life services supporting sustainability, and doing outreach and creating new partnerships that enhance sustainability (Clugston & Calder, 1999).

For evaluating the success of sustainability initiatives, Clugston and Calder provided seven conditions, as seen in Figure 3.

- 1) How the “champions” of sustainability are perceived by others on campus;
- 2) If the projects are endorsed by key administration;
- 3) Who benefits from the initiative;
- 4) If the initiative fits within the institution’s ethos, saga, and organizational culture;
- 5) If the initiative elicits engagement of the community;
- 6) If the initiative is academically legitimate; and
- 7) If the initiative brings in critical resources and produces cost savings over time.

*Figure 3.* Seven conditions for evaluating sustainability initiatives (Clugston & Calder, 1999)

This checklist offered the opportunity for programs to evaluate their effectiveness, and be a basis of comparison between programs.

With the growing number of academics making contributions to the research in sustainability in higher education field, a new peer reviewed journal was created in 2000. The *International Journal of Sustainability in Higher Education* bridged the gap between journals in sustainable development and general higher education. With an international

perspective, the journal's material covers topics from operational practices to curricula to student initiatives.

In 2001 the National Wildlife Federation (NWF) produced the first ever environmental report card in *State of the Campus Environment* (2001). This report gave data from 22% of the college and universities campuses across the United States as to their environmental performance. NWF spearheaded this project because they wanted to address an important gap in available information on higher education performance, because there were little known trends in environmental performance and sustainability in higher education, and because there was no baseline from which to measure progress across a range of issues. Performance areas that were measured included: recycling and waste reduction; energy efficiency, conservation, and renewable energy; water efficiency; environmental curriculum; grounds and landscaping; and transportation.

This document was a first step in what is now a much broader benchmarking field for sustainability in higher education. The newest approach is the Sustainability Tracking, Assessment, and Rating System (STARS) developed by the AASHE team and reviewed and piloted by nearly 70 campuses. This self-reporting framework is designed to collect data over time for internal monitoring purposes and was launched during the 2009-2010 academic year (Association for the Advancement of Sustainability in Higher Education, 2008c).

*Higher Education and the Challenge of Sustainability: Problematics, Promise, and Practice* edited by Peter Corcoran and Arjen Wals (2004) is similar to *Sustainability and University Life*, even including several of the same authors. In three sections, the

editors and contributors laid out some of the problems faced in sustainability in higher education, a few of the promising ways that might solve the problems, and finally, case studies of current practices.

One of the chapters in this book came originally from an article published in *Higher Education Policy* in 2002 by Tarah Wright called “Definitions and Frameworks for Environmental Sustainability in Higher Education.” This article describes nine declarations about sustainability in higher education over the past thirty years as well as institutional statements about environmental sustainability made by universities, and finally compares the two. As for the international declarations and how effective they are, Wright (2002) addressed the issues of accountability and the potential greenwashing of an institution’s reputation. Despite these findings, Wright (2002) continued by writing that these declarations are important as symbolic acts of the campus sustainability movement and called for further research into the effectiveness of declarations and institutional statements.

Another case study included in *Higher Education and the Challenge of Sustainability* came from Middlebury College, a recognized leader in higher education sustainability efforts. Jenks-Jay (2004) noted that one of the key aspects of success is the collaborations between academic and non-academic departments, which can result in mutually beneficial outcomes. Jenks-Jay also found that incoming students are indicating that they chose Middlebury for its environmental studies programs as well as their practices in sustainability efforts. Additionally, alumni give major gifts in response to these efforts (Jenks-Jay, 2004).

*Sustainability on Campus*, edited by Peggy Bartlett and Geoffrey Chase (2004), gave the next decade's worth of stories and shows how the campus sustainability movement has grown and evolved. The editors reasserted the claim that Orr and many others make that campuses have significant impact and can model the behavior that other communities could follow. The book includes five sections, giving examples from laying the groundwork for campus sustainability in leadership and policy as well as grassroots approaches; curriculum; buildings and infrastructure; engaging communities and students; and building system-wide commitment. The editors also outlined the recent transformations campuses are going through by adding environmental/sustainability coordinator positions, dedicating more institutional resources to these issues, and creating new partnerships with federal agencies and new faculty development programs.

Another case study of sustainability in higher education comes from the University of Victoria in British Columbia (UVic). *Planet U: Sustaining the World, Reinventing the University* traces the history of institutions of higher education and proposes an evolution in purpose, towards one that models sustainable practices. Taking examples from other universities in topics such as land use, transportation, urban planning, agriculture and food systems, and decision-making structures, the authors tell the story of policies and practices in place at UVic while also making recommendations for campus sustainability in general (M'Gonigle & Starke, 2006).

Other areas of literature in the sustainability in higher education field are more topic specific. Integrating sustainability into the curricula of higher education is one such

topic. *Environmental Challenges For Higher Education* (Wixom, Gould, Schmidt, & Cox, 1996) contains proceedings from a symposium on sustainable development in higher education in 1994. This volume gave suggestions on how to bring in issues of sustainability across the disciplines, often in an interdisciplinary or multidisciplinary way. Timpson et al (2006) offered specific lesson and project ideas for higher education faculty around sustainability issues in their book *147 Practical Tips for Teaching Sustainability: Connecting the Environment, the Economy, and Society*.

Other topics within the literature include specific campus management arenas, such as transportation. Will Toor and Spenser Havlick's (2004) book *Transportation and Sustainable Communities: Issues, Examples, and Solutions* is an example. In their introduction on why transportation matters, Toor and Havlick (2004) explained,

The daily movement of people back and forth to campus in automobiles burning fossil fuels is one of the largest impacts a typical educational institution imposes on the life support systems of the planet. In addition, the travel patterns that students learn while in college are likely to influence their future travel choices (p.1).

Transportation habits are just one of the package of pro-environmental behaviors that educators such as I hope to see students practice while on campus, and in their lives beyond.

As the sustainability in higher education movement evolves, it expands and extends into more initiatives, more programs, and more offices. There are more regional and national conferences as well as another new journal, *Sustainability: The Journal of*



*Record*, which published its first issue in 2008. With a quick glance at one of AASHE's bi-weekly bulletins (Association for the Advancement of Sustainability in Higher Education, 2008a), one can get an understanding of the growth in this field. A growing subset within the sustainability in higher education field is student outreach, the focus of this research. As campus sustainability projects serve a wide audience, it is important to craft the outreach message to a specific target audience, such as students. For example, an outreach campaign for campus managers would use a different approach than one for students (Owens & Halfacre-Hitchcock, 2006).

Outreach to students is conducted in a number of ways, but many efforts take place within the residence halls as this is where students spend a bulk of their time. Additionally, a campus can gather utility statistics for its on campus buildings—something impossible to do for its off-campus students.

Currently, there are limited published studies and evaluations of student outreach programs on campuses, including energy efficiency and conservation as a result of using Energy Star appliances (Kahler, 2003), the effects of a social marketing program on electricity usage (Marcell, Agyeman, & Rappaport, 2004), and measuring behavior change as a result of green building projects (Owens & Halfacre-Hitchcock, 2006). These studies, included in the next section, are examples of the challenge of connecting behavior change to specific outreach efforts. In an effort to begin understanding the human psychology around behavior change, we turn to the theories of the social psychology field, which has greatly added to the literature around environmentally-related behaviors.

## **2.2. The Psychology of Environmental Behaviors**

Returning to the critique of environmental education not changing behavior, the following questions must be posed: What does change behavior? How does knowledge and awareness affect behavior? Why do attitudes, beliefs, and behaviors not always align? Three fields with psychology contribute greatly to the understanding of humans and their environmental behaviors: social psychology, environmental psychology, and conservation psychology, which all have some degree of overlap. Relative to this research, key facets are the theories of behavior modification, relationship between attitudes and behaviors, motivations for behaviors, the role of information and education on behaviors, and the influence of peers and social settings.

Michener and Delamater (1999) defined social psychology as “the systemic study of the nature and causes of human social behavior (p. 3).” The term social psychology was coined after the middle of the nineteenth century, but was not widely used until the end of that century. The first text devoted to the topic was written by William McDougall in 1908, titled *An Introduction of Social Psychology*. Post-World War II saw a period of rapid expansion and movement in the field which now includes many subsets from pro-social behavior to self and social identity (Johoda, 2007).

One concept of social psychology, cognitive dissonance, is commonly associated with environmental problems (Kollmuss & Agyeman, 2002; Michener & Delamater, 1999; Winter & Kroger, 2004). Developed by Leon Festinger (1919-1989), cognitive dissonance explains the contradictory feelings a person can experience when our actions

and feelings do not align. As Winter and Kroger (2004) wrote, “Cognitive dissonance produces an uncomfortable state of tension, which motivates us to take whatever steps we can to reduce it, including changing beliefs or behaviors in order to appear consistent (p. 57).”

De Young (1999) defined environmental psychology as examining the “interrelationship between environments and human behavior (p. 223).” Working with a very broad definition of environment, this field emerged in the early 1980s and studies elements such as attention to environment, perception and cognitive maps, people’s preferred environments, environmental stress and coping, citizen participation, and conservation behavior (De Young, 1999).

The academic researchers behind ConservationPsychology.org, defined their field as “the scientific study of the reciprocal relationships between humans and the rest of nature, with a particular focus on how to encourage conservation of the natural world (Conservation Psychology, 2008b, p.1).” This field emerged in the early 2000s as growing numbers of psychologists were doing work in conservation. Topics of interest within conservation psychology include: a sense of place, environmental perceptions, ethic of care, cultural constructions of nature, meaning and values of nature, and conservation behaviors (Conservation Psychology, 2008a).

Behavior modification relates to general human psychological and personal behaviors (such as a child acting out), but has assessment tools that could be adapted for environmental behaviors. A central tenant of this theory is measurement of behaviors and social-based treatments (Martin & Pear, 2003). Behaviorists will argue that a more

efficient and effective way of changing behavior is by targeting specific efforts. “Getting distracted by trying to change hypothetical inner events like feelings or attitudes is a waste of precious time (Winter & Kroger, 2004).”

In the social psychology literature about the relationship between attitudes and behaviors (that is, does having a pro-environmental attitude lead to pro-environmental behaviors) there is much to say about the power of social context and pressures and the influence of peers (Charng, Pilliavin, & Callero, 1988; Gardner & Stern, 2002). The theory of reasoned action explains that people have behavioral intention and are influenced by their attitude and the social context (Charng et al., 1988). Ajzen and Fishbein found that,

persons will engage in energy conservation when they believe (1) that conserving energy has a strong probability of resulting in positive consequences like guaranteeing the energy supply for future generations or of preventing negative consequences like environmental damage (the attitude component); and (2) that their friends, family and colleagues at work expect them to conserve energy and they are motivated to comply with this expectation (the subjective norm component) (Charng et al., 1988, p. 163).

The influence of individuals through the subjective norm component complements Bandura’s (1977) social learning theory, which notes that people are capable of learning new behaviors by observing others.

Various improvements to the theory of reasoned action have been suggested including Azjen’s theory of planned behavior, which views an individual’s perception regarding the ease or difficulty of carrying out a task as a moderator of both behavioral intention and actual behavior. Most simply, the harder the behavior, the stronger the

attitude is needed. Conversely, easier behaviors will be performed by people with a moderate or weak attitude (Shultz & Oskamp, 1996).

A study by Cohen, as reported by Heberlein (1981), found that those with more knowledge have stronger environmental attitudes and are more likely to act in an environmentally responsible way. Heberlein (1981) also reported that Ramsey and Rickson contrasted this by suggesting that a strong knowledge of complex environmental issues did not necessarily result in a strong attitude. Additional searches into the attitude-behavior gap find that there are many more factors to consider.

We see environmental knowledge, values, and attitudes, together with emotional involvement as making up a complex we call 'pro-environmental consciousness'. This complex in turn is embedded in broader personal values and shaped by personality traits and other internal as well as external factors (Elder, 2003, p. 256).

There is a sizable body of research that tests or applies these theories for particular environmental behaviors. Two of the most prolific researchers in this arena are Raymond DeYoung and E. Scott Geller, and associated colleagues. Associate Professor of Environmental Psychology and Conservation Behavior at the University of Michigan, Raymond DeYoung, has spent much of his career studying the relationship of humans and their environmental behaviors (DeYoung, 1993). DeYoung's research has spanned from understanding motivations for participating in conservation behaviors such as recycling and energy conservation (DeYoung, 1985-1986, 1986, 1990-1991, 1996, 2000; DeYoung & Kaplan, 1985-1986), to the role of information and education in behaviors (Boershig & DeYoung, 1993; DeYoung, 1988-1989; DeYoung et al., 1993; Kearney &

DeYoung, 1995), to the use volunteers promoting behaviors (DeYoung, 1989-1990, 2003).

E. Scott Geller is the Alumni Distinguished Professor and Director of the Center for Applied Behavior Systems in the Department of Psychology at Virginia Tech. His work has spanned from worker safety to seatbelt use. Especially relevant for this literature review is his work in recycling behaviors (Geller, Chaffee, & Ingram, 1975; Witmer & Geller, 1976); evaluating energy conservation programs (Geller, 1981); understanding motivations for conservation behaviors and the use of social marketing (Geller, 1989; Geller & Lehman, 1986); the role of information in behaviors (E. Scott Geller, 1992); and the concept of “actively caring” (E. Scott Geller, 1991, 1995).

Allen and Ferrand (1999) tested Geller's personal factors (such as self esteem, belonging, and personal control) and how students self-report their pro environmental behaviors. Participants were 121 undergraduate psychology students who completed a lengthy questionnaire assessing, “self esteem, feelings of belonging, sense of personal control regarding environmental problems, sympathy for others, and the extent to which they engaged in a variety of environmentally friendly behaviors (Allen & Ferrand, 1999, p. 342).” Researchers also test for social desirability motivation. The findings generally supported Geller's theory of actively caring, especially how sympathy plays a strong role in personal environmental behaviors. Researchers called for an adaptation of Geller’s theory—specifically the need to drop self-esteem and belonging from the model.

Steven Kaplan (2000) believes that Geller’s altruism model for behavior does not tell the whole story. Drawing from the literature and from past research, Kaplan proposes

an alternative approach to fostering environmentally responsible behaviors through what he calls the Reasonable Person Model, one that focuses on personal gain rather than loss. As part of this model, Kaplan developed three key behavioral and motivational implications:

- 1) People are motivated to know, to understand what is going on; they hate being confused or disoriented.
- 2) People also are motivated to learn, to discover, to explore; they prefer acquiring information at their own pace and in answer to their own questions.
- 3) People want to participate, to play a role, in what is going on around them; they hate being incompetent or helpless (Kaplan, 2000, p. 498).

Building on past studies by Geller, Boyce and Geller (2001) studied the impact of indirect and direct rewards on students' environmental behavior by looking at a target behavior of delivering thank-you cards to individuals who helped the environment or another individual in some way. Students involved in the study were either given an indirect or direct reward for handing out thank-you cards. It was found that “Indirect and immediate rewards produced more behavior change than direct and delayed rewards and resulted in a slower decline of the target behavior after termination of the intervention (p.122).”

There are other models explaining environmental behavior. In 1987, Hines, Hungerford, and Tomera conducted a meta-analysis of research on responsible environmental behavior since 1971. The major goals of their study were,

- 1) to identify those variables which the research indicated were most strongly associated with responsible environmental behavior, 2) to determine the relative

strengths of the relationships between each of these variables and environmental behavior, and 3) to formulate a model of environmental behavior representative of the findings synthesized in this research (Hines, Hungerford, & Tomera, 1987, p. 2).

The team analyzed the following psycho-social variables: attitude-behavior relationship, locus of control-behavior relationship, verbal commitment-behavior relationship, personal responsibility-behavior relationship, and economic orientation-behavior relationship. They also analyzed demographic variables including age, income, education, gender. This meta-analysis led to the formulation of an environmental behavior model seen in Figure 4.

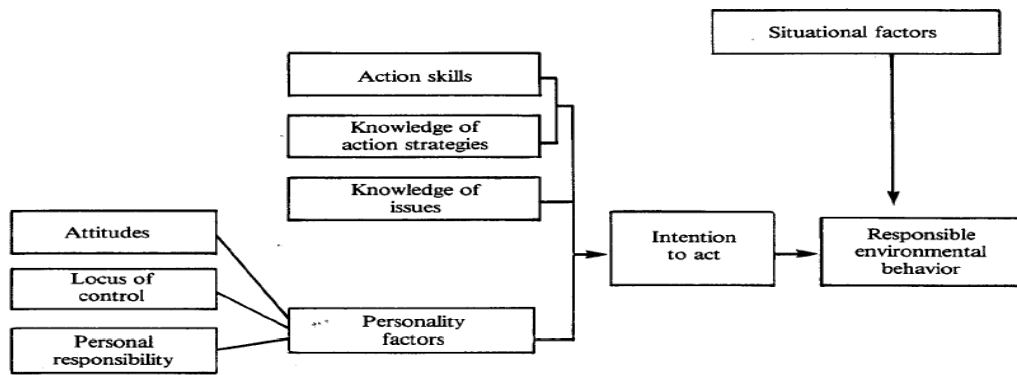


Figure 4. Proposed model of responsible environmental behavior (Hines, Hungerford, & Tomera, 1987, p. 7)

The conclusion of the meta-analysis was that it is difficult to determine at what point people will give up certain personal benefits for the sake of the environment. As the pathway to environmental behaviors is unknown, it might be more effective to manipulate a situation in order for the desired behaviors to take place (Hines et al., 1987).



After reviewing several theoretical frameworks, Kollmuss and Agyeman (2002) proposed another model that explored the gap between environmental knowledge and awareness and conducting pro-environmental behaviors. Researchers reviewed early linear models in the U.S.; models involving altruism, empathy, and pro-social behaviors; and sociological models. It was noted that community based social marketing was not discussed, but may prove to be very effective in transcending the knowledge-action gap. Findings included that rather than a single framework, there is instead a complex web of knowledge, values, attitudes, and emotions that combine for a “pro-environmental consciousness (Kollmuss & Agyeman, 2002).” Kollmuss and Agyeman’s (2002) model, seen in Figure 5, show the interrelationships between a number of internal and external factors and barriers to behaviors that are all part of the equation of ecological behavior.

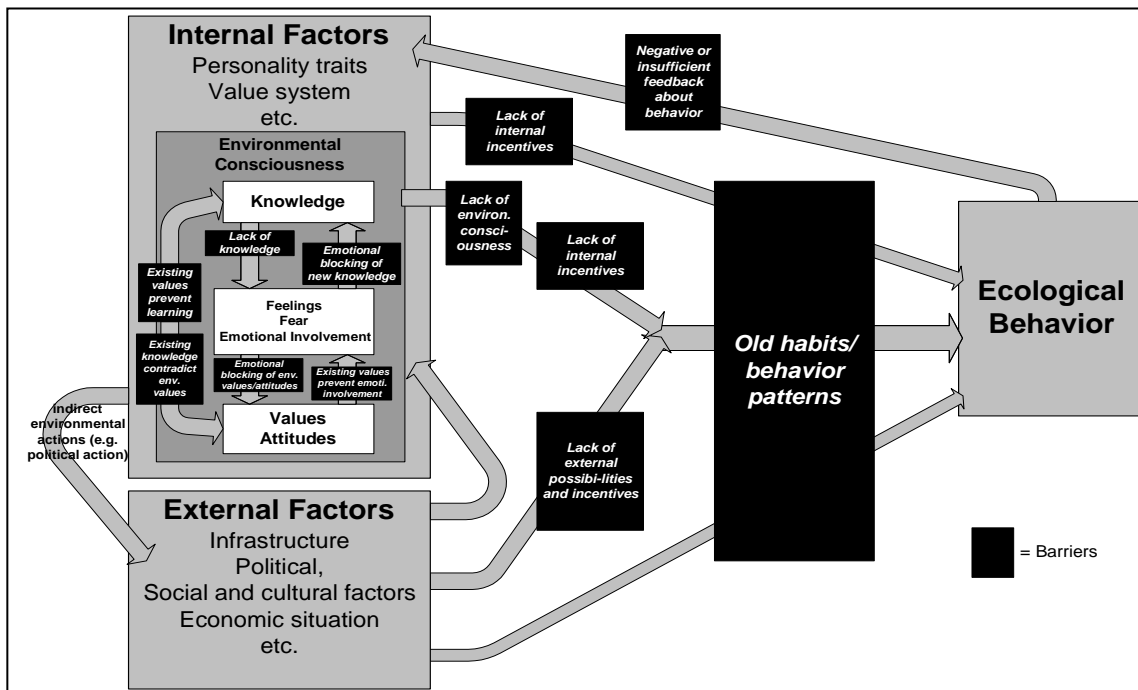


Figure 5. Model of pro-environmental behavior (Kollmuss & Agyeman, 2002, p. 257)

The fields of social psychology, environmental psychology, and conservation psychology offer insight into the knowledge-attitude-behavior relationship of humans, and begin to assess where points of entry for behavior modification lay. A number of studies, conducted on college campuses or with the general public, test and apply these theories in the areas of energy conservation, recycling, and general environmental behaviors.

### 2.2.1. General Environmental Behaviors

Investigating motivations of environmental behaviors of college students, Hartig, Kaiser, and Bowler (2001) took a different approach by studying 488 students who were biology or social ecology majors at the University of California who spent time away

from campus in a freshwater marsh. While most studies of environmental behavior have had an emphasis on risks, damages, moral obligations, and negative determinants, (including personal threat, guilt, and harm), this study looked for positive motivations for behavior such as enjoyment of natural areas. Researchers found, using the Perceived Restorativeness Scale (Hartig, Korpela, Evans, & Garling, 1997), the General Ecological Behavior Scale (Kaiser, 1998), the Marlowe-Crowne Social Desirability Scale (Crowne & Marlowe, 1960), and a set of environmental attitude measures, that among those in the sample, those with a greater interest in the marsh reported more engagement in pro-environmental behaviors. Further, the authors suggested that fascination and the restorative feelings one gets in a natural area might make it a venue for promoting pro-environmental behaviors (Hartig et al., 2001).

Exploring the relationship between personal sacrifice and a concern for the environment, Gigliotti (1992) did a comparison study of college students from 1990s, 1980s, and 1970s on things they were "willing to give up" on behalf of the environment. The studies included measuring attitudes toward 35 items in five major categories, including: food, household items, transportation, personal items and recreation. The 1990 study also included items from the New Environmental Paradigm scale used by Kuhn and Jackson (1989). A self-administered questionnaire was sent to 1,500 randomly selected students and resulted in a 70% response rate. Gigliotti found a strong relationship between sacrifice and concern, and recommended that environmental education needs to stress the connections between lifestyle choices and their impacts on the environment—particularly as students become more materialistic.

Green building projects are increasingly common on a number of campuses. Many hope that these will be ‘buildings that teach’ as students can have an opportunity to live or work or study in buildings that employ a variety of sustainability practices such as sub metered rooms, green roofs, and efficient energy and water systems. A study conducted at the College of Charleston by Owens and Halfacre-Hitchcock (2006), looked at measuring behavior change as a result of a green building project. The study sample included twelve faculty who worked in the retrofitted building, testing them before and after the building renovation. In an effort to get a random student sample, researchers went to required introductory English class and asked for participation, surveying 129 students at the beginning of the project and 62 students after the project. Survey topics included sustainable attitudes, information, and behaviors, and students were given a “sustainability score” based on their answers. Through the surveys, building waste sorts, and interviews of faculty and students, it was found that faculty improved their “sustainability scores” and improved recycling rates, but these behaviors cannot be directly linked to the project itself. Students did not show significant change as a result of the project and the authors found that the outreach surrounding the project, did not make a significant impact overall. The researchers reiterated the complexity of internal and external factors that go into understanding behavior change.

A theme of disconnect between personal behaviors and concern for the environment was similar for Hallin (1995) who conducted a qualitative study of households’ behaviors in a small town in Minnesota. Hallin found that people who did not participate in environmental behaviors did not connect their lifestyle choices and

behavior and environmental impact. Additionally, while participants didn't like the idea of a "throwaway society" they partook in the behaviors because of the lack of economic thriftiness rather than the overuse of natural resources.

### **2.2.2. Energy Conservation Behaviors Studies**

An early study of college students and energy conservation behaviors comes from Aronson and O'Leary (1982-1983), who studied various methods of energy conservation for college students' showers in a field house. After first finding baseline data for turning off water while soaping up, researchers posted prompts in the showers to test for any difference in participation. Finally, researchers had students model the desired behavior and tested for participation. Findings included that posted signs increased compliance for turning off water while soaping up to save energy, but that community leaders modeling behavior was the most effective intervention. This demonstrated the power of social diffusion (Gardner & Stern, 2002; Winter & Kroger, 2004).

More recently, Kahler (2003) relayed the story of a dormitory room at Tulane University that was furnished with Energy Star appliances and what its impact (educational and energy) was on the rest of campus. Researchers first determined the average energy usage and equivalent of carbon dioxide for a dorm room—approximately 1,100 kWh per year, costing \$120 and emitting 1,063 pounds of carbon dioxide equivalent. With conservative estimates, researchers found that the University could potentially save \$150,000 annually if students applied energy conservation methods along with using energy efficient appliances.

To promote this idea, tours were given of a model room during Homecoming/Parents' Weekend. The research team showed how students could begin to learn conservation habits while on campus and then transfer them to their future living arrangements where they'd be directly responsible for paying utility bills and purchasing appliances. As a result, Tulane University's President also wanted an Energy Star compliant office. Additional results were new information packets sent to all first year students encouraging them to purchase Energy Star products. Students were also invited to enter an essay contest with a prize of having their room supplied with Energy Star products. The winners had to be willing to give tours of their room to educate others about energy and climate change (Kahler, 2003). While this article shares a success story of one particular program at one campus, it would be more useful to track savings overtime as well resulting behavior change, if any.

Social marketing was a key focus of a more in-depth study that was conducted at two dormitories at Tufts University. The research tested for the impact of social marketing methods on student electricity use and to see if this was a cost effective way of addressing greenhouse gas emissions resulting from students' behavior. Additional goals included:

- Providing an assessment of Tufts' student attitudes, knowledge, and behaviors related to electricity use and climate change;
- Detecting the personal and institutional barriers students face in trying to reduce their electricity use;
- Identifying institutional barriers to undertaking a community based social marketing (CBSM) program to reduce electricity use in a university environment;

- Designing a marketing and communication strategy that attracted attention, specifically addressed student interests and concerns, provided interesting relevant information, and was approachable and easy to understand;
- Educating students on climate change; and
- Reducing student electricity use (Marcell et al., 2004, p. 172).

The control group received an educational treatment while the experimental group received the educational treatment plus a community based social marketing treatment. It was found that the social marketing treatment was effective in increasing environmental behaviors, but was quite time-consuming, as it involves creating and implementing a variety of techniques. The authors suggested that while advertising campaigns can be somewhat effective they are not too expensive. But to increase efficacy, advertising campaigns can be combined with social marketing tools and direct financial incentives. This could be cost effective and yet still maintain personal contact with students (Marcell et al., 2004).

### **2.2.3. Recycling Behaviors Studies**

One of the earlier studies on recycling behaviors comes from Witmer and Geller (1976), who set out to test the effectiveness of using prompts and reinforcement. Studying residential college students and the amount of paper they recycled on a daily and weekly basis, the authors found that raffles and contests were significantly more effective than using just a prompt to promote recycling rates. Contests were particularly effective in residential halls that had a pre-established community within it (in this case R.O.T.C) as they already had strong group structure and unity.

Smith, Haugtvedt, and Petty (1994), in their research regarding recycling behaviors found that despite many studies showing little or no link between attitudes and behaviors, the power of attitude should not be dismissed. Testing this theory on a group of undergraduate students, researchers suggest that the power of persuasion might be best employed to target affective factors such as feelings and reactions, rather than cognitive factors such as knowledge and awareness. Others called for a broader, more inclusive theory that combines behavior and attitudes theories, including internal and external factors (Guagnano, Stern, & Dietz, 1995).

A meta-analysis completed by Hornik and Cheria (1995) looked at recycling trends research since 1968. Studying 67 empirical studies, researchers examined five main categories of variables: extrinsic incentives (e.g. monetary rewards, social influence, laws and regulation), intrinsic incentives (e.g. locus of control, personal satisfaction), internal facilitators (e.g. awareness of importance of recycling), external facilitators (e.g. time, money, and effort), and demographic variables (especially education, youth, and home ownership). After evaluating the quality of each study, researchers coded and analyzed the data using a correlation meta-analysis technique. The findings indicated that knowledge and social influence are the strongest predictors for recycling behavior.

Bagozzi and Dabholkar (1994) applied social psychology theories in their look at recycling behaviors of 133 consumers in a moderate-sized metropolitan area. Using a random digit dialing telephone survey, researchers used a structured questionnaire partnered with an unstructured interview that began with a discussion on why they



recycle or why they should recycle. Their critique of previous studies looking at behavioral issues is that the previous studies did not apply a specific theory regarding motivation and behavior. Testing the theory of reasoned action (Ajzen & Fishbein, 1980), Bagozzi and Dabholkar (1994) found that, "... (a) intentions are primarily under the direct control of attitudes and past behavior and (b) attitudes, subjective norms, and past behavior are, in turn, functions of both goals and linkages among goals (p.235)."

Bagozzi and Dabholkar (1994) uncovered, and arranged in a hierarchy, 15 key goals explaining why people recycle, ranging from concrete (such as reducing waste) to value based (it's the right thing to do).

In the book *Why Do We Recycle? Markets, Values, and Public Policy*, Frank Ackerman (1997) gives readers a look at the recycling industry and motivations of those who participate in recycling, from the perspectives of conducting years of research as a recycling consultant in the Boston area. In explaining the motivation behind recycling, Ackerman (1997) concluded that social pressure was more effective than financial incentives, and that people's sense of altruism is another key factor in participation. Additionally, if people are willing to recycle, they will most likely be willing to partake in other pro-environmental behaviors.

Commitment strategies (an example of the power of peers and social settings) are a common theme among research on recycling and other environmental behaviors (McKenzie-Mohr & Smith, 1999). Pardini and Katzev (1983-1984), in a study of thirty households that participated in a two week intervention and a two week follow-up period, found that written commitment was the strongest indicator of recycling behavior (over

verbal commitment and information only). Cobern, Porter, Lemming, and Dwyer (1995) studied the different types of commitment strategies on residential grass-cycling by using a pre and post-treatment assessments of 558 households in three neighborhoods in a suburb of a large mid-southern city. There were four stages of the research, including: baseline data collection for four weeks, four weeks of intervention, four weeks of follow-up assessment, and four weeks of more follow up assessment after one year. Researchers found that combining verbal commitment along with a commitment to talk to their neighbors about grass-cycling improved participation rates.

#### **2.2.4. Community-Based Social Marketing**

Motivations and barriers seem to be the prevailing themes when discussing environmental behaviors. These concepts, with strong roots in behavioral psychology, make up a significant portion of the theory and methodology of community-based social marketing (CBSM) (Gardner & Stern, 2002; Martin & Pear, 2003; Winter & Kroger, 2004). As one research team points out, there is a danger in thinking that motivations or acts work singularly. Rather, "...goal-directed behavior can only be assessed as a composite measure of several acts, because a single act does not reveal a person's intention or the reason behind it (Kaiser & Wilson, 2004, p. 1542)."

In their book *Fostering Sustainable Behavior*, McKenzie-Mohr and Smith (1999) explain CBSM. With the research showing that information-only campaigns are not effective, this method is based on combining tactics from traditional marketing, such as advertising, with direct personal contact to motivate behavior change. Four key steps involved in CBSM are: identifying barriers and benefits of an action or behavior;

designing an appropriate strategy; pilot testing that strategy; and evaluating the impact on the program.

To understand the internal and external barriers of a particular behavior, three steps are recommended: a specific literature review, qualitative research such as observation and/or focus groups, and quantitative surveys (McKenzie-Mohr & Smith, 1999). It should be noted that barriers that prevent one behavior, such as riding the bus, are likely to be different than for other behaviors, such as composting and therefore it is critical to determine barriers for each desired behavior (McKenzie-Mohr, Nemiroff, Beers, & Desmarais, 1995). With this knowledge in hand, one can move on to designing strategies.

To design an appropriate strategy, there is an important need to communicate what are accepted and desired behaviors. These must be visible and communicated in a persuasive manner that is tailored to a specific audience. Threatening messages are often counter-productive if they are not partnered with messages and actions that empower individuals rather than just depress or scare them (McKenzie-Mohr & Smith, 1999). Asking for verbal or written commitment for a specific behavior has proven to be successful (Greenwald, Carnot, Beach, & Young, 1987; Lipsitz, Kallmeyer, Ferguson, & Abas, 1989). Visual or auditory reminders, or prompts, are helpful when they are tailored to a specific rather than general message, e.g. “Do not cut across the grass” versus “Think globally, act locally” (Austin, Hatfield, Grindle, & Bailey, 1993; McKenzie-Mohr & Smith, 1999; J. M. Smith & Bennett, 1992). Offering incentives for desired behaviors might be part of the strategy. If so, they should be closely paired to reward positive

behavior. Additionally, incentives need to anticipate people's actions and plan ahead for how they might avoid engaging in the desired activity. Creating social norms by modeling desired behaviors is another way to aid in social diffusion of actions (Gardner & Stern, 2002; Winter & Kroger, 2004). The overall strategy should also include methods of removing any external barriers that prevent individuals in partaking in desired behaviors (McKenzie-Mohr & Smith, 1999).

McKenzie-Mohr and Smith (1999) also emphasize the importance of program design and evaluation. They call for running pilot tests of any strategies to see if they will actually work, and what modifications are needed. A constant flow of re-design and evaluation will lead to greater results. This idea parallels the theory behind program evaluation, a topic that will be explored in the next section.

There are few published studies on the efficacy of CBSM approaches in academic journals. Marcell, Agyeman, and Rappaport (2004) studied the effectiveness of CBSM for outreach to students at Tufts University and found that the use of CBSM resulted in more environmental behaviors. There are, however, a number of case studies found on two primary websites: Tools of Change <http://www.toolsofchange.com/en/home/> (Cullbridge Marketing and Communications, 2005) and Fostering Sustainable Behavior <http://www.cbsm.com/> (McKenzie-Mohr, 2008). CBSM seems to be an emerging field that more campus sustainability practitioners are drawing upon, and one can expect to see more studies in the future.

### **2.2.5. Connecting Psychology and Education**

Environmental education emerged over thirty years ago to advance knowledge of environmental issues and to help modify human behavior (Baraaza et al., 2003). Yet, as mentioned above, this goal has not necessarily been realized through education alone. There are now more educators in the field of environmental education and sustainability education that are integrating the research findings from the psychology fields above with their pedagogy (Clover, 2000; Kuhtz, 2007; Newhouse, 1991; Sia, Hungerford, & Tomera, 1985-1986; Zelezny, 1999). Education may be useful for overcoming the internal barriers to action, such as ignorance and misinformation, or conflicting mental models (Gardner & Stern, 2002; Johnson-Laird, 2004). Smith-Sebasto and Fortner (1994) remind educators that they should take an interest in:

(1) the perceptions individuals have of the condition of the environment, (2) the degree and direction of concern individuals have regarding the perceived condition, (3) the information individuals use to arrive at their perceptions of the condition, (4) the reasons behind the degree and direction of concern, (5) the ways in which they believe that they may cause either a reversal or continuation of the perceived condition, and (6) the ways in which individuals come to hold favorable attitudes in influencing their situation (Smith-Sebasto & Fortner, 1994, para. 32).

Ultimately, it is this integration of education and behavior change theory that sets the scene for peer-to-peer sustainability outreach programs.

### **2.3. Peer Education**

Peer-to-peer sustainability outreach programs borrow from the practices of peer education in other fields. This development follows the progression called for in 1993 by Edelstein and Gonyer,

A vibrant and successful peer education program adapts to changing environments, cultural mores, fluctuating economies, and societal and health concerns. In planning the future of any peer program, we must be prepared to address new issues (e.g., HIV infection); find new and creative ways to address older, but critical issues such as alcohol and other drug use; and respond to economic demands and realities (Edelstein & Gonyer, 1993, p. 255).

This section of the literature review both describes the rationale behind peer education programs, looking at the target audience of American college students and their development, as well as learning from the methodologies of program evaluations conducted for this type of program.

### **2.3.1. Rationale of Peer Education**

Peer education is not a new concept. Miller and MacGilchrist (1996) found one of the earliest examples of this type of approach in the 19<sup>th</sup>-century England, where students assisted their teachers by teaching lessons to other students. While there are many definitions of this type of education, "...a basic ethos of peer education is that it is designed to be by and for young people; they themselves largely determine what is relevant in terms of information and how it is to be delivered (Backett-Milburn & Wilson, 2000, p. 94)." In his efforts to define peer education, Carpenter (1996), wrote, "Peer education, we need to remember, is a fancy term for an everyday occurrence. We all learn constantly from our peers, and young people are no different (p.23)." *Webster's Dictionary* defines peer as "one of the same rank, quality, endowments, character, etc.; an equal; match; mate (Neilson, 1950)."

Desired attributes of peer educators include credibility based on age, gender, cultural background, common experience, and styles of approach (Parkin & McKeganey, 2000; Shiner & Newburn, 1996). Peer education programs are often seen as cost effective (comparing the cost of paying professionals versus non-professionals), and it is believed that youth rely on peers for information and that peers can act as role models for each other. Peer education is also seen as an opportunity for volunteers to, “experience personal growth and perhaps career development (Ebreo, Feist-Price, Siewe, & Zimmerman, 2002, p. 412).”

Peer education approaches have been used for a variety of topics and with a wide range of ages. In the last twenty years has been used in the fields of sexual health education, HIV/AIDs, health and safety and work, teenage motherhood, gambling, reading skills, violence avoidance, and the empowerment of senior citizens (Parkin & McKeganey, 2000). On college campuses, peer education had its start in the 1950s addressing influenza, the 1960s, cannabis and other drugs, and 1980s, HIV/AIDS (Parkin & McKeganey, 2000). Common present-day campus peer education programs focus on issues of health and wellness, including tobacco use (Morrison & Talbott, 2005), rape prevention (Foubert, Newberry, & Tatum, 2007; Stein, 2007), alcohol use (Hunter, 2004), and crisis counseling (Sharkin, Plageman, & Mangold, 2003).

### **2.3.2. College Student Development**

The peer-to-peer sustainability outreach programs that are the subject of my research take place on residential college campuses. Therefore, it is important to look at the college and university campus experience as it pertains to students in the United

States. On today's campuses we see not just classrooms, but a society of its own, complete with health and fitness facilities, vast student affairs and residential life departments, and a number of other student resources.

Students' years on a college or university campuses have a significant impact on their development. Student Development has become a field of study in its own right in the past several decades, with several theories of its own, which build upon psychological theorists such as Sigmund Freud, Carl Jung, and B. F. Skinner. While there are varying definitions of what is meant by "development," it is generally viewed as a "positive growth process (Evans, Forney, & Guido-DiBrito, 1998, p. 4)."

The current student development field grew out of a history of the vocational guidance movement of the 1920s, the increase of student personnel on campuses as a result of increased enrollments following World War I and II, and later the significant changes in the 1960s, largely in response to the general social upheaval of the Vietnam War and civil rights and women's movements. Current student development theory builds on that first created in the 1960s and saw along with those theories, the creation of student affairs as a profession (Evans et al., 1998).

One area of student development looks at the role of peer influence on students (Astin, 1993; Feldman & Newcomb, 1969; Milem, 1998; Pascarella & Terenzini, 1991; Wallace, 1966; Weidman, 1989), with research pointing to the peer group as perhaps the "dominant change agent during the college years (Antonio, 2004, p. 446)."

Students have mutual and reciprocal influence on each other. In the interaction they develop consensual and shared sets of expectations regarding each others' behavior and regarding important aspects of their common environment. These



consensual and shared expectations—known as norms and standards—form the basis of the student peer group's power over individual members (Feldman & Newcomb, 1969, p. 240).

Students who live on campus have a greater exposure to their peers and are more likely to have attitude or behavior changes as a result (Milem, 1998).

Newton and Newton (2001) took the background of peer impact research combined with ideas of behavior change from Gladwell's (2000) *The Tipping Point*, and set out to poll students on who they thought the most influential students on campus were. Over 500 students participated in this poll. Once identified, the VIPs (Very Influential Persons) were then asked to join a focus group to give feedback on wellness program marketing tools. Researchers found that the VIPs' participation helped spread the word about the project intentions and progress and allowed for more student-initiated activity.

Testing theories of peer influence, Antonio (2004) set out to examine the effect that college friendship groups have on students over time, looking specifically at the impact on intellectual self-confidence and education aspirations. This longitudinal, quantitative study included a final sample of 677 third-year students at the University of California, Los Angeles (UCLA) used a questionnaire that included demographic data, measures of behavior and involvement in college activities, self-rated abilities, and degree aspirations. The focus of the survey regarded the racial/ethnic composition of up to seven of their "best friends" on campus.

Antonio (2004) found Weidman's (1989) model of socialization in college to be,

“...perhaps the most appropriate theoretical model with which to investigate and interpret peer group effects.... He underscores a conclusion made by a number of researchers, that the long-term academic impacts of college are not the result of classroom experiences, but of informal forms of social interaction with students and faculty. (p. 452).”

The results of Antonio’s study corroborated Weidman’s theory, and showed evidence that the “microlevel interpersonal environments” found on college campuses serve as significant influences on student development.

Another area of student development is that of student leadership, a relevant topic as peer educators are also considered student leaders. The Council for the Advancement of Standards in Higher Education (2003) highlighted essential student leadership guidelines in their book called *CAS Professional Standards for Higher Education*. In the section called “The Role of Leadership Programs for Students” the authors give a history and background of student leadership programs and then list CAS's standards and guidelines for these types of programs. These guidelines include student learning and development outcome domains such as: intellectual growth, effective communication, enhanced self-esteem, realistic self-appraisal, clarified values, career choices, leadership development, healthy behavior, meaningful interpersonal relationships, independence, collaboration, social responsibility, satisfying and productive lifestyles, appreciating diversity, spiritual awareness, and personal and educational goals (Council for the Advancement of Standards in Higher Education, 2003). These guidelines provide a

framework for developing evaluation questions for impact of peer education programs on the educators themselves.

Based on years of research and student interviews, Harvard professor Richard J. Light (2001) makes several conclusions regarding what aspects of higher education work best for students in his book *Making the Most of College: Students speak their minds*. Light found that students' experiences go far beyond the classroom and that often, their most important learning and life building opportunities occur outside of the classroom. Extracurricular activities have a positive impact on students, showing little or no relationship to grades, but do have a strong relationship with their overall satisfaction with life on campus. This finding supports Astin's (1984) theory of student involvement.

With the understanding of the power of peer influence and the positive impact that involvement has for students' development, we can see more of the rationale behind establishing peer-to-peer sustainability outreach programs.

### **2.3.3. Peer Education Program Evaluations**

In designing an evaluation process for peer-to-peer sustainability outreach programs, I explored the methodologies of evaluation of peer education programs from other fields. Education and social programs turn to evaluation for several purposes. One is to take stock of what the program is, how it operates, how to improve it, and the effectiveness of the program (Patton, 1997). Another reason for evaluation is to justify their existence (and often to retain their funding) to financial sponsors. Evaluators need to really understand the specific activities and desired outcomes of the program they are evaluating so that they can formulate probing questions, understand the data and how to

interpret what they find, to make fitting recommendations, and for reporting purposes. This process also includes understanding the theory/theories behind a program and its implementation (Weiss, 1998).

Russ-Eft and Preskill (2001) classify program evaluations into three categories: developmental, formative, and summative. Developmental evaluation often uses needs assessments for programs, finding out what a program requires to continue or expand its operations. Formative evaluations occur in the developmental stages of a program, generally for the staff of the program that have the intentions of improving a program. Process evaluations, a type of formative or summative evaluation, examine the process and procedures of a program rather than the outcomes. Summative evaluation determines worth, merit, and value of a program and often leads to a final judgment, such as whether a program should continue or not. What others call outcome evaluation, or accountability-driven evaluation, can be seen as a type of summative evaluation (Patton, 2002; Russ-Eft & Preskill, 2001). An additional kind of summative evaluation is impact evaluation, measuring the effect on participants as a result of a program (Russ-Eft & Preskill, 2001).

An example of using evaluations for continuous learning and improving sustainability initiatives is given by Owens and Halfacre-Hitchcock (2006).

Promoting and monitoring the impact and effectiveness of these initiatives is vital to spreading sustainability on campuses and throughout society. These initiatives are a means of reaching goals set by national governments to embrace sustainability, thereby developing a society where natural resource conservation

balanced with social justice and economic development ensures the planet's existence in the future (Owens & Halfacre-Hitchcock, 2006, p. 126).

As a significant portion of my research looks at program evaluation of peer-to-peer sustainability outreach programs, I wanted to turn to other evaluations, particularly of those in peer education and environmental behaviors, as examples. Evaluation methods run along the spectrum from narrow to comprehensive, depending on what is needed or desired.

One type of program evaluation is feedback given after a student has completed a course or activity. A survey evaluation for an interdisciplinary, distance learning, undergraduate course based in the UK asked a sample of 206 of the 1,800 participating students from around the globe if, as a result of taking the course, their household's travel patterns, consumption patterns, and/or environmental attitudes had changed in any way (Crompton, 2002). Findings from the survey were positive regarding awareness and understanding. The author wrote that, "There had been personal consideration of lifestyles and discussion of environmental issues within households that in many cases seem to have prompted genuine changes in attitude and behavior (Crompton, 2002, p. 323)." While the survey findings were positive, it must be noted that the depth of measuring individual behavior change over time cannot fully be realized with this method, as it just measured an individual's actions at that moment in time.

An example of a more thorough program evaluation comes from the dissertation of Jennifer Green (2005), who studied the efficacy of the Vermont Earth Institute's Voluntary Simplicity Course through participant observation, pre and post-surveys,

interviews, and course content analysis. The survey sample included 69 VEI participants and a control group of 62 church community members and a non-profit organization's employees. Twelve unstructured interviews were conducted with either willing volunteers or persons known by the researcher. The general theme of the interviews focused on what behavior change patterns emerged as a result of program participation. Using John and Lyn Lofland's (1995) procedure of looking for patterns in interviews, Green examined frequency of behaviors, magnitude of behaviors, structures needed for behavior, processes involved, causes of why behaviors do or do not happen, and consequences of either acting or not acting on pro-environmental behaviors. Research findings included that on a micro-level (i.e. household) environmental behavior changes did occur as a result of program participation, and that rate of behavior adoption is heightened by participation in a group.

Another environmental behavior based program that has undergone a thorough evaluation is the Eco-Team concept of the Empowerment Institute (formerly the Global Action Plan) (Gershon, 2006). Eco-Teams form as a means to encourage households to practice pro-environmental behaviors. By recruiting other neighbors, supportive networks develop to learn from each other about lessening their ecological footprints. An Eco-Team evaluation report completed by an external review team had the following three objectives:

1. Estimate the likely market potential for the Eco-Team program;
2. Evaluate the Eco-Team program and explore the program's long-term effects on participants' lifestyle practices;

3. Evaluate introductory events and Global Action Plan's training and support mechanisms for the Eco-Team program.

Survey results showed that Eco-Teams have the potential for widespread acceptance in the geographic areas studied, trying to reach a goal of 15% of an area's households. Results showed that people were more likely to join the teams if they were asked in person by a neighbor, as opposed to a phone call. Other results from the evaluation show the motivating factors for involvement in the Eco-Teams are: enthusiasm by participants and those recruiting and individuals being approached at the right time—being provided an opportunity to participate in something they've considered but not acted on. Follow-up conversations were also found to be essential in recruiting new members (Market Street Research Inc., 1996). Note that these findings parallel many of the tested theories mentioned above, specifically the power of peer influence and of verbal commitment.

An additional evaluation of the same programs had the purpose of determining to what extent Eco-Team participants had made lifestyle changes as a result of taking part of the program. The evaluation's general summary found that,

...past participants reported taking, on average, 91% of the possible actions. After they completed the program, they sustained or improved their behavior changes in 85% of the actions, took action for the first time in 2%, reported partial recidivism in 5%, and reported total recidivism in 7% (Issaquah Sustainable Lifestyle Campaign, 1998, p. S-1).

Particularly when program funding is in question, accountability becomes a significant topic for many organizations and programs. The Teton Summit for Program

Evaluation in Nonformal Environmental Education, held in 2000 had a primary goal of developing evaluation methods for environmental education programs. This summit came mostly as a response to the growing call for accountability, especially for programs receiving federal funding (e.g. National Parks Service's educational programs). Conference organizers saw the importance of connecting theory and research from an array of fields (including social psychology, teaching and learning, science education) with evaluation, with the end goal of strengthening environmental education pedagogy (Wiltz, 2000).

Evaluations of peer education programs use both qualitative and quantitative methods, generally comparing those who have been in contact with a peer education program with those who have not. Typical quantitative approaches have included questionnaires of participants and comparing pre and post-tests. Qualitative approaches have tried to identify the impact of the peer intervention (Parkin & McKeganey, 2000). Methodologies for impact evaluations have been challenging.

On the basis of the evidence that we have looked at, the strongest indication that peer approaches can have an impact is in terms of the impact upon peer educators themselves. The evidence in relation to the presumed impact upon the various target groups of such approaches, however, is considerably more problematic. Again on the basis of the limited evidence available one would conclude that such approaches may be more effective at changing knowledge and attitudes than changing behavior. However, there are methodological difficulties in even coming to this judgment (Parkin & McKeganey, 2000, p. 306).



The following examples of evaluations can generally be divided into two categories: 1) evaluations of a program's process and/or outcomes, and 2) evaluations on the impact of the program on peer educators themselves.

Fennell (1993) conducted a review of literature around evaluating peer education programs, with disappointing results, not finding many in quality or quantity. There is a noted rise of peer education programs and campuses using "paraprofessionals", defined as "undergraduate students who have been selected and trained to offer services or programs to their peers (Fennell, 1993, p. 251)". 70% of 118 campuses in a 1983 survey indicated that they used paraprofessionals in programming and other areas of campus life (Fennell, 1993). While peer education has become a common strategy used on many campuses, there are few published process evaluations, and fewer still outcome evaluations (Sawyer & Pinciario, 1997).

#### **2.3.4. Process and Outcome Evaluations**

Researchers have found it difficult to pinpoint the efficacy of behavior-change peer education programs on the targeted audience, with concerns about methodologies and a variety of influencing factors in an individual's life (Borgia, Marinacci, Schifano, & Perucci, 2005; Ebreo et al., 2002; Parkin & McKeganey, 2000). Nonetheless, due to the ever increasing demand for accountability for funding purposes, many programs undergo both process and outcome evaluations.

Fors and Jarvis (1995) report on an evaluation of a peer-led, group oriented program around drug use and prevention (a four-session program), which showed positive results. Using a pretest-posttest, quasi-experimental comparison group design,

evaluators developed questionnaires which included items on knowledge, attitudes, intention to help, intention to act, intention to utilize, and more knowledge. Results showed increase in knowledge for peer-led groups, more mature attitudes as a result of the program, and higher willingness to help a friend.

Gibson, Shah, and Mamoon (1998) conducted an evaluation of a peer-education program for asthma in a secondary school in Australia. Researchers found, through a 12-month study including a control group and a treatment group using a self-administered questionnaire assessing attitudes, that the program had a positive impact on changing attitudes around asthma. The evaluation noted that for behavior change to occur, messages should be delivered repeatedly and that peer educators should model the desired behaviors.

Backett-Milburn and Wilson (2000) described a process evaluation conducted for a health peer education program for young people in Scotland. Their process evaluation included a variety of mainly qualitative methods as seen in Figure 6.

- 1) Monitoring by the Project Coordinator and regular liaison interviews.
- 2) Interviews with stakeholders and interested parties.
- 3) Individual interviews and focus groups with peer educators.
- 4) Observation and evaluation of peer education training sessions and the world carried out by the peer educators.
- 5) Evaluation by peer educators themselves of these sessions and their formal and informal work.
- 6) Participant observation at steering group meetings.
- 7) Participant observation at three residential and the recruitment workshops.
- 8) Surveys of knowledge and attitudes (Backett-Milburn & Wilson, 2000).

*Figure 6. Qualitative evaluation methods for health peer education program (Backett-Milburn & Wilson, 2000, p. 87)*

Findings provided feedback on recruitment procedures, skills and attributes needed for a program coordinator, the need for peer education programs to tap into existing frameworks, how the support needs for those involved can change over time, how management and organizational structures can influence for form and content of the program itself, and the impact on peer educators themselves (Backett-Milburn & Wilson, 2000).

Borgia, Marinacci, Schifano, and Perucci (2005) studied the impact on behavior of an HIV/AIDS program in secondary schools in Italy, comparing a peer education program to a teacher-led program. Using a sample of 1295 students from 18 high schools,

researchers used pre- and post-intervention questionnaires comparing changes in behaviors, knowledge, prevention skills, risk perception, and attitudes. The study found the program to be effective in increasing knowledge, but not in behaviors. Additionally, researchers found that lasting behavior change with this age group is uncertain. Further, the peer-led intervention program proved to be more expensive than the teacher-led intervention.

A key product in process evaluation is refining a program with suggestions found during the evaluation. Keeling and Engstrom (1993) suggested ten features in refining a peer education program, including: issues of strategic planning and evaluation, recruiting, diversity, training, learning styles, being inclusive, flexibility, and visibility.

The AIDS Control and Prevention Project (2007) published a handbook called *How to Create an Effective Peer Education Project*. This handbook offers suggestions on recruitment and selection of peer educators, training, supporting and supervision, community acceptance and support, educational materials and supplies, and common difficulties, and parallels findings from the academic literature on peer education. A key piece of advice offered in the handbook states, “Peer education is not an isolated activity. It takes place in a community and must be understood, accepted and respected by the community. If issues are identified by the community then acceptance will not be a problem (p. 27).” This brings up issues of methodological challenges for evaluation, as the evaluated program is not an island – it is part of a complex web of activities and information exchanges that individuals participate in daily. While specific to the topic of

HIV/AIDS, this workbook is a useful resource to anyone creating a peer education program.

### **2.3.5. Evaluating Impact on Peer Educators**

Due to the lack of research at the time on the efficacy of peer education interventions, Sawyer and Pinciaro (1997) found that there is a greater need to study the impact of the programs on the peer educators themselves. Their study sample included previously untrained college students who signed up to be sexual health peer educators in programs from ten different universities. Their survey instrument included demographic variables, the Rosenberg Self-Esteem Scale (Rosenberg, 1986), The Personal Development Inventory (Carter & Spotanski, 1989), and the Safe Sex Behavior Questionnaire (DiIorio, Parsons, Lehr, Adame, & Carlone, 1993) and was conducted as a pre-test at the beginning of fall semester, a mid-test at the end of fall semester, and a post-test at the end of spring semester.

Researchers found increased levels of self-esteem, confidence, and safer sexual behaviors as a result of students participating as peer education, but the increases were not statistically significant, perhaps because students scored fairly high in the pre-test. The one statistically significant finding was that of level of self-esteem in relation to place of residence. On campus students showed higher levels of self esteem than those who lived off campus. This finding is consistent with Astin's (1984) theory of involvement, as on-campus students are generally more involved and therefore show greater satisfaction. The study was limited by data collection problems and a high

personnel turnover at participating institutions, as many coordinators work part-time (Sawyer & Pinciario, 1997).

Kerr and MacDonald's (1997) study, using participant action research methods, looked at a peer education project in the UK that uses student nurses to educate other students about health promotion via interactive drama (a 12-minute play followed by workshops). Methods of data collection included pre- and post-performance open ended questionnaires for the student nurses, evaluation of the performance video to see skills demonstrated by students, and focus group interviews with the student nurses six months following. One important outcome of this program regarded the positive personal and professional impacts on the peer educators themselves.

Perceived personal and professional benefits gained by the students (as reported by them) included: a sense of belonging, more independence, more openness, less inhibition, increased knowledge, improved communication skills, confidence, assertiveness, self-esteem, and the ability to educate people (Kerr & MacDonald, 1997, p. 247).

In their evaluation of a health peer education program as described above, Backett-Milburn and Wilson (2000) found that peer educators showed an increase in their self confidence and ability to voice thoughts and opinions, heightened communication skills, and increased ability to work in teams.

In a study conducted by Ebreo, Feist-Price, Siewe, and Zimmerman (2002), researchers looked at the impact of being a peer educator in a secondary school HIV/AIDS prevention program in 17 urban high schools. The primary method used for

the peer educators was a survey that included measures such as individual difference variables (using the Zuckerman Sensation-Seeking Scale, the Rosenberg Self-Esteem Scale, and Zimmerman's Decision Making Style Scale); general knowledge about pregnancy and STD prevention, parental communication, peer norms, self-efficacy with related behaviors, intentions to have sex, self-reported behaviors, student course evaluations, and demographics. Findings did not show that peer educators themselves had any significant changes, but did show areas of improvement for the overall program, including "...selection, training, supervision, type of intervention, and relationship between peer educator and peer educated (p. 419)."

Main (2002) responded to the Ebreo, Feist-Price, Siewe, and Zimmerman (2002) article by suggesting alternative methods for studying the impacts of being a peer educator. One main critique is in the difficulty of comparing peer educators to their classmates, in that the two groups truly had different "interventions." Instead, Main called for a look at the importance of peer selection and training, and the importance of clarity of purpose, as different goals require different strategies. Main pointed out that there are several studies that show positive impact on the health of peers as a result of peer education programs. What is lacking are studies on how,

...peer education programs affect the health-related knowledge, attitudes, and behaviors of the peer educators themselves. The ideal study would compare these health-related outcomes of peer educators with peers who look like them but have not been exposed to training and peer educator activities (Main, 2002, p. 425).

Strange, Forrest, Oakley, and Team (2002a) conducted a similar evaluation on another sexual health peer education program in English secondary schools. Using pre and post-intervention questionnaires, researchers examined the types of people who were peer educators and their perception of their involvement. In their findings, the researchers discussed methodological difficulties of assessing the impact of the program on the educators. The study showed positive impact on the peer educators, but called for longer-term studies in the future.

Several additional studies indicate the importance of personal development and training for the peer educators themselves, which allows them to accumulate skills and knowledge that will lead them to be able to work with peers (Miller & MacGilchrist, 1996; Parkin & McKeganey, 2000; Strange, Forrest, Oakley, & Team, 2002b; Ward, Hunter, & Power, 1997).

## **2.4 History and Nature of Campus Activism**

Peer to peer sustainability outreach programs could be characterized by some as a modern iteration of campus activism. It is therefore worthwhile to explore the history and nature of activism on campus. The history of campus activism in the United States has seen times of greater activity around key events (wars, major social issues, and the like) and times of quiet. But as campuses are centers of learning and engagement, they lend themselves to being places of activity. The nature of this activity has evolved over the years, from being very place-specific, to having a more global approach, to focusing locally yet maintaining a global perspective.



As soon as campuses were created in the United States, students or faculty found grievances with each other and acted upon those grievances. The first significant campus unrest came in the late 1700s and early 1800s following major shifts in curriculum. No longer were campuses teaching only the classic subjects of arithmetic, geometry, astronomy, logic, and grammar but moved into what was known as “New Learning” including mathematics, natural science, literature, history and philosophy. This shift “introduced the radical notion that the mind could discover the unknown (Horowitz, 1987, p. 26).” With this new way of thinking, different ideas and actions began to surface. Struggle for power became an issue between students and faculty. Divisiveness continued as more formal factions were created such as fraternities, which started to lump students into groups. Socio-economic class separation was another growing divisive factor. Activism during this era was predominantly specific to the campus and its politics and issues (Horowitz, 1987).

The age of campus activism as we may recognize it today came during the beginning of the 20<sup>th</sup> Century, during the Progressive reform era. The “College Settlement Movement” was a period where students opened inner city settlement houses to teach immigrants ‘Americanization’ classes, health and child care, industrial training, and recreational programs. This movement and the reform era laid the groundwork for the new field of social work. The time following World War I saw more adolescents rejecting parental ways and questioning broader society and taking that questioning to the academy. Also during this time period was the rise of the “New Negro” movement where African American students wanted to use their collegiate training to help advance their

race and worked on social reform movements to do this (Franklin, 2003). In response to the fascist movement of the 1930s campuses saw a revitalization of the “Old Left” socialist and communist groups. Students of this era started new groups such as the American Student Union, National Student Federation, National Student League, American Youth Congress, and Southern Negro Youth Congress (Franklin, 2003).

The period around World War II seemed to be a quiet time for campus activism, as many students left campuses to be involved in the war, either in the battlefields or supporting industries. In the time after the war, the G.I. Bill brought many soldiers back to campuses and student populations swelled again. The next decade of the 1960s is the most well-known time for campus activism, and this reflected the national and international events and movements such as the Vietnam War, the Civil Rights movement, and related Black Power movement. During this era there were well-publicized, very visual protests and demonstrations, many taking place on college and university campuses (Franklin, 2003; Loeb, 1994).

Student protests not only raised awareness and visibility on these issues, but led to changes within their home institutions as well. For example, the 1968 assassination of Martin Luther King, Jr. set off a round of protests at Columbia University by the predominantly white Students for a Democratic Society (SDS) and the predominantly black Students for Afro-American Society (SAS). One resulting change from these protests was the creation of a Black Studies program at Columbia (Franklin, 2003).

Campus activism of the late sixties and early seventies can be characterized as tumultuous. The killings of student demonstrators at Kent State and Jackson State in 1970

are an example of this (Loeb, 1994). Future student movements shifted to more humanitarian-based. The student divestment movement of the 1980s was supported by those who were drawn to helping others. This movement saw a new tactic – the shantytown, which was widely used because of its perceived effectiveness and had resonance with living conditions of many South Africans (Soule, 1997).

In his study of campus activism in the 1980s and 1990s, Paul Loeb (1994) pointed out a major shift in student values. According to student surveys, in the 1960s, 80% of freshmen cited “developing a meaningful philosophy of life” as a prime goal of going to college, compared with 40% of those who selected “being very well-off financially.” By the 1980s, these figures had reversed, with 75% students seeking financial security. “Adapters” and “activists” are the two main groupings that Loeb found in his study of students. Many students in this era had “unquestioning faith” and tended to stay politically silent and focus on individual wants and needs. However, Loeb also found that an activism community still existed, one that maintained a sense of common responsibility.

A few examples of newer types of activism during this period included the rise of the community service movement. One explanation for growth in this sector was the pace and scale of activity students could participate in. “The service movement allows individuals to enter social concern step by step, at their own pace, rather than being told (Loeb, 1994, p. 246).” A difference in this movement is that it has yet to receive the national media coverage that activism did in the 1960s (Levine, 1999).

Another area for increased action was the environment. Between 1986 and 1990, Loeb found that the freshman responses doubled for importance of getting personally involved in programs to clean up the environment. This type of activism appealed to students because it was very tangible as individuals have the power to take control over their personal behaviors (for example, on length of shower time, transportation choices, and what they eat). Students not only focused on their own behaviors and on “clean-ups,” but also on turning to the campuses and conducting energy audits and calling for more environmentally-related content in curricula (Loeb, 1994).

In 1988 the Student Environmental Action Coalition (SEAC) was created which quickly grew into a national network. Similar to older models of having campus chapters of a national organization (like SNCC and SDS in the ‘60s), SEAC encouraged action on home-campuses while connecting to national campaigns. They also devised special-interest caucuses focusing on sexism, racism, heterosexism, and classism, tying these topics to environmental issues (Loeb, 1994; Student Environmental Action Coalition, 2008). This is a good example of how student activism began to be more inclusive in its focus, rather than focusing on a sole issue.

As for students of today, many remain disillusioned by the minimal progress made since the various civil rights movements of the mid-20<sup>th</sup> century and therefore can be found to be quite cynical. Yet, there are contemporary activists who have what Stephen Quaye (2007) calls “critical hope” which is “anchored in the belief that by challenging inequitable behaviors, colleges students can work to improve their circumstances and those of their current and future peers (p. 3).”

In his study of student activism between 1992 and 1997, Levine (1999) found that 64% of the 9,100 undergraduates he surveyed were involved in volunteer activities. And while the rate of participating in protests dropped to 19% in 1976, it returned to 25% in 1999, similar to the rate of 28% in 1969 at the height of campus unrest (Levine, 1999). Civic commitment and social responsibility is of particular interest to students today. 67% of first-years students in 2006 found “helping others who are in difficulty” as either essential or very important objectives (Cooperative Institutional Research Program, 2006).

Student activism of today is not the same as it was in the 60s, which had visible protests that were well publicized by the national media (Levine, 1999; Loeb, 1994). Rather, today’s student activists tend to work locally and focus on issue-oriented goals and projects within a manageable scope. Additionally, these locally-focused goals connect globally via networks with others working on similar issues (Quaye, 2007). This concept is brought to life by one student’s comment. “I can’t do anything about the theft of nuclear weapons materials from Azerbaijan, but I can clean up the local pond, help tutor a troubled kid, or work at a homeless shelter (Levine, 1999, p. A25).”

To find examples of modern student activism on campus, one needs to look in many places. Browsing a list of student government supported student organizations finds groups dedicated to any number of social and environmental causes including: peace and global justice, animal rights, and livable wages. But you’ll also find active students in residence halls (e.g. Resident Assistants organizing a program on equity issues), students engaged in a service-learning project at a local elementary school, students traveling on

alternative spring break trips to help others in need, and student affairs professionals bringing high quality programming around issues of justice and equity to the campus. This type of activism may not have large, visible demonstrations highlighted in the media, but as Paul Hawken (2007) describes in *Blessed Unrest*, there is an unnamed movement afoot. The current state of student action within campus sustainability was the focus of a recent report from the National Wildlife Federation's Campus Ecology Program, *Generation E* (Erickson & Eagan, 2009). This report shares examples of students creating effective, and often measurable, impact through student organizations, coursework, and service projects.

#### **2.4.1 Student Expectations as they Relate to Social Change and Campus Activism**

In order to examine the relationship between changes in student activism and students' attitudes toward the aims of education and their roles in social change, it is important to have an understanding of what students expect to get from a college experience. There are a number of survey instruments that try to ascertain who entering college students are and the beliefs that they hold (Higher Education Research Institute, 2008), student experiences (College Student Experiences Questionnaire Assessment Program, 2007), and students' level of engagement (National Survey of Student Engagement, 2007). However, these and other studies tend to report on what influences learning rather than what is actually learned (Walker, 2008). As the desired outcomes of administrators and faculty do not necessarily match those of students', Paul Walker (2008) set out to ask students to reflect on what they believe they should learn and what they have learned rather than reflecting on predetermined outcomes. The three key

thematic areas that summarize what students listed as important “things” to learn at college: were content, career/academic skills, and life skills. Content covered the typical range of academic subject matter, from chemistry to history. Responses in the career and academic skills contained everything from how to read critically to learning the value of work to writing a resume. Life skills responses included cultural diversity skills and responsibility to domestic skills.

Clearly, students have a wide variety of expectations. How do these expectations relate to student activism? Any number of responses from across the three categories could apply, including: how to reason, politics, public speaking, environmental responsibility, critical thinking, leadership, responsibility, appreciation of diversity, sacrifice, and knowing how to make the world a better place. While these responses came from a relatively small sample at just one institution, it does give a sense of what students want from their time on campus. Of course, as this is a highly developmental stage in a young person’s life, those expectations may change with experience.

Civic commitment and social responsibility is of particular interest to students today. Sixty seven percent of first-year students in 2006 found “helping others who are in difficulty” as either essential or very important objectives. This is the highest rating this value has been in twenty years and was the third highest value held by incoming students (behind raising a family and being well-off financially). Additionally, 35% of students felt it was essential or very important to become a student leader (Cooperative Institutional Research Program, 2006). This trend in values matches what Loeb (1994) found over a decade ago.

There is a relationship between student expectations and values and the evolution of student activism, but it is not the sole driver. Institutions of higher education have historically been places to support social change, and this has been further promoted by many institutions specifically expressing this in their missions and vision statements. An excerpt from the University of Vermont's mission statement is but one example of this.

...A willingness to address difficult societal issues with honesty, civility, and practicality. We are a community that values respect, integrity, innovation, openness, justice, and responsibility and promotes the intellectual capacity to engage in ethical decision making (University of Vermont, 2008).

Colleges and universities play a significant role in shaping leadership in our country, in the very least by growing the next generation of leaders. But these future leaders need to be trained as such and institutions of higher education are in the position to do so (Astin & Astin, 2000). In that respect, campuses should honor and support activism as a vehicle for students to be active citizens. As Arthur Chickering (1998) posed, "Would we rather observe apathy and private getting and spending, or activism and opportunities to engage in responsible citizenship?" Perhaps herein lays the difference between contemporary and historical student activism. Are today's campuses more willing to allow students to be active in community service and even in acts of thoughtful dissent, as administrators recognize the value of engagement? Or is this a way for administrators to pacify radical activism? There are those who offer a critique of the modern activities, such as service-learning, who feel that these types of activities perpetuate the imbalance of power between an institution of higher education and the community it is "helping" (Marullo, Moayedi, & Cooke, 2009). Fletcher and Vavrus (2006) offered another critique:



Typical classroom-based and adult-led community “youth engagement” activities are done *to or for* young people, meaning that adults conceive of these activities, design them, institute them, and evaluate them afterwards. There are many problems to this approach, the main one being that oftentimes they actually serve to *disengage* the very young people they are intended to engage (p.3).

Rather, the authors propose that youth be involved in all levels of program development, implementation, and evaluation.

## **2.4.2 The Contemporary Sustainability Movement and its Links to Campus**

### **Activism**

Student environmental activism made a strong appearance on campuses in the 1990s, with Earth Day 1990 as a major catalyst (Loeb, 1994). Organizations like SEAC and National Wildlife Federation’s Campus Ecology Program (National Wildlife Federation, 2008), along with key events like the Campus Earth Summit at Yale in 1994 and books such as *Ecodemia* published in 1995 (Keniry, 1995) provided a base of resources and support for this wave of student-driven action.

Orr’s book inspired many students (including me!) but also inspired faculty and staff interested in making these changes. What came in the following years was a major upswing in the creation of environmental committees that were comprised of faculty, staff, and students, often making recommendations to administrators and facilities managers. This collaborative approach marks a point of departure from traditional student activism. Instead of students working on their own, they now teamed up and joined forces to work within the system. Environmental committees were part of a multi-faceted approach, however, and student environmental organizations still played a role

within this movement. This continues to be the approach today. For example, at the University of Vermont there are a number of groups working on campus sustainability (a broader term that encompasses ecological literacy but also includes issues of social and economic equity). These projects include the Environmental Forum (comprised of faculty, staff, and students), SGA recognized student organizations such as Vermont Student Environmental Program (VSTEP) and Campus Energy Group, student employment opportunities such as the Eco-Reps Program, academic classes such as ENVS 195: Campus Sustainability, and ad hoc student groups such as the Forest Crimes Unit, to name but a few of the partners. Together, these partners help to shape and create change around environmental practices on campus. This was one of the findings of the latest Campus Ecology guide, *Generation E* (Erickson & Eagan, 2009).

The collaborative approach focuses on specific issues on a campus while tying to a greater network of others involved in the campus sustainability movement (Association for the Advancement of Sustainability in Higher Education, 2008b). This approach shows that lessons have been learned from past campus activism and offers tactics for activism to come.

With a greater understanding of the many sides and aspects of sustainability education, environmental and social psychology, peer education, and the campus context, I will now share my exploration of the concept, practices, and effectiveness of Eco-Reps programs. I will first relay my examination of the current Eco-Reps programs—who they are, what they do, and how they do it, as well as program coordinators’ views on best practices and key challenges faced by their program. This initial examination was

followed by an in-depth look at four particular programs, which studied the impact that programs' administrative structure and institutional support has on program outcomes.

I will then impart my findings of a program evaluation of the University of Vermont Eco-Reps Program, which investigated the perceived value of the program, residential student behavior change, and ecological impact.

## CHAPTER 3: METHODOLOGY

The following study comes from an Action Research perspective (Herr & Anderson, 2005). I am the Eco-Rep Program Coordinator at UVM and therefore come from an insider perspective. This has benefits, such as having a relationship and knowledge of the topic, and it has drawbacks, such as issues of research validity and credibility (Russ-Eft & Preskill, 2001). At the outset, I wanted this project to be emergent and iterative – for each phase to inform the next, while always returning to and reflecting on my original research questions. This study utilized a mixed methods approach so that 1) I could learn and practice a variety of techniques and 2) to ensure more credibility to the work. To make sure that I was not working alone, I sought review and advice from other practitioners and research methods faculty.

### 3.1 Action Research

Action research is generally defined as “...research done either by or in collaboration with practitioners and/or community members (Herr & Anderson, 2005, p. 2).” There are many related terms, such as participatory action research or community-based participatory research that overlap with action research, but have can have different purposes and ideologies, and come from different social contexts. The agreement among these various fields is that “...inquiry is done *by* or *with* insiders to an organization or community, but never *to* or *on* them (Herr & Anderson, 2005, p. 3).” Five goals of action research include:

- 1) The generation of new knowledge,
- 2) The achievement of action-oriented outcomes,
- 3) The education of both researcher and participants,

- 4) Results that are relevant to the local setting, and
- 5) A sound and appropriate research methodology (Herr & Anderson, 2005)

Action research is often done by organizational ‘insiders’ and also includes active reflection, incorporating theoretical foundations in experiential learning from John Dewey and Kurt Lewin (Herr & Anderson, 2005). An insider approach is likely to draw concerns over bias, prejudice, and validity and therefore careful attention must be paid to dealing with these issues. Acknowledging one’s presence in the work through writing in first person narrative and incorporating reflections are one way of responding to these concerns. Triangulation of methods and incorporating critical review are others (Herr & Anderson, 2005; Russ-Eft & Preskill, 2001).

As an insider, it is also critical that I address the role that I play within the research, including my roles, values, beliefs, and experiences (Herr & Anderson, 2005). I am a Caucasian woman in her early 30s, raised in an upper-middle class, conservative family, and have ten years of higher education. I am a student, an educator, a wife, a mother-to-be, a daughter, sister, and aunt. I’ve worked in environmental, outdoor, and sustainability education for over a decade and during that time have developed a strong ecological worldview and related personal practice for daily life. I aim to be an inclusive, engaged community member that recognizes injustice and works to right it. As Program Coordinator for the UVM Eco-Reps Program for the past four years, I’ve worked on evolving the program to meet current needs by incorporating feedback from our various stakeholders. As a researcher of the field of peer-to-peer sustainability outreach programs

and of the UVM program in particular, I acknowledge my background and other roles, but strive to be as objective as possible.

My particular research followed Lewin's iterative cycles of plan-act-observe-reflect, as cited by Herr and Anderson (2005). Each phase of research design was developed, reviewed, and critiqued by a combination of my dissertation committee, research methods faculty, and outside practitioners. At various stages along the way I presented findings and received feedback on where to go next. Emergent themes from one stage were the drivers to the next stage. My overall research process evolved continually and included many alterations based on feedback from others.

This dissertation describes two main stages of research:

- 1) an examination of the characteristics of Eco-Rep programs through an initial review of current programs across the United States and Canada as well as four in-depth case studies, and
- 2) an impact evaluation of the University of Vermont Eco-Reps Program.

### **3.2 Examination of Eco-Rep Program Characteristics**

A first step in understanding the extent and impact of this relatively new type of program, I felt it necessary to gather data on what programs currently exist and how they operated. This was accomplished through a survey of program coordinators across the United States and Canada. To take this understanding deeper, I conducted four in-depth case studies of programs that focused on organizational structure. In examining a program's overall structure and behavior, I hoped to discover how these aspects

influenced the program's achievement of goals and outcomes as well as the durability of the programs themselves.

### **3.2.1 Eco-Rep Program Coordinator Survey**

The Eco-Rep Program Coordinator survey was developed with the following guiding questions in mind:

1. What is the definition of a peer-to-peer sustainability outreach program?
2. What is the range of content and delivery methods of these programs?
3. What are best practices of these programs?
4. What challenges do the programs and/or their coordinators face?
5. How do the administrative structures support or detract from the success of the program?

A desired end-product was documenting existing programs and providing examples of best practices and strategies to overcoming obstacles for other campuses to use as a resource as they maintain or start their own programs. As this phase included human subjects, an expedited review was filed and approved by the Institutional Review Board at UVM.

Using an approach described by the social research field (Singleton & Straits, 2005) I developed a self-administered questionnaire and that asked questions in three primary areas: about the program (including content and delivery), administrative structure of the program, and campus data (see Appendix A). The survey design included a mixture of open-ended or free response (qualitative) questions and close-ended or fixed-choice (quantitative) questions to obtain a variety of data, an approach advocated in

the program evaluation field (Russ-Eft & Preskill, 2001). While coding and analyzing open-ended questions is often more difficult than purely quantitative responses (Russ-Eft & Preskill, 2001; Singleton & Straits, 2005), these questions allow for freedom of responses, and “the resulting material may be a veritable gold mine of information, revealing respondents’ logic or thought processes, the amount of information they possess, and the strength of their opinions or feelings (Singleton & Straits, 2005).” As Patton (2002) writes of qualitative questions, “quality has to do with nuance, with detail, and with the subtle and unique things that make a difference between the points on a standardized scale (p.150).” Close-ended questions require less effort and are more standardized (Singleton & Straits, 2005).

The questionnaire was reviewed by colleagues, advisors, and a University of Vermont statistician and was pilot tested in April 2007 before general distribution in May 2007. Pre-testing of the instrument is an important stage, as it can identify weaknesses overlooked in the design process as well as issues of validity and usefulness (Russ-Eft & Preskill, 2001; Singleton & Straits, 2005). The pilot test included two members of the population of programs surveyed. Based on positive feedback from pilot test participants on ease of use and thoroughness, the instrument was not modified from the pilot test draft.

Programs included in the survey were identified through a list gathered from the prior UVM Eco-Reps Program Coordinator as well as an internet search (see Appendix B). Programs included on this list were residential-based, associated with a campus



program/department, and focused on sustainable living practices. General student environmental organizations or related academic clubs were not included.

Because of the relatively small size of the entire pool of Eco-Rep program coordinators, the survey attempts to be a census, surveying the entire population, rather than a sampling (Singleton & Straits, 2005). The questionnaire was available on-line and a request for participation was emailed to all program coordinators or supervisors. The email cover letter included information on purpose, informed consent, intent to publish the results, and deadline for participation. If someone did not respond to the email request, he or she received a follow-up phone call and emails asking for their participation. It has been found that this type of follow-up work increases the response rate for a survey (Singleton & Straits, 2005).

### **3.2.2 Eco-Rep Program Case Studies**

To follow up on the national survey that collected a little data from many sources, I decided to focus on four campuses to gather richer detail about their processes. The goal of conducting the four case studies was to generate a deeper understanding of how an Eco-Rep program's organizational structure and behavior influence a program's achievement of goals and outcomes as well as the potential durability of the programs themselves. As this phase included human subjects, an expedited review was filed and approved by the Institutional Review Board at UVM.

An important step in this process is gaining a fundamental understanding of the theories associated with organizational behavior (Scheirer, 2005). Organizational behavior, a field generally coupled with business management, describes the process of

management and focuses on the study of people, groups, and their interactions in organizations. It also addresses how an organization or company interacts and relates with its surrounding environment (such as technological development and change, social and cultural factors, and political and economic conditions). Further, structure and design of the organization itself are part of this field (Bowditch, Buono, & Stewart, 2008). While much of the literature is aimed at the business model of organizations, program managers and designers can learn from what the field of organizational behavior offers.

Scheirer (2005) developed the diagram, seen in Figure 7 to illustrate the life cycle of a program, from initiation to development and adoption to implementation to sustainability (or discontinuation).

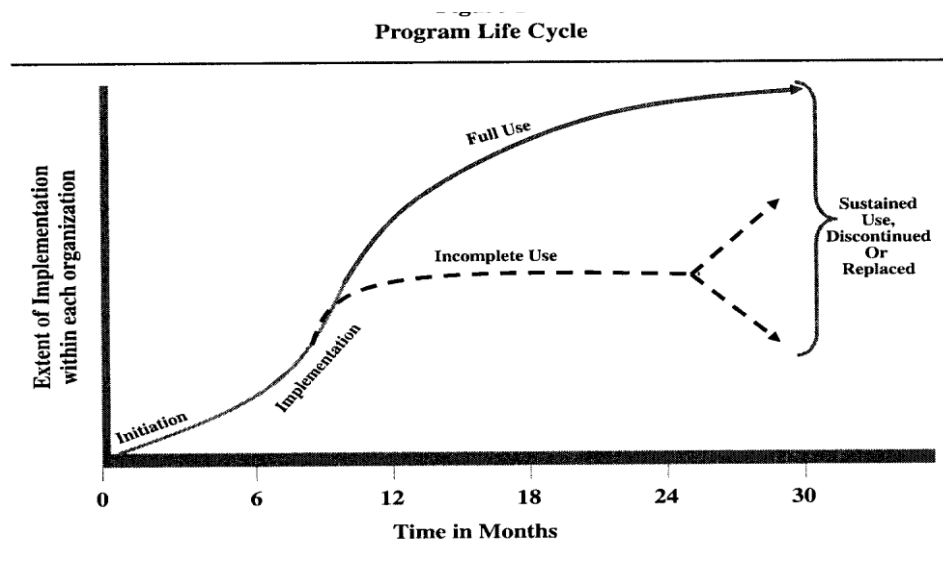


Figure 7. Program life cycle (Scheirer, 2005, p. 323)

While continuation or institutionalization of a program may seem like an assumed goal, Green (1989) pointed out that capacity building and innovations that come from the

generation of new, more relevant programs may be an even more important outcome. In other words, why keep funding a program that no longer meets current needs? As Eco-Reps programs are relatively young and are still developing, there is plenty of opportunity to learn from why some programs last and others don't.

I used case studies as part of my overall research design, as they are a way to gain in-depth knowledge of a particular subject rather than fleeting knowledge of many examples (Gerring, 2007; Yin, 1994). By focusing on the stories of a few programs, I hoped to “illuminate features of a broader set of cases (Gerring, 2007, p. 29).”

My research design was based on Yin's (2004) model, including constructing a preliminary theory that drives the rest of the study, selecting cases, designing the data collection protocol, conducting the case studies, writing reports and finally doing cross-case comparison, as shown in Figure 8.

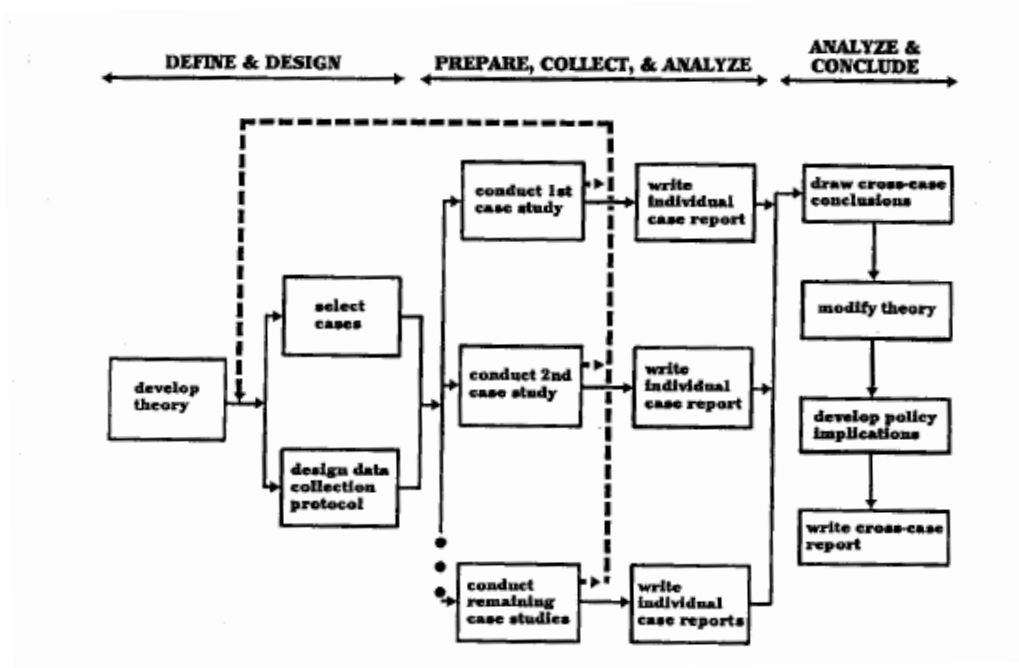


Figure 8. Case Study Method (Yin, 2004, p. 49)

Following this model, my research question for the case studies was: How do a program's organizational structures impact the outcomes and overall sustainability of Eco-Reps programs? Common outcomes of these programs include training students to be peer educators who will help increase awareness and pro-environmental behaviors of the residential student body through educational activities and information dissemination (Erickson & Skoglund, 2008). These outcomes are generally determined by the program

coordinator or advisors, and may vary according to specific campus needs and issues.

The following questions helped guide me toward my research question:

- What, if any, are the theoretical and/or philosophical frameworks of programs?
- What is the administrative structure of the programs, including staffing, budgeting, planning, management, evaluation, and oversight
- How are the programs evolving to meet current needs?

### **3.2.2.1 Guiding Theory**

As no other research has yet to be done on these particular types of programs, I turned to programs in other fields to build my preliminary theory. A large cross-case study of corporate diversity training programs found that both adoption of a program and perceived success of the training had a strong association with top management support for diversity (Rynes & Rosen, 1995). Scheirer's (2005) conducted a meta-analysis of the sustainability of health-related programs (meaning the longevity and continuation of distinct programs). She found that there are five main factors that influence the extent of a program's durability:

- a) The program itself is modifiable over time,
- b) the key role of a program champion,
- c) a substantial fit with the underlying organization's mission and procedures,
- d) benefits of staff members and/or clients that are readily perceived (but not necessarily documented via formal evaluation, and
- e) the importance of support from other stakeholders in the community (Scheirer, 2005, p. 339).

Smith and MacGregor (2009), in their study of learning communities within higher education, found that institutions with successful programs have "created new organizational structures, roles, and processes and appropriate resource investments to

support their learning community programs (p. 136).” Savaya, Spiro, and Elran-Barak’s (2008) analysis of the sustainability of social programs in Israel suggest a number of factors and indicators that contribute to the healthy duration of a program, in three areas: project design and implementation, organizational setting, and the broader community. Clugston and Calder’s (1999) conditions for evaluating sustainability initiatives are comparable to the indicators mentioned above.

Building on this literature, my preliminary theory for the case studies of Eco-Rep programs was that the more institutional support (meaning administration personnel providing or approving of physical, fiscal, and personnel resources) and articulated organizational structure a program has, the more likely it is to succeed in reaching its outcomes. More specifically, means of support include having:

- a dedicated faculty/staff/graduate student as program coordinator or advisor who is compensated for their time,
- compensation for student workers (either wages/stipend or reimbursement for room or board),
- dedicated storage and meeting spaces,
- access to campus resources and tools, such as room reservation and calendar systems,
- access to financial resources for necessary supplies and materials, and
- a “champion” among the middle or upper-level administration.

### **3.2.2.2 Case Selection**

Using my knowledge as the UVM Eco-Reps Program Coordinator and active participant in the informal national network of programs, I selected the campuses to study from a pool of active programs (see Appendix C). To be included on this list programs needed to meet the following criteria:

1. focus on sustainability living practices such as waste reduction and energy conservation,
2. focus on residential buildings,
3. focus on peer education, and
4. knowledge of or evidence of currently in operation.

I sought both a diverse and deviant case selection (Gerring, 2007) that include a mixture of well-established programs as well as recently launched programs. My goal was to choose those that represent a variety of administrative structures (diverse cases), from those with a dedicated staff person running the program with paid students to programs that are run by students that utilize volunteer students. The cases were selected by creating a spreadsheet of known programs that focus on sustainability living practices (such as waste reduction and energy conservation), operate in residential buildings, and use peer education as a primary approach. From this list, I selected three programs representing variety of characteristics including age of program, type of institution (public or private), undergraduate enrollment size, primary role of program coordinator (student or staff), and compensation of participating students (paid or volunteer).

I also chose one deviant, or “outlier” case, as this particular case has a significantly different twist to it. This particular Eco-Reps Program is the oldest, but took a two-year hiatus. My reason for including this case is that it may offer particularly strong insights into the management, evolution, and continuation of Eco-Reps programs.

As I am a peer of these other program coordinators and one who is in contact with several of them through listservs and conference gatherings, I had an already developed rapport and relationship that allowed me access to these individuals. However, despite any previous interaction with coordinators, not all of the first selected programs were interested or had the time to participate in the research. I then had to return to the spreadsheet to select other programs to pursue. Further, as it turned out, one of my cases selected in the “diverse” category turned out to also be on hiatus. This, too, provided many insights into that process.

For both diverse and deviant cases, informants’ roles include lead student Eco-Rep, program coordinator, and/or supervisors. To establish my informants, I contacted the primary contact listed for a particular program and asked to speak with the most relevant persons involved with the program.

### **3.2.2.3 Methods**

I used two primary qualitative methods for the case studies: interviews and observing documents and archival records (Yin, 1994). Semi-structured interviews with informants took place over the phone or in person, using the interview guide shown in Appendix D. Rather than sticking strictly to these questions, I let them guide my interviews, which followed more of a conversational, story-telling tone. I also asked



additional questions that arose during the interview. At the start of our conversations, informants were given a brief background on the nature of my research. I also asked permission to use the individual's name and institution's names in my dissertation for on-campus use only, and this point would be re-examined if portions of my dissertation are used for publication. I explained that they would have the opportunity to review the narratives to check for accuracy.

The second method used was observing documents such as websites, original program proposals, organizational charts, assessments, and any other documentation (including end-of-the year reports or other internal reports to supervisors), noting their existence (or not) and if they are public or for internal use only. Additionally, I conducted content analysis of the documents to draw further inferences and corroborate information provided in the interviews (Yin, 1994).

Interviews were audio-taped and then transcribed. Content analysis of the interviews and observations included coding of responses and categorizing responses to find themes and trends (Singleton & Straits, 2005). The case studies were then first individually written up in a narrative form. The style of writing used was intended to be more informal in tone, to make it more pleasurable to read by those who will get the most out of it – students and campus sustainability staff. I then conducted a cross-case analysis of the case studies, applying a framework consisting of indicators identified in the literature on program sustainability (Savaya et al., 2008). Overall, my analysis included seeking patterns and making linkages back to the theoretical propositions that initiated my research design (Yin, 1994).

### **3.3 University of Vermont Eco-Reps Program Evaluation**

The overall research goal of this study was to develop an evaluation protocol for peer-to-peer sustainability outreach programs, to be piloted on the UVM Eco-Reps Program. This study addressed the following questions:

1. What type of impacts does a peer sustainability outreach program have on campus? What are the best ways of measuring the effects?
2. Using the example of the University of Vermont's Eco-Reps Program, is UVM's program effective? How and in what ways? How can this information best serve other campuses?

The three primary focus areas included: perceived value of the program, resulting residential student behavior change, and ecological impact of the program. The methodology for this stage of research was based on the field of Program Evaluation (Patton, 2002; Russ-Eft & Preskill, 2001). Again, using a mixed methods approach, I gathered data in multiple ways from multiple sources, as a way to strengthen the validity of the research, including: a review of Eco-Rep demographics, a review of campus utility data, interviews and focus groups with stakeholders; a survey of residential students; and a review of student Eco-Rep feedback forms. As this phase included human subjects, an expedited review was filed and approved by the Institutional Review Board at UVM. An exempt review was necessary due to the incentive drawing used in the student survey. Methodology for each approach will be described separately.

### **3.3.1 Program Characteristics and Demographics**

The UVM Eco-Reps Program began as a pilot project of the Recycling Office in the spring of 2004. Since that time, the program has grown in scope and size. In order to give context to an evaluation of the program, I developed a summary of the program characteristics and history, including: administrative structure, funding, program topics, number and demographics of the Eco-Reps. In order to evaluate the intended goals and outcomes of the program, I created a logic model. Logic models,

...help determine the extent to which the program has clearly defined and measurable objectives, a logic or rationale for reaching the program's goals, and a sequence of activities that represent the program's logic or rationale. It shows logical linkages among activities, immediate outputs, and a range of outcomes (Russ-Eft & Preskill, 2001, p. 90).

I developed the UVM Eco-Reps Program logic model within my role as Program Coordinator, and it was reviewed by members of the Eco-Reps Advisory Team as well as a Campus Sustainability class at UVM. Another component of the program's characteristics is the participating students: those who apply and are accepted as Eco-Reps.

Interviews of UVM stakeholders and conversations with other program coordinators (both described in full below) suggested looking at the application rate and/or demographics of Eco-Rep applicants as an indicator for evaluation. One goal of the Eco-Reps Program is to have full coverage of Eco-Reps in all of the full-sized residence halls, ideally with students representing a diversity of academic interests (not just environmental studies or science). The aim of having a diverse group of Eco-Reps is

that it will allow the program to reach a broader audience and also adhere to UVM goals of having a diverse, inclusive, and engaged student body (University of Vermont, 2008). A review and analysis of Eco-Rep applicants and hired students included: application, acceptance, and retention rates, as well as the distribution of academic majors, residence halls, and class years, since the beginning of the program in spring 2004. Once placed in a spreadsheet, the data was put into graphs to show the longitudinal view.

### **3.3.2 Campus Utilities Analysis**

Another goal of Eco-Reps programs is to reduce waste and to conserve energy. However, depending on the campus situation, this can be quite difficult to ascertain, due to how utilities are measured. While there is excellent data available that covers the entire campus, only electricity is sub-metered per building (and this data was not available to me at the time). Water usage is not metered at all. Heat, trash, and recycling data are totals for the whole campus. Therefore, the data I had access to could not have any direct correlation to the effect of the Eco-Reps Program, as it covers a much broader scope than that of the program. However, it seemed worthy to have a sense of the state of key utility usage on campus, to help provide context.

The data reviewed came from two sources: 1) the greenhouse gas inventory for the years 1990-2007 compiled by Eleanor Campbell, a Graduate Fellow in the Office of Sustainability in 2008 (Campbell, 2008), and 2) the monthly tonnage report for solid waste and recycling for the years 2000-2008 – a working document of the UVM Solid Waste and Recycling Program (Spiegel, 2008). For the sake of this research, I focused

on three key areas: trash and recycling, electricity, and greenhouse gas emissions, as waste reduction and energy conservation are the two primary focuses of the Eco-Reps Program and greenhouse gas emissions are a timely and important measure.

For my purposes, I compiled the needed data into a simplified spreadsheet (Appendix E), showing the total population of the campus, total building square footage, total kilowatt hours (KwH), total short tons of trash and recyclables, and metric tons equivalent of carbon dioxide (MT eCO<sub>2</sub>) of greenhouse gas emissions for the years 2000-2007. Using this data I assessed the average rate of growth over time for population and building square footage as well as the amounts of electricity, trash and recycling, and greenhouse gas emissions per capita and per square footage. Graphing these findings and adding linear trend lines, (using the trend line tool in Microsoft Excel), allowed me to visually see the change over time.

### **3.3.3 Residential Student Survey**

Another goal of Eco-Reps programs is to promote pro-environmental behaviors among students. In the spring of 2008, I conducted a survey to selected UVM residential students to gain an understanding of their self-reported environmental behaviors as well as perceptions of and interactions with the UVM Eco-Reps Program. The survey also asked questions that could help inform the content and approach used by the Eco-Reps Program. I developed the survey after a series of conversations with six other program coordinators of Eco-Reps programs (five in the U.S. and one in Canada). Five of the programs were four to eight years old and fairly established on campus. One program was in its second year. My questions to coordinators included if they had been requested

or required to evaluate their programs and if so, what methods they used. I also asked coordinators about what they perceived as potential key indicators of a successful program. Generally, coordinators concurred that key indicators fall in two categories: campus-wide impacts and participating students' experience, as suggested by other peer education evaluations (Parkin & McKeganey, 2000; Sawyer & Pinciario, 1997) and overlapped with many suggestions offered in the UVM interviews (to be discussed in Chapter 5).

### **Campus-wide Impacts**

- Attendance at events hosted by program,
- Assessing specific goals for specific projects (i.e. how many storm windows are shut after a storm window campaign; how many light bulbs swapped out),
- Residence halls outside of the targeted audience have initiated their own program, and now seeking advice and assistance from office/coordinator/students,
- Application/participation rates increase,
- Program Coordinator and students recognized as resource people; getting contacted by random students,
- Lasting behavior change by surveying alumni on their environmental engagement and behaviors,
- Number of students studying environmentally-related subjects, and
- Rate of eco-literacy on campus (i.e. from being aware of environmental events on campus to knowledge of campus systems such as recycling).

### **Participating Student Experience**

- Alumni of program move on to higher level positions,
- Retention of student workers/volunteers,
- Participating students function as a team, and
- Lasting behavior change by surveying participating students on their environmental engagement and behaviors several years out of the program.

It is worth noting that none of the program coordinators mentioned administrative or institutional measures of success such as continued funding and staffing.

Using what I learned from these conversations, the UVM survey was a self-administered on-line questionnaire and asked questions in the following areas: about residential students' interaction with and perception of the UVM Eco-Reps Program, students' perceptions of their own environmentally related behaviors, motivations and barriers for changing behaviors, knowledge of environmentally related issues on campus, and demographic information. The design of the instrument, adapted from Harvard's Resource Efficiency Program's student survey (Kreycik, 2008), included a mixture of close-ended or fixed-choice (quantitative) questions and open-ended or free response (qualitative) questions to obtain a variety of data.

The questionnaire for UVM was reviewed by colleagues, my advisors, and a UVM statistician, and was pilot tested by four undergraduate students living in a residence hall that was not included in the survey sample. Generally, only minor changes

were suggested. These suggestions were considered and included in the final draft of the instrument.

The questionnaire (Appendix F) was available on-line and a request for participation was emailed, via Residential Life listservs, to all residents of four selected residential complexes on campus on February 25, 2007 and was open until April 1, 2007. Instead of surveying all residential students, the sample was narrowed to allow a more concentrated approach, including gathering qualitative data from residential life staff focus groups as well as residential students. The criteria for choosing residential complexes included analysis of past and current Eco-Rep placement in those buildings. The four complexes include: Harris/Millis (approximate population = 530); Marsh/Austin/Tupper (approximate population = 390); Chittenden/Buckham/Wills/Converse (approximate population = 520); and Mason/Simpson/Hamilton (approximate population = 390).

The email cover letter included information on purpose, informed consent, intent on use of the results, deadline for participation, and announcement of an incentive for participation (chance of winning four \$50 iTunes gift certificates). A follow-up email was sent out to request participation halfway through the window of time until the incentive drawing (approximately six weeks). Students' interest in participating in the incentive drawing was kept separate from the rest of their data.

The sample size was calculated by using an on-line calculator (Raosoft Inc., 2008). With a margin of error of 5% and a 95% level of confidence and a total population of the four chosen residential complexes at approximately 1,830, the recommended



sample size is 318. It should be noted that while striving for a statistically significant sample size in the residential student survey, the findings may not accurately describe the whole of the residential student body (as the population of the four complexes is roughly 39% of the total residential student population of 4,700).

Of the 437 entries for the drawing, only 352 were legitimate, as 85 were duplicates. According to the date stamp on the entry spreadsheet, most of the duplicates came soon after the survey announcements came out (on February 25th and March 24th). It is not certain whether students were confused and thought they were two different surveys, or if they were trying to get their names in multiple times for the drawing. Most of the duplicates were entered twice, but one respondent entered his name in seven times. Duplicates were checked by alphabetizing the names in the spreadsheet and then checked for duplications. The winners of the drawing were chosen by putting the names in random order, then blindly scrolled and selected four names. Those students were notified by email and asked to confirm their email address so that they could be sent an e-card for iTunes.

Noting the duplication in the drawing entries, there was concern over duplication in the survey entries. After consulting with Alan Howard, UVM Statistician, duplicate survey entries were found by comparing date/time stamps from the duplicates in the drawing and marking those as duplicates in the survey (noting that the time stamp would be the same or a minute earlier in the survey). Following this method, 70 responses were dropped from the survey. Three responses were also dropped for being outside of the

survey population (i.e. residence halls not in the original survey sample). Three blank responses were dropped as well as four responses that did not indicate a residence hall.

I received 424 valid surveys (a 23% return rate), which exceeded the needed return rate (318) for viability. I conducted univariate analysis of this survey by running frequencies of each question in SPSS (v. 15.0). Percentages given are valid percentages, dropping missing or invalid responses. I coded the qualitative responses and then quantified those responses according to the coding. I also included examples of narrative responses.

Before running bivariate analyses, using SPSS (v. 15.0), I re-coded the independent variables to make the chi-square tests more accurate. Gender was re-coded from three choices (male, female or transgender) to just two, as there was just one response for transgender. Residence halls were re-coded in three ways: 1) between buildings that did and did not have an Eco-Rep in that building for the whole year; 2) between buildings that did and did not have an Eco-Rep in that building for the surveyed semester (spring 2007); and 3) comparing Converse Hall to the rest of the residence halls. Converse was singled out as it has never had an Eco-Rep for the program's entire existence and while part of the Chittenden-Buckham-Wills complex, it sits separately and is recognized to be of its own, independent nature. As one Resident Assistant from the CBWC complex noted, "Converse is a I-do-my-own-thing kind of place." Residency was another re-coded variable, to have two choices between Vermont residents and non-Vermont residents. Finally, class year was re-coded to compare first year students to the other three classes.

The goal of running the chi-square tests was to test the hypotheses I generated to 1) check my assumptions about the demographic variables such as class year, gender, and residency and reported environmental behaviors, which could inform the Program's content and approach and 2) test whether having interaction with an Eco-Rep made a difference to, or impact on, residential students, regarding their knowledge and related behaviors. The hypotheses tested are as follows:

1. First year students would have more contact and knowledge of the Eco-Reps Program, as they are the highest percentage of on-campus residents.
2. Women would be more likely to report having pro-environmental behaviors than non-Vermonters.
3. Vermonters would be more likely to report having more pro-environmental behaviors, supporting the idea of the "Vermont ethos" as defined by Nan Jenks-Jay (1999) as the feeling that, "...since the environment is integral to a Vermont way of life, people tend to adopt a behavior that reflects a high regard for the environment as part of the culture (p. 151)."
4. Residents of buildings with an Eco-Rep during the year would know more of the program and be impacted by it more than those without an Eco-Rep.
5. Residents of buildings without an Eco-Rep during the surveyed semester (spring 2007) would know less of the program and be impacted by it less than those with an Eco-Rep.

6. Residents of Converse would know less of the program and be impacted by it less than the other buildings, either with or without an Eco-Rep.

I conducted bivariate analyses by using chi-square tests to test for significance for the independent variables (demographics). Unfortunately, as there was incomplete data for survey respondents' majors, this variable was not tested. Significance is noted for the p-value being less than or equal to .05 (or  $p \leq .05$ ).

### **3.3.4 Stakeholder Interviews and Focus Groups**

To understand the perceived value of the program by others as well as other issues, I conducted individual interviews as well as focus groups (see question guide in Appendix G). I wanted to conduct in-person interviews and focus groups, as they allow a researcher can, "... elicit a fuller, more complete response than will a questionnaire requiring respondents to write our answers (Singleton & Straits, 2005, p. 237)." In-person interactions also allow for the ability to clarify remarks and ask probing questions that might draw a more detailed response and unexpected information (Patton, 2002; Russ-Eft & Preskill, 2001; Singleton & Straits, 2005).

The interviews I conducted were semi-structured, audio-recorded conversations in a location mutually agreed upon between the researcher and the interviewee. The interviewees were identified as being stakeholders of the program, and are either actively involved on the Eco-Reps Advisory Team, key administrators identified by the Eco-Reps Advisory Team members, and a former Eco-Rep that was chosen for her reputation as an active Eco-Rep (as identified by the former Program Coordinator).

Instead of interviewing the entire residential life staff (including Residential Directors, Assistant Residential Directors, and Residential Assistants), the sample was narrowed to allow a more concentrated, in-depth approach that encouraged longer discussions as opposed to a quick response. The criteria for choosing residential complexes included analysis of past and current Eco-Rep placement in those buildings. The four complexes include Harris/Millis (approximate population = 530); Marsh/Austin/Tupper (approximate population = 390); Chittenden/Buckham/Wills/Converse (approximate population = 520); and Mason/Simpson/Hamilton (approximate population = 390). This sample matched that of the survey of residential students.

The focus groups were semi-structured, audio-recorded conversations in the usual meeting location for the Residential Life staff. At the beginning of the interviews and focus groups, I briefly described the research purpose and process (including the intent to preserve anonymity but explaining the possible breach of confidence) and asked for their consent to have participants sign an informed consent statement. As part of my introduction, I also encouraged participants to be honest, and not feel concerned that they might offend me for commenting negatively on “my” program.

Interviews and focus groups were audio-recorded and transcribed. I then conducted content analysis of the interviews and focus groups by coding and categorizing responses to find themes and trends (Singleton & Straits, 2005).

### **3.3.5 Eco-Rep Feedback**

As the peer education program evaluation literature suggests, I found it important to study the impact the program has on the participants themselves (Backett-Milburn & Wilson, 2000; Ebreo et al., 2002; Kerr & MacDonald, 1997; Parkin & McKeganey, 2000; Sawyer & Pinciario, 1997). At the end of each year, student Eco-Reps are asked to fill out an evaluation form regarding their experience with the program, completed during the last meeting of the year. I compiled the results of the evaluation forms since 2004-2005 to observe any trends in terms of students' perception of the value of the program both personally and for the residential campus. While the form has evolved over the years of the program's existence, there are some consistent questions. The form used in 2007-2008 is shown in Appendix H. Each year's full report on results can be found on the Eco-Reps Program website <http://www.uvm.edu/ecoreps>.

I will now share the findings and analysis from the examination of Eco-Rep program characteristics and the evaluation of the UVM Eco-Reps Program.

## **CHAPTER 4: EXAMINATION OF ECO-REP PROGRAM CHARACTERISTICS: FINDINGS AND ANALYSIS**

This chapter will share the findings and analysis from the first of two stages of research, the examination of Eco-Rep program characteristics. This stage included two parts: an initial survey of known Eco-Rep program coordinators to learn about the content and operations of existing programs, and then an in-depth study of four programs, developed as case studies. This chapter also includes a cross-case analysis of the four case studies and applies the case studies to a Program Sustainability Framework.

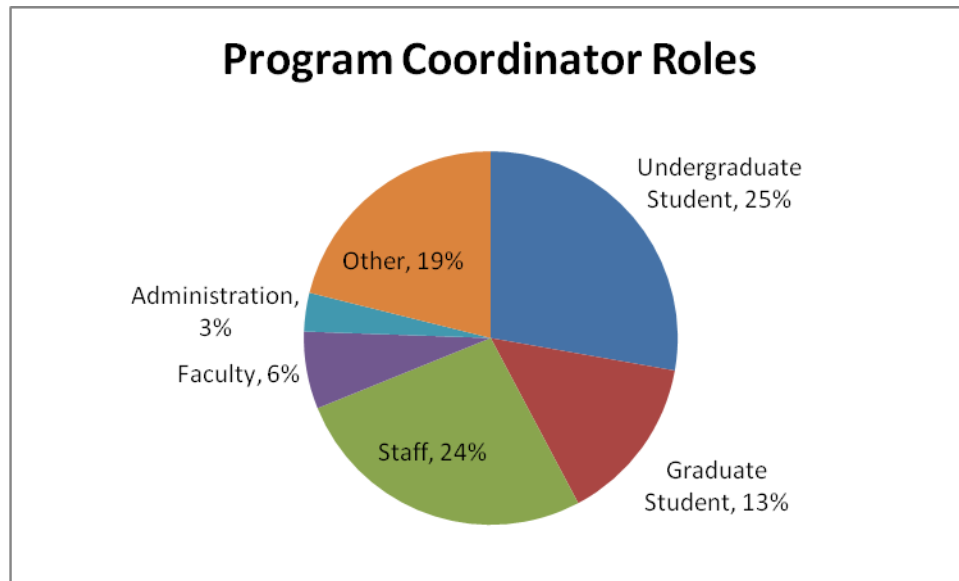
### **4.1 Eco-Rep Program Coordinator Survey**

An initial step in understanding the extent and impact of Eco-Reps programs, I gathered data on what programs currently exist and how they operated. This was accomplished through a survey of program coordinators<sup>1</sup>.

The 2007 Peer-to-Peer Sustainability Outreach Program Survey was completed by representatives from 26 of the programs in the United States and Canada (out of 35 that existed at the time, see Appendix A). Individuals that completed the survey represented a variety of roles, some having more than one. The roles are shown in Figure 9. Some of the other roles mentioned included Adjunct Faculty, Boarding School Teacher/Coach/Dorm Faculty, Trustee, Residence Supervisor, and Staff Grant Writer.

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<sup>1</sup> The results of this survey as well as narrative descriptions of the UVM Eco-Reps Program and the University of New Hampshire Waste Watch Challenge were published as Erickson, C. & Skoglund, C. (2008). "Eco-Reps programs: Conducting peer outreach in residence halls." *Sustainability: The Journal of Record*, 1 (1).



*Figure 9.* Roles of those that completed the survey (may have more than one)

Of those programs represented in the survey, 92% were from four-year colleges. The remaining 8% included a boarding school and a program that targets primarily graduate students). Thirty-one percent were public institutions, while 69% were private. Total student population (including undergraduate and graduate students) is shown in Figure 10.



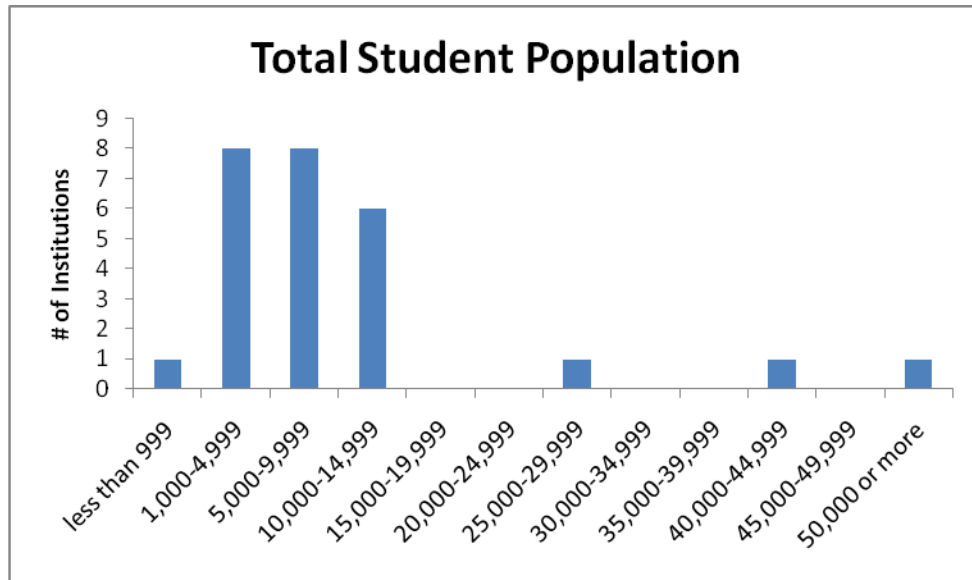


Figure 10. Total student population of participating institutions

Eco-Rep Programs primarily focus on residential students. Figure 11 shows the population size of the programs' target audience.

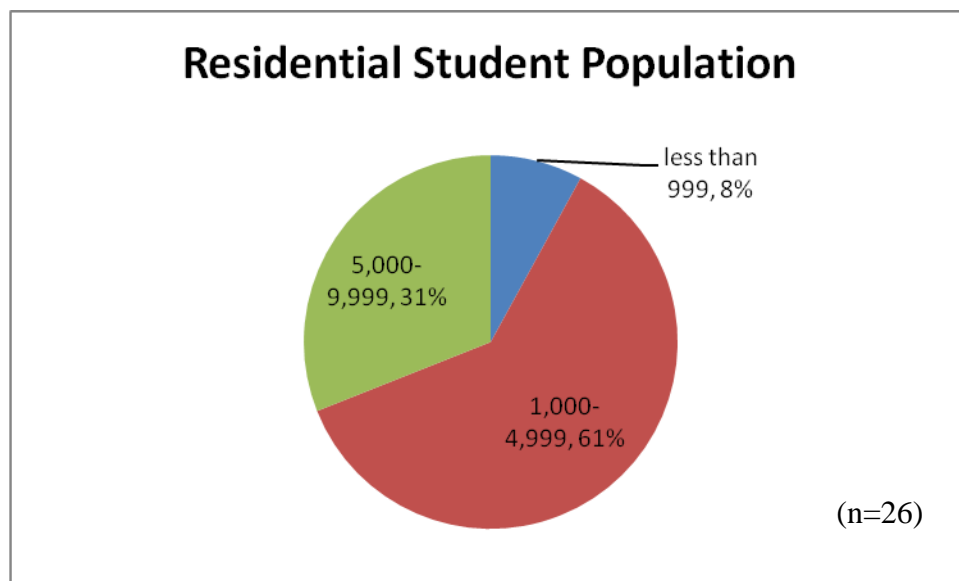


Figure 11. Residential student population of participating institutions

#### **4.1.1 About the Programs**

Of the survey participants, 50% of them used some form of “Eco-Rep” for the name of their program. While some of the associated organizations or programs may have started many years prior, the first Eco-Rep Program was founded in 2000 at Tufts University, created using a concept that begun at Dartmouth College (Rappaport & Creighton, 2007; Tufts Office of Sustainability, 2009b). The names of the various programs and year founded can be seen in Table 1.

Table 1. Names and Founding Years of Programs

<b>Institution</b>	<b>Name</b>	<b>Year Founded</b>
Tufts University	Tufts Eco-Reps Program	2000
Phillips Exeter Academy	Environmental Proctors	2002
Harvard College	Harvard Resource Efficiency Program	2002
Mount Holyoke College	ECO-Reps	2002
Sewanee: The University of the South	Environmental Residents	2002
University of British Columbia	Residence Sustainability Coordinator Program	2003
University of Northern Iowa	UNI Energy! Team	2004
Bowdoin College	Eco-Rep Program	2004
Princeton University	Princeton University Eco-Reps	2004
Yale University	Student Taskforce Environmental Partnership	2004
University of Vermont	UVM Eco-Reps Program	2004
Bard College	BERPs (Bard Environmental Resource People)	2005
University of Texas-Austin	EcoReps	2005
Carnegie Mellon University	Eco-Reps Program	2005
Harvard University (for Harvard Real Estate Services, Harvard Business School and Harvard Law School)	Graduate Green Living Program	2005
Dickinson College	Recycling Task Force	2005
Duke University	Students for Sustainable Living	2005
North Carolina State University	G.R.E.E.N. (Generating Residential Environmental Education Now)	2006
Coastal Carolina University	Eco-Reps	2006
Johns Hopkins University	ECO-Reps	2006
University of New Hampshire	UNH Energy Waste Watch Challenge	2006
Green Mountain College	Campus Sustainability: Eco-Reps	2007
Barnard College	Barnard EcoReps	2007
Keene State College	Eco-Reps	2007

The motivations behind Eco-Rep Program development included: the desire for broader student outreach, involvement, and awareness; to increase recycling rates, reduce waste, and reduce utility costs; to coordinate efforts with other campus entities; and to provide student leadership development in this area. Eco-Rep Programs address a number of topics consistent with these motivating factors in their outreach, as shown in Table 2. Some of the other topics addressed include: arts and celebration, carbon emissions, global climate change, biodiversity, Earth Week, move-out, leadership/advocacy skills, population, use of disposable products, and dining hall dishware loss. One program mentioned the importance of engaging first year students. “We will focus almost entirely on the freshman class in an attempt to catch them young and instill an institutional culture of conservation and awareness.”

Table 2. Eco-Rep Program Topics Addressed (n=26)

<b>Topic</b>	<b>Percentage of Programs That Address Topic</b>
Waste & Recycling	96%
Energy	96%
Water	85%
Food	65%
Consumerism	58%
Transportation	50%
Compost	35%
Other(s)	31%

Written or visual documentation is one form of demonstrating a program’s level of establishment. Two questions about program/organizational development on the

survey inquired about the status of a website and a mission statement. Table 3 shows this status.

Table 3. Status of Program Website and Mission Statement

<b>Status</b>	<b>Website (n=26)</b>	<b>Mission Statement (n=23)</b>
Currently Have	54%	39%
Currently Developing	8%	4%
Plans to Develop	15%	39%
No Plans to Develop	8%	17%
Mentioned on General Sustainability Website	15%	

For a listing of program websites, see the directory on the AASHE website

<http://www.aashe.org/resources/peer2peer.php>.

Some of the themes found in the mission statements included: education and awareness, fostering environmental stewardship and behavior, and lifestyle choices and impacts. A sampling of mission statements follows:

- Student Taskforce for Environmental Partnership, (STEP) is a program designed to educate Yale students and the Yale community about sustainability and to foster a community ethic of environmental stewardship and sustainable behavior.
- Our mission is to teach students how their choices affect the environment and to engage them in on-campus environmental activities. Through the [Keene State College] Eco-Reps program, our goal is to increase overall student awareness of sustainable choices that they can make.

- To increase environmental awareness and sustainable actions among Johns Hopkins freshmen through focused activities, the dissemination of information, and the promotion of competition.

When it comes to addressing these issues and putting their missions into action, programs utilized a variety of tactics, as shown in Table 4. Other strategies identified included: mass emails, personal plans of action, and skits/performances.

Table 4. Methods of Information Dissemination (n=26)

<b>Methods</b>	<b>Percentage of Programs That Utilize Method</b>
Door-To-Door Contact with Residents	88%
Posters	85%
Group Activities/Events	85%
Bulletin Boards	73%
Tabling	73%
Articles in Student Newspaper	54%
Surveys	46%
Bathroom Stall Bulletins	46%
Online Social Networks	42%
Audits	35%
Other(s)	19%
Blogs	12%

Group events and activities sponsored by Eco-Reps are another method for disseminating information and engaging others, as shown in Table 5. The “other list” shows the creativity of the various programs and included: Energy Bingo; Energy Jeopardy with info on local, state, national energy issues; energy competitions; food

waste audits; recycled valentines; reverse trick or treating for recycling; event participation encouragement for RecycleMania and Earth Day; month-long eco-cup competition; speakers; water bottle sales; clothing exchanges; end-of-year donation bins; ‘unplug’ reminders at the beginning of every break; organic vs. non-organic food tastings; potlucks; open mics; compilation of Campus Sustainability Guide information; rallies; hikes; work with administration; study breaks with ice cream; wine and cheese parties; pizza parties; and an energy competition kick-off party.

Table 5. Eco-Rep Program Group Events and Activities (n=26)

<b>Event/Activity Type</b>	<b>Percentage of Programs That Sponsor Event</b>
Light Bulb Exchanges	54%
Waste Sorts	46%
Film Nights	46%
Tours of Local Facilities	46%
Others(s)	46%

When asked about a best practice from their program, responses ranged from procedures to organizational structure. Participants noted the importance and success from partnerships and collaboration between various campus entities (including administration, offices of sustainability, facilities management, and residential life). Having a structured program with application processes, paid students, specific task lists, manuals, and regular meetings was noted by several programs as their best practice. Others mentioned energy competitions, required reflections, and recycling audits. One survey participant answered, “We acknowledge the presence of despair that is part of

why we work to help the planet. We honor honesty and relationships as important parts of environmental work.”

Programs may also face a variety of challenges in their work. In addition to the most commonly identified issues, as shown in Table 6, other challenges mentioned included: Eco-Reps not always being taken seriously by their peers or by faculty; limited to semester offerings; identifying creative outreach strategies; selecting the right structure so students have enough freedom to feel ownership but enough organization to stay on track; finding the right balance between goals and feasibility; finding common meeting times; waning interest in the spring; lack of institutional recognition; disinterested student body; over-committed Eco-Reps; poor recycling infrastructure; no website; a very busy student population; and residents not connecting to where they live.

Table 6. Challenges Faced by Eco-Rep Programs (n=26)

<b>Challenge</b>	<b>Programs that Face Challenge</b>
Student Accountability	69%
Other(s)	54%
Not Enough Time	50%
Not Enough (or any) Funding	42%

There is a current trend in program development for evaluation and assessment of a program’s goals (Russ-Eft & Preskill, 2001). Eco-Rep Programs are responding to this trend in a variety of ways, both internally with individual student Eco-Reps and across the campus as a whole. Frequent responses to how a program’s effectiveness was evaluated included: looking at metrics such as utility rates, recycling rates, and food waste rates; conducting informal and formal surveys with Eco-Reps and with the student



body; looking at the quality and quantity of participation in events held; informal discussions with faculty and staff; surveying Residential Directors; gaining recognition from the administration, Eco-Rep reflections, developing goals for specific projects, and room checks (to see if particular behaviors are being practiced).

The survey also asked program coordinators whether their programs had received any institutional or external recognition. Only four of the participating programs had received recognition from their institution or from an external organization for their work, as shown in Table 7.

Table 7. Awards or Recognition Received by Eco-Reps Programs (n = 4)

<b>Institution</b>	<b>Award(s)/Recognition</b>
Green Mountain College	Frequent mention of activities through weekly campus journal, Environmental Studies Newsletter, and Campus Sustainability Council
Phillips Exeter Academy	Green Flag Program participation
Sewanee: The University of the South	Best Up and Coming Club (2003) Student Organization with the most positive influence on student life (2004) Best residence hall program (2005) Best educational program (2006)
University of Vermont	Governor's Award for Environmental Excellence (2005)

While many of these programs have similarities, each has its own unique twist and situation. Survey participants identified the following as unique qualities of their programs: collaborating with other student organizations; building community around learning about green issues; having an academic course with a diverse student population; working with graduate students and their families; including room checks and hosting regular pizza parties for winners of the energy competition; having the program be

student initiated; incorporating values into the work; being part of a broader campus environmental culture; connecting with the administration; and establishing a recognizable name. A distinctive answer came from one survey participant, who wrote,

I feel that the most unique quality is that the coordinator of the program (me) is a student as well. I will be a senior this coming semester and it will be my third semester running the Eco-Rep Program. It is hard to be available for the program while still taking classes. It is also hard sometimes to get the students to take you seriously when some of them are older than you. I take it on as a challenge and I feel that with each semester I am growing stronger just as the program is.

Student leadership was another area mentioned. Another participant wrote, “Whether the leadership qualities draw students to our program, or our program engenders an interest in leadership is difficult to estimate. We certainly benefit from student leaders who place environmental issues high on their agenda.”

#### **4.1.2 About the Student Educators**

Just as there are varied names for these peer-to-peer programs, there are also a variety of titles the student educators hold. Forty-two percent of the programs called their students “Eco-Reps.” Other titles included: BERP, Energy Captains, Energy Representatives, Environmental Proctor, Environmental Residents, GREEN Coordinators, Green Living Representatives, House Environmental Coordinators, Recycling Task Force Member, REPs, Residence Sustainability Coordinator (REZ SC), STEP Coordinator, and Student for Sustainable Living.

Many programs (48%) had varying levels of student involvement. Sometimes this designated who was paid and who worked as a volunteer. Fifty percent of the programs had student coordinators/interns/co-chairs that have higher levels of responsibility organizing events, facilitating specific projects, and acting as resources for new Eco-Reps. These students were generally returning Eco-Reps.

Others have unique arrangements. One survey participant wrote,

Our REP Captains are in charge of planning, facilitating tasks, maintaining accountability. Our House/Yard REPS are those who do peer education in the upper-class houses and Freshman yard dorms. The Eco-Reps are a crew of freshmen volunteers who attend some of our events, and help with publicity and word of mouth. We also have a number of students in the houses who compete in Green Cup by submitting eco-projects.

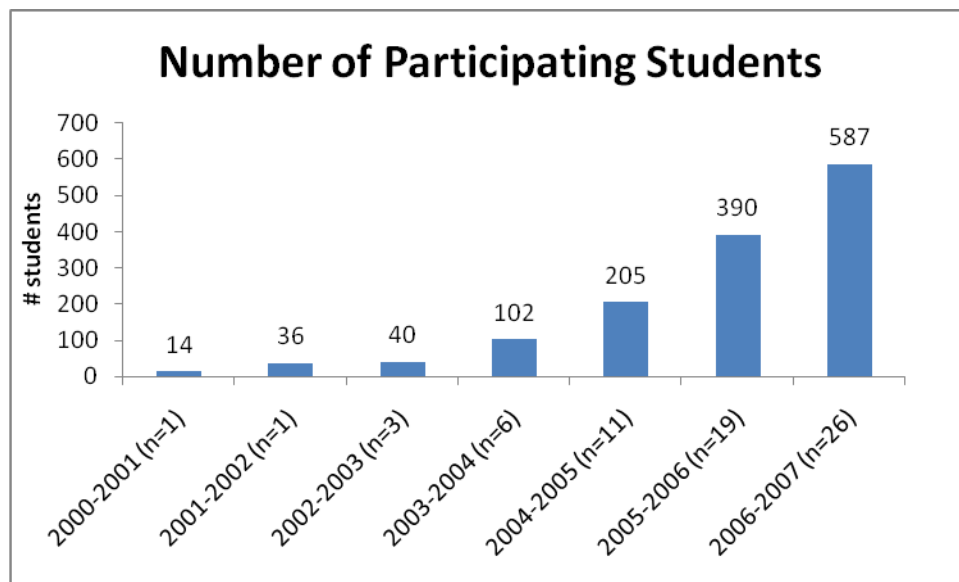
At another campus, they have “Student Coordinators who are hired to run energy teams in one to two dorms. Two energy reps per dorm receive a small stipend for the year to be assistants and the rest of the energy team are volunteers.” A different situation included,

Paid student interns, employed by Waste Reduction and Recycling and Office of Energy Management, who have played an important part in initiating and maintaining the program (in addition to their duties for the respective offices). Within the organization, students have ‘chaired’ or ‘coordinated’ various initiatives, but the structure is highly egalitarian.

One program noted expansion into hiring off-campus students.

One off-campus student was hired this past semester. She focused her efforts on the Student Center instead of on a specific dorm. Through her role as the Eco-Rep for the Student Center, she was able to do a lot to spread the word about Eco-Reps and about sustainability to staff that otherwise would not have been directly affected by the program.

As the number of programs has grown over the years, so have the numbers of students involved. Figure 12 shows the total number of students involved across the twenty-six surveyed programs, of which only one existed in 2000-2001, to the 26 existing at the time of the survey (hence the differing n=).



*Figure 12.* Number of students involved (as employees or volunteers) in surveyed Eco-Reps programs (n = # indicates the total number of programs in that year)

The optimal number of students involved as employees or volunteers in the program often depends on the population size of the residence halls. Thirty one percent said that they'd like at least one Eco-Rep per building. One program strived for an Eco-

Rep to Residential Student ratio of 1:150. Other programs wanted multiple reps per building, particularly if the building is large. Several cited specific numbers as their target goal.

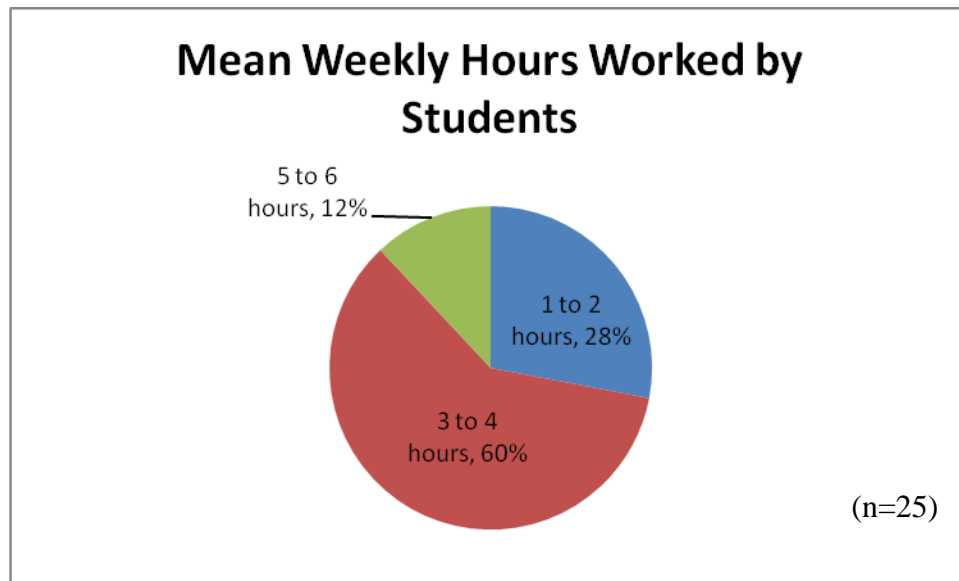
When it comes to hiring students, 62% of the programs had application processes, generally using an application but others requiring a cover letter and resume. Compensation ranged widely. Depending on available funding, some programs paid all participating students while others were strictly volunteers. Again, as programs have varying student levels of involvement, they may have multiple compensation means, as seen in Table 8. Hourly compensation ranged from \$7-18 per hour. Hourly Work Study wages depended on the student’s financial package. Semester stipends ranged from \$150-250 per semester and yearly stipends ranged from \$150-250 per year. In the case of academic credit, students earned one credit.

Table 8. Types of Compensation used by Programs (n=26)

<b>Compensation Type</b>	<b>Percent of Programs that use this Compensation</b>
Hourly Wage	46%
Volunteer	31%
Semester Stipend	15%
Hourly Wage through Federal Work Study	12%
Yearly Stipend	8%
Academic Credit	4%

Student Eco-Reps worked between one and six hours per week, shown in Figure 13. Program meetings generally occurred weekly (48%) or bi-weekly (44%), with a

couple that met once or twice per semester (8%). Most often, meetings were held in the evenings (85%), with 11% meeting during the day and 4% meeting on the weekends.



*Figure 13.* Mean hours worked per week by typical student Eco-Rep

In order to maintain consistency between the programming occurring in each residential space, Program Coordinators employed a number of tactics to hold student Eco-Reps accountable for their work, seen in Table 9. Other accountability methods mentioned included: completed task lists; psychology student research projects; check-ins with co-chairs/faculty; reports; written self-evaluation; peer-pressure; and monthly program evaluations.

Table 9. Types of Accountability Method used by Programs (n=26)

<b>Accountability Method</b>	<b>Programs that use this Method</b>
Verbal feedback to Program Coordinator	69%
Mandatory attendance at meetings	62%
Turning in "assignments" such as surveys and audits	50%
Photographs documenting their work	15%
Time Cards	27%
Journal or Log Book	4%

#### 4.1.3 Administrative Structure of Program

Eco-Rep Programs vary in the department or office with which they are affiliated, shown in Table 10. Sometimes, programs are collaborative efforts between departments.

Table 10. Office or Department Affiliation (n=26)

<b>Office or Department</b>	<b>Programs that Fall under this Affiliation</b>
Physical Plant/Facilities	42%
Residential Life	27%
Sustainability Office	27%
Environmental Studies (Academic Department)	8%
Environmental Health & Safety	4%
Student Organization	4%
Volunteer Office	4%
None	4%

Eighty-five percent of programs surveyed had a collaborative relationship with other departments or programs on campus. Some of those collaborative partners included: Residential Life, Physical Plant/Facilities and Recycling, Environmental Studies and Environmental Sciences, Sustainability Office, Health Services, Service-Learning Office, Student Environmental Organizations, Campus Environmental Committee, Purchasing Office, Orientation Program, and the Transportation Office.

Survey participants noted that facilitating interaction and networking among students and faculty and staff was important. One campus found that,

We have now just started a similar program for interested staff on campus. Now students and staff can learn about current environmental issues and practices together. It has also allowed me to garner more support for our environmental programs and raise awareness. It's also great for the students to see adults who are interested in the same issues. The staff has begun to look into how they can make their offices and departments more conscientious.

Similarly on another campus,

The program has lead to a tremendous network within the school—the program is run by students and staff and has fostered connections between non-academic departments and student organizations that did not exist prior to the programs development.

Funding for programs came mostly from department budgets (85% of programs). Departments that fund the programs are Sustainability Offices, Physical Plant/Facilities and Recycling, and Residential Life. Eight percent of the programs were



funded through grants through places such as a state-funded energy center and the former “Green Fund.” Other sources of funds included: alumni donations, monies from end-of-the-year sales, student activities funds, and a university management fellowship.

Just as the student titles vary across the programs, so do the program coordinator titles. Sixty five percent of them include the word “coordinator” in the title. To understand the chain of command of the programs and where they fall in the campuses’ organizational chart, coordinators were asked who they reported to. Most commonly, they report to the Director of the Sustainability Office, followed by Director of Physical Plant/Facilities, and the Director of Residential Life. Other Program Coordinators report to their Environmental Program Manager, Vice President, Assistant Principal, Director of Service-Learning, Director of Engineering, First Year Focus Area Director, and Housefellow, but often report to more than one person.

As for the program coordinators’ job descriptions, 27% work full time (35+ hours/week) on their program; 31% work part time (20 hours or less/week), and 15% volunteer their time to coordinating the program. Twenty seven percent describe a different situation, including part-time graduate students, coordination split between multiple people, working as an adjunct faculty, and duties “added on” to their current job description. In regards to how much of the program coordinators’ time is allocated to running or supervising the program, 69% spend less than ten hours/week; 19% spend approximately ten hours/week; 4% spend 20 hours/week, and 8% spend forty hours/week.

#### **4.1.4 Analysis of Program Coordinator Survey**

Results from the Eco-Rep Programs survey show that while the administrative structure and other such details differ from program to program, there are common motivations, implementation strategies, and needs for assessment techniques. It is understandable that many of these programs sprang from a desire to reach more students, especially in an era in which campus sustainability is rapidly gaining exposure and merit. That waste, recycling, energy, and water are the most common topics addressed by the programs is no great surprise, as these are often the areas over which students living in a residence hall setting have the greatest control. While students might not have the ability to control their heating or cooling, they generally have control over what bin to toss their used paper in, when to flip the light switch, or how long to shower. These are the type of actions that have been studied in the recent literature on student behaviors and campus sustainability (Kahler, 2003)

Face-to-face contact and personal interaction seem to be the favorable means for students conducting their outreach. Traditional passive methods such as poster and bulletin boards complement the more personal approaches of raising awareness and changing behavior. Ideally, Eco-Reps programs will develop and utilize outreach methods that best speak to the current context and how to overcome barriers, as suggested by Community Based Social Marketing (McKenzie-Mohr & Smith, 1999).

Survey participants noted how partnerships and collaborative relationships between various campus entities are a critical component of their success. Also important is finding the balance between a structured and creative environment for both

students and coordinators. Programs face a number of challenges, which is to be expected of new programs in an emerging field. Common challenges for all programs include gaining institutional support and resources. Existing programs are the guinea pigs for future endeavors on other campuses.

Perhaps because of the young age of the programs there are not many examples of thorough evaluations or assessments. Combining the known benefits of program evaluation and indicators based assessment, it would be advantageous to develop both qualitative and quantitative indicators or logic models for these programs (Russ-Eft & Preskill, 2001; Singleton & Straits, 2005). While no two campuses are alike in infrastructure and in curricular and residential content, programs may be able to share general formulas for indicators for assessment. Indicators must be developed for internal evaluation of the program (i.e. for the Eco-Rep participants) as well as for the broader outreach to the general student population. Indicators are a critical step in understanding if these peer education programs are meeting their goal of influencing behavior change in residential college and university students. Examples of such indicators might be: direct measures of students' attitudes, self-reports of behavior change, direct measures of reduces waste stream flow, energy, and water consumption, and increased recycling rates.

This stage of research helped me define what a peer to peer sustainability outreach (or, Eco-Reps) program was by developing criteria of who to include in the survey. The survey findings showed the range of content and delivery methods of those programs as well as self-identified best practices and challenges. The survey results did

not provide an in-depth look into how the administrative structures supported or detracted from the success of the program, and so this was a topic explored in depth with the case studies of four programs.

#### **4.2 Eco-Rep Program Case Studies**

The program coordinators survey provided preliminary data on the existing Eco-Reps programs. To create a more detailed, or “thick” (Geertz, 1973) understanding of the programs, I conducted four in-depth case studies of programs that focused on organizational structure. In examining a program’s overall structure and behavior, I hoped to discover how these aspects influenced the program’s achievement of goals and outcomes as well as the durability of the programs themselves. Each case is written up in a narrative style using interview results as well as a review of related program documents and websites, and is followed by a cross-case analysis. As mentioned in the prior chapter, cases were chosen from a list of currently known programs to represent a diverse and deviant (or, outlier) selection. A quick look at the selected programs can be seen in Table 11.

Table 11. Quick Stats on Selected Programs for Case Studies

<b>Name</b>	<b># of Reps</b>	<b>Year Started</b>	<b>Compensation</b>	<b>Management</b>	<b>Institution</b>
Barnard College EcoReps Program	10	2007	\$360/semester	Student-run with assistance from Res. Life staff	Private, 2,400 undergraduates
Rice University EcoRep Program	9	2007	\$8/hour for 2 hours/week	Student “Lead Eco-Rep”; staff advisor	Private, 2,050 undergraduates
Tufts University EcoReps	15 // 20-25	2001	\$150/semester // course credit	Staff program coordinator // Grad. Student & staff	Private, 5,050 undergraduates
GREEN @ NC State	15	2006	Volunteer	Staff-led	Public, 24,700 undergraduates

#### **4.2.1 Barnard College EcoReps Program**

Sources for this narrative came from interviews with a student EcoRep and the program’s advisor (Scheu, 2009; Tolman, 2009), the program website (Barnard College EcoReps, 2009) and the original proposal (Rubin, Hazelhoff, Magee, Rook, & Roher, 2006).

##### ***A Student-Run Student Group***

A group of Barnard College students knew that they wanted an Eco-Reps program at their school, but also knew they wanted to run it differently. Instead of a program that usually has one or two people coordinating, the students wanted their program to have shared responsibility, equally across the group. This has become a defining characteristic of the program.

Barnard is a women's college of 2,400 students associated with Columbia University in New York City. In the fall of 2006, five students put together a proposal to start an EcoReps Program on campus after researching several other programs, including Carnegie Mellon, Harvard University, and the University of Vermont. Kirsten Scheu, a student who has been an EcoRep since the founding year in 2007, described the situation in which the proposal came forward. "Barnard had a student group called Barnard Earth—one of those all-purpose environmental groups that all campuses seem to have – and Columbia had a group as well. The Columbia group, called EarthCo, focused on work on both campuses and so it didn't really make sense to have two groups. Barnard Earth disintegrated, yet students still felt there was a need for something to exist specifically for Barnard. That's when the EcoReps idea came up." According to the original program proposal, an EcoReps program would help "bridge the gaps" and be a "coordinated effort among residents, administrators, staff, and faculty" that is "interdependent by design", intentionally creating collaborative connections across campus. The idea was to start small and focus on the first year students, who are required to live on campus, and to build environmental responsibility into their living habits. Steve Tolman, Associate Director of Residential Life and Housing, described receiving this proposal. "We had a group of students come to our office and basically say, 'Hey. We want to save the planet. Will you help us?' and we said, 'Sure. We'd love to.'"

At the beginning of the 2007-2008 school year, the program launched with ten EcoReps focusing on working within the first year student residential areas. The program

just concluded its second full year, and as Tolman said, “It’s very beneficial and they do amazing work.” Tolman is the group’s advisor/mentor/liaison. “I never know what to call myself,” Tolman explained, “I intentionally don’t call myself their supervisor because they really supervise themselves, but as they are actually employees of Residential Life, I’m listed as such. I see myself as a sounding board for them and to try to provide guidance. ” Scheu explained that the EcoReps deliberately do not have a power structure within their organization. “We all have an equal say in decision making, we all facilitate meetings, and we all have different jobs but are equal in responsibility.” She continued, “It can lead to difficult decision making, but in general works pretty well.” Tolman commented, “I have to admit that I was a bit skeptical and cynical about this structure and I was certain that it would never work without having someone responsible for the group. Much to my amazement, it has worked beautifully.” Scheu stressed the importance of having connections with key staff people, such as Tolman in Residential Life. “He’s been really helpful in making things happen for us and in integrating us into the Residential Life staff. He’s helped us get extended housing and is a great person to bounce ideas off of. At the same time, he wants to make sure that this is a student run group.”

Indeed, Tolman’s position in Residential Life allows for the EcoReps to be paid, a \$360 per semester stipend, a number based on roughly \$8 an hour for three hours of work per week. Tolman commented that, “Like many student leadership positions, in terms of the work that they do, the stipend definitely doesn’t even come close to compensating them for their work. With respect to programming and event planning, they do as much

work as the Resident Assistants (RAs) do.” EcoReps are hired based on the merits of their application, a document that also explains the general expectations of the role.

Tolman said that he talks to the current EcoReps about the hiring process, in terms of fair hiring practices, but ultimately lets the decisions be made by the group. “So far we’ve been really successful and have had a good retention rate from year to year,” noted Tolman. “There’s been a strong interest and I don’t anticipate it’ll be hard to fill vacancies as students go abroad or graduate. One thing I encourage is for the current EcoReps to find someone that they think will be a good match and have that person get involved early so they can see what it is really like to be an EcoRep before they are hired.”

As Scheu mentioned, Tolman also assists with getting EcoReps extended housing at no cost. This year, EcoReps will arrive 18 days before classes start in the fall so that they can participate in relevant portions of RA training, such as programming, interacting with students, and public speaking. At this time they will also prepare themselves for the upcoming school year by doing their own training and planning as well as meet key staff and administrators. By having the EcoReps participate in the RA trainings, the two groups have the chance to form relationships in the beginning, so that during the academic year it is easier to work together. “They really start to rely on each other,” Tolman noted. “So when the EcoRep puts on a program, they can reach out to the RA they know to ask for support.” The RAs also reach out. As Tolman said, “And RA might say to an Eco-Rep, ‘Hey. I’m hosting a movie night next week. Would you want to bring



some organic popcorn and talk about why that is more environmentally friendly?’ It has worked both ways for us.”

Scheu also noted the importance of the relationships with RAs, although she also commented that “It’s not always clear from the RA’s perspective as to what our relationship is with them and what we’re supposed to do. Sometimes working with them on programs works and sometimes we can’t get in touch with them very well. That’s sort of a struggle.” That is one of the struggles with the EcoReps primary role, of raising awareness about living sustainably in the residential halls. Each EcoRep is assigned to two floors in a building and tries to be a resource person and peer educator on things like waste reduction and energy conservation. But, as Scheu explained, “We don’t actually live in the buildings, so it’s hard because we don’t really have a physical presence on the floors like the RAs do. So we are trying to come up with new ideas on how to have more of a presence without actually living there.”

Several of the EcoReps live in on-campus housing together, informally known as the “EcoSuite”. This on-suite has also served as a meeting and storage space for the group. “We’re hoping to find another meeting and storage space on campus next year,” Scheu said. “We’re using one of the closets in the suite and it impedes on the lives of the people who live there, especially those who are not EcoReps. If we had a more central space dedicated to us we could hold office hours and have a presence other than in the residence halls.”

Record keeping and documentation is another area that the EcoReps are improving. “We have a Google group and use Google Documents so that we can all edit

and share written materials,” explained Scheu. “It’s more organized than we used to be. We don’t have any official records of what we did last year, except for all the emails I’ve saved in my inbox. I like the idea of having an archive that we can refer to so we’re not asking the same question year after year.” The group’s website, independent of the Barnard College website (although linked in many places) serves as a primary tool for reaching the broader campus audience. The website is updated with the monthly theme and includes background information on the program, contact information for each EcoRep, links to other campus and area groups, listing of relevant campus and area of events, links to key Barnard reports including solid waste management and the sustainability report, and a blog noting the latest happenings. The “Green in NYC” section of the website also includes tips for eco-friendly rooms and energy conservation.

The other key role that EcoReps have is to be a liaison with another department or sector on campus, including Residential Life, student government, and administrators, such as the Vice President of Administration and Capital Planning. “We’re trying to navigate between students and administration,” Scheu described, “To make sure student voices are heard when it comes to environmental decisions and to make sure that those decisions are transparent to the students.” Regarding these roles Tolman said, “The community really embraces the EcoReps and look to them for guidance and utilize their skills throughout campus. The EcoReps have infiltrated many sectors of our campus community and are getting many administrators, students, and staff members involved. The president is very aware of what they are doing and the students generally have a lot of credibility.” Scheu feels that these roles have been very successful. “We’ve established

good relationships with Dining Services and host a Harvest Dinner every year.

Administrators around campus tout their relationships with EcoReps to show that they are going green. We were also profiled in the Barnard alumni magazine our first semester.”

One key action that Scheu has been involved with is helping to establish the Green Committee, which includes students, faculty, the heads of Residential Life and Facilities, as well as the Vice President of Administration and Capital Planning. This committee is the primary entity that deals with campus sustainability issues on campus, other than the EcoReps. Barnard at this time does not have a dedicated Sustainability Coordinator position – something that Scheu hopes to change. For now, the Green Committee is involved with the campus-level work as part of their commitment to Mayor Bloomberg’s challenge to city campuses to be more environmentally friendly, part of the city wide PlaNYC 2030, the city’s sustainability initiative (City of New York, 2009).

In terms of evaluating the program, the EcoReps attempted to receive feedback via a survey last year, but it had a very low return rate (about 1%). “We do a lot of internal evaluation within our meeting times or during retreats or training at the beginning of the year to see what is going well and what we want to change,” said Scheu. “One thing we’re working on is accountability among ourselves. We’re all extremely committed to the work that we do and are over-achievers, but often we get really involved with our liaison positions and the work we’re supposed to do on the floors, like events and bulletin boards, falls to the wayside. We even tried a buddy system but that didn’t always work because sometimes both people would let each other off the hook.” The group is able to get some external feedback through their connections with others,

such as Tolman in Residential Life and a Program Assistant in the Environmental Science department. Tolman said that he'd like to incorporate questions about the EcoReps Program into Residential Life's annual student survey, which asks about the floor community as a whole, including the RA's performance.

Tolman plugged a particularly effective event that the EcoReps organized, along with their counterparts at Columbia – the annual Give and Go Green event. Held at the end of the school year to collect goods that would otherwise go into the waste stream, the event this year collected three 17-foot truckloads of household items and clothes, one pick-up truck load of food, and over 15,000 plastic shopping bags to be recycled. “If it weren't for the Eco-Reps, all that stuff may have gone to the landfill,” said Tolman.

Looking ahead, both Scheu and Tolman gave comments on the future of the program. “I think the expectations of each person need to be more clearly defined,” said Scheu. “We've all agreed that it'd be helpful to have set tasks for each month and having a way of communicating that the job was done back to the group.” The roles and expectations of the EcoReps will likely shift as the program evolves. “We've been talking a lot about new directions we want to take with the program,” Scheu explained, “We've been thinking about what our role is on campus and how people see us. We agree that we're seen as the ‘Recycling Police’ rather than facilitators for discussion and raising awareness. We plan on reframing our goals to help foster community with an environmental perspective.” Scheu also hopes that the group can help broaden its outreach through effective use of volunteers and interested students. “There is a lot of interest in our program. Last year we had 30 applications for only four or five spots. We

want to figure out a way to engage those that are interested without creating a whole other group.”

Tolman commented that he would love to see the program expand so that there were EcoReps for every building, but that they first need to “find a system that will benefit the whole campus and then trying to figure out how to financially support that.” He continued, “For us, it’s better to find the successes and then get larger and larger until we get to where we want to be.” This is a practice that Tolman is hoping to instill within the current group of EcoReps. He said, “They have a lot of great ideas on where they’d like to go and things they’d like to try – some really big ideas. For me, the concern is that if we try to go too large too soon before we’re prepared for it, we won’t be successful and then we may give up. You can’t be where you want to be at right away, it takes steps to get there. On the flip side, I try to be responsive and give things a shot and work with the EcoReps on trying some risks and gambles in our community.”

Scheu was appreciative of the recognition that she and her fellow EcoReps have on campus as the primary catalysts within the realm of campus sustainability. “The administration is making good steps toward showing their commitment. Ultimately the only way we’ll have the true commitment and support we really need is if we hire a full time Sustainability Coordinator. Financial times being as they are, I realize as a small school we might not be able to do this. For now, we students do the work, and that’s fine for the moment.”

#### **4.2.2 Rice University EcoRep Program**

Sources for this narrative came from interviews with a student EcoRep and the program's advisor (Caves, 2009; Johnson, 2009) and from the program's online files (Rice University EcoRep Program, 2008).

##### ***Building a Consistent Grassroots Approach***

College students have a habit of graduating. While that is certainly the desired outcome of institutions of higher learning, it can lead to less desirable results when trying to maintain consistency in student-run initiatives on campus. At Rice University, a small, independent college in Texas, this was the case in point with the recycling program. The Student Recycling Committee, active in the earlier 2000s, had key student leaders graduate and the program went defunct. While some recycling still occurred on campus, it was spotty and inconsistent across the university's nine residential colleges. This inconsistency was noted by current students active in the Environmental Club, the Rice Student Green Building Initiative, and the Student Association and they set out to do something about it.

Around the same time, Richard Johnson, the university's Director of Sustainability, based in the Facilities, Engineering, and Planning department, also saw a need to expand student opportunities. "We have a real comfort on our campus in involving students in our sustainability efforts. A lot of Rice's sustainability initiatives came about through student action in the classroom, including our sustainability policy, the creation of my position, our green building commitment and adding plastics recycling. And yet while those class-oriented projects have been very successful, I've

seen time and time again our student organizations spin their wheels. So, I started thinking of other grassroots approaches to empower other students.” In the fall of 2006, Johnson decided to pilot a student peer education project in one of the university’s residential colleges. The pilot project started with only one student who was a resident of one of the only two colleges on campus that were individually metered for electricity, chilled water, and steam consumption. This was intentional on Johnson’s part, as he said, “Because if I wanted to, I could track the benefits of savings related to conservation efforts.” Striking a deal with Housing and Dining, Johnson found an interested student and the work began.

After attending presentations at some national campus sustainability conferences, Johnson was inspired to expand the program to all of the colleges. He explained, “I see the role of the campus sustainability professional, my position, as making connections and enabling other people to lead initiatives, because if the sustainability officer has to do everything himself or herself, it’s just not going to happen, there’s just way too much work to do. And so having a grassroots approach to giving people the resources they need and some direction, but otherwise letting them go forward themselves seemed a much better way to leverage resources and to have a staff without having a real staff. I think this combination for Rice, of having a paid student in each college plus a few different courses where students can get credit for their campus oriented environmental work, is a good approach to take.” In Johnson’s mind, an Eco-Rep program could result in not only the direct benefits of reduced utility consumption and stronger participation in environmental events on campus; it would also help foster a “culture of sustainability” in

each of the residential colleges. “I want students to be able to feel a sense of responsibility,” said Johnson “and for students to not only point out problems but be able to say, ‘this is something that I can do something about.’”

Working together with Johnson, the concerned students submitted a proposal in the fall of 2007 to an internal Rice grant program to secure seed money to launch a full-scale program with nine paid student positions. The students’ proposal demonstrated the need for an EcoRep program, detailed the specific duties for involved students, outlined costs and potential payback of the program, addressed the relationship of the EcoRep to existing organizations, and proposed specific project ideas on how to conduct outreach, such as the Green Dorm Initiative. A central argument in the discussion of the need of such a program was explaining the “same basic pattern for success and failure” among voluntary student initiatives, such as the Student Recycling Committee. Stated reasons for these patterns included: students being busy and having competing priorities, the lack of consistent commitment with voluntary activities, the lack of full coverage across all residential colleges, and a lack of overall organizational structure. To remedy this, they proposed a program that would be part of the institution and overseen by a staff member (Johnson). The primary focus of these student positions would be to promote recycling, energy and water conservation, and food waste reduction while also promoting environmental events. An important additional feature would be for students to serve as a liaison between administration and students, and to create communication channels between EcoReps and custodians and dining hall employees.



The grant proposal was accepted, and the Rice EcoRep program was fully underway. With the seed money of \$1500 from the grant, Johnson was able to continue the cooperative agreement between his department and Housing and Dining to pay the students and purchase necessary supplies. In the fall of 2008, Johnson asked students to submit applications to the new program and filled all nine positions, including one of the original proposal authors, Jeremy Caves, who became the Lead EcoRep. While Johnson plays an active advisory role and fills the important task of getting the students paid, Caves is responsible for the day-to-day management of the program, including communicating with the other EcoReps, facilitating meetings, and coordinating Green Fund purchases. Green Funds are \$1000 grants distributed by Housing and Dining for each of the nine colleges. Eco-Reps submitted requests to Housing and Dining and in the 2008-2009 school year, they purchased \$5000 of new recycling containers and spent \$4000 on energy related products including compact fluorescent light bulbs.

Caves and Johnson also set up an internal wiki site, so that EcoReps could access program materials such as meeting minutes, signs, stickers, floor plans, and historical documents related to the program, such as the original proposal. Johnson noted the importance of such a repository, "Sometimes I've seen the challenge within student organizations that there's very little institutional memory when people don't hand over records or they're not kept in a central place. This is a way to keep resources in a place where everyone can get to them." A key document housed on this site is the EcoRep resource guide, which has notes on funding sources, how to keep program documentation, ways of recording CFL distribution and event attendance, key staff

contacts, student group contacts, EcoRep contact information, and project ideas. This resource guide also spells out EcoRep responsibilities, including:

- Facilitating recycling (educating students on what and where)
- Reducing dining hall waste (including signage about food waste and discouraging disposables)
- Conserving energy (through CFL distribution, announcements & posters and ways to save)
- Promotion of environmental issues (including first year orientation, events, and policy)
- Maintain contact with facilities and housing and dining staff.

After completing nearly a year with the program, Caves was able to reflect on what worked well and what lessons he learned to pass on to the next generation of EcoReps. The whole year was a time of great learning opportunities for Caves in his role at Lead EcoRep. He noted that their 30 minute bi-weekly meetings in the first semester were far too short and lacked a sense of accomplishment. In the second semester the group met for an hour or more and aimed to use the time as work time, rather than just brainstorming and reporting back on activities. Meetings also included introducing EcoReps to custodial and dining hall personnel as well as explaining university procedures. The group also gathered for a retreat mid-year, to reflect on the past semester's work and plan for the upcoming semester.

Both Johnson and Caves agreed on the importance of starting earlier, in order to accomplish more. “One of the lessons I learned from the first year of the program is that we got a late start,” said Johnson.” “One way that we’re addressing that problem is to have everyone submit their applications in the spring for positions in the following fall. That way we’ll have all the EcoReps lined up to start as soon as school starts, with no lag.” Caves said the same of the Green Funds purchases. “I learned that the purchases need to be made much earlier in the fall. This year we started later on and by the time we waded through the university bureaucracy around purchasing, we didn’t make our purchases until February and March, which creates a shorter time period for impact, especially with the light bulb swaps.”

One other aspect of the program that Caves is hoping to improve is EcoReps’ access to storage. Currently, access is spotty where some students can use storage space in their college and others cannot. This is something that Caves is trying to work out with Housing and Dining, so that the program can have a central storage spot, for items like the CFLs and other Green Fund purchases.

Part of Caves’ role as Lead EcoRep was reminding students to submit their hours to Johnson so that they could be paid. Caves was surprised at how often students did not submit their time. This was a point of uncertainty for Caves, as he was unsure if EcoReps didn’t care about being paid, or didn’t see it as worth their time and effort in submitting the paperwork for only \$16 for 2 hours of work. This was a point brought up by Johnson as well. “The amount of time dedicated per EcoRep really varies. Some of the EcoReps spend a lot of time on the program and I may not hear from others for weeks. Finding

people who are willing to be completely engaged with the program consistently through the semester is challenging.” Caves found that while the idea of a paycheck is a good incentive for some students, others would likely do the work as a volunteer. Both Caves and Johnson agree that paying the students is important, as Johnson stated, “so they can treat it like a real job” which can bring an air of responsibility and accountability to the position. On the flip side, as Caves pointed out, “If they don’t turn in a pay stub, I don’t really have a lot of recourse if they are not doing their work.”

In reflecting on what outreach methods were most effective, Caves knew he was doing his job well because other students would approach him with questions about recycling, energy, sustainability, and with their ideas. “As a senior, I’ve been in the same college for four years and people know that I am committed to environmentalism. People will come up to me and tell me how much they recycled today. I can tell they’re interested in what we as EcoReps are doing by what they talk to me about.” Johnson sees these types of interactions as a real asset of the program. “EcoReps are the go-to people. Instead of students coming to me with a question that relates specifically to their college, they go to their EcoRep instead. EcoReps are close enough to the ground in the colleges that they most often know the answers, or at least can direct students to the right contact people.”

Caves also stressed the importance of having an EcoRep presence in the residential college student governments. “The college government meets every week or every two weeks. What I’d like to see happen is at those meetings for EcoReps to make an announcement regarding one of our current projects. That’s what I do and it’s

effective. If people don't come to the meetings, they read the minutes, so the message goes out that way. Just talking about recycling bins or green funds at these meetings is a very important way for other people to get interested and involved." Caves added that getting the support of the college government is critical in setting forth new programs, such as a trayless experiment in the dining hall, to see how much food waste could be reduced by taking away trays. "At my college, the president was supportive. At another college they first killed the idea so we had to go back with more fleshed out ideas. The cabinet was split on the issue, but then the president said to give it a try and that turned the tide." "So," added Caves, "Not only do EcoReps have to get involved in the college, but they also have to have good relations with the college government."

Another way to get people talking is to create strong visual images that encourage discussion. The EcoReps collaborated with the Environmental Club to make a plastic bottle tree that showed two hours worth of plastic bottle consumption on campus. This project caught the attention of many passers-by as well as the local media. "It got people talking. It was also a lot of fun to put together," said Caves.

Overall, Caves found that finding actual measurement of effectiveness and savings to be difficult. "One of my goals for this year was to get good hard numbers on everything we do, but that didn't happen. We could have figured out how much money we've saved by handing out CFLs, which would be useful. We talked about those savings in our original proposal, but the problem is in how to measure the savings. Maybe next year..." Johnson noted, "I don't have any set metrics of assessment in place yet, but I know that it's an important next step to be able to evaluate the effectiveness of the

program. So far, I've been able to loosely argue and justify paying for the program, and my supervisor, the Head of Facilities, generally agrees and supports the principles behind this program." Johnson commented that having the support of both the Head of Facilities and the Head of Housing and Dining, both Associate Vice President positions, are the two key people he needs to support this program. "I doubt that our President knows of the program, and I'm not sure about the Vice President of Administration, and that's okay, since we have the support we need from the middle administration."

Caves continued on the topic of evaluation by saying, "On the other hand, I also think that the things that have the biggest impacts are the things that you really cannot measure. Having someone like EcoReps who care about this stuff and getting other people to start caring even just a little bit – there's no real way to tell. I know it happens, but I don't think I could ever measure it." Caves described an anecdote to illustrate this point. "There's a girl in my college who always sends me her ideas. One idea that we ended up funding was to subsidize Mooncup purchases for females. That was our first Green Fund purchase. It was really interesting. The University didn't really want to fund it, but while the response wasn't overwhelming, it got—and this is one thing that I can point to—a lot of people thinking about sustainability outside of the traditional bounds of turning off lights and recycling soda cans. At our college we have to get all Green Funds approved by college government, so we had to talk about if this was a worthwhile purchase for the college. I know in just debating this topic we got a lot of people thinking. If it wasn't for the EcoRep Program then there wouldn't have been a reason for me to ever bring up this idea at a college government meeting. But, because it exists, it

gives me a platform to talk about these things. I think, ‘Oh, I’m an EcoRep. I’m supposed to talk about these things with you!’”

Overall, both Caves and Johnson found the first year of the program to be successful. Caves planned on calling a meeting to review the year and to give his suggestions on improvements to his successor. Johnson observed that the program will grow, as two new residential colleges are in the planning and construction phase. “This growth will take some thought, as it might mean paying a Lead EcoRep more to do more supervision, as well as the added financial pressure of bringing on two more EcoReps. This growth will bring some challenges in the next year or two, but hopefully some opportunities as well.”

#### **4.2.3 Tufts University EcoReps**

Sources for this narrative came from an interview with the program coordinators (Woolston & Scott, 2009) and from related websites (Tufts Office of Sustainability, 2009a, 2009b).

##### ***The one that started it all...***

The first student Eco-Rep program on a college campus in the United States was started in 2001 at Tufts University, a mid-size, private institution in urban Massachusetts, by Anja Kollmuss, a staff member of the Tufts Climate Institute (TCI). TCI staff hoped to broaden the base of participation by engaging undergraduate students in climate action work on campus that would build off the success of the activities in the 1990s including starting the Talloires Agreement and signing onto the Kyoto Protocol. The original ECO-

Representative program was designed as an opportunity for students to learn about environmental issues and then give them the structure to be actively involved in greening projects in the residence halls. The program had clearly stated goals including:

- To train a core group of students as environmental educators and activists;
- To increase overall student awareness of environmental actions and ways to affect individual change on campus; and
- To institutionalize environmental stewardship with the student body.

Participating students signed a contract that outlined responsibilities and expectations as well as consequences of not fulfilling their duties (a reduced or declined stipend). Students who successfully completed the semester were granted a \$150 stipend. Funding for the program came from the TCI with support from the Tufts Institute of the Environment.

The program started with 23 students meeting bi-weekly in the fall semester to learn about various environmental topics such as recycling, climate change, water, food, and consumption. Students were then charged with completing a project sheet outlining specific tasks to complete over the next two weeks such as meeting with custodians, surveying fellow residents, and gaining more background knowledge through reviewing websites and films. The goal with the projects sheets was to provide some structure for the students while also encouraging creativity through individually-crafted actions.

At the end of that first semester, students showed increased understanding of environmental topics, improved recycling rates, and several creative events and activities such as bathroom stall newsletters and eco-friendly snack breaks. Fifteen of the original



Eco-Reps continued in the spring semester working on specific projects related to recycling, green building, and food.

Integrating feedback gathered from project sheets and end-of-semester student evaluations, including themes of wanting to work more in groups rather than individuals, calling for more accountability measures, and the merits of receiving money vs. academic credit, Kollmuss continued the program for the next five years, with nearly 100 students participating. The Tufts example quickly became a model for other campuses' programs including Harvard University, University of California at Berkeley, Carnegie Mellon, and the University of Vermont.

And then, the program that started it all, stopped.

Kollmuss left TCI to become a staff scientist with the Stockholm Environment Institute, housed on the Tufts campus. Her successor to the TCI office, (now the Office of Sustainability), Tina Woolston, started work on the first day of classes in the fall of 2007, when typically the Eco-Reps class would have started. This was logistically not feasible, but was also determined to be not the best use of staff time, for an office with an ambitious agenda that only had 1.2 full-time-equivalent employees. Further, there was a vibrant student organization ECO as well as several Tufts Institute of the Environment (TIE) student employees that resulted in student outreach occurring on various levels. Striving for the greatest impact with what staff hours existed, the TCI, now Office of Sustainability, Director Sarah Hammond-Creighton, determined that the Eco-Reps program could go on hiatus.

With that, came a shift in focus on outreach activities. Woolston felt that she could make the greatest impact by focusing on the campus population that didn't see the high rate of turnover that the students had – the staff and the offices in which they work. By targeting staff with the Eco-Ambassadors program, Woolston hoped to create standards and norms that would continue within a building, as a way to get it, as Woolston put it, “more embedded in the fabric of daily functioning.” There were still a few students who wanted to be involved, so Woolston engaged them within the staff of the Eco-Ambassadors program.

But as they do, the campus winds shifted again. Within a year, there was no strong leadership with the student ECO group and the TIE employees transferred or graduated, and the need for a student outreach program resurfaced. “We wanted a multi-pronged approach,” said Woolston, “where we reach out through the staff to saturate the offices and also try to get through to the students.”

Enter Dallase Scott, a master's student in Urban and Environmental Policy Planning. “So much depends on the particular people who are around,” Woolston pointed out, “and Dallase seemed to be the perfect person to bring the program back, with her background in education, engagement, and psychology.” Fulfilling the internship required by her master's program, Scott started in January 2009, redesigning the original Eco-Reps program.

At the same time, Woolston learned about opportunities with the ExCollege, or Experimental College, that invites peer-taught academic courses. With budgets tightening across the board, Woolston saw the idea of an ExCollege Eco-Rep course that

could provide marketing assistance and potentially attract a wider-variety of students than might otherwise be interested in engaging in environmental outreach on campus. “I hope with this course that we’ll reach people we might not normally interact with,” said Woolston.

With fingers crossed, Scott continued with ideas on how to take the original Eco-Reps program and give it more energy. A highly passionate person herself, Scott wants the new and improved program to, as she put it, “engage critical thinking and create cognitive dissonance. I want to turn their world upside down and have them explore themselves in the process about learning about the environment.” Exploring the themes of what leadership is and how it is created and manifested, Scott hopes to evoke the same feeling of empowerment she felt as a student at Chico State University, where she was deeply inspired by an engaging and dynamic professor of Geography and Planning, Mark Stemen.

Scott hopes to create similar inspiration in the new program, by asking students to participate in personal behavioral challenges, such as toting around their own trash for a week, an activity likely to raise eyebrows and create discussion around issues such as waste reduction, conscious consumption, and incineration or landfills. Students will also create three social marketing campaigns and analyze the rate of success, employing theories of social psychology. “By having these conversations and by journaling about their experience we’ll get them to think about what it takes to create change in a larger community” said Scott. By learning these action skills, she hopes to create a feeling of empowerment with the students. Scott plans on using the peer-to-peer approach for

students to learn about knowing their audience and being versatile in order to reach the different beliefs, attitudes, backgrounds and cultures that one finds in a community. As the course will be open to all students, it will no longer have a solely residential focus to it, but will expand to the broader campus and students' friends and social groups.

Another activity will be for students to organize an Eco-Rep symposium for students from other campuses to come together to share ideas, challenges, and successes. "The symposium idea is a way to create community among students," said Scott. "Gatherings like these also teach people to reach outside of their own academic community, realizing there are a lot of great ideas out there. Also, as college students are similar across the country, what works at one place might work at another." Woolston added, "Getting together in this way also makes you feel like you're part of something bigger, like you're part of an important movement and really making the world turn."

This collaborative spirit is something desired for the Tufts campus as well. Scott hopes to also incorporate collaboration into the program, such as with the various student organizations, so that students see other ways of staying engaged with campus sustainability projects. Others on campus, such as Dawn Quirk, the Recycling Coordinator, hope that students will want to continue in the waste reduction arena by working with her as recycling interns. In the past, the Eco-Reps program was a great feeder for these positions.

In terms of evaluation, Woolston noted that it is a very important aspect of a program, but one that often receives not enough attention. Scott plans on using the pre and post-test method of evaluation for the participating students, as Kollmuss did in the

original program as a way to assess student learning. Woolston hopes to also have a later evaluation in the spring semester, to see how the impact lasts over time. In terms of campus-wide impact, Woolston and Hammond-Creighton hope to once again see a question about environmental sustainability in the surveys administered by the Office of Institutional Research. There's no pressure for her to show measurable impact from the Eco-Reps program at this time as she is not asking for any further financial support from her office. "We want to do more measuring, but sometimes it is hard to directly attribute findings to a particular program or outreach method," said Woolston.

Scott hopes that the new Eco-Reps program will help fill the void of student environmental leaders on campus and build the enthusiasm and visibility around environmental issues. She is focusing her own academic work in this area. Her thoughts show this exploration. "It makes me wonder, do you spend your energy creating leaders? Can it be taught? Or do you have to recruit charismatic individuals and get them wholeheartedly to believe and be passionate about the environment and send them off in the world?" One concern that Woolston has about the new program is what will happen to it once its own leader graduates. "I told Dallase that part of her job this next year will be to find her replacement. We need someone that is engaging and dynamic and that people look up to and respect and want to be around."

A few weeks following our conversation, Scott and Woolston received good news. The class was approved and it's called "Environmental Action: Shifting from saying to doing." And so, the one that started it all starts again.

#### **4.2.4 Generating Residential Environmental Education Now (GREEN) at North Carolina State University**

Sources for this narrative came from interviews with the prior program coordinator (Powell, 2009) and an educator for the campus's sustainability office (Batchelor, 2009).

##### ***Lessons Learned***

In 2005, Lindsay Batchelor attended an EFS West (the organization from which AASHE arose) conference in Oregon. One of the sessions she attended was presented by students from the University of British Columbia, who described their Student Residential Sustainability Coordinators program, a peer sustainability outreach program targeting residential students. Inspired by what students were doing at a large Canadian university, Batchelor returned to her home campus, where at the time she was the Education and Outreach Coordinator for the Office of Waste Reduction and Recycling at North Carolina State University (NCSU), a large, public institution in Raleigh, North Carolina. Back on campus, Batchelor sketched out what a similar program might look like at NCSU and brought in some students as well as key staff members from other offices that might play a role in designing and implementing the program, including the recycling office, energy office, housing office, dining services, and campus environmental sustainability team. Conversations continued during the 2005-2006 school year, at the end of which Batchelor took a different position within the recycling office, and then-graduate student, Ryan Powell, became the new Education and Outreach Coordinator. Picking up the conversations between the various offices, Powell and the

Education and Outreach Coordinator from the Office of Energy Management and the Inter-Residence Council coordinator from University Housing set out to launch the program in the fall of 2006.

The basic premise of the program, now with the name Generating Residential Environmental Education Now, or “G.R.E.E.N.”, was to solicit student volunteers from each floor of the 22 campus residence halls. To find these volunteers, Powell and his team presented the program to the residential Hall Councils and the Inter-Residence Council (IRC) and worked with these groups to nominate students. “Working with the Hall Councils and IRC was our way of institutionalizing the program rather than doing something on our own,” said Batchelor.

The student response was positive. “The plan was for the program to be very structured with one representative for each hall, and it mostly started that way,” noted Batchelor. “But then there was more student response and we didn’t want to turn anyone away if they were really interested. It was sort of a come one, come all situation.” In response, Powell and his team started up a listserv that quickly grew to 150-200 students.

All of the interested students were invited to participate in a training session, held in conjunction with the IRC training at the beginning of the semester. This was a point of distinction, for those students who truly wanted to be actively involved, rather than those who just had an interest in what was going on. “This was the point where we lost the geographical representation idea,” commented Powell. We had 25-30 people come to that training meeting which only covered about half of the floors on campus.” Out of the original large group of interested students, 10-15 students became part of the

core GREEN team, meeting every other week with Powell to discuss ideas and plan activities. The rest of the group remained on the listserv and were called upon to post fliers and participate in larger events.

The expectations for the GREEN reps were to be an information outlet. “We let the students know that this was not just a passive task, but to be creative and to take pride in doing a sufficient job getting information to the whole floor, not just their roommate or friends,” said Powell. The staff members that were coordinating the group saw these student reps as a key way of reaching an audience and physical space that they might not otherwise have access to, in order to convey important messages from their offices. “The trash chute issue was one such example,” Powell offered. “Two of the residence halls have trash chutes in the building and the recycling rates there were non-existent. My office saw this as an opportunity to get signs to the GREEN reps to post directly on the chutes and to spread the word on how to recycle in the building, rather than send it all down the chute.”

GREEN reps also planned events and activities, such as light bulb swaps and an inter-residence hall competition around energy conservation. “The students did all the planning and were going to use actual data collected by the energy management office, something we had not done before on campus,” reflected Powell. However, at this time, the Education & Outreach Coordinator for that office left her position and the data for the competition could not be gathered until several months later, after students had left campus.



This was the end of the first of three distinct phases of the program, as Powell called them. “The first semester we started, the program was strong, with about 15 people regularly coming to the meetings. They weren’t necessarily from all across campus, so we almost felt more like a student environmental organization rather than an effective tool geographically for getting information out,” said Powell. In the second phase, during the Spring of 2007, it was just Powell acting as the program coordinator/advisor, as by this time both the energy office and housing office positions were vacated. Without an active student environmental organization on campus as there had been in the past, the GREEN reps slightly shifted their focus more toward that capacity, but one that probably “benefited from the resources and involvement of staff,” explained Powell.

In reflecting on his role, Powell said “I became more of a facilitator or advisor; a resource person for them. I was also the person who would explain to the students that there are staff positions at the university who are responsible for many of the day to day operations of some of the things that they were interested in changing and helped them create effective strategies for engaging those staff people in conversation, how to get around bureaucratic hurdles and to not step on too many toes.” Powell said that many meetings were dedicated to discussing what initiatives to address and how to address them, with more input coming from the students themselves. “We spent a lot of time talking about social marketing techniques such as norms and prompts, and the challenge of students having to go to a predominately dispassionate, unaware community and convince their peers to become a part of something,” commented Powell. During that second semester of the program students took on the challenge of discussing how to

influence behavior. Powell explained, “Examples of some of the questions we tackled were things like, ‘Is there really any value in putting together a Facebook group?’ or ‘Is our Brickyard still the important social center on campus?’.”

The third phase of the GREEN program came that following fall. Once again, Powell went to the IRC to present and solicit volunteer reps, but things “never really got off the ground.” There may have been some competition from a new student environmental organization based in the School of Natural Resources, “but our previous GREEN reps felt it was less diverse and only represented the Environmental Science students rather than an academically diverse group like GREEN,” commented Powell. In addition, Powell remained the only staff person of the original three who helped get the program going. “We just never got the traction we did in the first year,” explained Powell. “But we did have a lot of continued success with the listserv and could always ask for volunteers who would help us with our programming or getting information out.”

In terms of evaluating the program, “what we did was informal and wasn’t very detailed, especially for a pilot project that we’d want to look back at and see how to do things differently,” said Powell. Powell did conduct a survey of the 10 or so students that stuck it out that whole first year. Powell expressed that he was somewhat hesitant in doing this, as the students’ response may have been affected by a lack of evidence of tangible outcomes or changes in campus attitudes after a yearlong commitment of time and energy and might reflect poorly on him. Despite this, “I was really interested in and looked forward to the students’ input, and found that they were almost irrationally optimistic about their experience. They really enjoyed their experience and their time.” In

reflecting on this point in particular, Powell was really struck by how important the experience was to the students in finding their own identity and community on a campus that at the time, being involved in environmental sustainability was not the mainstream thing to do. He said of this, “The original GREEN reps are still friends, some of them still live together even after they graduated, and I’m still friends with them as well. I don’t know a lot about social dynamics, but from my own experience, you assume that a lot of your friends are the people you met in classes or lived near. This was a weird phenomenon of a bunch of people who were picked because they lived in different areas on campus and didn’t have classes together or live next door and yet they all became a close group of friends. I think that friendships, or that element that students can come and be part of a small community, is a huge motivator for students. They’re looking for a cool, fun group of friends that they’ll enjoy spending time with, especially their first year, when they are getting to know the campus culture and community.”

Lindsay Batchelor, despite not being directly involved with the program as it went along, has kept her eyes on the GREEN program since she brought it to campus. “When we started GREEN, we didn’t have the Office of Sustainability. Now we do and my position as Sustainability Program Coordinator is to revamp programs like this,” Batchelor said. There are several aspects of the original program idea that never came to fruition that Batchelor would like to dust off, such as having monthly themes and putting a real push on branding the program. Officially connecting it with current structures is another idea. “I still really feel that if we can make it work having GREEN be part of the Inter-Residence Council that would be beneficial, but only if it’s fully supported.

Otherwise, it may be better for us to go out on our own and recruit students.” Having a steering committee to advise the program, as well as support it financially is another important aspect. “In addition to recycling, energy, and housing, I’d like to include transportation, dining, and our office. The funding aspect is something that was never established the first time around. I think in order to be successful we’ll need to have some seed money, from the participating offices on the steering committee,” projected Batchelor. She continued, “I’d also like to hire a student who could coordinate the day-to-day operations of the program, perhaps as a paid position through our office.” Batchelor was clear that she doesn’t want to rush into starting the GREEN program again until there’s been enough time for thinking through completely. “I also want to be sure to build in more feedback and reflection, to make sure we’re doing what the students are interested in. We need to find the balance between getting the input without completely losing all the structure and control over the project.” With over 8,000 residential students Batchelor feels that there is a lot of potential to reach these students with a program like GREEN. “We just have to find the best way to really engage them.”

Powell has since graduated from NCSU and gone on to be the Education & Outreach Coordinator for the Office of Sustainability at Duke University. In this position he has continued to work with student peer educators and has the advantage of his experience with two programs to reflect on student peer sustainability outreach programs in general. “I think a lot of universities have now tried similar programs and run into the same challenges as we did at NCSU,” noted Powell “and I think it’s still a challenge to figure out how to use the peer education model in the best way.” He elaborated this

thought a bit more by offering, “I see a lot of offices hiring students and letting them do whatever they do (like Facebook pages) to influence their peers. It’s blind trust that they’ll be able to do it. It kind of sets them up for failure, which they always have to come up with the resources to do that more effectively. It’s challenging enough for me, who has spent a lot time doing and studying this, than for students who have little or no background in social marketing.”

Although Powell is leaving his position at Duke for another adventure, with the Peace Corps, he has given some thought to what he’d do differently with the peer education groups, if he had the chance. “One of the things I’d like to do”, explained Powell, “is to create more of a social media group. I’d provide some training but really make sure that the students we hired were interested in creating video, blogging, and other social media and then provide them training and sustainability information and let them use the tools and experience to get the information out there. Typically we use the opposite approach of hiring students who are motivated and knowledgeable about sustainability and encourage them to learn to use various forms of social media.” Either way, recruiting, hiring, and training students is a big investment and the first semester is often spent bringing them up to speed on the history of relevant work on campus, what staff is responsible for key areas, and how to find a project that is of an obtainable scale.

While the story of the GREEN program at NCSU may not sound like a success story at first, it is certainly a story of importance, with many lessons to learn. “A lot of what happened with GREEN had to do with staff transitions and timing”, said Batchelor. “My hope is that we can go back and learn from the successes and pitfalls of both our

program and other school's programs and try to create a structure that will work for our campus. At the same time, we have to realize that one template does not work for all campuses. Each is different with its own culture and student body and we have to find one that will work for us.”

These case studies were meant to be a richly-detailed look at four different Eco-Rep programs. The narratives describe the programs' situations “as is” without any manipulation by me, the researcher (Russ-Eft & Preskill, 2001). In the following chapter I present a cross-case analysis of these programs and apply a program sustainability framework.

#### **4.2.5 Cross Case Analysis**

The four case studies are examples of the variety of ways that Eco-Reps Programs are managed, yet offer many similarities. By conducting a cross-case analysis, I drew out key themes that reflected the studied cases, but may also offer key insights for others with programs of their own, or those who are looking to start a program. As one goal of this research was to find out what makes an effective program that is able to sustain itself, I grouped the themes to parallel the Program Sustainability Indicators framework, adapted from Savaya, Spiro, and Elran-Barak (2008). Many of the indicators are parallel to those noted by Keeling and Engstrom (1993). I used this framework to give a basic assessment of each of the four programs, as shown in Table 12.

Table 12. Program Sustainability Indicators Comparison

<b>Program Sustainability Indicators Comparison</b>				
adapted from (Savaya, et al 2008)				
	<b>RICE</b>	<b>TUFTS</b>	<b>BARNARD</b>	<b>NCSU</b>
<b>PROJECT DESIGN &amp; IMPLEMENTATION</b>				
<b>Program theory:</b> formal or informal; definition of target population, needs to be met, expected outcomes, interventions employed, how interventions will bring desired outcomes.	informal, student expectations noted in resource guide, no clearly defined expected outcomes	old program: clearly documented; new program: still developing -- especially expected outcomes, audience	informal, general expectations outlined in application, no clearly defined expected outcomes	informal, student expectations explained during training presentation; no clearly defined expected outcomes
<b>Demonstratable effectiveness:</b> document successes, disseminate evidence among stakeholders & general public	nothing public, little to no documentation other than some CFL & recycler distribution	public website	documentation of Give & Go Green program effectiveness, external website	little documentation; participating offices had a good volunteer pool and group to post fliers, etc.
<b>Program flexibility:</b> change in accord with circumstances	new program, lead EcoRep has advice for next lead EcoRep	original program ended with staff change; reassessing for new program; changing to fit current opportunities with class & staffing	undergoing reassessment	shift toward student organization when personnel changes occurred

<p><b>Human resources:</b> staff training including strategic planning skills, knowledge of needs assessment &amp; logic model construction, leadership skills, fundraising expertise, problem solving</p>	no known specific training	staff developing program will deliver it; no known specific training	EcoReps have dedicated training time at beginning of the year, participate in RA Training, some throughout the year (facilitation)	brief training session at beginning of year
<p><b>Financial resources:</b> multiple sources of funding, financing strategies in place early in implementation, use of volunteers</p>	funding from grant, facilities and housing & dining	new program: staffing by grad internship (\$\$ by Office of Sustainability); students pay for academic credit	funding from Res Life	none specified
<p><b>Program evaluation:</b> ongoing evaluation to identify problems and facilitate flexibility</p>	no specific evaluation tools; some internal evaluation at meetings and retreats	old program: built in feedback loops from student project sheets; compilation of feedback; new program; need to build this in; would like to include in institutional research	some internal evaluation, hope to include in future Res Life surveys	informal; participating student survey



<b>ORGANIZATIONAL SETTING</b>				
<b>Organizational stability &amp; flexibility:</b> ability to integrate new elements, flexibility in structure, approaches & values	new program, still developing; needs more feedback loops to integrate learning into program	hiatus allowed for program redesign to meet/match current needs & opportunities	open to change, program is evolving in its 2-3 year	attempted to be flexible, but lost structure
<b>Program champions:</b> existence of champions; have high position in organization, with ability and authority to make necessary compromises and negotiations	buy-in from Facilities, Housing & Dining, support from VPs	Support from Office of Sustainability; no clear upper-level administration support	Very positively viewed by administration on campus; president acknowledges work	Not clearly shown
<b>Managerial support &amp; flexibility:</b> openness to new ideas, readiness to take risks	willingness to try new things, wanting to expand topics beyond recycling	hiatus allowed for program redesign to meet/match current needs & opportunities; new staff people with new ideas	non-hierarchical student-run organization, seems open to change, integrates feedback from res life	flexible due to current needs/staffing
<b>Integration in the organization:</b> well integrated with existing systems; key policies and procedures remain part of routine activities of organization even after departure of original personnel; integrate goals of program with goals of host organization	wiki/website houses program documentation including resource guide; individual colleges folders are underutilized;	Old program well documented on public website, including in-depth manual; new program needs a similar system	public website for campus audience, internal use of Google Groups/Documents;	attempted to be part of Housing systems (IRC) but was not an official arrangement; supervised/advised by multiple offices

<b>FACTORS IN BROADER COMMUNITY</b>				
<b>Community support:</b> cooperation of community bodies, degree of involvement	collaboration with other student groups, college governments	potential collaboration with other student groups	collaboration with other groups (Columbia, JTS); Res Life staff (RAs); Green Committee; in absence of Sustainability Coordinator, group takes on many roles	some collaboration with Intra-Residence Council (IRC)
<b>Political legitimization:</b> political support of relevant governing bodies	some support from college student government	not known	EcoRep liaison on Campus Green Committee	not known
<b>Socioeconomic context:</b> availability of resources, existence of competing organizations	\$1k funds for each college from housing & dining for supplies; student wages from facilities; need of access to storage	unknown relationship to current student organizations; funding from Office of Sustainability	Current funding from Res Life, could need more if program expands; need of better meeting space & storage; potential competition from other student orgs	competition with new student environmental org.; no clear funding mechanism

#### **4.2.5.1 Project Design and Implementation**

The first overarching theme is Project Design and Implementation, which includes topics such as: program theory, demonstrateable effectiveness, program flexibility, human resources, financial resources, and program evaluation. Program theory seemed to be a point of weakness for several of the programs. While the programs may have been inspired by other campuses and created their program as a result of that, as the case was with Rice and NCSU, there was not any articulated theory behind the programs. Rather, it was more of an informal theory, based on the peer education model and concepts from social marketing. All institutions laid out the expectations of the participating students to some effect, but other than Tufts, the programs did not have clearly defined outcomes. By not having clearly defined goals or outcomes, it becomes difficult to assess whether the program is effective or not (Russ-Eft & Preskill, 2001).

As Eco-Rep Programs work with the student populations at large, it is important to have a variety of communication channels to use for information dissemination as well as documenting program accomplishments, and having a means for internal communication. This may be important when reporting back to those that fund the programs. Both Tufts and Barnard have websites that are geared toward an external (meaning outside of the student Eco-Reps) audience. This is a way for students to find out who the Eco-Reps are and how to contact them, as well as upcoming events and past activities.

Flexibility seems to be a characteristic necessary for campuses and populations that can have shifting missions, personnel, and budgets, and is an important characteristic

noted by Scheirer (2005). Each of the four campuses reviewed showed degrees of flexibility, as caused by personnel changes, learning from previous years, or fitting with new opportunities. As noted by the cases of Tufts and NCSU, the programs ceased but are starting again (in the case of Tufts), and may (in the case of NCSU), but with mindfulness and in a timeframe that will allow to run the programs in a way that will work in current campus conditions.

Staffing the program may well be the most important ingredient to a successful program, and is a indicator of success noted by Smith and MacGregor (2009). Not only do the participating students need to be hired (either as volunteers or as paid employees), the coordination and management of the program needs to be determined. This was where the reviewed campuses showed the greatest variation, and is fairly representative of the active Eco-Reps programs across the country, as shown in the program coordinators survey I conducted in 2007. From the non-hierarchical, shared student leadership model at Barnard to the graduate student managed program at Tufts, to the staff-led program at NCSU, to the staff-advised, lead-student model at Rice, the management combinations run the gamut. I will not go as far as to make a judgment on which style works best, as the style should be a best match to the campus climate and availability. I can say with certainty that have some sort of staff connection, whether it be an advisor/mentor/liaison, as Steve Tolman plays with the student-run program at Barnard, there is inherent importance in having a direct relationship with a staff person who has institutional memory and is a key link to the day-to-day operations at the institution. Campuses are

often very complex organisms, and having someone who has greater access to the “bigger picture” of operations is of central importance.

Another essential aspect of associated staffing is training, including planning, leadership, problem solving, and communication and delivery skills, to name a few. As Ryan Powell, formerly of NCSU, pointed out, there seems to currently be “blind faith” in the peer education approach of environmental behavior change. Powell felt that program coordinators cannot assume that just because a person is of the same age range, physical proximity, or other similar characteristics of another, that they will automatically be able to communicate complex issues and ideas. While some students may be naturally outgoing and willing to challenge other students to act in the ways that we desire, without adequate training Eco-Reps may not have the skills needed to do the needed work. The Barnard program seemed to have the most dedicated training schedule, building the Eco-Reps training into Resident Assistant (RA) training before the school year begins.

Money. While Eco-Reps might be very dedicated to reusing materials and living simply, there is always the need for some financial resources, whether for purchasing light bulbs for swaps or for paying wages. In this case, too, the four campuses showed a great variety in sources, from campus grants to funding from Facilities/Physical Plant, Housing/Residential Life, Dining, or an Office of Sustainability. Lindsay Batchelor at NCSU recalled that there was no financial resource plan for the first iteration of the GREEN program, and that would be an important aspect to remedy in the next time around.

In order to know how well a program is doing, it is necessary to evaluate it. When programs have logic models and/or clearly articulated objectives and outcomes, it is then possible to go back and assess to what extent these have been met. Ongoing evaluation can help identify problems and facilitate flexibility. Each of the four campuses concurred that evaluation was an important ingredient, but one that often gets pushed aside when time runs out. In the case of Eco-Reps Programs, there is both internal and external evaluation. Internal refers to the inner workings of the program and the experience of the participating students. External evaluation refers to how the program interacts with the broader population it serves. Each program had some level of internal evaluation, whether it was informal feedback given at meetings and retreats, in the case of Barnard and Rice, or by written survey feedback, in the case of Tufts and NCSU. None of the programs pursued formally evaluating their work within the broader audience. Two suggestions were posed as to how they'd like to do this in the future. In the case of Tufts, they'd like to build some questions about sustainability into the institutional research conducted annually. Barnard would like to include some questions in future Residential Life surveys. Informally, programs felt a sense of achievement of outcomes through having Eco-Reps be recognized as resource people in the community, and by hosting successful (and measurable) events, such as move-out collections and bulb swaps.

#### **4.2.5.2 Organizational Setting**

The second overarching theme in the Program Sustainability Indicators is organizational setting, which includes aspects such as organizational and managerial

stability and flexibility, program champions, and integration into the organization.

Organizational and managerial stability and flexibility means that the program is able to integrate new elements, is flexible in structure, approaches, and values and managers are open to new ideas and ready to take risks. All four campuses showed some level of evolution within their programs. Rice's program, being the youngest, was interested in building in more feedback loops to integrate learning from the first year into subsequent years. Powell and Batchelor from NCSU both noted that their program attempted to be flexible due to current conditions, but almost became too flexible and lost its structure completely. This is a reminder of the needed balance between structure and creativity.

In the age of competing resources and priorities on campus, it is important for programs to have "champions" in multiple layers of the institution. Finding champions in high positions who have the ability and authority to make necessary compromises and negotiate is advantageous, as stated by Rynes and Rosen (1995), Clugston and Calder, (1999) and Scheirer (2005). At Rice, the Eco-Reps program had buy-in from Facilities, Housing and Dining, and is supported by at least two Vice Presidents. The Barnard program is viewed very positively by the upper level administrators on campus. This was not as clear in both the Tufts and NCSU examples.

All of the programs mentioned "institutionalizing" their programs on campus, to some degree. In this way, programs are well integrated into their overarching organization (meaning the campus or institution). It also indicates that important procedures will remain part of the program even after the original personnel who developed and implemented the program leaves. It is also an attempt to align and

integrate the goals of the program with those of the institution, to ensure as lasting situation. This indicator was met by all campuses to an extent, but with room for improvement. At Rice, the program has an internal wiki/website for program documentation, including a resource guide describing procedures and contacts for the Eco-Reps. Each residential college had a folder of its own to store related information, but this is currently under-utilized. The program is connected to the Housing & Dining Department and student governments, but these relationships are still being built upon. The original Tufts program had a detailed manual and files for the new program to build upon. The program has no direct ties to other departments on campus. Documenting and archiving program information is something the Barnard group is striving towards. They have a strong relationship with Residential Life and have liaisons for other key departments on campus. The program at NCSU attempted to be a part of the Housing department, through their Inter Residence Association, but this was not an official arrangement that had much strength to it. The program was supervised by multiple offices, but those ties were somewhat lost when personnel moved on.

#### **4.2.5.3 Factors in the Broader Community**

The third overarching theme in the Program Sustainability Indicators is factors in the broader community, including community support, political legitimization, and socioeconomic context, which have many overlapping points. Community support refers to the cooperation of various community bodies and their degree of involvement – something that overlaps with the integration into the organization mentioned above. The



programs mentioned collaborations with other community bodies such as Resident Assistants, student governments, and other student organizations.

Political legitimization speaks to similar concepts as the community support, whereas programs have support of relevant governing bodies. Both Rice and Barnard programs showed connections to relevant political bodies, including student governments, and the Campus Green Committee, respectively. This was not clearly indicated for Tufts or NCSU.

Both the political and community connections and relationships play a part of the greater socioeconomic context, which refers to the availability of resources and existence of competing organizations. Access to financial resources was discussed above, and yet one remaining resource to discuss is that of access to needed physical spaces on campus, including storage and meeting places. Depending on connections to other departments, the campuses had varying access to necessary physical spaces. Both Rice and Barnard mentioned this as an existing need. Another key theme mentioned by all of the campuses was the existence or strength of student environmental organizations on campus and the program's relationship to that organization. This was a point of collaboration and/or competition, depending on the current scenario.

To conclude, I return to my research question for this stage of research: *How do a program's organizational structures impact the outcomes and overall sustainability of Eco-Reps programs?* I can say that with established administrative and organizational structures, programs are able to work more fluidly and evolve to meet current needs.

However, when those structures are interrupted, namely by personnel changes, there will be a break in program operation. My intention with using the Program Sustainability Indicators framework was not to give the four studied programs a rating, but to examine them with a framework that can help to articulate strengths and areas of improvement. The framework findings supported my preliminary theory for the case studies of Eco-Rep programs that stated: the more institutional support (meaning administration personnel providing or approving of physical, fiscal, and personnel resources) and articulated organizational structure a program has, the more likely it is to succeed in reaching its outcomes.

One obvious indicator of success of these programs is their continuation, when circumstances allow. In the case of Rice and Barnard, the programs have proved their worth enough that they are allowed to continue and are financially supported. In the case of Tufts and NCSU, personnel shifts meant a time of hiatus. The Tufts program will see its reemergence, and it is desired that the NCSU program re-emerge, if circumstances allow. The fact that institutions across the country continue to start similar programs on their campuses could be seen as a national indicator of success.

The following chapter is another in-depth look, via an evaluation, from another campus—the University of Vermont Eco-Reps Program.

## **CHAPTER 5: UNIVERSITY OF VERMONT ECO-REPS PROGRAM**

### **EVALUATION: FINDINGS AND ANALYSIS**

In order to understand the impacts that Eco-Reps programs can have, I wanted to do an in-depth evaluation of one program. Because of my insider access to the University of Vermont (UVM) Eco-Reps Program, I choose to evaluate this program, in hopes of developing a protocol that other campuses could use as well. The UVM program evaluation focused on three areas: perceived values of the program, resulting residential student behavior change, and ecological impact of the program. Conducting the evaluation using a triangulation of methods and data sources helped address concerns of validity and credibility, as this was done from an insider perspective (Russ-Eft & Preskill, 2001; Singleton & Straits, 2005).

#### **5.1 Program Characteristics and Demographics**

##### **5.1.1 Program History and Logic Model**

In the spring of 2004, Erica Spiegel, the Recycling Manager at UVM, wanted to find a way to fix an observed “disconnect” between UVM’s growing environmental reputation and student behaviors not always aligning with this reputation. Hearing about similar programs at Tufts and Harvard, Spiegel decided to sponsor a pilot-program, hiring 26 students that first semester to be Eco-Reps who would focus their efforts on getting their peers to reduce waste, improve recycling rates, and conserve energy and water. Receiving positive feedback from Residential Life staff and from the participating Eco-

Reps, Spiegel and Gioia Thompson, UVM's Environmental Coordinator, submitted a proposal (see Appendix I) to the Directors of Physical Plan and Residential Life to make the program permanent on campus (Spiegel & Thompson, 2004). The original proposal highlighted the potential benefits that the Eco-Rep program could bring.

The intangible benefits are numerous:

- Promotes community-building in residence halls centered on ecological living and helps foster "ecological literacy" in all residents as future citizens.
- Engages students who might not otherwise get involved in residential hall activities.
- Supplements and supports programs sponsored by Resident Assistants, IRA and Community Councils, e.g., hosting speakers, contests, activities

Anecdotally, we know that reduced energy consumption and waste *will* lead to operational cost savings. Unfortunately, these tangible benefits are difficult to measure, but we can speculate on the following:

- If by employing Eco-Reps, we can reduce the amount of trash generated in the residence halls by 10%, we can potentially save \$6,000 in landfill disposal fees.
- If we can reduce electricity costs (usage by students) in the halls (currently \$800,000/year) by just one percent (.01%), we can potentially save \$8,000.
- If we can reduce current water usage in the halls (\$360,000/year) by just one percent (.01%), we can potentially save \$3,600 (Spiegel & Thompson, 2004).

The proposal was accepted, a ten hour per week graduate student, Deborah Perry, was hired to coordinate, and at the start of the 2004-2005 school year, the Eco-Reps Program was underway. The Eco-Reps Program became a program of Residential Life and Physical Plant (and later, the Office of Sustainability when it was created in 2008), and is funded by both of those departments. The Program is advised by the Eco-Reps Advisory Team, which currently consists of the Director of Sustainability, Recycling Manager, Director of Residential Life, and an Environmental Studies faculty member.

After Deb's graduation in May 2006, I was hired to be the Eco-Reps Program Coordinator, a 10-15 hour per week position. In the fall of 2008, the program coordinator position became the primary duties of one of the Graduate Fellow positions in the UVM Office of Sustainability.

While the program has evolved over the time since its inception, it has generally followed the same format. Students apply to the program, and when hired are paid the standard UVM entry level student wage (\$8.75/hour in 2008) for four hours of peer education work in the residence halls. They attend a full-day training session at the beginning of the year, and in recent years have additional training workshops throughout the year on topics such as effective communication and event planning. Eco-Reps attend weekly meeting to plan and discuss projects and reflect on past events and activities. Through the meetings and a manual (chapters include Recycling, Energy, Eating and the Environment, Conscious Consumption, Water, Transportation, to name a few), Eco-Reps learn about environmental issues and how lifestyle choices impact the environment. They

then work in small teams and as individuals to bring those messages back to their peers in the residence halls in a variety of formats. Regular activities include keeping a current bulletin board and keeping an eye on recycling/trash room signage. Larger events include waste sorts and light bulb swaps, along with participating in special events and campaigns such as Earth Week and “One Less Cup” – promoting the use of reusable mugs. Eco-Reps also cosponsor events with other programs on campus, such as the annual “Do It in the Dark” campaign, with Health Promotion Services, promoting energy conservation and safer sex. In general, Eco-Reps are meant to be resource people for others in the residence hall and to model desired behaviors.

One of the program goals is to hire a diverse group of students. However, the primary hiring criteria is where the student lives on campus, as the Program seeks to have full coverage across the campus with students who live in those buildings. Student demographics, of both applicants and hired Eco-Reps, are described in the following section.

In the fall of 2006, as I began my role as Program Coordinator, I also began my role as researcher of Eco-Reps programs. After taking a program evaluation course, I learned about the usefulness of using and creating logic models, or a way of defining how an organization or program does its work (Russ-Eft & Preskill, 2001; W. K. Kellogg Foundation, 2004). Knowing that the UVM Eco-Reps Program was working off an informal theory and set of goals, as described in the program proposal (Spiegel & Thompson, 2004), I set out to create a logic model that would 1) help the program better

define itself and 2) be useful in an evaluation of the program's outcomes. Experimenting with a number of formats, I created several models and then brought them to the Eco-Reps Advisory Team, a small group of individuals who provided feedback on the current and future state of the program. At the same time, I worked with the Advisory Team on drafting a mission statement for the program. A first draft of a logic model is shown in Table 13.

Table 13. UVM Eco-Reps Program Logic Model, Fall 2006 Draft

RESOURCES	ACTIVITIES	OUTPUTS*	OUTCOMES	IMPACT
Program Coordinator	Training	# of Eco-Reps (from what majors and res. Halls)	Academically diverse Eco-Reps in all residence halls	Educated populace who practice pro-environmental behaviors
Program Advisory Board	Bi-weekly meetings			
\$ for student wages and Program Coordinator	Waste Sorts	# of large group activities	Improved program content	Decreased campus ecological footprint
\$ for program supplies	Bulb Swaps			
Office/Resource Area	Tours (MRF, Compost, Heating Plant, Water Treatment Plant, etc.)	# of individual projects and activities	Educated residential student populace	
Manual	Films	# of group-building activities	Stabilized or decreased costs for energy, water, and waste removal	
Website	Tabling (Student Activities Fest, Eco-Fair, etc.)	# of non-Eco-Reps who attend & participate in activities	Positive learning experience for student Eco-Reps	
Other Eco-Rep Program Coordinators and websites	Earth Week			
		<i>*important to not just note the quantity of outputs, but the <u>quality</u> of outputs.</i>	Contributing to healthy communities in residence halls	
			Formal bonds with Residential Life staff	
			Necessary resources allocated	



Program evaluation practitioners encourage playing around with various formats of logic models, as a means of learning about the program and expressing its goals and outcomes in different ways (W. K. Kellogg Foundation, 2004). A simplified version of a logic model is seen in Figure 14.

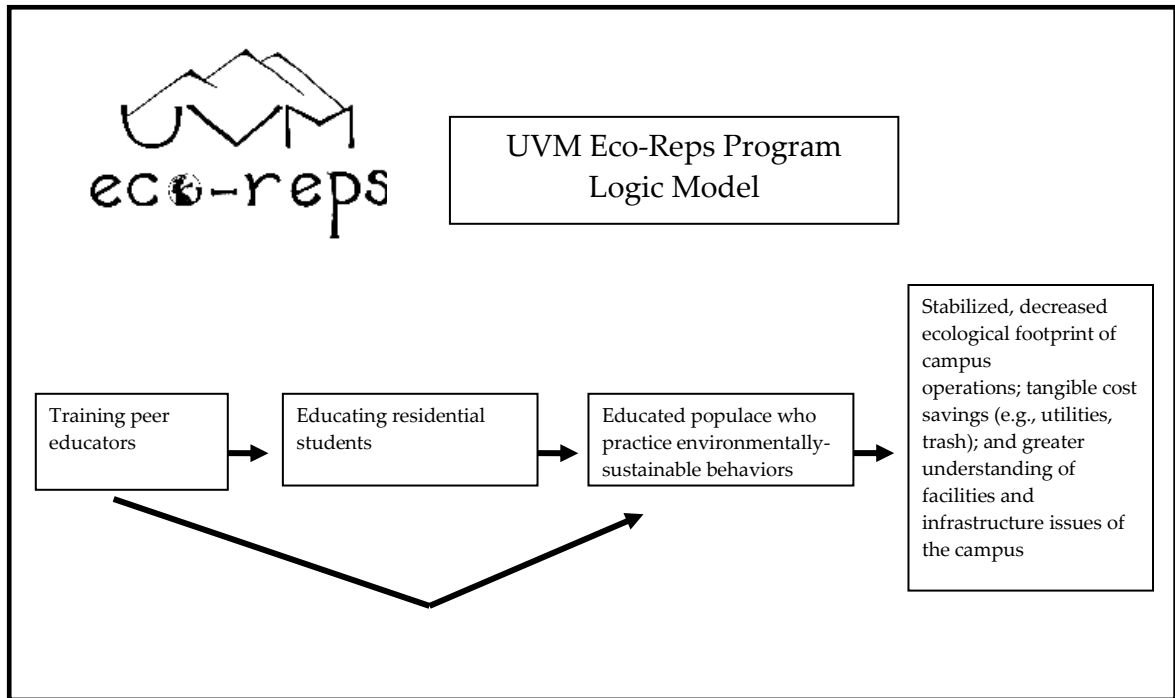


Figure 14. UVM Eco-Reps logic model, fall 2006 draft

A year later, in fall 2007, the Eco-Reps Advisory Team agreed on a mission statement and desired outcomes for the program. The mission statement read, *By promoting environmentally responsible behaviors in University of Vermont residence halls, the Eco-Reps Program strives to create an environmentally literate student population and reduce the campus' ecological footprint.* Desired outcomes included: diversity of participating students and coverage across campus, a positive experience for student Eco-

Reps, integration of the program into the University, promotion of environmental stewardship to residential students including knowledge and behaviors, reduction of the campus ecological footprint and financial costs of utilities, and promotion of community building in the residence halls. The full details of the outcomes, activities, indicators, and progress can be seen in Appendix J.

### **Analysis**

This component of the research allowed the opportunity to return to the original program proposal as well as early theory and logic models to see and document the evolution of the program. The authors of the original proposal, Gioia Thompson and Erica Spiegel, had been in their respective roles as Environmental Coordinator and Recycling Manager for several years and therefore had the experience and foresight to know that it would be difficult to determine actual dollar or utility savings, but were willing to propose rough estimates. To complement this, they added intangible benefits such as community building and student engagement – goals common to programs within institutions of higher education (Light, 2001).

The Eco-Reps Program ran for two years with an informal theory, building the program based on those found at other campuses, but adapting it to the UVM climate. When I began as Program Coordinator in 2006, knowing that it would also be the topic of my dissertation research, I began a more formalized look at program development and theory and logic models. This was an exercise in articulating what the program's goals and desired outcomes were as well as ways of getting there (Russ-Eft & Preskill, 2001; W. K. Kellogg Foundation, 2004). The various models were shared with the Eco-Reps

Program Advisory Team and it provoked conversations around what the program was and what it hoped to accomplish. However, despite the best intentions of all involved to use this as a guiding document, once these goals were established they were not looked at again until I began the evaluation of the program. This shows the value of undertaking a program evaluation, either by an internal or external examiner, as there is often not time within the day-to-day operation of running a program to assess it (Russ-Eft & Preskill, 2001).

While the logic model did not go through any formal revisions, the Eco-Reps Advisory Team did revisit the mission statement for the program in 2008. The revision came as a result of findings from my dissertation work – namely noting the difficulty in determining ecological and financial savings, and rather wanting to emphasize the development of student leaders more.

Original mission statement (2006-2008):

*By promoting environmentally responsible behaviors in University of Vermont residence halls, the Eco-Reps Program strives to create an environmentally literate student population and reduce the campus' ecological footprint.*

Revised mission statement:

*The UVM Eco-Reps Program trains student leaders who model and promote environmentally responsible behaviors in the residence halls and other university facilities by educating their peers.*

Despite not going through a formal revision process for the logic model, several of the original program activities did shift, in response to current conditions and needs.

Examples of revisions included:

- 1) Shift in hiring practice, from only those who resided in the building could be an Eco-Rep for that building to placing qualified students in other buildings, to ensure full coverage across campus.
- 2) Focusing more on training the Eco-Reps throughout the year in peer education, event planning, and communication skills.
- 3) No longer seeking an academic course to run parallel with program. This was tried for one academic year and was discontinued due to lack of interest (low enrollment) and sense of it be worth the effort (as per Coordinator & Advisory Team).

With an understanding of the history, structure, and desired outcomes of the Eco-Reps Program, I will now describe the demographics of the participating students.

### **5.1 2 Eco-Rep Applicant and Hired Student Demographics**

A key characteristic of the UVM Eco-Reps Program are the students who apply and ultimately become Eco-Reps. The following section provides the findings of examining the student acceptance rate, coverage in the residence halls, academic major and class year distribution, and retention rates. The full spreadsheet of data can be seen in Appendix K. The application and acceptance rates can be seen in Figure 15.

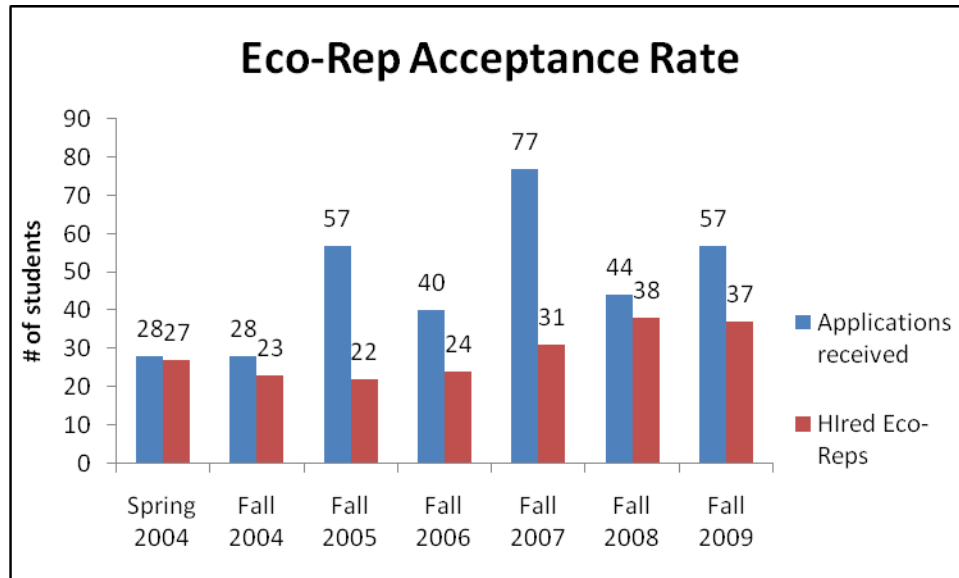


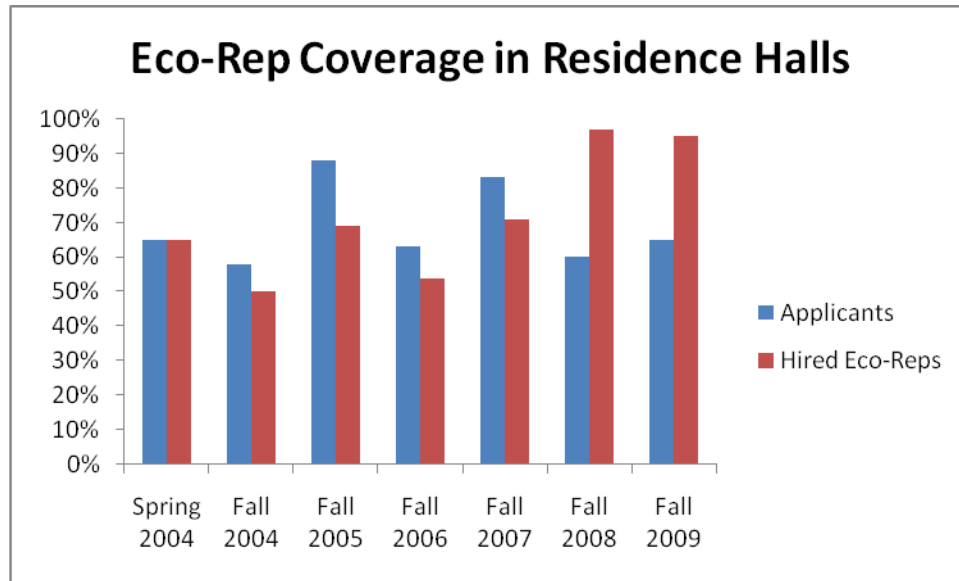
Figure 15. Eco-Rep acceptance rate (applications received vs. hired Eco-Reps)

Note: For Figures 16-20 and Table 13, n=

n=	Applicants	Hires
Spring '04	28	27
Fall '04	28	23
Fall '05	57	22
Fall '06	40	24
Fall '07	77	31
Fall '08	44	38
Fall '09	57	37

Figure 16 shows the coverage of Eco-Reps in the residence halls, based on 35 residence halls. The reason that the coverage rate is higher in both Fall 2008 and 2009 reflects a change in hiring practices. Originally, only students who lived in a residence hall could be an Eco-Rep in their home building. In the fall of 2008, the Advisory Team recommended that students could be placed in a residence hall where they didn't live, in

order to expand our coverage. The preferred method was to have a student live and work in the same building.



*Figure 16.* Eco-Rep coverage in residence halls

Distribution of academic majors was also looked at, for all applicants as well as hired Eco-Reps, as seen in Figure 17 and 18. These graphs depict Environmental Studies (ENVS), Environmental Science, and/or combination majors (e.g. Environmental Studies and English) versus all other majors.

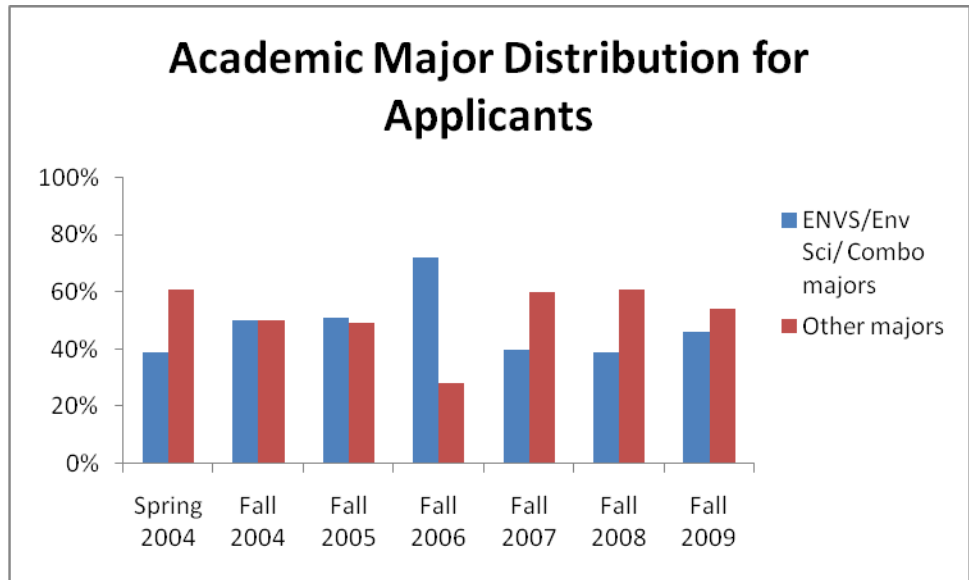


Figure 17. Environmental-related majors versus other majors of Eco-Rep applicants

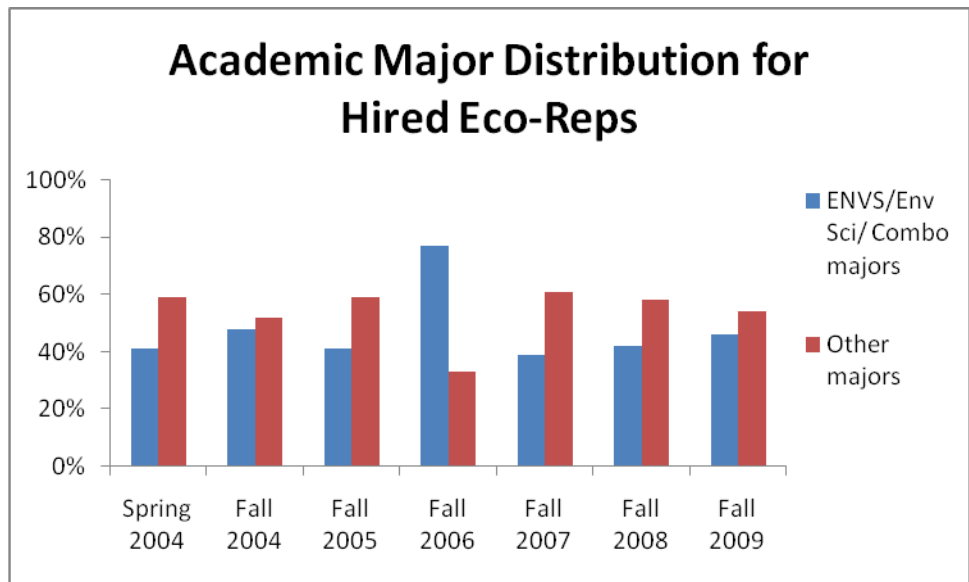


Figure 18. Environmental-related majors versus other majors of hired Eco-Reps

As class year was a topic discussed in several of the interviews (specifically, if this was a job best suited for returning students rather than first-year students), I

examined the distribution of class year among applicants and hired Eco-Reps, as seen in Figure 19 and 20.

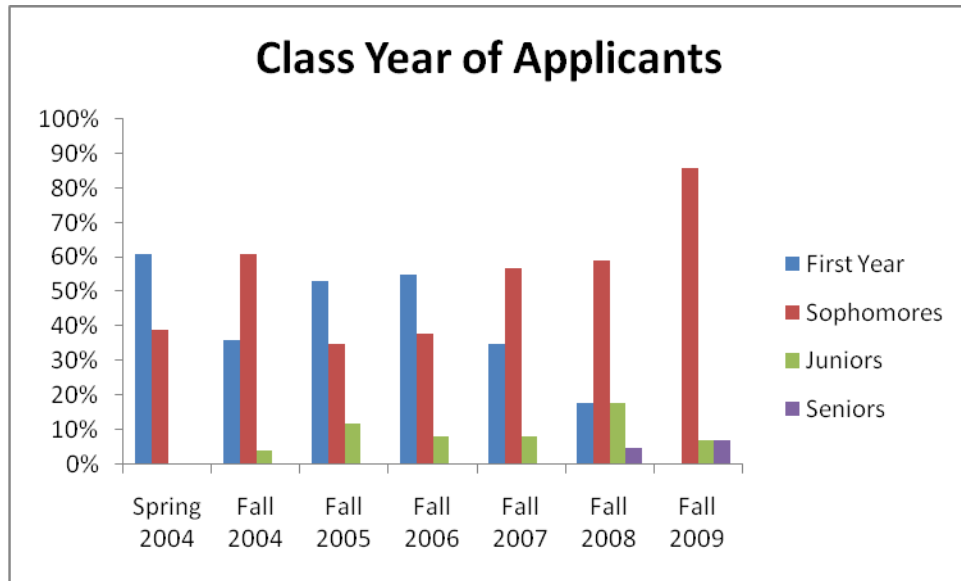


Figure 19. Class year of applicants

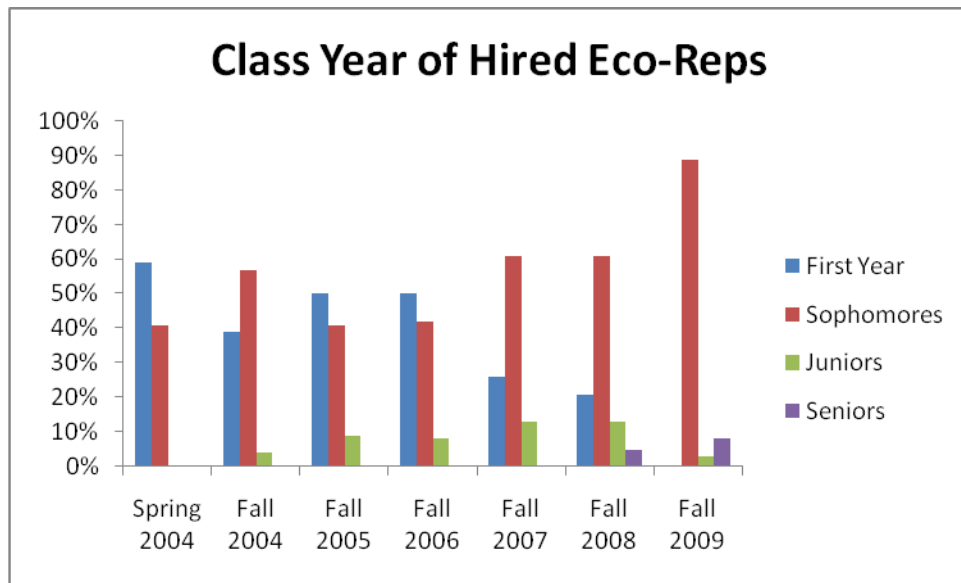


Figure 20. Class year of hired Eco-Reps



In terms of retention, Table 14 shows the percentage of current Eco-Reps who applied and were hired to the program the following year.

Table 14. Percentage of Applicants and Hired Eco-Reps that were Returning Eco-Reps

	<b>Fall 2009</b>	<b>Fall 2008</b>	<b>Fall 2007</b>	<b>Fall 2006</b>	<b>Fall 2005</b>	<b>Fall 2004</b>	<b>Spring 2004</b>
Applicants	14%	9%	8%	8%	11%	21%	N/A
Hired Eco-Reps	14%	11%	13%	13%	14%	22%	N/A

### **Analysis**

The examined demographics of Eco-Rep applicants and hired students included: application and hiring rates, residential hall coverage, academic major and class year distribution, and retention rates of Eco-Reps.

A few points of explanation need to go along with the program acceptance rates. There was a change in Program Coordinators in the summer of 2006, and therefore recruitment may have been affected by having a new coordinator. Additionally, the application form was significantly altered in the fall of 2008, which made it longer by asking more specific questions and also requested references. This may have affected the application rate. The other modification in fall 2008 was a change in hiring practice. Students were hired on their qualifications and enthusiasm, rather than their residence being a significant factor. Therefore, the hiring rate and placement coverage was much higher in fall 2008.

The depiction of the residence hall coverage also needs some explanation. The change in hiring practice was already mentioned, but in addition, at the end of the spring 2007 semester, I sat down with the Director of Residential Life to determine the ideal coverage for residence halls, knowing that the population of residence widely varies. The desired coverage as of 2007 can be seen in Appendix L. Therefore, the definition of “coverage” has changed over the years. For example, as Slade Hall only houses 24 students, and they are all part of an environmental cooperative living situation, we felt it was not necessary to have an Eco-Rep placed in that building. However, in years past, we did hire Eco-Reps for Slade. So, while fall 2008 shows 96% coverage, it was actually 100% as there was not an Eco-Rep in Slade Hall in 2008, but there had been in years past. Additionally, in the fall of 2006, the GreenHouse Residential Learning Community opened in the new University Heights South residence hall. This program likely concentrated many of the “eco-minded” students into one building, where they may have been more equally distributed in other residential halls before.

For most of the years there was an average of a 60-40 split between other majors and environmental-related majors, with the exception of the fall of 2006. I am unsure of the explanation for this deviation, except perhaps the position was widely advertised in the introductory ENV5 or Environmental Science classes more than other years. Outside of this exception, the graphs show that there is a strong representation of environmental-related majors, as to be expected, but that there is also a strong representation of other academic areas (ranging from nutrition to business), thereby meeting a hiring goal of the Program.

In the first three years of the program there was a balanced split between first year students and returning students who either applied or were hired to be Eco-Reps. There is a noted change in the fall of 2007, with many more returning students applying and hired as Eco-Reps. This can be explained that much more of the recruiting period occurred during the end of the spring semester, and therefore current students had more opportunity to hear about the Program rather than first year students only hearing about it during Orientation or the first week of school in the Fall. Further, hiring practices again changed for the 2009-2010 school year, in that hiring only took place in the prior spring semester. Therefore, first year students were no longer hired in the fall semester.

Retention of Eco-Reps from one year to the next is not high. Possible explanations for this include students moving off-campus (as many do in the junior year), taking on higher-level leadership roles (e.g. ENVIS Teaching Assistant or student organization president), or not wanting to repeat the program again. Some of the returning students have taken on leadership roles within the program, including facilitating meetings and conducting special projects.

Now, with an understanding of the characteristics and demographics of the UVM Eco-Rep Program, I will describe the findings and analysis of campus utilities.

## **5.2 Campus Utilities Analysis**

One of the goals of the UVM Eco-Reps Program is to decrease waste and energy usage and increase recycling rates. Unfortunately, the available utility data is not sub-metered by building and therefore makes it difficult to ascertain real-time savings, and further cannot be attributed to a certain activity – such as the Eco-Reps’ efforts.

However, it seemed worthy to explore the data to see the general trends across the campus.

In reviewing the utility data, it is important to note that both the total campus population (including full-time, part-time, and summer session students, staff, and faculty) and the total building square footage of the campus grew in the eight years examined. (See Appendix E for all data.) I determined the average growth rate of population and building square footage by calculating the change from one year to next, [% rate of change = ((Year 2 – Year 1) / Year 1) \* 100] and then the average over all eight years. Linear trend lines (or regression lines) also show the rate of change over time, with the R<sup>2</sup> value indicating the accuracy of the trend lines. Figures 21 and 22 show the growth in population and square footage from 2000-2007. The average growth rate of population in this time frame was 1.87% per year and the average growth rate of square footage was 3.52% per year.

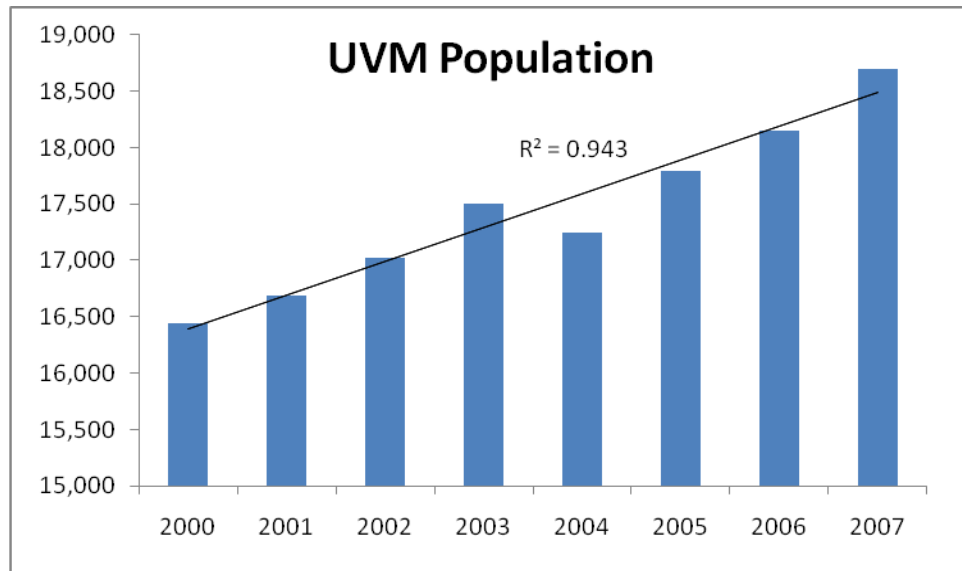


Figure 21. UVM population from 2000-2007

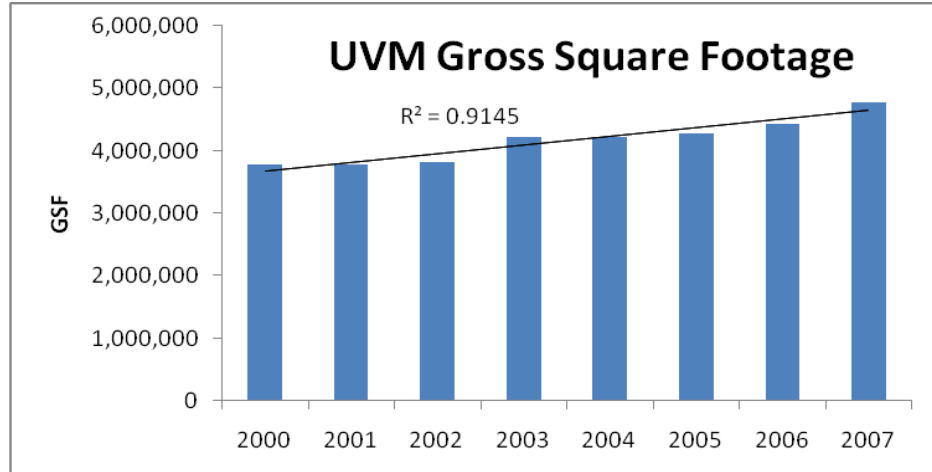


Figure 22. UVM gross square footage from 2000-2007

The first utility data examined was electricity usage across campus, per capita and per square foot of building space from 2000-2007 as seen in Figures 23 and 24. On average, electricity increased .10% per year per capita and decreased -1.4% per year per square foot.

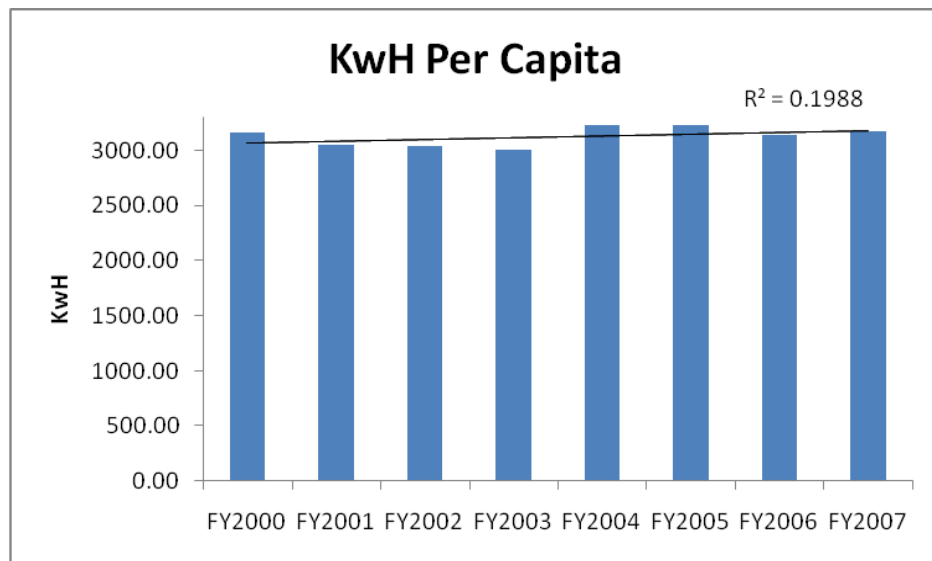


Figure 23. Kilowatt hours per capita (using total population) from 2000-2007

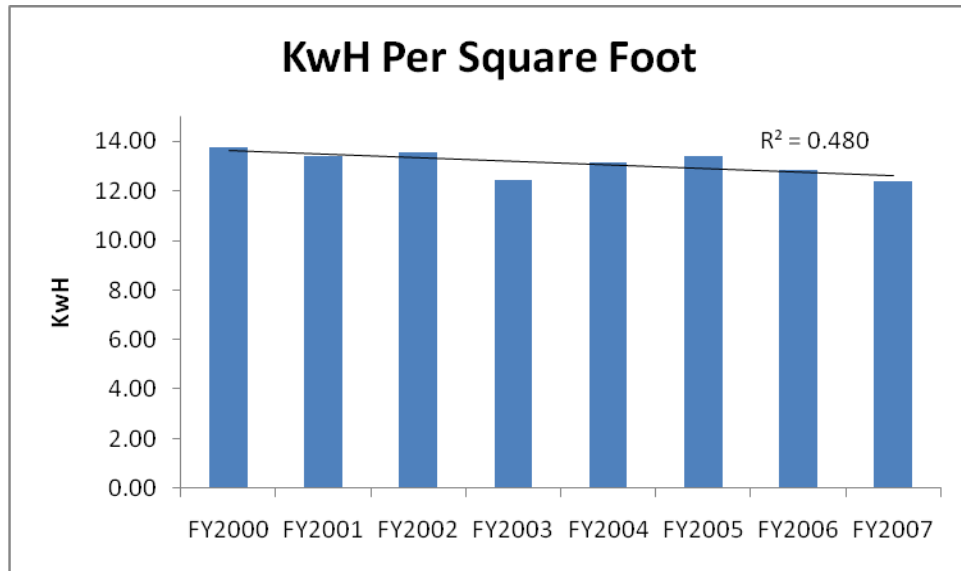


Figure 24. Kilowatt hours per square foot (using total building space) from 2000-2007

Figures 25 and 26 show per capita and per square footage of trash and recyclables (which includes paper, containers, cardboard, shredded paper, books, food waste, compostable bioplastic, kitchen grease, wood, scrap metal, tires, appliances, concrete/C&D, computers, e-waste, and surplus/reuse). On average, trash per capita declined -.68% per year and recycling per capita increased 2.61% per year. Per square foot, trash decreased -2.05% per year and recycling increased 1.26% per year.

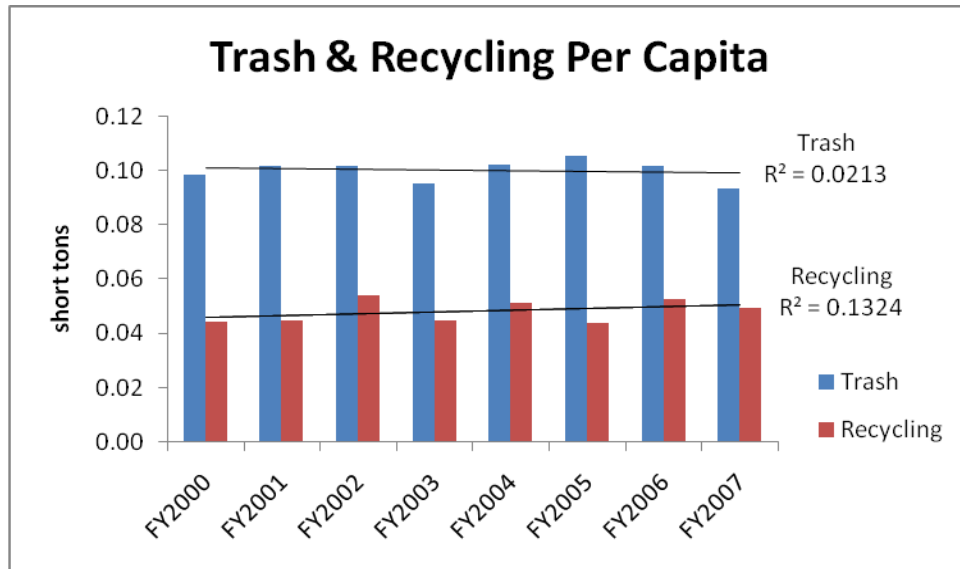


Figure 25. Tons of trash and recycling per capita (using total population) from 2000-2007

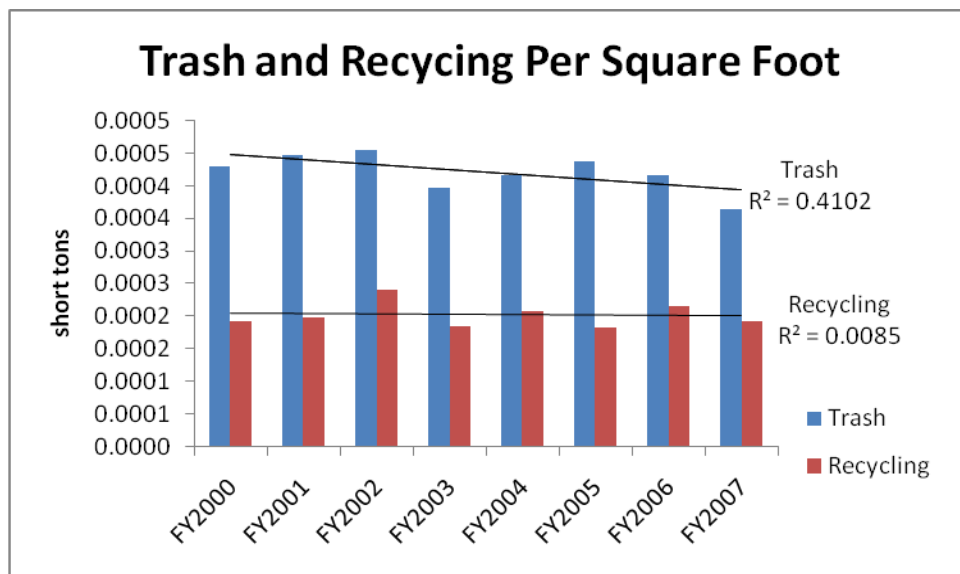


Figure 26. Tons of trash and recycling per square foot (using total building space) from 2000-2007

Finally, the same was done for greenhouse gas emissions, as seen in Figures 27 and 28. These figures were tabulated from emissions from electricity, heating/cooling, fleet, commuting, agriculture and solid waste. Tons solid waste composted counts as a

carbon offset. On average, greenhouse gas emissions increased per capita by 1.27% per year and decreased per square foot -.5% per year.

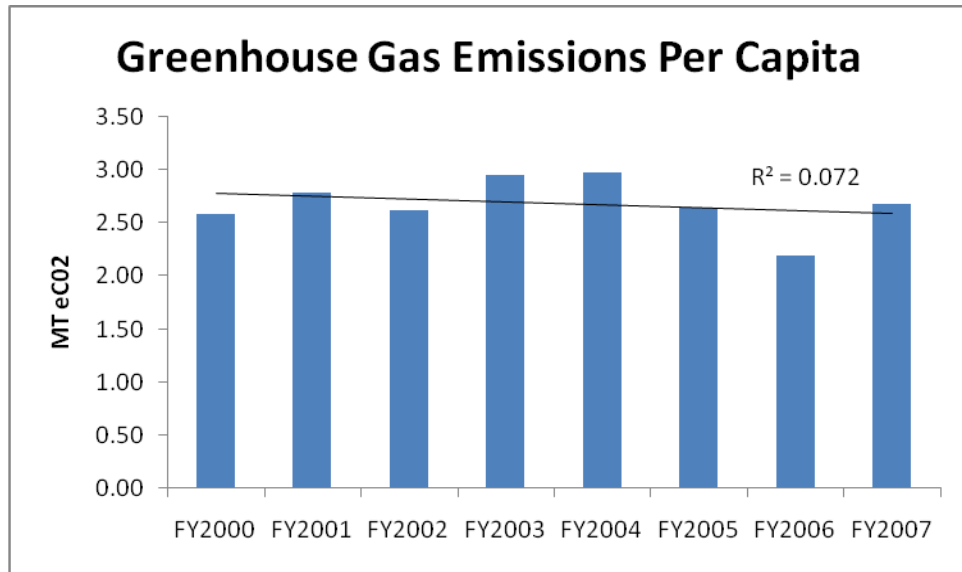


Figure 27. Metric tons equivalent of CO<sub>2</sub> per capita (using total population) from 2000-2007

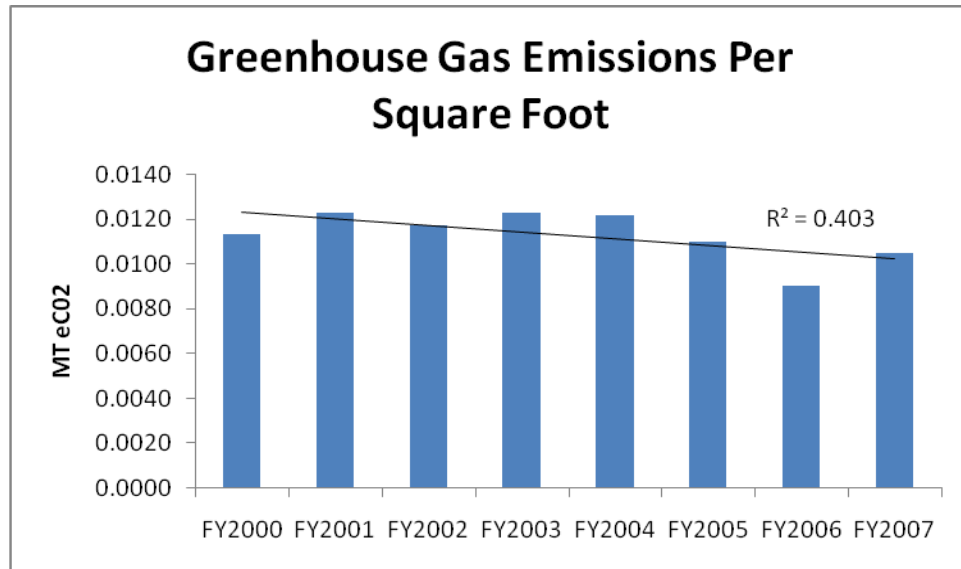


Figure 28. Metric tons equivalent of CO<sub>2</sub> per square foot (using total building space) from 2000-2007



The Eco-Reps Program conducts one project that is relatively easy to make an estimate of electricity and greenhouse gas emissions reductions and costs savings, from annual light bulb swaps. This project includes Eco-Reps going door-to-door in the residence halls, asking students to swap out an incandescent bulb for an energy-efficient compact fluorescent bulb – for free. The estimated savings can be seen in Table 15, on the following page. An additional activity that Eco-Reps participate in is residential hall waste sorts. Due to the small volume of trash sorted in the waste sorts, these cannot be deemed as scientifically sound, but they do offer a snapshot look into the make-up of what is winding up in the trash, as seen in Figure 29.

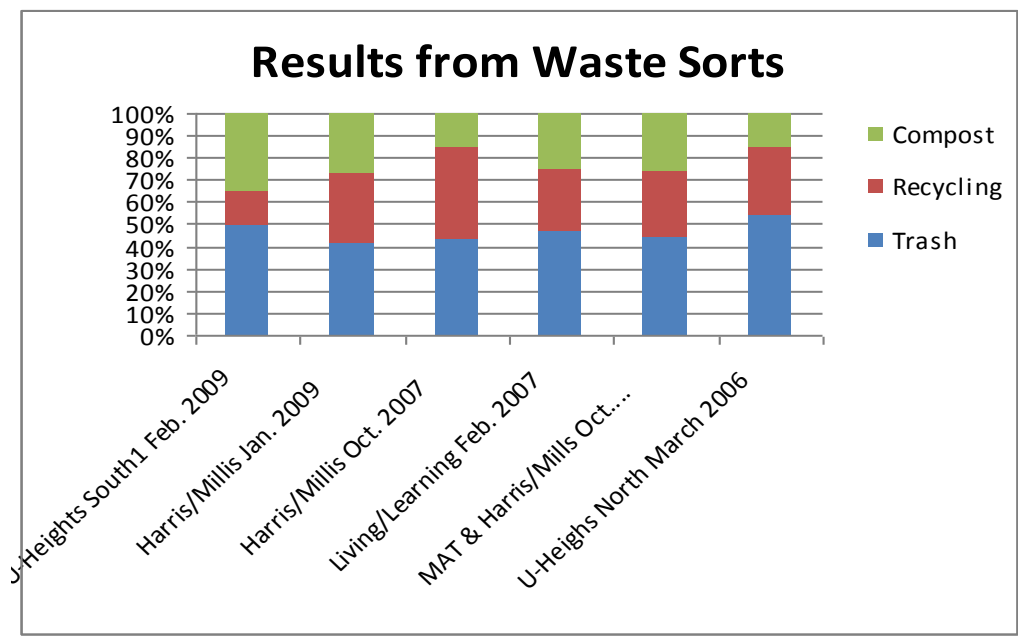


Figure 29. Results from residential hall waste sorts

Table 15. Estimated Savings from Eco-Reps Light Bulb Swaps

	<b>kWh saved/year</b>	<b>\$ saved/year<sup>a</sup></b>	<b>lbs. of CO<sub>2</sub> reduced/year<sup>b</sup></b>	<b>lbs. of NO<sub>x</sub> reduced/year<sup>c</sup></b>	<b>lbs. of SO<sub>2</sub> reduced/year<sup>d</sup></b>	<b># of Bulbs</b>
2008-2009	9,291.27	\$1,114.95	833.43	13.94	35.31	400
2007-2008	24,017.57	\$2,882.11	2154.35	35.99	91.2	489
2006-2007	53,041.88	\$6,365.03	4757.86	79.56	201.56	916
2005-2006	29,762.08	\$2,976.21	1590.92	47.15	64.84	531
2004-2005	26,599.46	\$2,659.95	14229.11	42.14	57.95	444
<b>TOTALS</b>	<b>142,712.26</b>	<b>\$15,998.25</b>	<b>23,565.67</b>	<b>218.78</b>	<b>450.86</b>	<b>2,780</b>

<sup>a</sup> based on \$.10/kWh

<sup>b, c, d</sup> based on VT's grid emissions outputs (2000) from <http://www.epa.gov/cleanenergy/index.html>

## Analysis

As mentioned above, changes utility rates (for electricity, trash, recycling, and greenhouse gas emissions) cannot be directly attributed to the Eco-Reps Program, as most often rates are only available across campus (as opposed to per building) and there are a number of contributing factors that could impact the rates, including infrastructural changes, heating degree days, and human behavior patterns (which are, in turn, influenced by a number of sources). To further this point, previous studies showed that residence halls are only responsible for 14% of the total campus electrical usage and for 50% of the trash generated on campus (Thompson, 2002). It is known that academic buildings, especially those that contain laboratories are very energy intensive (Rappaport & Creighton, 2007). Despite these challenges, it seemed worthy to examine the rates to find general campus trends. Table 16 shows a condensed version of the averages rates of change per year of UVM campus utilities, as described in detail in the previous chapter.

Table 16. Average Rates of Change Per Year for UVM Campus Utility Rates

<b>2000-2007</b>	<b>Per Capita (population grew at an average of 1.87% per year)</b>	<b>Per Gross Square Foot (grew at an average of 3.52% per year)</b>
<b>Electricity</b>	.10%	-1.4%
<b>Trash</b>	-.68%	-2.05
<b>Recycling</b>	2.61%	1.26%
<b>Greenhouse gas emissions</b>	1.27%	-.5%

When looking at the utility rates that most directly relate to Eco-Rep program goals, the changes over time per capita are most relevant, as they pertain to human behaviors rather

than infrastructure improvements or building performance, which would be reflected in the per gross square foot column. Decreases in trash and increases in recycling are both positive signs, and align with Eco-Rep program goals. These rates reflect mostly a behavioral issue, of individuals making a choice of how much trash or recycling they create and how to dispose of it. Electricity consumption increases likely reflect an increased plug-load over the past decade (Rappaport & Creighton, 2007), which infers the need for outreach around unplugging or powering-down electronic devices, a common Eco-Rep task. Greenhouse gas emissions are more difficult to analyze for behaviors, as they include many more factors, including heating and cooling rates, which is likely to be more related to the outside temperature at the time. For example, if one year was significantly warmer and required less heating, the net emissions would decrease. These limitations show the need to generate savings estimates when possible, as is done with light bulb swaps, as noted in the previous chapter.

While only assumptions can be made from the available utility usage analysis, it allows for the opportunity to make campus-wide observations. It also shows a need for sub-metering of water, heating/cooling, trash and recycling per buildings, so that problem areas can be pin-pointed and addressed. This will also allow for a greater ability to show more direct correlations with Eco-Reps Program effectiveness on ecological and financial savings. It also points to the opportunity to create outreach programs for users of other campus buildings, such as faculty and staff. Further, with more specific utility feedback using real-time displays, building occupants could see how their behaviors have a direct link to utility usage (Peterson, Shuntruov, Janda, Platt, & Weinberger, 2007).

### 5.3 Residential Student Survey

To study the impact of the Eco-Reps Program on the residential students, as well as ways to inform the Program's content and approach, I conducted a survey in the Spring of 2008 that asked students to self-report their behaviors as well as provide their perceptions of and interactions with the Eco-Reps Program.

#### 5.3.1 Demographic Information

Of the 424 respondents of this survey, the mean age was 18.7 years (St.d.=.818). The survey sample was 73.1% female and 70.7% first year students. Only 28.7% of the sample population are Vermont residents. Table 17 shows the comparison of the survey respondent demographics to the total residential population. The Residential Life Department provided the data on the total population (Hyttén, 2008).

Table 17. Demographics of all UVM Residential Students and Survey Respondents

	<b>Population</b>	<b>Mean Age</b>	<b>Gender</b>	<b>Class Year</b>	<b>Residency</b>
<b>All Residential students</b>	4,750	20	55% female; 45% male	46% first years; 54% upperclass	30% Vermont; 70% non-Vermont
<b>Survey respondents</b>	424	18.7	73.1% female; 26.9% male	70.7% first years; 29.3% upperclass	28.7% Vermont; 71.3% non-Vermont

85.8% of the survey sample had an Eco-Rep in their building during the surveyed year, which dropped to 71.9% for the surveyed semester (reflecting a few Eco-Reps who left the program mid-year). Residents of Converse Hall made up on 6.6% of the survey sample. Unfortunately, there was an error and the survey did not include a full list of majors. As a

result, two thirds of the survey respondents were not able to indicate their school or major. Full tables of demographic information for survey respondents can be seen in Appendix M.

### **5.3.2 Residential Students' Interaction With and Perception of the UVM Eco-Reps Program**

The survey addressed if and how residential students were impacted by the Eco-Reps Program. There was a fairly even split between students who had not heard of the Eco-Reps Program, as shown in Table 18, with a slight lean towards those who had not heard of the program.

Table 18. Responses Regarding Hearing of the Eco-Reps Program (n=424)

<b>Response</b>	<b>Frequency</b>	<b>Percent</b>
Yes	206	48.6
No	218	51.4
Total	424	100.0

Of the 200 responses to this question of being able to state the purpose of the Eco-Reps program in a sentence or phrase, 172 gave accurate to fairly-accurate definitions, meaning that students identified at least one aspect of the program's mission or goals, such as:

- “To promote environmental awareness and environmentally friendly practices in the residential halls.”
- “To create awareness on-campus about how to be more eco-conscious and little things we can do to combat global warming.”
- “I believe they teach the community about environmental issues.”

The remaining 28 responses had heard of the program but weren't very clear of its purpose.

In terms of visibility of the program, only 15.6% of those surveyed felt that the Eco-Rep in their building was visible enough. This question was a test within itself to see if students knew if they had an Eco-Rep or not (as not all buildings had one in place). This was a noted choice for respondents, as seen in Table 19.

Table 19. Responses Regarding Visibility of Eco-Rep in Respondent's Residence Hall

(n=424)

<b>Response</b>	<b>Frequency</b>	<b>Percent</b>
Yes	66	15.6
No	172	40.6
Not Sure	126	29.7
Don't Think We Have An Eco-Rep	60	14.2
Total	424	100.0

In rating the effectiveness of outreach techniques used by the Eco-Reps program, respondents gave the following responses, as seen in Figure 30. The word "effective" was not defined on the survey, so it was up to respondents' judgment as to where they chose along the scale. The top two "very ineffective" and "somewhat ineffective" outreach techniques were face-to-face in a students' room (34.4%, 21.9% respectively) and face-to-face in the residence halls (29.4%, 20.6% respectively). The top two "somewhat effective" outreach techniques are posters (50.9%) and events such as bulb swaps (38.8%). The top two "very effective" outreach techniques are programs such as films (25.8%) and events such as bulb swaps (23.5%). Combining "somewhat" and "very" effective, posters top the list.

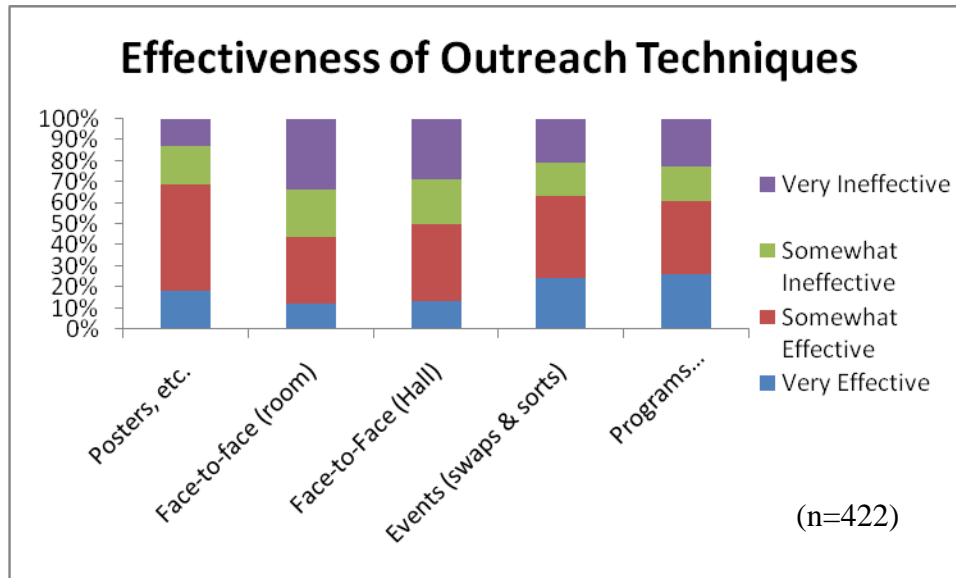


Figure 30. Comparative effectiveness of outreach techniques

The following responses on the survey regarded students' self-reporting of their own behaviors. While anonymous surveys are one way of reducing fear for respondents, so they will hopefully answer honestly, there is the chance of over-reporting or under-reporting behaviors – in other words, trying to provide the desired answers (either consciously or unconsciously) (Singleton & Straits, 2005).

In asking whether Eco-Rep campaigns or events influenced actual behavior change, respondents noted the following, as seen in Figure 31. The top two “not at all” influenced behaviors: Use public transportation or carpool (35%) and compost food waste (34.7%). The top two “somewhat” influenced behaviors: conserve water (33.3%) and save energy (33%). The top two “a great deal” influenced behaviors: Reducing trash through recycling more (29%) and compost food waste (19.7%). The top two behaviors that student report they are “already doing all they can”: reducing trash through recycling more (28.1%) and save



energy (25.7%). The top two behaviors most influenced by Eco-Reps Program: reducing trash through recycling more and saving energy. The top two behaviors least influenced by Eco-Reps Program: use public transportation or carpool and compost food waste.

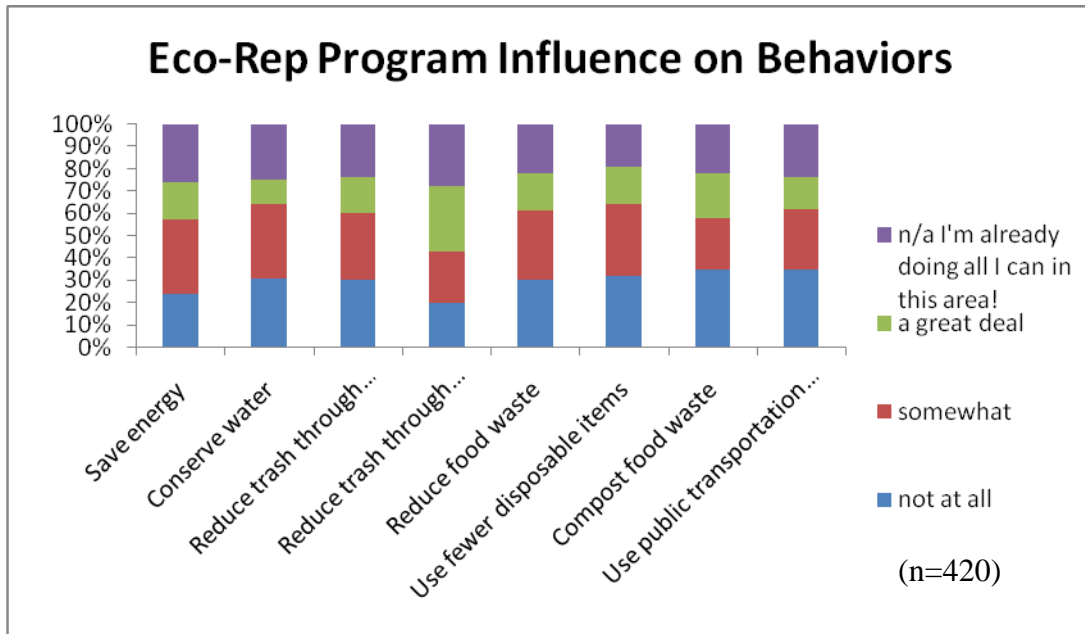


Figure 31. Comparative Eco-Rep Program influence on environmental behaviors

When asking for specific examples of behaviors changed, approximately half of the total survey respondents named a variety of answers, as shown in Table 20, with recycling and energy related behaviors being the most frequent. Five respondents reiterated that the program had no influence on them.

Table 20. Responses Regarding Behaviors Changed (n=208)

<b>Response</b>	<b>Frequency</b>	<b>Percent of Sample</b>
Recycling	95	22.4
Energy	71	16.7
Reduce waste & reuse	57	13.4
Compost	50	11.8
Water	38	9.0
Transportation	23	5.4
Conscious consumption	22	5.2
No influence	5	1.8
Encourage others	4	.9
Overall impact	3	.7

Examples of some of the responses included:

- “I have reduced my consumption dramatically.”
- “I am more conscious of what I am doing and the impact it will have.”
- “I have changed from keeping the lights on, to turning them off when I leave the room.”
- “I recycle everything that I can now and I encourage my family to do the same. That is the biggest thing that I have changed.”

These sample responses show heightened awareness and active behavior change indicated by respondents. The final example indicates that Eco-Reps program is influencing students (or at least that particular student) in a way that they go on to influence others—a ripple effect.

### **5.3.3 Motivations and Barriers for Changing Behaviors**

A second area of the survey addressed motivations and barriers for changing behaviors – two important aspects that could help inform both the content and approach of the Eco-Reps Program (McKenzie-Mohr & Smith, 1999). When asked what or who influences them to change behaviors or to take action, respondents noted the following, as seen in Table 21. The two least influential sources/people noted were celebrities (96%) and social networking (Facebook, etc.) (80%). The two most influential sources/people: friends (78.8%) and family (66%). Other responses indicated themselves as an influence, the community they live in, and signage.

Table 21. Responses to Who or What Influences Respondents' Behaviors (multiple responses allowed) (n=424)

<b>Response</b>	<b>Frequency</b>	<b>Percent of Sample</b>
Friends	334	78.8
Family	280	66
Moral or ethical considerations	251	59.2
Classmates	209	49.3
Other Media (newspapers, tv, radio, films, etc.)	180	42.5
Faculty	148	34.9
Financial considerations	143	33.7
Internet	122	28.8
Social Networking (Facebook, etc.)	85	20
Other	19	4.5
Celebrities	17	4

Knowing who influences someone can help overall program design, including types of approaches. That friends and classmates rank high with survey respondents is helpful for the Eco-Reps Program to know, as the student Eco-Reps are likely to have a strong influence with their peers and classmates. This coincides with the tactic used in the “Very Influential Person” study conducted by Newton and Newton (2001), and is strongly supported by the peer education literature, particularly regarding the power of peer influence (Antonio, 2004; Charng et al., 1988; Gardner & Stern, 2002).

Primary motivations for changing behaviors or taking action are shown in Table 22, the most frequent being a concern for or desire to protect natural resources. Feeling morally or ethically inclined to participate was another strong response.

Table 22. Responses Regarding Primary Motivation for Changing behavior (n=353)

<b>Response</b>	<b>Frequency</b>	<b>Percent of Sample</b>
Concern for/protect natural resources	108	25.5
Moral/ethical (feels good, right thing to do, personal choice, etc.)	87	20.5
Quality of life (working for change/better world)	39	9.2
Personal actions make a difference	36	8.5
Friend/family/community influence	30	7.1
Care for future generations	28	6.6
Education (awareness, facts, etc)	23	5.4
Climate change/global warming/pressing problems	23	5.4
Personal benefit	16	3.8
Convenience	12	2.8
Financial/costs	10	2.4
Time outdoors	6	1.4
Media influence	5	1.2
Eco-Rep	4	.9
Anger/fear	2	.5
Don't change	1	.2

Examples of responses include:

- “I am motivated to take action when the subject is interesting to me and I am knowledgeable on it.”
- “I realized that I can impact the Earth positively or negatively and that if I try to make a positive impact then that little bit could help others to make change and it could all add up to make a bigger difference.”
- “Knowing that things - items, products, consumed goods - aren't a one-time use substance. If it's disposable, then there's something disposable about me, too.”
- “Socially, I really want our world to wake up and change and the only way to do that is through changing my own habits.”
- “The time is now, the question more is why wouldn't I take action?”
- “To be a better steward of God's creation.”

Respondents named a variety of reasons for not changing behaviors or taking action as seen in Table 23. The top two barriers to changing behaviors are too busy (42%) and too complicated (29.2%). Other reasons included laziness, missing infrastructure, feeling discouraged, it being difficult to change, need to know how to change, being forgetful or feeling that there is nothing wrong with the behaviors and therefore no need to change.

Table 23. Indicated Barriers to Changing Behaviors (multiple responses allowed) (n=424)

<b>Response</b>	<b>Frequency</b>	<b>Percent of Sample</b>
Too busy	178	42
Too complicated	124	29.2
Financial considerations	124	29.2
Not Interested	59	13.9
Other	40	9.4
What I do as an individual doesn't make a difference	38	9
Moral or ethical considerations	15	3.5

Understanding the barriers can help to create a more effective solution for behavior change (Kollmuss & Agyeman, 2002; McKenzie-Mohr & Smith, 1999). Many students do have increasingly busy schedules with classes, extracurricular activities, and sports, and so to see the top response is that they feel “too busy” to participate in pro-environmental behaviors is not surprising, yet perhaps this is more a perception that many of these behaviors take more time. Of course, with all aspects of life, humans choose how to spend their time and prioritize their time to what seems most important, pertinent, or even more fun.

#### **5.3.4 Students’ Perceptions of their own Environmentally Related Behaviors**

Survey respondents reported their participation in certain environmentally related behaviors, including turning off lights and computers, using powerstrips, controlling the temperature of their room, water usage, and use of refillable mugs and water bottles.

As seen in Table 24, beyond those who already claim to always turn off the lights (70%), the top two reasons for not turning off lights when leaving a room was forgetting (23.6%) and intending to return soon (23.6%). Other responses included using lights as a signal to not get locked out of their room and roommate(s) leaving them on.

Table 24. Reasons for Leaving Lights On (multiple responses allowed) (n=424)

<b>Response</b>	<b>Frequency</b>	<b>Percent of Sample</b>
n/a -- I always turn the lights off when I leave	297	70
Forgot to turn off	100	23.6
I intend to return soon	100	23.6
Someone else may be using the room soon	39	9.2
Comfort	19	4.5
Other	7	1.7
Inconveniently located switch	5	1.2

As for computers, Table 25 shows reasons that students leave them on. The top two reasons for leaving computers on was having it in stand-by or sleep mode (61.8 %) or the convenience factor of having it on all the time (41.7%), while only 12.7% report turning their computer off all the time. Common “other” responses referred to the time required to reboot a computer as being slow.



Table 25. Reasons for Leaving Computers On (multiple responses allowed) (n=424)

<b>Response</b>	<b>Frequency</b>	<b>Percent of Sample</b>
I put it on stand-by or sleep mode	262	61.8
It is more convenient to leave it on all the time	177	41.7
n/a -- I always turn my computer off when I leave	54	12.7
I believe that turning it on and off damages it	27	6.4
I believe that turning it on and off wastes energy	26	6.1
Other	17	4
I need to access it from a remote location	7	1.7
It is a server	5	1.2
n/a -- I don't have a computer in my room	2	0.5

Although the vast majority of residential students have power strips in the room (95%), over half of them reported that they not actively turn them off (thereby cutting any phantom power loads), as seen in Figure 32.

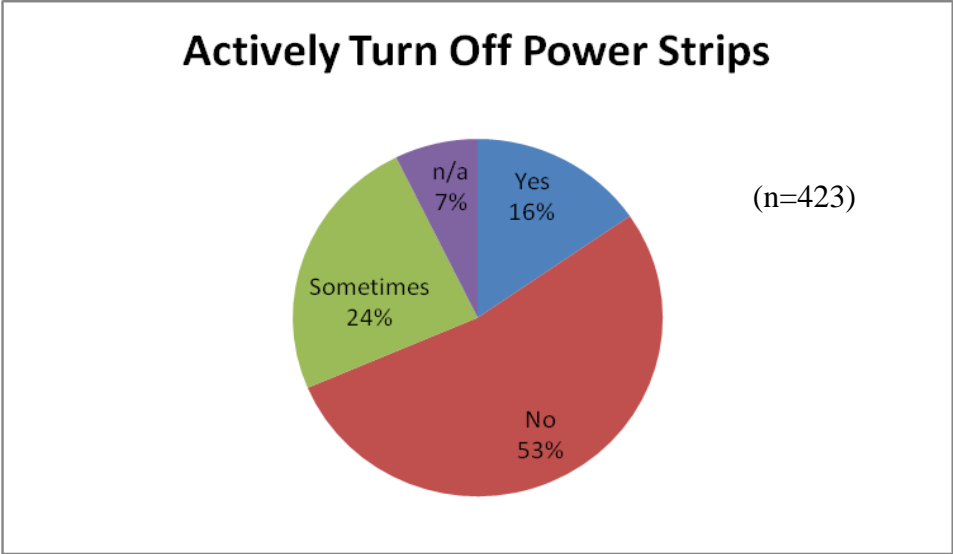


Figure 32. Percentage of respondents who actively turn off power strips in their room

Controlling a room’s temperature was another behavior surveyed. Just over half of the respondents felt they could adequately control their room’s temperature. However, 33% noted their thermostats were non-responsive and 10% didn’t have control of heat in their rooms, as seen in Figure 33.

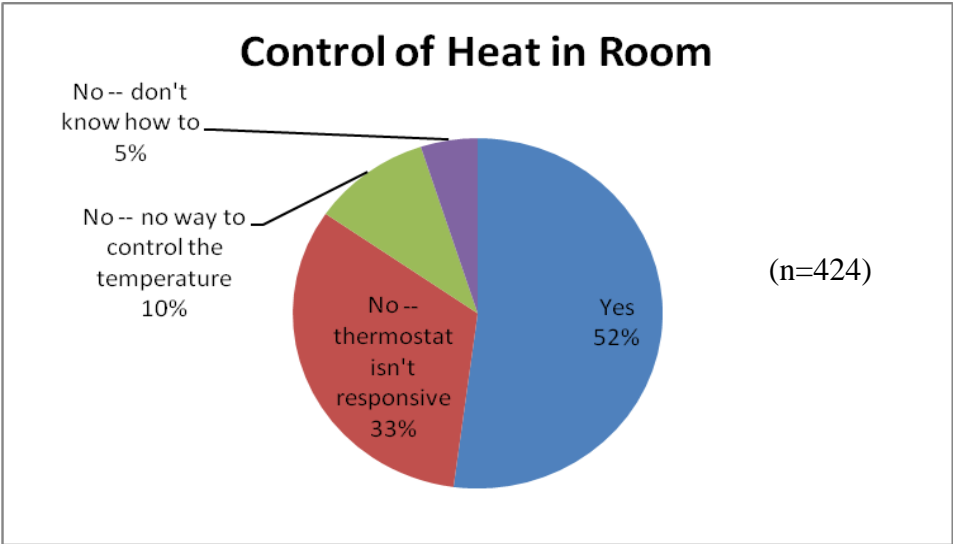


Figure 33. Responses regarding ability to control heat in their room

A little over a third of respondents reported that they never or rarely opened their windows in heating season while another third of respondents opened them most or all of the time. Another third sometimes opened them, as seen in Figure 34.

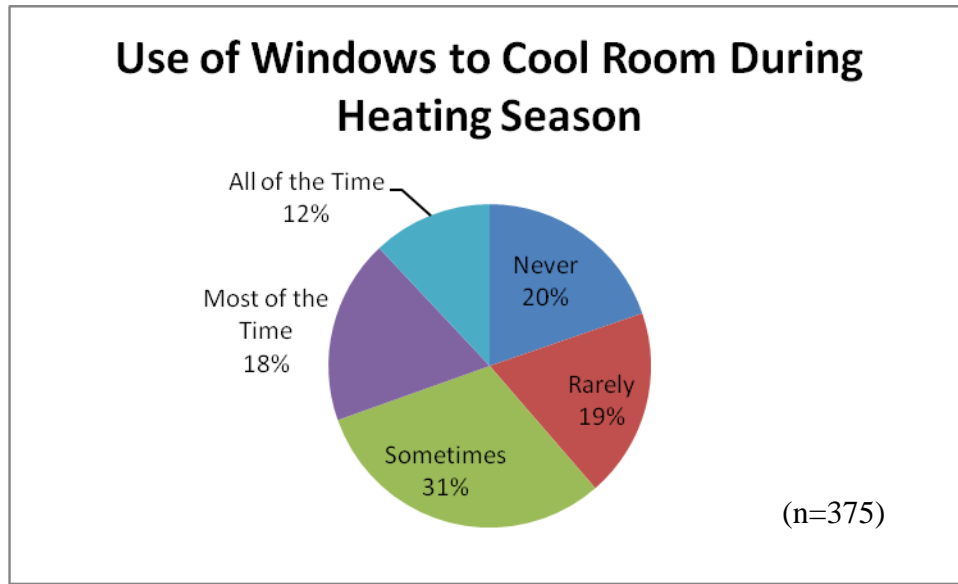
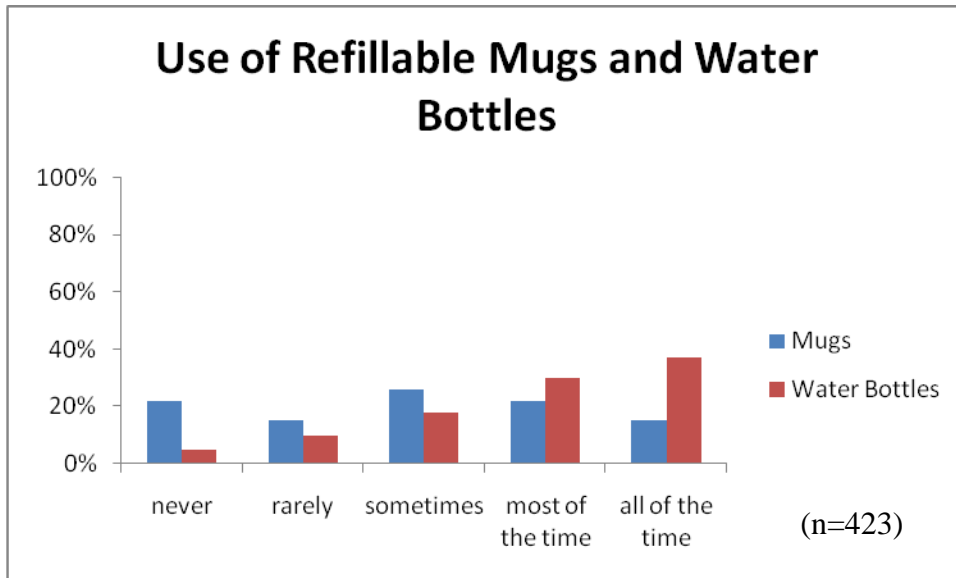


Figure 34. Use of windows to cool room during heating season

Figure 35 shows the use of refillable mugs and water bottles. Sixty three percent of respondents claimed to use a refillable mug "sometimes" "most of the time" or "all of the time". 37% "never" or "rarely" use them. The question should have had an n/a response, as not everyone drinks hot or fountain drinks. In terms of refillable water bottles, 85% of respondents claimed to use one "sometimes", "most of the time", or "all of the time." 15% responded as "never" or "rarely" using one.



*Figure 35. Use of refillable mugs and water bottles*

When it comes to leaving water running during activities in the bathroom, there are mixed results as Figure 36 shows. A clear majority turned the water off while brushing their teeth, but regarding efforts made toward taking short showers, there was nearly an even split among responses. It should be noted that "short" was not defined and could mean different things to different people. A vast majority of respondents ran full loads of laundry, but this could be indicative of the cost of using washing machines or lack of desire to do laundry over thoughts of water conservation.

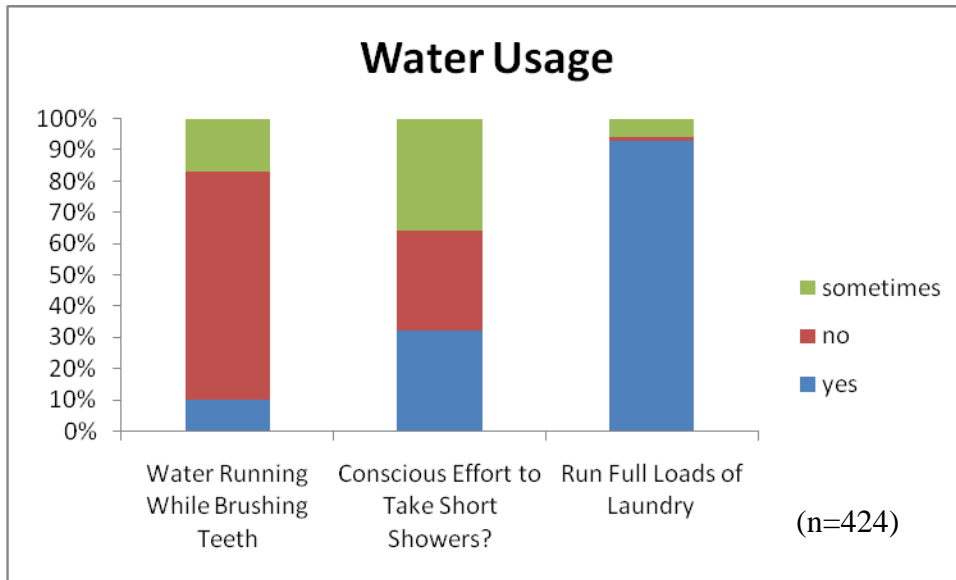


Figure 36. Comparative use of water

A third of the respondents reported leaving the water running while shaving as seen in Figure 37.

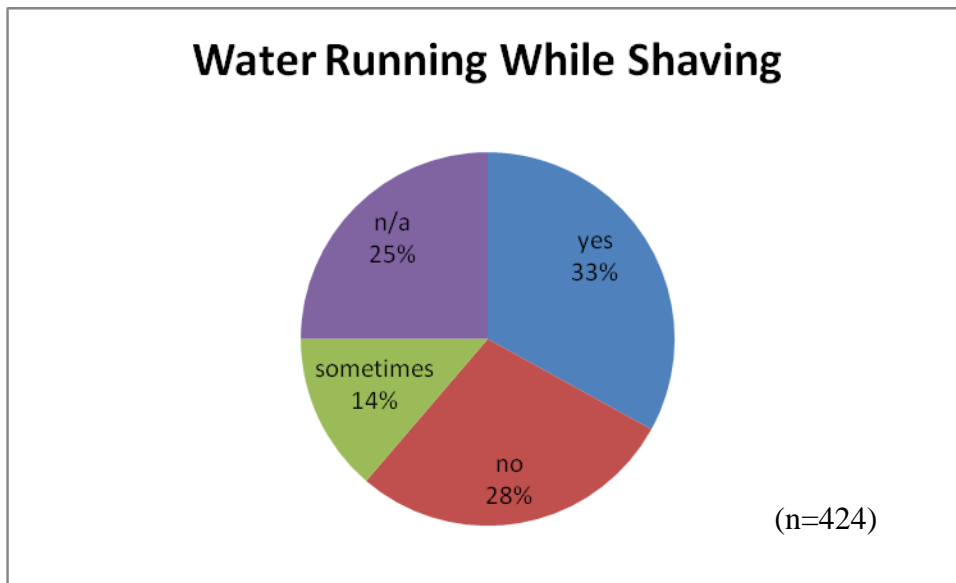


Figure 37. Reporting on leaving water running while shaving

### 5.3.5 Knowledge of Environmentally Related Issues on Campus

Another goal of the UVM Eco-Reps Program is to increase residential students’ knowledge about campus environmental practices. Overall, as seen in Figure 38, respondents claimed to be generally knowledgeable in what is recyclable, about energy and water conservation, about alternatives to disposable items, and how transportation works in Burlington. The area of least knowledge was in what happens to food waste in dining halls, with over half of the respondents claiming to be “very unaware”.

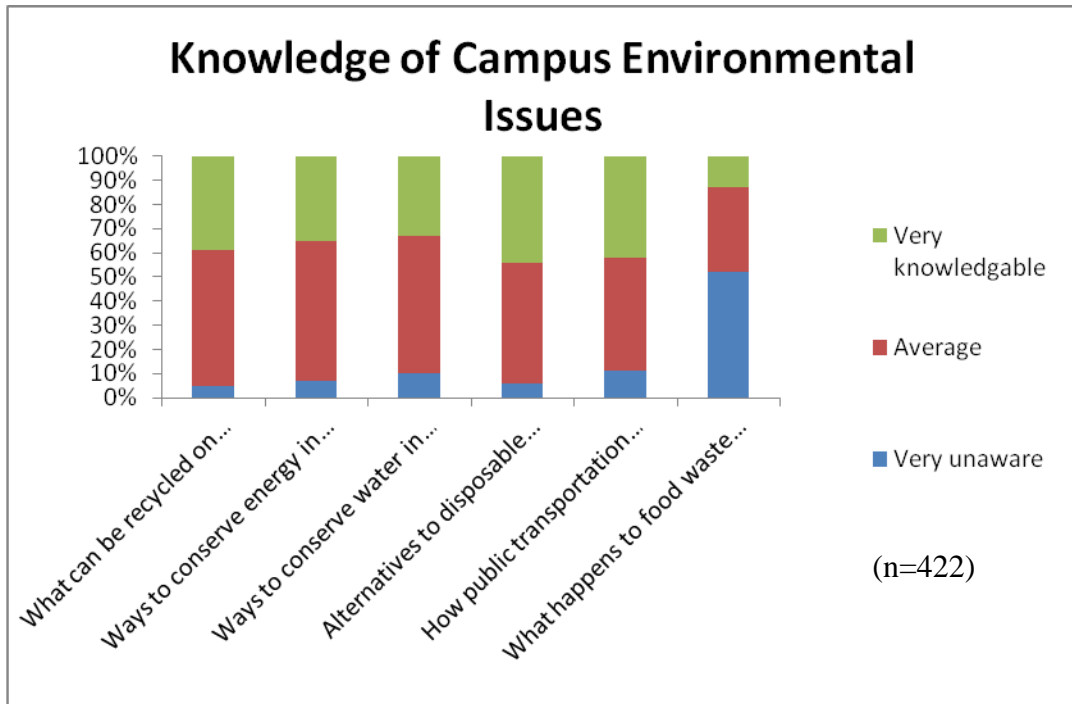


Figure 38. Comparative knowledge of environmentally related practices on campus

To test for accurate knowledge of what is recyclable at UVM, survey respondents were asked to note true or false for certain items. The correct answer for all of these items was true. In general, respondents knew what is recyclable, as seen in Table 26. The items that were least known to be recyclable are laundry detergent bottles, yogurt containers, and

plastic take-out containers. This is not all that surprising as the latter two just became recyclable in on campus in 2007.

Table 26. Respondents Marked “True” for UVM Recyclables (n=422)

<b>Answered “True”</b>	<b>Frequency</b>	<b>Percent of Sample</b>
Paper	415	98.8
Cardboard	414	98.3
Glass Bottles & Jars	410	97.4
Aluminum Cans	406	96.2
Plastics #1-7	388	91.9
Pizza Boxes	384	91
Laundry Detergent Bottles	362	85.8
Yogurt Containers	357	84.8
Plastic Take-Out Containers	292	69.4

The survey included a similar question regarding recycling of electronic waste on campus.

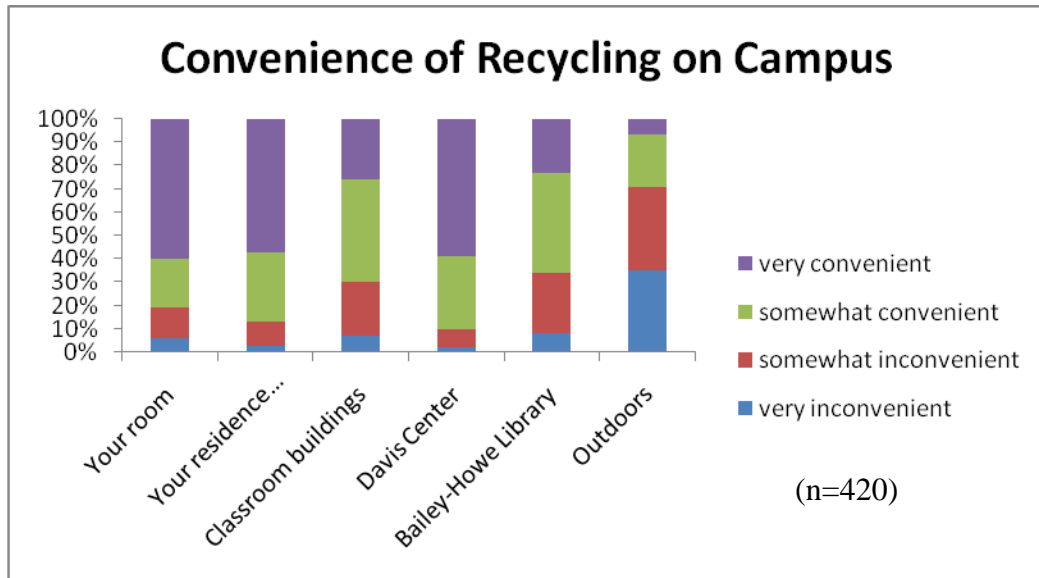
The correct answer for all of these items was true. In general, respondents knew that batteries and electronic devices are recyclable, but were not as familiar with recycling compact fluorescent light bulbs (CFLs), as seen in Table 27. Battery collection has occurred on campus for several years, but the green "Techno-Trash" bins that collect electronic waste were put in place in spring 2007.

Table 27. Respondents Marked “True” for UVM Electronic Waste Recyclables (n=421)

<b>Answered “True”</b>	<b>Frequency</b>	<b>Percent of Sample</b>
Batteries	410	97.2
Electronics (cell phones, etc.)	393	93.3
Mercury light bulbs (CFLs)	346	82.4

Survey respondents were also asked to rate the convenience of recycling around campus, as seen in Figure 39. This is a relevant question for the Eco-Reps Program as increasing recycling rates is a goal of the program, and findings can offer suggestions for program content and outreach. If the perception that recycling is inconvenient, people are less likely to participate (Ackerman, 1997). The top two “very inconvenient” and “somewhat inconvenient” places to recycle, according to respondents, are outdoors (35.3%, 36% respectively) and the Bailey-Howe Library (8%, 26.3% respectively). The top two “very convenient” places to recycle, according to respondents, are in students’ rooms (59.6%) and in the Davis Center (58.5%). The top two “somewhat convenient” places to recycle, according to respondents, are the classroom buildings (44%) and the Bailey-Howe Library (43.4%). Overall, respondents generally find it convenient to recycle in most places on campus, with the exception of outdoors.





*Figure 39.* Comparative convenience of recycling on campus

As a conclusion to the survey, respondents were asked to give any suggestions and feedback on the Eco-Reps Program. Nearly a third of respondents gave comments or suggestions. Common responses can be seen in Table 28. There was a clear indication that students want to see more from the Eco-Reps Program.

Table 28. Respondents' Feedback on Eco-Reps Program (n=194)

<b>Responses</b>	<b>Frequency</b>
Do more/Be More Active/Visible (InSTALLments, emails, programs, events)	108
Better Signage	36
More Recycling/Balanced Bins	26
Good Job/Getting a lot done	24
More Compost	17
More rewards	8
Don't know	5
Better Buildings/Infrastructure	4
Do Something about Smelly Compost	2
More Green Purchasing (tp, etc.)	1
Want to get involved/know more	1

Examples of comments included:

- “Make more posters and put them in places where they will not just be covered up by other posters. That makes them hard to see.”
- “Posters don't always grab my attention because there are so many posters on campus. Maybe you should send out emails.”
- “Sometimes Eco-Reps facts are incorrect and/or contradictory on posters in the Res Halls.”

- “Make yourself known more and give us more information about what we can do individually in our dorm rooms--in particular, what is the best temperature for our thermostat to be set at?”
- ” Not too many people listen, unfortunately I suggest punishment. I feel comfortable saying that not recycling, wasting energy and water, and littering are offenses that are way worse than having a beer on campus or smoking weed in a dormitory. “
- “Your work has influenced me. On a previous page I mentioned that I recycle more often when I am home as the result of what I've learned at UVM. Eco-Reps probably do not have the power to influence this, but students should be encouraged to recycle beer bottles / liquor bottles on campus. I know many students that throw away said items because getting caught with them in residence halls would violate the alcohol policy.”

### **5.3.6 Bivariate Analyses**

In order to test the hypotheses for the residential student survey (as noted in the previous chapter), I conducted bivariate analyses, using the cross tab test (in SPSS v. 15.0) for 78 dependent variables and six independent variables: class year, gender, residency, having an in-house Eco-Rep for the year, having an in-house Eco-Rep for the surveyed semester, or living in Converse Hall. The dependent variables were separated into two categories: 1) behavior or knowledge based questions that represented potential impact by the Eco-Reps Program and 2) questions that helped inform the Eco-Reps Program’s content and delivery methods. Any points where statistical significance was found ( $p \leq .05$ ) are highlighted in green in Tables 29 and 30.

Table 29. Bivariate Analysis Results for Behavior/Knowledge Questions

	<b>Question Number</b>	<b>Class Year (First Years vs. Upperclass Students)</b>	<b>Gender (male vs. female)</b>	<b>Residency (Vermonters vs. Non-Vermonters)</b>	<b>In House Eco-Rep for the Year (yes vs. no)</b>	<b>In House Eco-Rep for Spring '08 (yes vs. no)</b>	<b>Converse vs. rest of halls surveyed</b>	<b>TOTAL # of significant differences per independent variable<sup>2</sup></b>
1	1. Heard Of	0.000	0.001	0.020	0.002	0.298	0.072	4
2	3. Visibility	0.223	0.113	0.219	0.001	0.006	0.002	3
3	4a. Effectiveness - Posters	0.278	0.000	0.227	0.137	0.110	0.238	1
4	4b. Effectiveness - Face to face in Room	0.540	0.288	0.092	0.223	0.619	0.467	0
5	4c. Effectiveness - Face to face in Hall	0.551	0.337	0.589	0.690	0.573	0.725	0
6	4d. Effectiveness - Special Events	0.000	0.099	0.829	0.264	0.371	0.218	1
7	4e. Effectiveness - Special Programs	0.614	0.375	0.478	0.596	0.519	0.843	0
8	5a. Eco-Rep Influence on Saving Energy	0.036	0.014	0.161	0.122	0.334	0.093	2
9	5b. Eco-Rep Influence on conserving water	0.028	0.029	0.133	0.001	0.004	0.006	5
10	5c. Eco-Rep Influence on Reducing trash by reusing	0.364	0.047	0.193	0.005	0.134	0.007	3

<sup>2</sup> Highlighted in green where  $p \leq .05$

11	5d. Eco-Rep Influence on Reducing trash by recycling	0.833	0.001	0.127	0.096	0.068	0.395	1
12	5e. Eco-Rep Influence on Reducing food waste	0.712	0.012	0.223	0.006	0.039	0.030	4
13	5f. Eco-Rep Influence on Using fewer disposables	0.698	0.063	0.818	0.005	0.402	0.021	2
14	5g. Eco-Rep Influence on Composting food waste	0.782	0.011	0.022	0.176	0.238	0.241	2
15	5h. Eco-Rep Influence on Using public transportation	0.559	0.170	0.493	0.020	0.230	0.108	1
16	10a. Lights on because... Always turn off	0.717	0.006	0.300	0.126	0.206	0.491	1
17	10b. Lights on because... comfort	0.080	0.624	0.420	0.120	0.163	0.099	0
18	10c. Lights on because... switch location	0.604	0.733	0.119	0.361	0.160	0.550	0
19	10d. Lights on because... forgot	0.061	0.050	0.237	0.206	0.317	0.520	1
20	10e. Lights on because... someone else	0.197	0.548	0.761	0.802	0.984	0.286	0
21	10f. Lights on because... return soon	0.896	0.395	0.725	0.206	0.209	0.520	0
22	11b. Computer on because... always turn off	0.210	0.639	0.697	0.128	0.485	0.358	0
23	11c. Computer on because... stand-by/sleep	0.071	0.366	0.196	0.791	0.917	0.494	0
24	11d. Computer on because... server	0.640	0.000	0.666	0.361	0.160	0.550	1

25	11e. Computer on because...remote access	0.958	0.007	0.995	0.279	0.096	0.478	1
26	11f. Computer on because... wastes energy	0.768	0.665	0.113	0.693	0.559	0.559	0
27	11g. Computer on because...damages it	0.078	0.586	0.228	0.299	0.485	0.531	0
28	11h. Computer on because... convenience	0.695	0.263	0.252	0.788	0.944	0.503	0
29	12. Use powerstrips	0.708	0.405	0.013	0.525	0.336	0.588	0
30	13. Turn off powerstrips	0.691	0.017	0.192	0.080	0.396	0.647	1
31	15. Open windows	0.086	0.212	0.485	0.145	0.192	0.732	0
32	16a. Knowledge of - recyclables	0.333	0.663	0.248	0.921	0.251	0.292	0
33	16b. Knowledge of - conserving energy	0.928	0.624	0.084	0.309	0.714	0.146	0
34	16c. Knowledge of - conserving water	0.536	0.079	0.015	0.198	0.739	0.882	1
35	16d. Knowledge of - disposable alternatives	0.240	0.022	0.229	0.283	0.714	0.010	2
36	16e. Knowledge of - public transportation	0.575	0.409	0.106	0.248	0.276	0.247	0
37	16f. Knowledge of - where food waste goes	0.957	0.363	0.484	0.149	0.153	0.016	0
38	17a. Recycling T/F - Detergent bottles	0.009	0.743	0.253	0.832	0.945	0.091	1
39	17b. Recycling T/F - Pizza boxes	0.437	0.732	0.802	0.844	0.538	0.312	0
40	17c. Recycling T/F - Yogurt containers	0.029	0.063	0.885	0.410	0.533	0.342	2

41	17d. Recycling T/F - Glass bottles & jars	0.415	0.032	0.428	0.706	0.969	0.370	1
42	17e. Recycling T/F - Cardboard	0.381	0.065	0.986	0.998	0.414	0.476	0
43	17f. Recycling T/F - Aluminum cans	0.454	0.668	0.042	0.352	0.788	0.950	1
44	17g. Recycling T/F - Paper	0.654	0.500	0.665	0.363	0.162	0.555	0
45	17h. Recycling T/F - Plastic take-out containers	0.217	0.218	0.356	0.429	0.503	0.061	0
46	17i. Recycling T/F - Plastics #1-7	0.697	0.985	0.753	0.247	0.569	0.210	0
47	18a. E-Waste Recycling - batteries	0.107	0.899	0.003	0.554	0.124	0.349	1
48	18b. E-Waste Recycling - mercury light bulbs	0.001	0.724	0.830	0.875	0.427	0.584	1
49	18c. E-Waste Recycling - electronics	0.335	0.275	0.003	0.265	0.099	0.498	1
50	20. Mug Use	0.051	0.000	0.663	0.212	0.829	0.116	2
51	21. Water bottle Use	0.234	0.143	0.389	0.005	0.142	0.026	2
52	22. Leave water running while brushing teeth	0.242	0.029	0.882	0.000	0.000	0.002	4
53	23. Leave water running while shaving	0.054	0.000	0.102	0.596	0.934	0.390	2
54	24. Take short showers	0.508	0.000	0.139	0.616	0.983	0.637	1
55	25. Run full loads of laundry	0.756	0.241	0.897	0.327	0.872	0.044	1
<b>TOTAL NUMBER OF SIGNIFICANT DIFFERENCES (out of 55)</b>		<b>9</b>	<b>20</b>	<b>6</b>	<b>9</b>	<b>4</b>	<b>9</b>	

**Table 30. Bivariate Analysis Results for Program Informing Questions**

	<b>Question Number</b>	<b>Class Year (First Years vs. Upperclass Students)</b>	<b>Gender (male vs. female)</b>	<b>Residency (Vermonters vs. Non- Vermonters)</b>	<b>In House Eco-Rep for the Year (yes vs. no)</b>	<b>In House Eco-Rep for Spring '08 (yes vs. no)</b>	<b>Converse vs. rest of halls surveyed</b>	<b>TOTAL # of significant differences<sup>3</sup> per independent variable</b>
1	7a. Influenced by Friends	.366	0.000	0.899	0.033	0.041	0.016	
2	7b. Influenced by Family	.425	0.081	1.000	0.440	0.295	0.538	
3	7c. Influenced by Classmates	.105	0.133	0.088	0.067	0.150	0.023	
4	7d. Influenced by Faculty	.230	0.902	0.583	0.783	0.304	0.361	
5	7e. Influenced by Social Networking (Facebook, etc.)	.584	0.309	0.662	0.720	0.441	0.431	
6	7f. Influenced by Internet	.243	0.559	0.687	0.697	0.856	0.980	
7	7g. Influenced by other media (newspapers, etc.)	.677	0.072	0.346	0.486	0.916	0.964	
8	7h. Influenced by Celebrities	.102	0.797	0.632	0.773	0.671	0.263	
9	7i. Influenced by Financial considerations	.349	0.853	0.820	0.603	0.975	0.290	
10	7j. Influenced by Moral or ethical considerations	.386	0.258	0.092	0.883	0.449	0.571	
11	9a. Barriers - too busy	0.107	0.293	0.129	0.174	0.386	0.622	0
12	9b. Barriers - Not interested	0.423	0.002	0.518	0.506	0.283	0.235	1
13	9c. Barriers - Too	0.298	0.156	0.713	0.173	0.447	0.101	0

<sup>3</sup> Highlighted in green where  $p \leq .05$



	complicated							
14	9d. Barriers - Individuals don't make a difference	0.654	0.477	0.055	0.429	0.899	0.727	1
15	9e. Barriers - Financial considerations	0.420	0.604	0.916	0.290	0.319	0.101	0
16	9f. Barriers -Moral or ethical considerations	0.808	0.555	0.861	0.508	0.103	0.294	0
17	14. Heat control in room	0.173	0.291	0.902	0.000	0.112	0.000	2
18	19a. Recycling Convenience - Your room	0.671	0.002	0.882	0.685	0.730	0.587	1
19	19b. Recycling Convenience - Res Hall	0.690	0.004	0.872	0.898	0.708	0.432	1
20	19c. Recycling Convenience - Classrooms	0.183	0.317	0.723	0.969	0.543	0.517	0
21	19d. Recycling Convenience - Davis Center	0.729	0.001	0.304	0.398	0.008	0.331	2
22	19e. Recycling Convenience - Bailey-Howe	0.545	0.127	0.229	0.495	0.877	0.748	0
23	19f. Recycling Convenience - Outdoors	0.390	0.012	0.715	0.220	0.514	0.687	1
<b>TOTAL NUMBER OF SIGNIFICANT DIFFERENCES (out of 23)</b>			<b>6</b>	<b>1</b>	<b>2</b>	<b>2</b>	<b>3</b>	

The findings above are condensed into Table 31, showing the frequency of statistical significance occurrence for the two categories.

Table 31. Frequency of Statistical Significance for Independent Variables

<b>Independent Variables</b>	<b>Behavior/Knowledge Dependent Variables (55 total)</b>	<b>Program Informing Dependent Variables (23 total)</b>	<b>Total Occurrences (78 total)</b>
Class year	9	0	9
Gender	20	6	26
Residency	6	1	7
In House Eco-Rep for the Year	9	2	11
In House Eco-Rep for Spring '08	4	2	6
Converse Hall Residents	9	3	12

### 5.3.7 Survey Analysis

I conducted the residential student survey to study the impact of the Eco-Reps Program on the residential students' behaviors and knowledge, as well as ways to inform the Program's content and approach. Having a greater understanding of the Program's audience, including perceptions, influences, motivations, and barriers can help fine-tune strategies employed (McKenzie-Mohr & Smith, 1999).

In terms of residential students' interaction with and perception of the UVM Eco-Reps Program, half of the respondents knew of the program, but there were strong implications that the program is not visible enough. Popular and effective outreach techniques included: posters, events such as bulb swaps, and films. Students reported to be less enthusiastic about face-to-face interactions, either casually in their rooms or in the

residence halls. When it comes to actual behavior change, students reported being most influenced to change their behaviors by the Eco-Reps Program around energy conservation and recycling and least around transportation options and composting food waste.

In terms of who influences them to change their behaviors or to take action, respondents largely name their friends and family. Concern for and a want to protect natural resources was a common response for what motivates respondents to change their behaviors as well as the desire to “do the right thing” or other similar ethical or moral responses. The most common barriers to changing behaviors expressed were being too busy or actions being too complicated.

When it comes to actively partaking in energy conservation behaviors, there was spectrum of responses. Seventy percent of respondents claimed that they always turn the lights off when they leave a room, while only 12.7% shut down their computers. Instead, a larger majority (62%) used the sleep or stand-by mode on their computers. Ninety-five percent of students had powerstrips in their room, but half of them did not actively turn them off. They might instead be used to plug in the multitude of appliances rather than as a conservation measure of shutting off any phantom power loads. Using windows as a cooling mechanism has a balanced split between a third that open them in the heating season, a third that do not, and a third that sometimes open them. These answers can be compared to the 26% of respondents who said the Eco-Reps Program didn’t influence their energy conservation behaviors as they were already doing all they could in this area.

The survey also showed fairly strong results for water conservation measures such as turning off the water while brushing teeth or shaving, taking short showers, and running full loads of laundry. Twenty five percent of respondents said the Eco-Reps Program didn't influence their water conservation behaviors as they were already doing all they could in this area, and a strong majority claimed to turn water off while brushing their teeth (73%) and running full loads of laundry (92%). Again, the laundry response could be indicative of the cost of using washing machines or lack of desire to do laundry over thoughts of water conservation. There was a nearly even split in thirds for taking, not taking, or sometimes taking a short shower. Again, it should be noted that "short" was not defined and could mean different things to different people.

In terms of waste reduction and alternatives to disposable items, 63% of respondents regularly use refillable mugs and 85% regularly use refillable water bottles. This corresponds to 24% who claimed they already were doing all they could to reduce trash by reusing items.

Overall, respondents claimed to be generally knowledgeable in what is recyclable, about energy and water conservation, about alternatives to disposable items, and how transportation works in Burlington. The area of least knowledge was in what happens to food waste in dining halls. However, while 95% of respondents said that they were very to average knowledgeable about what was recyclable on campus, only half of the recyclable items mentioned in the true-false question reached the 95% correct mark (although four of them were within a ten point range of this mark) . In terms of the

convenience of where to recycle, respondents overall found it convenient to recycle in most places on campus, with the exception of outdoors.

I will now return to the hypotheses made at the beginning of this paper, indicating where the bivariate analyses showed statistical significance between independent and dependent variables.

1. *First year students would have more contact and knowledge of the Eco-Reps Program, as they are the highest percentage of on-campus residents.*

This hypothesis was rejected, as a greater percentage of upperclass students had heard of the program. One explanation for this is that upperclass students have had more time on campus and therefore are generally more knowledgeable about how things work on campus.

2. *Women would be more likely to report having pro-environmental behaviors.*

While this statement was found to be supported, the data analyses showed the inverse to be more supported, that men reported to having fewer pro-environmental behaviors, specifically in regards to forgetting to turn off their lights, leaving their computers on, not turning off powerstrips, not using refillable mugs, leaving water running while brushing teeth or shaving, and not making an effort to take short showers.

3. *Vermonters would be more likely to report having more pro-environmental behaviors than non-Vermonters, supporting the idea of the “Vermont ethos” as defined by Nan Jenks-Jay (1999) as the feeling that, “...since the environment is integral to a Vermont way of life, people tend to adopt a behavior that reflects a*

*high regard for the environment as part of the culture (p. 151).”*

This hypothesis was shown to be rejected, as more non-Vermont residents had knowledge and more accurate knowledge of water conservation measures and “Techno-trash” recycling.

- 4. Residents of buildings with an Eco-Rep during the year would know more of the program and be impacted by it more than those without an Eco-Rep.*

This hypothesis was shown to be supported, although a more supported statement is that residents of buildings without an Eco-Rep during the year would know less of the program and be less impacted by it than those without an Eco-Rep.

Residents without an Eco-Rep claimed no influence of the program in water conservation, reducing waste through reuse, reducing food waste, knowledge of alternatives to disposable items, and public transportation options. Further, these residents had a higher rate of leaving water running while brushing their teeth.

- 5. Residents of buildings without an Eco-Rep during the surveyed semester (spring 2007) would know less of the program and be impacted by it less than those with an Eco-Rep.*

This hypothesis was supported, for many of the reasons mentioned above.

- 6. Residents of Converse would know less of the program and be impacted by it less than the other buildings, either with or without an Eco-Rep.*

This hypothesis was supported, as Converse Hall showed a marked difference from the other residence halls in terms of lack of Eco-Reps Program influence on water conservation, reuse practices, reducing food waste, or using alternatives to

disposables. Residents knew less about where food waste goes, and were less prone to use a refillable water bottle and more inclined to leave water running while brushing teeth.

Overall, the results of this survey can assist the Eco-Reps Program in fine-tuning the program to reflect students' current influences, motivations, barriers, and reported behaviors. This information can help determine where to put more energy into certain outreach techniques than others, to perhaps tailoring messages to different audiences (e.g. gender), and being more visible as a whole. The three last supported hypotheses show that the Program does impact students, or more definitely the inverse, that students who do not get to interact with an Eco-Rep report fewer environmental behaviors and knowledge. Because of the previously stated limitations with self-reported behaviors, this study could be expanded by conducting participant observation of behaviors (Singleton & Straits, 2005).

## **5.4 Stakeholder Interviews and Focus Groups**

### **5.4.1 Focus Groups**

I conducted focus groups of Residential Life Staff during the first part of their weekly staff meetings, during the months of March and April, 2008. Generally, all Residence Assistants (RAs) were in attendance and most often Residence Directors (RDs) and Assistant Residence Directors (ARDs) did not make any comments. Table 31 shows the composition of the focus groups as well as indicates whether that complex had

Eco-Reps during the year or during the semester that the focus groups took place. The last two columns show an important change, as each building had at least one Eco-Rep in-house at the beginning of the year, but by mid-spring semester, coverage was thinner and a couple of those Eco-Reps were inactive.

Table 32: Composition of Focus Groups

<b>Residence Hall Complex</b>	<b>#Residence Assistant (RA) Participants</b>	<b>Residence Director (RD) Participant</b>	<b>Assistant Residence Director (ARD) Participant</b>	<b>Eco-Reps In Building (Year)</b>	<b>Eco-Reps In Building (Spring Semester)</b>
H/M	16	1	1	Harris (2) Millis (2)	Harris (2)* *Both Dropped Out Mid-Semester Millis (1)
MAT	12	0	1	Marsh (1) Austin (1) Tupper (1)	Tupper (1)
MSCHR	14	1	1	Mason (1) Simpson (1) Hamilton (1) Coolidge (1) Redstone (1)	Mason (1) Simpson (1) Redstone (1)
CBWC	15	0	1	Buckham (1) Wills (2)	Buckham (1) Wills (2)

As all complexes had at least some Eco-Rep presence in their building (although level of activity and enthusiasm may have greatly varied), there was no way to distinguish differences between buildings with or without an Eco-Reps. The findings



described below are grouped together around general themes brought up in the conversations, as uncovered by coding the transcripts of the focus groups including: understanding the purpose of the program; program strengths, benefits, and limitations; and suggestions for improvement.

### **Understanding Purpose of Program**

In each of the focus groups, at least two RAs (out of 12-15, as noted in Table 32 above) were able to give an accurate definition of what the purpose and goals of the Eco-Reps Program are. RAs had mixed responses when responding to the question of, “To what extent the Program meets those goals?” While there was a difference between those who did or did not have an Eco-Rep on their floor or in their building, there were also comments on the level of activity or inactivity an Eco-Rep had. There was general agreement that Eco-Reps were at their best on the floor where they lived and had a weaker presence in the rest of the building or complex. As one RA said, “I had an Eco-Rep as a resident last year, and she was great. She put a composting thing on our floor, and put up a bunch of signs of things that she was in to, and she was just awesome at it. But this year, I don’t have an Eco-Rep on my floor, but there is one in my building. Not having one on my floor makes a huge difference.”

### **Program Strengths**

Noted strengths on Eco-Reps in their buildings included having posted signs on various issues or behaviors (such as turning off the lights) on the bulletin boards or in bathrooms. Signs are a good “official reminder – some visual recognition that helps residents stay conscious of energy and water” said an RA. Gaining access to an Eco-Rep

by having their door clearly marked was appreciated by one RA. Another RA commented that even if an Eco-Rep could not attend a Community Action Board (CAB, now known as Residence Hall Council), she would forward announcements and updates to be shared with the group. Light bulbs swaps were the most frequently mentioned program put on by the Eco-Reps. Other programs that RAs liked included the Central campus Earth Day event and clothing swaps. One RA said, “I like the programs that you guys do; you must do more of them.”

### **Program Benefits**

RAs recognized that the individual Eco-Reps gained several benefits from being involved in the program such as being paid, connecting with a community more, knowing more about how the University operates, helping to influence others to participate in certain behaviors and actions, learning about organization and time management, and having something to add to their resume. An RA whose friend was an Eco-Rep commented that “...she definitively got some sort of personal rewarding feelings out of it, some altruistic feelings.”

For their residents, RAs noted that having an Eco-Rep in the building was generally a good thing. Two RAs commented that learning the habits of conserving energy and recycling more were good to learn now, as soon residents would be out in the world paying for their own utility bills. Another RA mentioned that the general presence of an Eco-Rep in the building helps keep residents “in check” so that there is always someone who can remind others what is recyclable or why it’s good to shorten your

shower. It was noted that having an Eco-Rep around helps their residents feel like they can make a difference and that the university is making an environmental contribution.

There were conflicted thoughts on peer education as a tactic. One RA remarked on the power of peer influence, “I think for residents that have an Eco-Rep in their community there’s clearly more interaction and they are definitely able to be more aware from a peer about the impact that UVM is having on their environment. I think it comes up in one of those casual everyday conversations.” Another felt similarly by saying, “It’s more informative when I see someone my age telling me about what’s going on as opposed to someone older than me, just because it shows a level of understanding. You also want to learn what’s going on from your peers as opposed to someone who is talking down to you.” However, another RA from the same complex disagreed and said, “I think it’s almost the opposite. There are certain times when I find it easier to listen to, not necessarily older people, but people who come with a more authoritative presence.”

### **Program Challenges and Limitations**

Perceived weaknesses or limitations of the program included:

- generally not being visible enough,
- not enough signage in places,
- lack of access to good composting facilities and outdoor recycling,
- lack of attention to compost buckets,
- not enough programs,
- varying levels of enthusiasm and activity from individual Eco-Reps, and
- not having an Eco-Rep on every floor or in every building.

While one MSHCR RA praised the work on the Eco-Rep on her floor, another added, “I’m in the same building as she is, and the Eco-Rep never comes to my floor. I don’t think my residents even know that we have one.” Another RA continued this thought by saying, “It’s not really a building wide sense of Eco-Rep presence. I feel like a lot of residents don’t even know that Eco-Reps live there. Even if the bulletin boards go up, they might just assume that the RAs put them up, because those two things seem to go hand in hand for the most part.” An RA from the MAT complex stated that “Overall, it’s kind of an underwhelming presence. I don’t really feel like they do a lot.” An H/M RA also brought this up and said, “In this whole year I’ve never heard anybody talk about who is an Eco-Rep or anything that Eco-Reps have done. I don’t know if it’s because I’m not listening or what, but I definitely have not heard anything about it.”

One RA pointed out that they have some things in common with the Eco-Reps by saying, “Some Eco-Reps make a really strong effort, but have some of the same troubles RAs do, such as having bulletin boards torn down and compost buckets taken.”

One point of clarification that I offered regarded the varying coverage of Eco-Reps in buildings (due to the number of applications received per building). To this, an RA noted two challenges in recruiting Eco-Reps from each residence hall as well as hiring students who will be an active participant. She said, “We’ll, I’d say that it’s sad for a green university if you can’t find one person per building. That’s not your fault, and if you get people but then they slack. That’s amazing, I mean this is the green university!”

## **Suggestions for Program**

RAs had a number of suggestions for improving the Eco-Reps Program including: improving the relationship with residential life staff, ways that Eco-Reps could be more involved in the residence halls, and ideas for recruiting and accountability. One suggestion was to have direct contact initially with residential life staff and building rapport with them. One method to do this would be for Eco-Reps to attend an occasional staff meeting. Another RA suggested that Eco-Reps come to the different floor meetings at the beginning of the semester to introduce themselves. There were other ideas around expanding recruiting by having more flyers on each hall, asking RAs or others on campus to nominate students to be an Eco-Rep, and passing the word on to TREK leaders. Another recommended rectifying the coverage issue by placing enthusiastic students to be an Eco-Rep in buildings where they may not live. Teaming up with RAs to do programs and bulletin board was another proposal. As for accountability issues, one RA suggested that the best Eco-Rep from the group should be given the power to hold others accountable. Another recommended that the Eco-Reps website include more information on how to contact the Eco-Rep in their building. Working with the Davis Center was another suggestion.

### **5.4.2 Interviews**

I conducted individual interviews with key stakeholders around themes of awareness of program, perceived value of program, and strengths and weaknesses (see question guide in Appendix G). The interviews were semi-structured, audio-recorded conversations in a location mutually agreed upon between the researcher and the

interviewee. The interviewees were identified as being stakeholders of the program, and are either actively involved on the Eco-Reps Advisory Team, key administrators identified by the Eco-Reps Advisory Team members, and a former Eco-Rep that was chosen for her availability and reputation as an active Eco-Rep.

Interviews were held at the individual's office, and occurred between March and September, 2007. Interviews were conducted with the current SGA president (former Eco-Rep), former UVM Eco-Rep Program Coordinator, Recycling Program Manager (person who started program), an Environmental Program faculty member, Director of Sustainability, Director of Residential Life, Director of Living/Learning, Vice President of Student Life, and President of the University. The latter two interviewees were selected not because they have a direct role with the program, but rather to gauge their awareness and understanding of the Eco-Reps program as upper-level administrators. To this effect, the President gave an accurate definition of the program's purpose and goals. He continued by saying,

My impression is that the program is a good thing and that it has a positive effect on the behavior of students at UVM and adds to the perception of UVM's stance toward conservation, disproportionate to the low level of dollars and human resources. For instance, I think the Eco-Reps Program was mentioned as one of the elements that help to produce our grade and rank in the [2007] Sustainability Endowment Institute, which also gave a high grade to much wealthier schools that dedicate more resources.

The findings described below are grouped together around general themes brought up in the interviews, as uncovered by coding the transcripts, including: evaluation indicators,

recruitment and retention, program benefits and strengths, the relationship with Residential Life, institutional commitment, program limitations, and suggestions for improvement.

### **Evaluation Indicators**

When asked about key indicators for evaluating the Eco-Reps programs, interviewees suggested several indicators, but generally expressed hesitation around how to best measure those indicators. There was also a call to distinguish evaluating the student Eco-Reps' experience with the program from the overall impact on residential students. Many of these indicators align with those mentioned by other program coordinators, when I consulted with them (as described above). Suggestions on indicators included:

- Eco-Rep satisfaction and participation with the program;
- number of Eco-Reps involved;
- number of residence halls with an Eco-Rep;
- visibility of program especially among students and administration (including evidence in the community, such as signs and posters);
- knowledge that students have of the program and name recognition;
- perception of accessibility with an Eco-Rep;
- perception of influence of the Eco-Reps;
- media coverage; and
- student behaviors.

Several of the interviewees mentioned the difficulty in finding actual data on energy or water saved or waste reduced as the buildings are not individually metered for these. This is just the first issue, as noted by the Recycling Manager when she stated, “[Even if we could measure these], we still can’t directly correlate the energy usage in the building or the amount of trash in the building to something that the Eco-Reps did directly.” She continued by saying that despite the inability to draw a direct correlation, the program is still beneficial for the student involved with the program, as the Eco-Reps themselves “are getting a great experience, they’re getting paid, and they feel connected to a community.” The Director of Residential Life expressed an interest in having the ability to see utility and waste statistics by building, but acknowledged that this may be a costly endeavor and is not an option at this time. She pointed out that waste sorts and other similar activities can help give a snapshot on how the residence halls are doing with recycling. The President also acknowledged that “I guess it would be somewhat challenging to pin the contributions of the Eco-Reps Program to some currency.”

Another challenge of evaluating impact of the program is that the UVM campus is perceived to already have a relatively high level of environmental understanding. The President explained, “I think that one of the ironic things is that the lower, the more poorly developed consciousness, the bigger impact the Eco-Reps program would have, so if you put Eco-Reps at UVM or another similar institution, you’ll actually see less value added than at an institution that has little or no consciousness of these issues.” The former Eco-Reps Program Coordinator added, “I think it’s really challenging to differentiate between the effect of this particular program and the impact of all the other things going



on in the world. Are people recycling more because their Eco-Rep told them to, or because of the big news article on the impact of recycling and how important it is, and all of a sudden, everyone's awareness is raised.”

While measuring these impacts is not currently possible, the Director of Sustainability stressed the importance of telling the stories of the Eco-Rep Program, as “Stories are what motivate and inspire and get told.” The key indicator to her is whether the program can evolve to current needs. “If the Eco-Reps can evolve and become more integrated and useful in the community for measurable or non-measurable reasons, then they'll stay and it'll make sense. I think it's a good idea to get rigorous methods of evaluation, but to not get too hung up on that because ultimately those measures are just an aid for good judgment, they're not a substitute for judgment.”

### **Recruitment and Retention**

Recruitment and retention were topics discussed in the interviews. Several of the interviewees gave feedback on recruiting, including the time period for recruitment. Some felt that if the recruiting occurred during the end of the spring semester, there'd be a greater opportunity to “hit the ground running in September”, as the Recycling Manager put it. One idea that she had would be to bring the Eco-Reps to campus a few days before the fall semester to train them so that they could be ready when the rest of the students moved in. This, she noted, would require a greater financial buy-in from Residential Life.

The original recruiting plan focused on finding a student that resided in a building to be an Eco-Rep for that building. Student selection was therefore based on the number

of applications from a certain building. In the fall of 2006, a new environmentally-themed residence hall opened, housing 180 students. Suddenly, there was a glut of applications from one building while other buildings didn't have one. This prompted discussion with some of the interviewees about the impact of that residence hall on recruitment. The Director of Residential Life encouraged utilizing students from this "gold mine" of a residence. She said, "Certainly, we should be tapping into the residents that live in the building, but as long as you're a residential student, you have a concept and understanding of what these communities look like." The Director of Living/Learning seconded this by saying, "Get 'em. They're going to be the missionaries of eco-living. If those students go out to other halls, other students might get interested in more community living."

The other question was "who" to recruit. In the past, the position has been open to all students, including brand-new first year students. Knowing that first year students are very early in their developmental process as an adult (Evans et al., 1998), is this the best age to recruit? The Director of Residential Life felt that while second year students are more acclimated and transitioned to a campus environment, "the baseline for recruitment for Eco-Reps is passion." The former Program Coordinator added that "there are first years that are very effective and very outgoing and great at being in college—they thrive and do very well and adjust quickly. So I don't know that I'd want to rule out all first years."

The former Program Coordinator brought up the issue of finding qualified students. To address this, the Environmental Studies faculty member recommended asking for references, as she does with her teaching assistants.

When asked about retention of Eco-Reps from year to year, interviewees generally felt this was not a critical indicator. The “curriculum” of the program is similar year to year and this might not be as engaging for students to do twice, although there are mentoring and leadership roles available for returning students. A more important indicator was having an enthusiastic group that was ready to take action, whether they were first-timers or repeat Eco-Reps. “Quality of participation” was a factor that the Director of Residential Life noted as important for retaining student Eco-Reps from year to year.

### **Benefits of Program**

Interviewees identified a variety of benefits of the Eco-Reps Program for the campus including:

- potential financial savings;
- valuable feedback to staff members;
- critical mass for campaigns and events;
- a visible culture shift around environmental attitudes and behaviors; and
- positive impact of student involvement on retention.

For participating students:

- sense of community;
- professional development opportunities; and

- being engaged in meaningful work.

For residential students:

- access to peer resource people, and
- sense of community.

Interviewees acknowledged that it is very difficult to prove actual financial or ecological benefits of the program (outside of one activity – light bulb swaps), but as the Director of Residential Life added, it would make an even stronger case for the program. To this, the Director of Sustainability said, “We know from our studies that the residence halls aren’t a huge source of environmental impact as opposed to the research buildings, so the educational impact is more important, than the ecological footprint or the cost reduction.” Several interviewees said that the real focal point for benefits come in the form of cultural change.

The Recycling Manager, who started the program in the spring of 2004, noted a shift in the institutional feel, especially with name recognition. Yet, there’s also been a shift in the whole institution with more attention to environmental issues and therefore people can confuse who does what. The Recycling Manager continued by saying, “I think the program gets credit for things that it wasn’t directly responsible for, like Focus the Nation events or the waste sort at the Davis Center.” She also brought up the perception that some on campus think the program is “bigger and better funded” than it is, and that Eco-Reps are “ready to be employed whenever there’s a need.” And while this may not be the case, Eco-Reps do help to provide critical mass that helps make an

event successful. The Environmental Studies faculty member also brought up critical mass and added, “[This means] we can all move forward together because the work is mutually supportive.”

When asked about how one can tell a culture has shifted, the Vice President of Student Life said, “I think it’s when students start doing things themselves and on their own without any guidance, without any prompting. When students, faculty, and staff start to feel ownership, they move beyond the peripheral concept of ‘this is a good thing’ to saying ‘this is what I do and this is why I value it.’ The tipping point comes when you have a critical mass that owns an idea and then the whole culture shifts and it becomes the only way of doing things.” The Director of Sustainability said she knows when the culture has shifted when, “Deans start asking questions about, for example, how can we buy less bottled water? That’s a culture shift. When you find that the questions are not only coming from the same old complainers or the people already in the know and they are starting to come from people higher up in the administration, you know you’re making progress. It’s completely immeasurable, but it’s a feeling. You can tell.”

Student Eco-Reps were said to benefit from the program as well. As the Director of Living/Learning put it, “[Students get] a sense of community, the ability to be involved. That’s probably more valuable to them than cash. It’s part of who they are. They can have an on-campus job that is not only convenient but has meaning too.” Being an Eco-Rep also allows students to “actively do stuff rather than just complain, ‘oh it’s so horrible, but what can we really do?’” as the Environmental Studies faculty member said. Professional development and personal growth were key benefits that the former Program

Coordinator recognized, particularly around responsibility, advocacy, and communication.

For a lot of college students who are coming into a new set of beliefs or becoming more aware of things that are of interest to them, things that they are passionate about—having the ability to communicate those things is really important. The experience of trying to communicate *why* everyone should compost, or *why* recycling is important. I think a lot of Eco-Reps find that frustrating. they can't figure out why they can't communicate effectively, why saying 'because it saves energy' isn't good enough—and thinking about what are those hooks or angles to get people interested and excited about what excites you.

The SGA President (a former Eco-Rep) confirmed these benefits by saying, “Being an Eco-Rep was early exposure for me to advocacy work and to mitigating apathy among students and trying to really make a change on campus.” She went on to say the benefit of doing actual work, such as replacing light bulbs, was really meaningful. “There are so many students here who really want to make change and want to use their hands to do so, so I think it really brings that real work applicability to the environmental sensibilities that people have on campus.” She credited her experience as an Eco-Rep in influencing her academic and professional plans. As a peer leader,

I learned how to give more support to other Eco-Reps and to lead by example and show how to effectively engage people. For me that meant learning more about how to effectively engage people and treat them with more responsibility. It helped build my sense of confidence in leadership and my ability to help engage people early on and that sort of led into all my other leadership on campus.

Additionally, interviewees stated that there were benefits to the residential students. The former Program Coordinator mentioned the benefit to students in having resource people in the hall or building as well as attending events hosted by Eco-Reps that foster and build community. She also mentioned the benefits to campus managers such as Recycling and Energy. These managers are able to use the Eco-Reps as a focus group of sorts, to get feedback on anything from poster designs to new initiatives. This allows an exchange of ideas and feedback loops that ultimately create stronger projects and ideas. In this way, Eco-Reps also act as translators of culture between students and non-students. The Director of Sustainability noted that this is a reason to have the Eco-Reps be as diverse as possible, so they are able to speak to a wide audience.

Further, the result of student involvement extends beyond the student to the whole institution. As the Vice President for Student Life said,

Research shows that being involved in positive ways leads to greater retention, greater satisfaction and success in their life, and for me, means they're being active and positive in healthy ways, and not in negative or detrimental ways to themselves or somebody else. So I think any time we create peer programs where students can really own something, it's so much better for the campus, for them, for the students' academics—it's huge.

The University's image benefits from the program. The former Program Coordinator mentioned that she frequently received phone calls from other campuses that wanted to use the UVM program as model at their school. As the Environmental Studies faculty member put it, "It strengthens the university's environmental brand." She also

felt it was a program that attracts students to the university as it is something that first and second year students can get involved with right away.

### **Program Strengths**

In terms of what the program does well, the Recycling Manager perceived the program to be successful in its outreach methods, particularly the face-to-face, personal approach that students can have with one another as opposed to a mass email sent out. Key activities that have worked well, from the point of the Environmental Studies faculty member, include bulb swaps, waste sorts, and bulletin boards, as they are action-oriented, entertaining, and visible.

Making connections between different offices is something that the Director of Residential Life saw as a major success of the program.

One of the things I see as a great thing is that the program links multiple offices and people together. All sorts of people are trying to support this program and that creates an interface between all of that we would not have normally had. The strongest link I have with different offices (such as Environmental Forum) on campus is with the Eco-Reps program. With that, I have more of a pulse on campus around what the institution is doing in becoming the environmental campus—which I would not have had if I didn't have this one simple connection with the Eco-Reps.

Eco-Reps are peers teaching peers, a model that several of the interviews found strength in. The President said to this effect, "I think when peers promote and model appropriate behavior outside of the peer group, it shapes the life of the community on that



peer group much more effectively. It's very powerful." The Vice President of Student Life added,

I'm a big believer in peer to peer programs, as there's only so much the institution can do, in terms of faculty or staff working with students. When it comes from students themselves about what they want to see changed and what their priorities and their values are, it's a much more powerful message.

### **Relationship with Residential Life**

The UVM Eco-Reps Program is officially a program of Physical Plant (the Recycling Office – which started the program) and the Residential Life Department (which pays the students' wages). The Recycling Manager expressed interest in knowing about the relationship between the Eco-Reps and Residential Life staff, particularly RAs. She suggested that Eco-Reps might attend a Residential Life staff meeting once a month to briefly check in and update the staff on various activities. Doing this might help build rapport and certainly help clarify any questions. She also suggested that perhaps RAs could include a pledge to recycle when they first work with their residents to establish community standards at the beginning of the year.

The Director of Residential Life also saw a need for greater communication channels, particularly between Eco-Reps and RAs, and suggested that there be a session on the Eco-Reps Program for RAs during their summer training. She said,

I think it's #1 that they need to know what the program is, have realistic expectations of what these positions are supposed to be doing, some sense of what the positions do, what kinds of programs we expect to see in the limited amount of time that these Eco-Reps are around in our buildings. Once it's all in

alignment, than the RAs will be great. And, it may actually work in your favor, because once the RAs know what the program is and the expectations and have a sense of what kind of programs the Eco-Reps do, they may actually use them as a resource and tap into them.

The Vice President of Student Life suggested that the Eco-Reps also build partnerships with the Inter-Residence Association (IRA), a programming and advocacy board for residential students, facilitated by Residential Life staff.

### **Institutional Commitment**

All of the interviewees mentioned something about the importance of institutional commitment supporting programs such as the Eco-Reps. The Director of Residential Life drew attention to the important leverage points the program offers, both institutionally and for student leadership. The Director of Living/Learning stated that, “[This program] is just another example of where we’re going. We can point to it and say ‘see.’ It helps us stand out.” The President of the University corroborated this by saying, “To me, I think things like Eco-Reps are important symbolically, but they are important beyond symbolism.” He continued later by adding,

Something like Eco-Reps puts a human face to our sustainability efforts, and it’s nice that it’s a program where students are really at the ground—grassroots level, and yet it’s structured, it has staff support. It has its grassroots, but it represents some modest institutional investment in channeling this energy.

Several statements were made regarding the program coordinator position. This was a point where my concurrent role as coordinator and researcher became a blurred, as

some of the interviewees gave feedback on my particular performance, rather than the nature of the position itself. Perhaps an anonymous review could have provided more objective validity.

The Director of Residential Life mentioned the importance of having a program coordinator as a distinct role, rather than tacked on to someone else's job. "It's a job within itself, which you've clearly proven with this graduate assistantship. The program is something that needs to be monitored on a daily, a weekly basis, including the attention to student leadership and assessment work." The Director of Living/Learning added, "My real sense is that your coming in has been very good. You've given the program some structure and organization. It has a sense of place and I've started paying attention." He continued by adding, "I wish that there would be stable institutional commitment. So instead of trying to fund raise all the time, you could put that time into getting more things done." The Director of Sustainability noted the importance of having the program coordinated by a graduate student, rather than staff, as "...having a graduate student with teaching experience and a real commitment to experiential learning can foster a sense of exploration and continuous improvement that might be more difficult for a staff person to maintain over time." The former Program Coordinator recognized the shift in institutional commitment from the beginning of the program when supplies were stored in a bathroom and it was a 10-hour/week position to the Program now having a physical home and the Coordinator having a more established position. The Recycling Manager concluded on this point, "Now I think it's to the point where it's just become part of the fabric of the university and you wouldn't even dream of undoing those things."

## **Program Challenges and Limitations**

Program limitations mentioned by interviewees included: accountability issues, stagnant recycling rates, lack of visibility, and concerns over the evolution of the Eco-Reps Program.

Accountability of Eco-Reps regarding the expectations of their role was one challenge mentioned. The Recycling Manager noted a positive shift by saying,

I think you've done a great job, each year that you do this, by better spelling out expectations and having forms and systems that they have to keep track of things and document what they've done. [But], I don't know how well they've done that and turned things in.

She suggested looking into accountability measures for other student employment, such as for RAs. The Director of Residential Life felt that if students weren't meeting expectations, they should be let go, as "it doesn't help the program when you're perpetuating mediocrity in performance. Because the people who are working hard see the people who aren't working hard and that affects their motivation." She suggested using peer review to have the students hold each other accountable.

The Director of Residential Life was the one to note the mid-level rates of recycling in the residence halls. She noted that while we do a fair job at it, there is still so much that winds up in the trash. "I think it's so scary, because I think as a state, and as Burlington, as even as a campus, people are very familiar with recycling as a concept. Even if they don't do it well, there's an effort. And while we might think we do a lot, at the same time if it was a scale from 1 to 100 and compared to other places we're a 50 –

50 is still not good. So how do we get those numbers up to where we're in the 70s, 80s, 90s?"

The Director of Residential Life noted a lack of recognition of Eco-Reps as a "real student leadership position", similar to AdvoCats, Orientation leaders, or RAs. She made suggestions on connecting with Student Life, SGA, and the Davis Center to help grow this recognition. The Vice President of Student Life felt that the program "should be woven into Student Life." The Director of Living/Learning felt that the program's visibility was somewhat limited. As he said, "My vision was that there'd be one of our showcases in the Fireplace Lounge dedicated to Eco-Reps information, but that hasn't really happened." I explained that students may be focusing on a bulletin board in their building, rather than the common lounge. The Vice President for Student Life also noted a fairly-low level of visibility on campus. She continued, "I couldn't speak directly to the visibility of Eco-Reps in the halls, which makes me think that it has not yet been woven into the leadership, because I do see the RAs, the Orientation Leaders, the AdvoCats, but I feel that the Eco-Reps Program hasn't risen to that level of visibility on campus."

Figuring out the point of what size of group is manageable and financially possible is a limitation that the Environmental Studies faculty member brought up. While ideally there could be an Eco-Rep in academic buildings as well as residence halls, or even staff Eco-Reps, the whole formula needs to be addressed, in terms of coordination. Summing up the challenges, the Director of Residential Life said, "In my mind the program is still very young and the stuff that you're going through is still growing pains—part of establishing a significant and meaningful leadership position on campus."

## **Suggestions for Program**

The Director of Living/Learning made a few additional suggestions. He thought that there could be more recognition and rewarding of the student Eco-Reps beyond getting a paycheck, perhaps a special dinner or award. He also thought that there could be better use of the LCD screens with changing tips and information. The former Program Coordinator stressed the importance of building collaborative relationships with other programs and organizations on campus, creating more professional development opportunities for student Eco-Reps, and paying attention to community-building within the group.

The Environmental Studies faculty member suggested that there should be a full-time educator position that could coordinate student Eco-Reps as well as a staff program. “If there was a peer led group of top level educators around these issues, it would really push the whole critical mass of culture on campus forward, because it would be impacting so much more than students. That’s a possible vision.”

### **5.4.3 Analysis**

To understand the perceived value of the program by others as well as other issues, I conducted individual interviews as well as focus groups. In beginning the analysis of the data from the focus groups, it is important to describe the condition of the relationship between Residential Life Staff and the Eco-Reps Program. For at least two years prior to these conversations, a budding relationship was forming between the Residential Life Administration (Director, Residence Directors and Assistant Residence Directors) in the form of twice per year meetings and occasional email communication

with the Director and an annual presentation with RDs and ARDs at the beginning of the school year, describing the Eco-Reps Program. The only intentional contact directly made with RAs, was an optional presentation during a mid-year training, held in February (a month before these focus groups). A small number of RAs attended this session (20 out of approximately 130).

These focus groups were the first direct call for feedback from RAs on the Eco-Reps program, and proved to be informative, both for the RAs and for me as Program Coordinator. RAs asked many clarifying questions about the program, including wanting to know about the expectations and duties of the Eco-Reps, accountability issues, how well they know each other, the compensation for being an Eco-Rep, and recruiting practices for the program. This showed a great need for the RAs, who spend the most face-time with their residents, to know more about the program. As one RA pointed out, “I think there’s a lot of stuff out there that I don’t know about... I mean, I’ve already learned more in this meeting about the whole thing. There’s a pretty big voice out there if you’re an Eco-Rep. But it’d be nice to know more.” Many of the suggestions made by the RAs were implemented in the time following the focus groups. Table 33 shows some of the suggestions from the focus groups and interviews and how as Program Coordinator I’ve been able to take the suggestions and implement them, thus showing one valuable outcome of the evaluation process (Russ-Eft & Preskill, 2001).

Table 33. Suggestions from Interviews & Residential Life Staff Focus Groups, as of Fall 2008

<b>Idea</b>	<b>Progress toward implementation</b>
Partner first year students with a returning student	In Fall 2008, there were only four returning students, so used a team approach for each complex instead of students working individually.
Ask RAs for nominations for future Eco-Reps	Sent out a request for nominations to RDs, ARDs, and RAs, but only received two in return.
Recruit TREK leaders, participants	Sent recruitment announcement out via student leadership listservs, including TREK. Three Eco-Reps in the Fall 2008 group were TREK leaders or participants.
Presentation for RAs during summer training	The Eco-Reps program was a stop on the RA training resource scavenger hunt that all RAs participated in.
Learn about how RAs are evaluated, their accountability systems	Have not made in depth inquires yet.
Ask RAs to include a recycling pledge when they set up community standards at their first floor meeting	Have not tried yet.
Have Eco-Reps give a five minute update/briefing at one res life team meeting a month in their complex	Eco-reps in the Fall 2008 group were asked to attend a meeting in October and December.
Connect with inter-residence association (IRA) – perhaps have a set position for an Eco-Rep.	Had IRA advisors come to Eco-Rep meeting in September 2008 to talk about Hall Councils & IRA. No official seats for Eco-Reps, but at least one Eco-Rep is a part of IRA.

Visibility was a predominant theme in both the interview and focus groups. A member of the Environmental Studies faculty stressed the importance of institutional buy-in and recognition of the program, a theory supported by Rynes and Rosen (1995), Clugston and Calder (1999), and Scheirer (2005). She predicted that in my conversations with the President and Vice President of Student Life that they would acknowledge the



Eco-Reps Program as just something UVM does. “It’s just sort of an assumed kind of thing now. I knew we’d always get to this place, even when the funding was shaky and seemed impossible, because I knew they’d just want it under their list of things that we do.” This prediction was confirmed by both the President and Vice President being aware and appreciative of the Eco-Reps Program and its efforts. The President concluded in his interview by acknowledging that the Eco-Reps Program itself is an indicator. “It’s important to have programs like this, for the substantive good that they do. It’s one of the visible elements, Eco-Reps, that shapes the sense of the community – that this is a place that values these things. Eco-Reps are one of the signs that we’re doing well.”

Interviewees recognized the educational and cultural value in the program, even if the ecological or financial benefits cannot be easily measured. However, to know these benefits would be welcomed. It was also clearly shown that this young program needs to continue to be more deeply established across the institution, especially within Student Life.

One of the strongest observed benefits is that of the student Eco-Reps themselves. Their feedback forms over the past few years showed a positive experience with the program, which will be discussed below.

Additionally, student Eco-Reps’ activities and broader campus participation support Astin’s theory of involvement, which states that engaged students are more likely to be successful academically and socially on campus (Astin, 1984)—something that the Vice President of Student Life mentioned. To test this theory, in March, 2008, I took an informal, anonymous poll of the Eco-Reps in attendance at one of our meetings

(representing 72% of spring 2008 Eco-Reps), on their GPA and involvement in other organizations, clubs, sports, and jobs. The average GPA for participating Eco-Reps was 3.52 and they participate in an average of 3.06 other groups/sports/jobs per students. Table 34 shows some of the other clubs, sports, and jobs or internships that Eco-Reps partake in.

Table 34. Additional Clubs, Sports, and Jobs/Internships of UVM Eco-Reps

<b>UVM Club</b>	<b>Sports</b>	<b>Jobs/Internships</b>
Alternative Spring Break	Club Hockey	ECHO Internship
Asian American Student Union	Club Lacrosse	Barnes & Noble
Catamount Pep Band	Intramural Broomball	National Ski Patrol
Community Action Board	Intramural soccer	Research job
Community Liaison Program	Triathlon Club	Ski instructor
Concert Band	Yoga	Subject area tutoring
Feel Good		Work-Study job
Feminist Majority		Work at Biology lab
Focus the Nation planning committee		Work at Women's Health Clinic
L/L Program Director		
L/L Program resident		
National Society of Collegiate Scholars		
Outing Club		
Pottery Co-op		
President's Commission on LGBT Equity		
Pre-Vet Club		
SEEDS		
Ski/Snowboard Club		
Slade Co-op		
Society of Women Engineers		
Student Labor Action Project		
Student Legal Service		
Students for Peace & Global Justice		
Students for Sensible Drug Policy		

These students are engaged in a myriad of ways on and off campus, and are likely to thrive in their college experience. Further, alumni of the Eco-Rep program have gone on to other campus leadership positions including ENVS 01 teaching assistants, the President of Outing Club, Vermont Student Environmental Program (VSTEP) and Student Government Association (SGA). Being an Eco-Rep appears to be a good stepping stone for students in their campus careers.

The final section of the UVM Eco-Reps Program evaluation includes findings from the student Eco-Reps themselves.

### **5.5 Eco-Rep Feedback**

The primary vehicle for generating written feedback from the student Eco-Reps is an annual end-of-the-year feedback form (Appendix H). Questions included on the anonymous form regard the student's experience as an Eco-Rep, their input on the content and delivery of the program, as well as their perception the impact they as educators have on their peers' environmental knowledge and behavior. For all tables below, responses are shown as percentages of those who completed the form. It should be noted that there was a change in program coordinators between 2005-2006 and 2007-2008.

Students' responses to the statement "I enjoyed being an Eco-Rep" OR "I had a positive experience being an Eco-Rep." are seen in Table 35.

Table 35. Percentages of Eco-Rep Responses to “I enjoyed being an Eco-Rep” or “I had a positive experience being an Eco-Rep”

	<b>2004-2005</b> (n =17)	<b>2005-2006</b> (n=14)	<b>2006-2007</b> (n=17)	<b>2007-2008</b> (n=20)
Strongly Agree	24%	43%	53%	60%
Agree	59%	50%	47%	40%
Neutral	0%	7%	0%	0%
Disagree	6%	0%	0%	0%
Strongly Disagree	12%	0%	0%	0%

Students were also asked to rate their perception on guidance and information from the Program Coordinator as seen in Table 36.

Table 36. Percentages of Eco-Rep Responses to “Program Coordinator provided enough information and guidance.”

	<b>2004-2005</b> (n =17)	<b>2005-2006</b> (n=14)	<b>2006-2007</b> (n=17)	<b>2007-2008</b> (n=20)
Strongly Agree	64%	93%	71%	75%
Agree	18%	7%	29%	25%
Neutral	0%	0%	0%	0%
Disagree	0%	0%	0%	0%
Strongly Disagree	0%	0%	0%	0%

Students were also asked to rate if the amount of background information they received on each topic was the right about, as seen in Table 37.

Table 37. Percentages of Eco-Rep Responses to “The amount of background information I was provided with each week was:”

	<b>2004-2005</b> (n =17)	<b>2005-2006</b> (n=14)	<b>2006-2007</b> (n=17)	<b>2007-2008</b> (n=20)
too much	0%	0%	6%	0%
just right	94%	79%	82%	100%
not enough	0%	0%	12%	0%
no response	0%	14%	0%	0%
other	6%	7%	0%	0%

Students were asked about the frequency of meetings as shown in Table 38.

Table 38. Percentages of Eco-Rep Responses to “Meeting every other week was:”

	<b>2004-2005</b> (n =17)	<b>2005-2006</b> (n=14)	<b>2006-2007</b> (n=17)	<b>2007-2008</b> (n=20)
too much	0%	0%	0%	0%
just right	100%	92%	88%	80%
not enough	0%	8%	2%	20%

Similarly, students were asked to rate the specificity of the tasks on their bi-weekly “to-do lists”, as seen in Table 39.

Table 39. Percentages of Eco-Rep responses to “The activities on our to-do list were:”

	<b>2004-2005</b> (n =17)	<b>2005-2006</b> (n=14)	<b>2006-2007</b> (n=17)	<b>2007-2008</b> (n=20)
just right	82%	64%	75%	75%
not specific enough	18%	14%	25%	25%
too specific	0%	0%	0%	0%
no response	0%	21%	0%	0%

Students gave estimates on their average amount of time spent each week on Eco-Rep duties, as seen in Table 40. It should be noted that the expectation is for an Eco-Rep to work four hours per week.

Table 40. Mean Number of Hours Per Week Spent on Eco-Rep Duties

	<b>2004-2005</b> (n =17)	<b>2005-2006</b> (n=14)	<b>2006-2007</b> (n=17)	<b>2007-2008</b> (n=20)
Hours/week	3.7	4	3.4	2.7

In order to get more feedback on the program from participating students, particularly around their perception of program impact on residential students as well as on themselves, questions were added to the evaluation form in 2007 and again in 2008. The following questions were asked in those two years. Accountability has been a common theme in the past couple of years among students, (and was also seen in the interviews and focus groups), so the question was asked of the Eco-Reps, as seen in Table 41.

Table 41. Percentages of Eco-Rep Responses to “I was held accountable for my work.”

	<b>2006-2007</b> (n=17)	<b>2007-2008</b> (n=20)
Strongly Agree	25%	35%
Agree	49%	30%
Neutral	13%	30%
Disagree	6%	5%
Strongly Disagree	0%	0%

Students were asked to rate their opinion on if they helped other students in their residence hall learn about how personal choices impact the environment, as seen in Table 42.

Table 42. Percentages of Eco-Rep Responses to “I helped other students in my res hall learn about how their personal choices impact the environment.”

	<b>2006-2007</b> (n=17)	<b>2007-2008</b> (n=20)
Strongly Agree	38%	20%
Agree	49%	55%
Neutral	13%	25%
Disagree	0%	0%
Strongly Disagree	0%	0%

The question with responses shown in Table 43 went beyond knowledge of impact to actual behavior change.

Table 43. Percentages of Eco-Rep Responses to “I noticed a difference in students’ behavior in my res. hall as a result of my work as an Eco-Rep.”

	<b>2006-2007</b> (n=17)	<b>2007-2008</b> (n=20)
Strongly Agree	12%	13%
Agree	35%	29%
Neutral	47%	29%
Disagree	6%	8%
Strongly Disagree	0%	21%

The 2007-2008 edition of the student feedback form asked questions specific to students’ opinions on skills gained or educational or professional goals clarified. Table 44 shows the trends from these responses.

Table 44. Additional Responses from 2007-2008 Feedback Forms

<b>Response</b>	<b>Percent</b> (n=20)
I strongly agree or agree that I developed skills as a leader in my residence hall.	80%
I strongly agree or agree that I developed skills as a peer educator.	75%
My experience as an Eco-Rep helped me develop my educational goals.	60%
My experience as an Eco-Rep helped me develop my career goals.	50%
If I needed assistance, I could ask a fellow Eco-Rep for help.	90%
I strongly agree or agree that as a result of being an Eco-Rep, I changed my personal behaviors, especially toward waste reduction and energy conservation.	80%

For all years of the program, students were asked what would have made them a more effective as an Eco-Rep. Common answers to this open-ended question included having more time (feeling quite busy with school work and other obligations), reaching out to students in a more personal, one-on-one situation, working together as teams, having more specific tasks or events, or resolving challenges with building or bulletin board locations.

### **Analysis**

The results of the annual end-of-year-feedback forms report that student Eco-Reps have a positive experience with the Program. They generally feel well supported by the Program Coordinator and that the amount of information provided was the amount



that they needed. While the majority of the Eco-Reps felt that meeting every other week was fine, a growing percentage felt that it was not enough and would prefer to meet every week. This suggestion was implemented in the fall of 2008. Similarly, while most students felt that their task of “to-do lists” were fine, there were a several who felt they were not specific enough. Students’ estimates of their hours spent per week on their duties as an Eco-Rep usually neared the four hour mark as was expected of them, with an exception of students from 2007-2008. There is no particular known explanation for this.

Accountability is a re-occurring issue with the Eco-Reps Program, so a specific question was added to the feedback form. While in the informal discussions with students there was a sense that students were not held accountable, according to the feedback forms a majority felt that they were held accountable for their work. This continues to be a point of discussion and was a key issue brought up in the training of the 2008-2009 Eco-Reps.

While there was agreement that Eco-Reps help other students learn about the relationship between personal choices and impact on the environment, there were still some who didn’t fully feel this to be true. Some students felt that they did see actual behavior change in their neighbors, but others flat out disagreed that their work had any impact on behavior change. It should be noted that this does not take into account that perhaps residents were already doing well in waste reduction and/or energy conservation, but the question did not clarify this.

The more detailed evaluation from 2007-2008 showed that students personally benefit and learn from the program. They reported to gain skills as peer educators and

leaders while developing their educational and professional goals. They were also finding a sense of community and a group that they could depend on. The following quotes demonstrate these points.

- “When I was looking for a work study job, and I really wanted to do something that benefited others as well as myself. I feel that this job fulfilled my wishes. It was really great to be able to reach out to the community in this way, and to educate people in something that I feel so strongly about.” (Female, Sophomore, ENVS/Studio Art Major, 2006)
- I’m really enjoying the job and feel good about what I am doing. (Female, Sophomore, Nutrition/Radiation Therapy Major, 2006)
- “Being an Eco-Rep helped me out with all of my environmental and natural resource classes that I took along with allowing me to inform my fellow students about how they could environmentally make a difference.” (Female, Sophomore, ENVS major, 2008)

It is important to mention that this feedback, in conjunction with informal requests for feedback throughout the year is very important to me as program coordinator, as I strive each year to further refine the program to meet campus and students’ needs, a benefit of the Action Research design implemented with this study (Herr & Anderson, 2005). The compiled feedback is also very useful to pass on to the Eco-Reps Advisory team and could be critical if there were ever a need to defend the financial and other resources currently dedicated to the program.

Each of the components of the UVM Eco-Reps Program evaluation (program characteristics, utilities analysis, student survey, interviews and focus group, and Eco-Rep feedback) contributed to a greater understanding of how the program currently functions, perceptions of stakeholders and participants, and impacts. To complete the UVM Eco-Reps Program evaluation, I applied the findings to the stated process and outcome indicators, noting the level of achievement, as shown in Table 45.

Table 45. UVM Eco-Reps Program Performance Indicators

	<b>Level of achievement</b>	<b>Data Source</b>
<b>Program Impact Indicators</b>		
<i>Process Indicators</i>		
Application rates to program	Average # of applications from 2004-2009 = 47.29  Average hiring rate (# applications/# hired) from 2004-2009 = 66.87%	Tabulation of Applicant demographics (Appendix K)
Eco-Rep coverage in residence halls	Average coverage rate from 2004-2009 = 71.64%	Tabulation of Applicant demographics (Appendix K)
<i>Outcome Indicators</i>		
Attendance at events hosted by program	Student organized res. hall events:  2007-2008 = 15 events, with an average of 21 participants  2008-2009 = 22 events, with an average of 17 participants	Program files (Event planning and reporting forms)
Accomplishing specific goals for specific projects Examples: Waste sorts: improved separation rates Bulb swaps: electrical and greenhouse gas savings	Waste sorts results: often find that at least 50% of what is in the trash should have been recycled or composted  Bulb swap savings estimates: continue to swap bulbs annually	Waste sorts results (see Figure 29) Bulb swap savings estimates (see Table 15)

Program Coordinator and students recognized as resource people	Not formally assessed; some positive indication regarding Eco-Reps from Resident Assistants; frequent requests for information from Program Coordinator	RA focus groups Log of Requests (Appendix N)
Program visibility, especially among students and administration	Need to improve visibility	RA focus groups Interviews Residential student survey
Residential students know the Eco-Reps name and what the program is	48.6% of surveyed students knew of program	Residential student survey
Eco-Reps are accessible to residential students	Not formally assessed; RAs indicated that students with an Eco-Rep in their floor had most access (over in the building or not at all)	RA focus groups
Eco-Reps and program activities are perceived as influential	Top two behaviors <u>most</u> influenced by Eco-Reps Program: reducing trash through recycling more and saving energy; top two behaviors <u>least</u> influenced by Eco-Reps Program: use public transportation or carpool and compost food waste	Residential student survey
Receiving media coverage	2007-2008: 4 <i>Vermont Cynic</i> articles, cover story of the <i>Burlington Free Press</i> (11.2.07), article in <i>USA Today</i> (11.5.07), Eco-Rep interviewed for article in the <i>Christian Science Monitor</i> (11.26.07)  2008-2009: 2 <i>Vermont Cynic</i> articles	Program files

Improved student behaviors (recycling rates, electricity usage, windows opened during heating season, water usage);	70% always turn lights off 62% put computer on sleep or stand-by 73% always turn off water when brushing teeth 37% always use a refillable water bottle 32% try to shorten showers 20% never use windows to cool room in heating time 16% turn off powerstrips 15% always use refillable mug	Residential student survey
Eco-literacy rate on campus	Not assessed	
Model for other programs (residential, office, off-campus);	Desire to create new programs, but resources do not currently exist	
Lasting behavior change by surveying alumni on their environmental engagement and behaviors	Not assessed	
<b>Participating Student Impact Indicators</b>		
<b><i>Process Indicators</i></b>		
Student retention rate (through the year and year-to-year);	Average retention rate for 2005-2009 = 14.15%  ~1-2 students will drop out or be asked to leave during fall semester; 5-10 students will leave program between fall and spring break due to study abroad, transfers, or graduation	Tabulation of Applicant demographics (Appendix K)  Program records

<i>Outcome indicators</i>		
Sense of community/teamwork	In 2007-2008, 90% strongly agreed that “If I needed assistance, I could ask a fellow Eco-Rep for help.”	Eco-Rep Feedback Forms
Satisfaction with program	Average percentage that strongly agree, from 2005-2008 = 45%	Eco-Rep Feedback Forms
Professional development/Personal growth opportunities	In 2007-2008, students strongly agreed or agreed that: 1. I developed skills as a leader in my residence hall. (80%) 2. I developed skills as a peer educator. (75%) 3. My experience as an Eco-Rep helped me develop my educational goals (60%) 4. My experience as an Eco-Rep helped me develop my career goals. (50%)	Eco-Rep Feedback Forms
Alumni of program move on to higher level positions	Eco-Reps alumni have become Resident Assistants, President of Outing Club; President of Student Government Association	Communication with Eco-Rep alumni
Lasting behavior change by surveying participating students on their environmental engagement and behaviors several years out of the program	Not assessed	

Recommended next steps with these performance indicators would be for the Eco-Reps Advisory Team to establish goals for each indicator, so that future performance could be tracked against these baseline figures. Additionally, indicators that are not currently being assessed could be taken on, if determined necessary and/or feasible by the Advisory Team.

The following chapter contains a concluding discussion on the program's effectiveness overall, including: educational impacts, ecological and financial impacts, and cultural impacts, as well as noting areas of improvement.



## CHAPTER 6: CONCLUSIONS

This final chapter comments on the broader context of this research and presents concluding remarks from the examination of Eco-Rep Program characteristics and from the University of Vermont (UVM) Eco-Rep Program evaluation, including limitations from both stages of research. It also provides suggestions for future studies. Finally, it offers elements of successful program design, based on this research as well as my personal experience as Program Coordinator of the UVM program.

To the best of my knowledge, this research is the first conducted on campus-based, peer sustainability education. Whereas the sustainability in higher education field is relatively new and quickly evolving, and whereas there is a general lack of campus-based peer education evaluations, this research contributes to both fields (and perhaps describes a new subfield). Despite this ‘new-ness’ there are a number of sources of related literature that have helped build this subfield. While I have attempted to connect my research to the literature reviewed throughout my analysis, I would like to address a few points directly. These comments raise broad questions about my findings and indicate where the findings are supported and pushed-back by the literature.

In the environmental and sustainability education literature I reviewed, there were several suggestions on how to best craft an education program that would result in behavior change. Susan Santone’s (2003) five characteristics of sustainability education included: 1) infusing curriculum with concepts that show the interconnections of all systems; 2) using technology appropriately; 3) showing respect for all; 4) nurturing compassion, creativity, and cooperation; and 5) having sustainable practices in school

facilities. These characteristics comment both on content and delivery of education. Applying what was shown in the data an analysis of Eco-Reps programs included in this research, the fifth characteristic is the most strongly addressed, which may include showing the interconnectedness of topics. This is likely an area that Eco-Reps programs could improve, to ensure that topics are not singly addressed, but rather shown how they relate to one another. For example, how waste reduction affects climate change or how water conservation practices relate to energy savings. Using technology appropriately was not an explicit topic mentioned by any of the studied programs, but may or may not exist in content. Showing respect for all and nurturing compassion, creativity, and cooperation are characteristics that lend themselves more toward delivery of a program, but certainly could be included in the content of the program as well. To ensure that these programs are sustainability related (and not just environmentally), they need to include concepts of social justice and economic equity and how they and pro-environmental behaviors relate to one another. For example, when talking about waste reduction, Eco-Reps program content could include topics of environmental justice as to where landfills and incinerators are sited and who is affected by them. Also, programs should reach out to underrepresented populations on campus and make sure that these communities feel that they are included.

Eco-Reps programs certainly attempt to match David Orr's (1992) call for the need for creating ecologically literate students and for college and universities to model sustainable behavior and practices. At the University of Vermont (UVM), student Eco-Reps and residential students have reported increased knowledge of campus

environmental practices and related behaviors. The programs exist on campus are at least an effort on behalf of the campus to encourage more behaviors and practices. A potential danger may be that the existence of a program is enough for administrators to feel that they are doing their part and other more significant infrastructural improvements might be ignored. This point could also be applied for integrating sustainability into the formal curriculum. Several campuses have explored an environmental or sustainability requirement as part of the general curriculum, and the debate is still out on whether this is the best or most effective approach to take (Rowe, 2002). As the President of Middlebury College remarked in a recent speech, “Sustainability is today as what diversity was a decade ago. It should be infused in *all* aspects of our institution (Liebowitz, 2009).”

The psychology of environmental behaviors literature offered several models of how to reach desired behaviors, such as those suggested by Hines, Hungerford, and Tomera (1987) and Kollmuss and Agyeman (2002). None of the studied Eco-Reps programs mentioned using these types of models in the design or practice of their program (however, Anja Kollmuss was the creator of the Tufts University program and likely used her own model in that design). As I describe in detail below, Eco-Reps program coordinators would likely benefit from these models as they design or update their program’s content and implementation methods. The field of Community Based Social Marketing incorporates many of these concepts, especially concerning motivations and barriers, into its methodology (Gardner & Stern, 2002; Martin & Pear, 2003; McKenzie-Mohr & Smith, 1999; Winter & Kroger, 2004). Again, none of the studied programs explicitly mentioned using this methodology, but several of the concepts are

used, such as creating incentives as rewards and using prompts and visual reminders for targeted behaviors.

Integral to understanding the motivations and barriers to overcome within Eco-Reps programs' audience, practitioners would be well served to have a greater understanding of college student development, a field described by Evans, Forney and Guido-Dibrito (1998). Personally, for me as the UVM Eco-Reps Program Coordinator, I learned a great deal about our audience by taking a course on student development and also by networking with student life professionals on campus. Programs that are connected to Residential Life are likely to have more access to these student life professionals who are trained in student development, but those who are not would be well-served to reach out to these individuals. Eco-Reps programs seem to have strength in content (various sustainability topics), but would likely be stronger if more attention was given to the training and development of the Eco-Reps as peer leaders and educators – aspects that could be learned from other student life professionals on campus. The point of training the peer educators was made in several peer education program evaluations (Keeling & Engstrom, 1993; Miller & MacGilchrist, 1996; Parkin & McKeganey, 2000; Strange et al., 2002b; The AIDS Control and Prevention Project, 2007; Ward et al., 1997).

Turning to the literature on campus activism, several questions arise. The history of activism has shown a shift from large public rallies around specific topics to students participating in community service projects and working with campus staff, as Eco-Reps do (Levine, 1999; Loeb, 1994). How are student Eco-Reps viewed in this spectrum as

activists? Are they seen as leaders? Instigators? Mainstream insiders? Are today's campuses more willing to allow students to be active in community service and even in acts of thoughtful dissent, as administrators recognize the value of engagement? Or is this a way for administrators to pacify radical activism? Are Eco-Reps programs, which have largely been created by campus staff members, something that would be criticized by youth activists Fletcher and Vavrus (2006), who feel that youth should be the ones to decide the content and approach of youth-based programs? These questions were not expressly studied in this research, but would be an excellent launching point for future studies (more of which will be discussed below).

Personally, I can see both sides of this debate as someone who was a very involved student activist and now as someone who works on training student leaders in sustainability work. I believe entities such as Eco-Reps programs help address issues of continuity and lack of connection to the decision-makers on campus (problems I as a student activist continually ran into). By building a bridge between students and staff on campus, I see the power of collaboration. At the same time, I worry that I am imposing my ideas and approaches on students that might stifle their creativity. Students acting independently (outside of a sanctioned campus program) are likely more able to raise controversial topics using more in-your-face tactics. Which is more effective? That is likely to depend on whom you ask.

I will now continue with concluding remarks on the two stages of research and suggest areas for further research.

## 6.1 Examination of Eco-Rep Program Characteristics

The program coordinator survey helped me define what a peer to peer sustainability outreach (or, Eco-Reps) program was by developing criteria of who to include in the survey. The survey findings showed the range of content and delivery methods of those programs as well as self-identified best practices and challenges. The survey results did not provide an in-depth look into how the administrative structures supported or detracted from the success of the program, and so this was a topic explored in depth with the case studies of four programs. A desired end-product for this stage was documenting existing programs and providing examples of best practices and strategies to overcoming obstacles for other campuses to use as a resource as they maintain or start their own programs. The findings were shared in an article in the new campus sustainability journal *Sustainability: The Journal of Record* (Erickson & Skoglund, 2008) and helped to update and expand the directory of Eco-Reps programs on the AASHE website <http://www.aashe.org/resources/peer2peer.php>. An additional outcome of this stage of research was that it helped me, as the relatively new (at the time) Program Coordinator at UVM, gather ideas on implementation within my own program. This application of knowledge gained is one of the stated benefits of Action Research (Herr & Anderson, 2005).

The case studies of four Eco-Reps programs allowed me to examine how organizational structures impact the outcomes and overall sustainability of such programs. The case studies showed that with established administrative and organizational structures, programs are able to work more fluidly and evolve to meet

current needs. However, when those structures are interrupted, namely by personnel changes, there will be a break in program operation. My intention with using the Program Sustainability Indicators framework was not to give the four studied programs a rating, but to examine them with a framework that can help to articulate strengths and areas of improvement. The framework findings supported my preliminary theory for the case studies of Eco-Rep programs that stated: the more institutional support (meaning administration personnel providing or approving of physical, fiscal, and personnel resources) and articulated organizational structure a program has, the more likely it is to succeed in reaching its outcomes.

One obvious indicator of success of these programs is their continuation, when circumstances allow. In the case of Rice and Barnard, the programs have proved their worth enough that they are allowed to continue and are financially supported. In the case of Tufts and NCSU, personnel shifts meant a time of hiatus. As of the fall of 2009, the Tufts program has seen its reemergence, and it is desired that the NCSU program make a comeback, if circumstances allow. The fact that institutions across the country continue to start similar programs on their campuses could be seen as a national indicator of success. The goal with this stage of research was to help those starting and continuing programs learn about best practices from existing programs, such as the ones reviewed here. As with the program coordinator survey, the case studies helped me as UVM Program Coordinator to re-examine my program and led me to explore new practices.

Limitations of this portion of research included the inability to hear from all programs, whether it was through an oversight in not identifying them in the first place, or by the program coordinator not completing the survey. As for the case studies, I wrote the original drafts of narratives based on the interviews I conducted and materials I reviewed. Each informant was given the opportunity to review the draft for accuracy as well as make any clarifications. In one case, an informant asked that I withdraw a comment that might be seen as potentially controversial if made public, in reference to the lack of support from an upper-level administrator. As my intention was not put these programs in jeopardy, but rather to share best practices and find areas of improvement, I removed the comment from the narrative.

It is also critical to note that these narratives are based on the perspectives of two individuals from each campus, and that they may not reflect the perspectives all of program participants or of their related departments/offices. The greatest limitation is that I only had the opportunity to speak with two students and did not get to visit the campuses in person, with one exception.

Overall, these two steps allowed for a greater understanding of the current state of Eco-Reps programs across the country and gave insights into their structure and operation.

## **6.2 UVM Eco-Rep Program Effectiveness**

While the key goal of a peer sustainability outreach program is to change student behaviors and to ultimately decrease a campus's ecological footprint and save money,



there are a number of other impacts on a campus. The multiple methods approach used in this research showed broader opportunity for impact. Beyond behavior change, these types of programs offer educational benefits for residential students as well as participating Eco-Reps; professional development opportunities for participating Eco-Reps; as well as the potential to aid in a culture shift on campus, and perhaps beyond. The challenge lies within how to best measure these impacts. As mentioned previously, other program coordinators that I contacted when designing the UVM residential student survey and UVM interviewees identified several program impact indicators, for the campus as a whole and for participating students.

### **6.2.1 Educational Impact**

Participants in the focus groups and interviews acknowledged the educational opportunities for both Eco-Reps themselves, as well as their audience – the residential student body. The student survey and Eco-Rep feedback showed the avenues for assessing educational impact from the Program. The student survey showed that there was a difference between buildings that did and did not have an Eco-Rep. Buildings with an Eco-Rep had students reporting more influence on knowledge of environmental behaviors than those that did not, especially around recycling and energy conservation (the two main topics of the program). Students reported a fairly high level of awareness on how recycling works on campus as well as different energy and water conservation measures.

Feedback from Eco-Reps over the years clearly showed they had a positive experience with the program as well as opportunities for educational, professional, and

personal growth, indicated in the literature as an area of clear impact of peer education programs (Backett-Milburn & Wilson, 2000; Parkin & McKeganey, 2000). This was a perception that many of the interviewees held, and was confirmed by the students' feedback, as noted in the following reflection from a male Eco-Rep, a sophomore, Classics major.

“Perhaps my most startling realization was that despite all of the action that is already being done, the awareness already being raised, and the great things that have been achieved, there is still tons of work to do. For a campus that is supposedly one of the 'top ten greenest schools,' I know too many students who don't know and don't care about even the most basic things like recycling. I am excited to be in a position where I am given both the knowledge and the means to advance the issues, spread the word, and get people to be active and passionate about the problems facing the environment. And the best result of being an Eco-Rep, just after a couple of weeks, is that instead of feeling wicked overwhelmed about it all, I feel empowered.”

### **6.2.2 Ecological and Financial Impact**

According to the student survey, residents without an Eco-Rep reported lower rates of environmental behaviors, such as turning water off while brushing their teeth. The influence of the Eco-Reps Program on recycling and energy conservation was shown by 70% of students reporting that they always turn off their lights when they leave their room and 62% using the sleep mode for their computers. Buildings with Eco-Reps also means a greater visibility of students modeling desired behaviors and using social pressure for others to do the same, both seen as important in the behavior change and college student development literature (Ackerman, 1997; Gardner & Stern, 2002; Hornik

& Cherian, 1995; Winter & Kroger, 2004). Keeping in mind both campus population and overall building square footage growth, utility data showed an increase of electricity usage per capita but a decrease in usage per square footage over the eight years analyzed. Trash showed a decrease and recycling showed an increase, both per capita and per square footage. Greenhouse gas emissions showed an increase per capita but a decrease per square footage. Reductions in all areas (except recycling) can mean financial savings for the university (Eagan & Keniry, 1998).

### **6.2.3 Cultural Impact**

The idea of culture shift was most noted in the interviews, which has meaning as these individuals have the most institutional history out of all involved with this research. They are the ones who can best report on cultural shifts on campus. As the Director of Sustainability pointed out, upper level administrators (Academic Deans) are now asking about bottled water. While we may not be able to directly attribute this to the Eco-Reps Program's One Less Bottle campaign, it could be said that the efforts of the Eco-Reps have contributed to the recent groundswell around bottled water on campus, seen in the form of Student Government resolutions, a day held annually where no bottled water is sold in the student center, and visual displays in the student center.

Eco-Reps Programs contribute to the critical mass of people at all levels of the university working on sustainability. It helps strengthen the "brand" of the university as "the Environmental University." As the President said, the Eco-Reps Program is an indicator in and of itself." As he stated, "Eco-Reps are one of the signs that we're doing well."

#### **6.2.4 Areas of Improvement**

The RA focus groups showed a great need for more outreach about the programs' goals and expectations among the RAs themselves. This is a critical point, as RAs can be instrumental in getting the word out to their residents as well as provide useful feedback on individual Eco-Rep performance in their buildings. RAs can also recommend qualified students to be future Eco-Reps.

The focus groups, some of the interviews, and the student survey all called for more visibility of the program overall. Half of the surveyed students reported that they had heard of the program. It is hard to know how to best interpret this figure, as I am unsure how this might compare to knowledge of other campus programs. Perhaps this is something that could be included in future institutional studies.

The survey also showed a few specific needs, such as the need for more awareness around what happens with food waste from the dining hall and ability or knowledge of how to control the heat in their rooms. This challenge could be addressed by applying a community based social marketing (CBSM) approach for specific topics, as this has been noted in the literature as a successful means of behavior change (Marcell et al., 2004; McKenzie-Mohr & Smith, 1999). One of the greatest challenges posed by the survey is the point that 42% of students reported that they feel "too busy" to make behavior changes. This brings up questions of 1) how do students use their time and 2) what do they value as important enough to change?

### **6.2.5 Resource for Other Campuses**

The UVM Eco-Reps Program, while still in its formative years, holds a strong reputation nationally and I am frequently contacted for information on how to start programs, ideas for specific projects, and other general advice. To demonstrate how the program has become a valued resource, I tracked information requests over a six month period, as shown in Appendix N. Of the 37 requests, 25 were from outside of the UVM community and were from students, Sustainability Coordinators, Directors of Programs, Residential Life Staff, and a College Dean. As Program Coordinator, I've given numerous presentations at regional and national conferences and maintain a directory of programs on the AASHE website. One Directory of Sustainability from a southern university wrote to me, saying,

“Thank you for being such a great resource about Eco-Rep programs! When I first heard you present on this topic at the Greening of the Campus conference in 2007, we had just completed a one-person Eco-Rep pilot project at our university. Your presentation and the success of the pilot project spurred me on to work with students to roll-out the program to all nine of our residential colleges.”

The informal network of program coordinators that has formed over the past few years is gaining in numbers and activity. Evaluation is a topic of deep interest, but not many have been able to delve deeply into it. An outcome of this research is to help inform other campuses on indicators and measurement tools so that they can undertake evaluating their own similar programs, as they see fit.

In conclusion, this evaluation has shown areas of success and areas of needed improvement. As Program Coordinator, I've learned a great deal from this process—especially in learning from others and building relationships across campus. Similarly to building a relationship with RAs and being a part of their training session, I decided to reach out to Custodial Supervisors, realizing that I had never sought them out to meet them, give them an overview of the program, or hear their issues, concern, or perhaps even praise, of the program. Many of the lessons and tips learned in this process have been integrated into the current operation of the Eco-Reps Program.

It is important to note, however, that it is not likely that program coordinators themselves will be able to undertake a comprehensive evaluation, such as I was able to do (by making the work the focus of my doctoral research, in conjunction with my role as Program Coordinator). Therefore, it is important to find ways of pulling meaningful information in a more condensed fashion. In some cases, one can set up a system to tabulate data collected annually, such as the end-of-the-year feedback forms and Eco-Rep demographics. Once these systems are in place, it becomes an easier task to maintain. Getting feedback from Residential Life staff and other key players in a program does not have to take place as formal focus groups. Attending an occasional staff meeting or training events, or requesting mid-semester or mid-year feedback may be a more manageable task to accomplish. And, in the era of “survey fatigue” when students receive several request for survey participation in the course of a semester, it may be easier to tack on a couple questions to already established surveys, such as the one that Residential Life likely conducts each year. Finding the key contacts on campus is the

critical piece of this formula. Finally, another suggestion is to enlist a research methods course on campus to conduct an evaluation of your program. Faculty members are often looking for real-life examples to use in their classroom – having one on campus might be the ideal fit.

### **6.2.6 Program Evaluation Limitations**

A key limitation of this portion of the research was that I was an internal evaluator and therefore people may have been uncomfortable sharing criticisms of the program. In interviews and focus groups I encouraged participants to be open and honest, and to let them know that I would not be personally offended if they criticized “my” program. Again, coming from an internal perspective has its benefits and drawbacks, as described by the Action Research approach (Herr & Anderson, 2005). To overcome potential issues of credibility and validity, I used a triangulation methodology, generating data from many sources (Russ-Eft & Preskill, 2001). Further, my methods, data, and analysis were reviewed by colleagues and advisors to ensure I was not working in my own “bubble.”

While striving for a statistically significant sample size in the residential student survey, it is possible that the findings do not accurately describe the whole of the residential student body. This holds true for those I selected to interview and hold focus groups with.

The feedback from Eco-Reps is limited, as this was largely based on one form, held on the last meeting night of the semester. While informal feedback was provided throughout the year, these forms are the primary written feedback from individuals.

The limitations of reviewing utility data were discussed in that section, but can be reiterated here. The most significant limitation is not being able to break down the large campus values for individual buildings and their occupants (either residential, academic or other types of buildings). Without knowing this, there is only anecdotal information and observations as to who creates the highest amount of trash or what building uses the most heat.

As this research examines the effectiveness of a program, it needs to be noted that the impact that programs of this type may be something that cannot be measured in the short term, but that the effects may be gradual and occur over time, as is the case with other social and education programs (Singleton & Straits, 2005). Rather, as a young program, it is more possible to evaluate the process objectives of a program (such as number and diversity of Eco-Reps and their placement across campus) than outcome objectives (such as lower electricity usage) (Rappaport & Creighton, 2007).

### **6.3 Suggestions for Future Studies**

As with most research, additional questions and ideas arise in the course of studying a topic. To that effect, I will suggest several ideas that would be possible continuations of this particular study. One of the ideas came from the interview I conducted with Ryan Powell, formerly of North Carolina State University. Ryan wondered if instead of training the already eco-minded students to be Eco-Reps, perhaps students will communication, marketing, and social media skills should be trained in



sustainability topics. This begs the question of which scenario might create more effective peer educators?

As stated previously, whereas many of these Eco-Reps programs are quite young, and students are in a highly transformative age when residing on a college campus (Evans et al., 1998), future studies might examine longer-term behavior change of Eco-Rep alumni and of the greater student body, 5-10 years out of college. Another suggestion would be to see if there is a difference in reported behaviors of on-campus students versus off-campus students, as many of those students may be responsible for paying their own utility bills and therefore be more conscious about participating in certain pro-environmental behaviors such as energy and water conservation.

Finally, there is a rise of real-time monitoring of utility use, using building dashboards and other electronic media to report to building occupants the rate of usage, with the goal of inspiring immediate behavior change (Peterson et al., 2007; Tice, Trugbov, Schippering, & Loeb, 2009). This is a quickly growing field and there is a lot of potential for future studies on its effectiveness for short-term and long-term behavior change.

#### **6.4 Elements of a Successful Program**

As I conclude, I would like to offer a number of lessons learned as a result of this research as well as my own experience coordinating the Eco-Reps Program at the University of Vermont. My personal goal with this research was to create something meaningful and useful to others in this field, and I believe the following meets that goal.

It should be stressed that not all campuses has to have each of the elements below, as each situation is different. However, these elements come from my own experience including: presenting at campus sustainability conferences, survey data from program coordinators nationally (as well as informal conversations with many of them), case studies of four programs, the evaluation of the UVM Eco-Reps Program, and related literature. The elements described below address many of the points highlighted by Clugston and Calder (1999) with their seven conditions for evaluating sustainability initiatives as well as the Program Sustainability Framework adapted from Savaya, Sprio, and Elran-Barak (2008).

#### **6.4.1 Program Design**

Those who are creating a new program may find it helpful to start with a pilot program in a targeted area of campus (one building or first year buildings, as an example). The new program can then be refined through lessons learned over the pilot phase. Starting with a smaller program that can be built upon may ensure more success than a large program that does not work (Rappaport & Creighton, 2007). In designing programs that seek to develop pro-environmental behavior in individuals, consideration should be given to how to best interact with internal (such as personality traits, values, and knowledge) and external factors (such as infrastructure and social and cultural factors), while at the same time overcoming barriers (such as lack of knowledge and incentives and overcoming old habits), as shown in the model developed by Kollmuss and Agyeman (2002). Also important to consider is involving the students who will be the peer educators throughout the process, if possible. This will help overcome the

criticism that programs developed by adults that are supposed to be *for* or *by* youth can be more stifling than productive (Fletcher & Vavrus, 2006). In the case of Eco-Reps programs, there is precedent for youth involvement in design and implementation, as seen in the case study from Barnard College.

### **Guiding Theory**

While enthusiasm and passion are needed for any program to begin, an articulated program theory can provide a solid foundation to build the program upon (Russ-Eft & Preskill, 2001). The theory can identify resources and other inputs, activities, goals, and short and long-term impacts, utilizing concepts of organizational behavior. If possible, this program theory should be shared with participating students, as it may offer insights on the context and greater meaning of their work. At the same time, the stated program theory should build in enough flexibility to change in accord with current and future circumstances (Savaya et al., 2008). Integrating and aligning the goals of the program to those of the greater institution may help with recognition and greater support (Clugston & Calder, 1999).

### **Resources**

Staffing and other resources are central pieces of a successful program. In order for a program to always have a “home” on campus, a direct relationship with a staff person (either as coordinator or advisor) is important to further relationship and capacity building throughout the institution. Programs should find champions in various levels of authority (from custodial supervisors to departmental directors to high-level administrators, who can defend and support the needs of the program (including financial

support, and access to various spaces and storage on campus), if necessary (Clugston & Calder, 1999; Rynes & Rosen, 1995; Scheirer, 2005). In terms of program coordination, graduate students can be a great hybrid between staff/students, as they may come with professional experience but also may be able to more closely relate to undergraduates. This type of experience may be suitable for a required internship/practicum.

Dedicated financial resources are another important aspect to a program's success (Savaya et al., 2008). Planning a budget for the year including wages, materials, and other supplies is a helpful step to knowing what resources are needed. There are various models of funding currently in existence; the key is to find the best scenario for the campus. Often, having funding from multiple sources to ensure availability, but can also be time consuming, especially depending on the budgeting process within the institution. Securing permanent, rather than temporary funding scenarios, is an important way to institutionalize the program. In addition, associated offices/departments/programs can offer in-kind funding, such as office space, photocopying, or food.

## **6.4.2 Program Implementation**

### **Training**

Offering training for participating students, at the beginning of the school year and potentially throughout the year, helps build capacity within the individual as well as the whole group (Miller & MacGilchrist, 1996; Parkin & McKeganey, 2000; Strange et al., 2002b; Ward et al., 1997). Training topics can range from how to plan and carry out an event in a residence hall to stress management for student leaders. Regional symposiums/meetings can help students network and share ideas, as well as realize they

are part of a larger movement. It is key that program coordinators be offered training as well, in topics such as organizational/program management, behavior change theory, community based social marketing, and student employee/volunteer management. Another important resource for program coordinators are other student affairs professionals on campus who may offer advice and resources.

### **Expectations and Accountability**

In order for everyone to be on the same page, it is helpful for expectations of participating students to be defined as clearly as possible, and offered in the application process. These expectations can be revisited when needed, to help students and program coordinators be clear on what duties are to be fulfilled. Expectations can be further delineated by creating task lists by topic or month, or whatever framework the program uses. Pledges or contracts can be used to further understanding of and commitment to the expectations. Manuals/resource guides are helpful tools for participating students to be clear on expectations and who to contact about what. By clearly outlining expectations, there is likely to be a better chance at addressing issues of accountability. Maintaining records and task completion records is a helpful practice, and can also come in very handy when students ask for references or letters of recommendation in the future. One tip from the field includes having students submit digital photographs of their work (such as bulletin boards), so that coordinators don't have to spend their time scurrying across campus to check up on these tasks. Working in pairs or teams can create share responsibility and a greater success rate. Ultimate repercussions for students not meeting

expectations will vary with the situation (especially if this is a paid position or not) from not receiving a positive recommendation to terminating the position.

Record keeping is also important for activities such as bulb swaps and waste sorts. By tracking data and results there is something to look back at over time, as well as report back to supervisors and/or funders.

### **Communication**

Maintaining a website, blog, or whatever key communication piece is used on campus is important for programs to document successes and to disseminate information to the campus audience as well as internal participants. Programs should also have a clear system for documenting and archiving information and procedures so that information does not get lost from year to year and need to be recreated. Additionally, thorough records from the past, new staff can know the activities, accomplishments and institutional dynamics that shaped the program over the years.

### **Collaboration**

Collaborating with other departments/programs on campus helps a program reach a broader audience, incorporate other concepts such as social justice, draw upon multiple resources, and be further “institutionalized”. A steering committee drawn up of personnel from associated offices is a way to build these alliances and generate feedback. Tapping into relevant governing bodies may be a source of support and collaboration for programs, as well as a way to disseminate information to a broader audience. Programs need to navigate points of potential competition between other existing organizations/programs and find ways to collaborate. For example, if there are several

student environmental groups on campus, instead of competing for the same audience to attend one event over the other, why not team up and create one high quality event together?

Beyond the campus, Eco-Reps Programs can collaborate with each other by sharing activity ideas, strategies, and resources, through listservs and regional and national gatherings. To this effect, the first ever student Eco-Rep Symposium was held at Tufts University in November, 2009, organized by the class taught by Tina Woolston and Dallase Scott. This half-day gathering had representatives from 15 different colleges and universities from New England, and allowed students and program coordinators to learn about other programs and directly share best practices. It is my hope that more of these regional gatherings occur, and that the broader Eco-Reps community continues to actively participate at national campus sustainability conferences.

### **Feedback and Evaluation**

Programs should have a mechanism for generating internal feedback, to help constantly improve the day-to-day operations, objectives, and outcomes as well as participating students' experience overall—or process evaluations. It is also important to have a mechanism for generating external feedback—or outcome evaluations (Russ-Eft & Preskill, 2001). Outcome evaluations can occur through appropriate means such as a comment section on a website, surveys (either from the program or questions added to another's survey), or gathering feedback by attending an occasional residential life staff meeting or training events, or requesting mid-semester or mid-year feedback from those indirectly related to the program (such as advisors and Residential Assistants). Another

suggestion is to enlist a research methods course on campus to conduct an evaluation of your program.

Programs can build in annual review of outcomes to see what extent they were met. An end of the year report to related stakeholders can be an instrument for articulating this, and may prove important information if there is ever a time when a program needs to be defended in order to keep staff or other resources.

Again, these suggestions are not meant to be a required checklist, but aspects to consider when creating or maintaining an Eco-Reps program.

To conclude, I return to my guiding question for this dissertation, which asked: *What does a study of peer to peer sustainability outreach programs tell us about the effect of education and outreach initiatives on human behavior change?*

To address this question, I had to first determine who the players were that I was going to study. This meant finding what programs existed and learning about their basic structure, best practices, and key challenges. Results from this phase of research showed that while the administrative structure and other such details may be different from program to program, there are common motivations, implementation strategies, and needs for assessment techniques. It was found that programs are facing a number of challenges, such as gaining institutional support and resources. To gain a greater understanding of the impact a program's structure has on its outcomes, I developed four case studies of programs. By examining a program's overall organizational structure and behavior, I discovered how these aspects influence the program's achievement of goals



and outcomes as well as the potential durability of the programs themselves. This process helped to identify elements of a successful Eco-Reps program, as well as potential pitfalls. Perhaps because of the young age of the programs there were not many examples of thorough evaluations or assessments. This confirmed my thoughts that it would be advantageous to develop both qualitative and quantitative indicators for these programs, which was a natural lead to the next stage of research.

An evaluation of the University of Vermont Eco-Reps Program identified the type of impacts a program has and attempted how to measure them. A launching point for this phase was trying to determine the ecological impact of the program by looking at related utility and waste figures on campus. As this was not a highly informative practice, I solicited feedback from a variety of sources on campus, including the Eco-Reps themselves to look at the perceived value of the program and resulting residential student behavior change. These methods showed positive educational and cultural benefits and to a lesser extent, ecological and financial benefits, as a result of the program. The entire process also illuminated several areas of improvement for the program.

Overall, this study showed that peer to peer sustainability outreach programs can have an impact on students and on campus, in a variety of ways. However, before a program can create an impact, it is important for the program to be structured in a manner that can allow it to be effective, as illuminated in the case study section of this research. The evaluation of the University of Vermont Eco-Reps Program indicated that students who interacted with Eco-Reps reported more knowledge of campus environmental procedures and practiced more environmental behaviors. However, issues of visibility

and perceived influence signified that the program is far from perfect. Literature and studies from social psychology and social marketing offer many suggestions on how to improve education and outreach programs, by targeting them more specifically to the audience at hand, and developing strategies that directly focus on overcoming identified barriers. There is great potential to continue to learn how to best combine these fields to further refine education and outreach efforts, which will hopefully result in effecting desired change.

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## APPENDICES

### Appendix A: Survey of Peer-to-Peer Sustainability Outreach Programs in Higher Education

*This questionnaire is to be completed by the individual(s) who coordinates the peer-to-peer sustainability outreach program (e.g. Eco-Reps Program) on your campus. Completion of the questionnaire should take 20-30 minutes. Please answer the following questions to the best of your ability. Your responses will be kept confidential and used only with your permission.*

#### About the Program

1. Program Name \_\_\_\_\_
2. What year was your program founded? \_\_\_\_\_
3. How often do you meet with the students as a group?
  - weekly
  - every other week
  - other (please explain) \_\_\_\_\_
4. Meetings are usually held:
  - weekdays
  - weekday evenings
  - weekends
5. What topic areas does your program address? (check all that apply)
  - waste/recycling
  - energy
  - water
  - transportation
  - food
  - consumerism
  - compost
  - ecological footprint
  - Other(s) (please explain) \_\_\_\_\_
6. What are the primary means of information dissemination used by your students? (check all that apply)
  - bulletin boards
  - door-to-door contact with residents in hall



- articles in student newspaper
- surveys
- tabling
- posters
- audits
- group activities/events
- blog
- Online social networks such as Facebook or MySpace
- bathroom stall bulletins
- Other(s) (please explain) \_\_\_\_\_

7. What kind of group activities does your program do? (check all that apply)

- light bulb exchanges
- waste sorts
- film nights
- tours of local facilities/field trips
- guest speakers
- Other(s) (please explain) \_\_\_\_\_
- none

8. Does your program have a website?

- yes, (please give address) \_\_\_\_\_
- currently developing a website
- plans to develop a website
- no plans to develop a website
- other (please explain) \_\_\_\_\_

9. Does your program have a formal mission statement or goals statement?

- yes, (please write mission/goals statement) \_\_\_\_\_
- currently developing a mission/goals statement
- plans to develop a mission/goals statement
- no plans to develop a mission/goals statement
- other (please explain) \_\_\_\_\_

10. Has your program received any recognition or awards? (check all that apply)

- From the institution \_\_\_\_\_
- From an external organization (ex: Governor's Award) \_\_\_\_\_
- Other (please explain) \_\_\_\_\_

11. Please describe the motivation behind starting your program.

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12. Please describe an aspect of your program that you'd call a "best practice."

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13. What are the greatest challenges of your program? (check all that apply)

- not enough time for organizing events/activities
- not enough (or any) funding for program (coordinator & student compensation, activity materials, etc.)
- student accountability for getting work done
- Other(s) (please explain) \_\_\_\_\_

14. How do you evaluate the effectiveness of your program?

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15. What do you see as the unique qualities of your program?

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### **About the Participating Students**

16. What is the job title of the students involved in the program (e.g. Eco-Rep)?

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17. Does your program have varying levels of student involvement (e.g. captains, volunteers, etc.)?

- yes
- no

18. If yes, please describe, noting job title and primary responsibilities.

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19. How many students have been/are involved with your program in a given year?

2006-2007 \_\_\_\_\_

2005-2006 \_\_\_\_\_

2004-2005 \_\_\_\_\_

2003-2004 \_\_\_\_\_

2002-2003 \_\_\_\_\_

2001-2002 \_\_\_\_\_

2000-2001 \_\_\_\_\_

Earlier (please list year and number of students) \_\_\_\_\_

20. What is your optimal number of students? (please describe e.g.: one in each residence hall) \_\_\_\_\_

21. To participate in your program, do students complete an application?

yes

no

22. How are students compensated for participation in your program?

Receive an hourly wage through department. If so, how much? \_\_\_\_\_

Receive an hourly wage through federal work study program. \_\_\_\_\_

Receive a stipend for the semester. If so, how much? \_\_\_\_\_

Receive a stipend for the year. If so, how much? \_\_\_\_\_

Receive academic credit. If so, how much? \_\_\_\_\_

They do not receive any compensation (strictly volunteer)

Other (please explain) \_\_\_\_\_

23. On average, how many hours per week does the typical student work?

1-2

3-4

5-6

7+

Other (please explain) \_\_\_\_\_

24. How are students held accountable for their work? (check all that apply)

mandatory attendance at meetings

turning in "assignments" such as surveys and audits

photographs documenting their work

time cards

journal or log book

verbal feedback to Program Coordinator

other(s) (please explain) \_\_\_\_\_

none

## Administrative Structure of Program

25. What department is the program part of? (check all that apply)

- Physical Plant/Facilities Operations
- Residential Life
- Academic Department \_\_\_\_\_
- Other(s) (please explain) \_\_\_\_\_

26. Do you collaborate with other Departments or Programs on campus?

- no
- yes

27. If yes, please describe, noting which departments or programs and your program's relationship to them.

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28. What are the primary sources of funding for your program? (check all that apply)

- Department budget. Which department(s)? \_\_\_\_\_
- Grant. Type of Grant? \_\_\_\_\_
- Other(s) (please explain) \_\_\_\_\_
- No funding (please explain) \_\_\_\_\_

29. Job title of program coordinator \_\_\_\_\_

30. As program coordinator, what is the job title of the person you report to?

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31. Is coordinating the program an official part of your job description?

- Yes, part of my job description, full time (35+ hours/week)
- Yes, part of my job description, part time (20 hours or less/week)
- No, volunteer
- Other (please explain) \_\_\_\_\_

32. How much of your time is allocated to coordinating your program?

- Less than 10 hours/week
- Quarter time (10 hours/week)
- Half time (20 hours/week)
- Full time (40 hours/week)
- Other (please explain) \_\_\_\_\_

33. What other roles do you have at your institution? (check all that apply)

- Undergraduate student
- Graduate/Doctoral Student
- Staff
- Faculty
- Administration
- Other (please explain) \_\_\_\_\_

**Campus Data**

34. Name of Institution \_\_\_\_\_

35. College/University Type

- Four-year institution
- Community College or Two-Year Institution
- Other (please specify) \_\_\_\_\_

36. College/University Type

- Public
- Private
- Other (please specify) \_\_\_\_\_

37. What is the total number of the student population in your institution? \_\_\_\_\_

38. What is the total number of residential students? \_\_\_\_\_

39. Any other comments you would like to share?

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

40. If you are willing to be interviewed and provide more in-depth information, please leave your name and email address here: \_\_\_\_\_

### Appendix B: Known Eco-Reps Programs as of Spring 2007

	<b>Program Contacts</b>	<b>Program Name</b>	<b>Program Coordinator Title</b>	<b>Website(s)</b>
1	Bard College	Bard Environmental Resource People (BERPs)		<a href="http://inside.bard.edu/berd/recycle/students/">http://inside.bard.edu/berd/recycle/students/</a>
2	Barnard College	Eco-Reps		
3	Bowdoin College	ECO-Reps	Coordinator for a Sustainable Bowdoin	<a href="http://www.bowdoin.edu/sustainablebowdoin/index.shtml">http://www.bowdoin.edu/sustainablebowdoin/index.shtml</a>
4	Brown University	Eco-Reps	Environmental Stewardship Initiatives Manager	
5	Carnegie Mellon University	Eco-Reps	Eco-Reps Coordinator	<a href="http://www.cmu.edu/eco-reps/">http://www.cmu.edu/eco-reps/</a>
6	Coastal Carolina University	ECO-Reps		
7	Columbia University	Eco-Reps	Co-Captain	<a href="http://fiveplusone.net/ecoreps/">http://fiveplusone.net/ecoreps/</a>
8	Connecticut College	House Environmental Coordinators (HECs)	Environmental Coordinator	<a href="http://greenliving.conncoll.edu/">http://greenliving.conncoll.edu/</a>
9	Dartmouth College	ECO Reps		<a href="http://www.dartmouth.edu/~rwg/eco/index.html">http://www.dartmouth.edu/~rwg/eco/index.html</a>
10	Dickinson College	Recycling Task Force		<a href="http://www.dickinson.edu/departments/sustainability/recycling.html">http://www.dickinson.edu/departments/sustainability/recycling.html</a>
11	Duke University	Students for Sustainable Living	Environmental Sustainability Coordinator	<a href="http://www.duke.edu/sustainability">www.duke.edu/sustainability</a>
12	Green Mountain College	Eco-Reps	Service-Learning & Sustainability Coordinator	<a href="http://campus.greenmtn.edu/syllabi/env2005/ENV_2005_S07_pylesj.pdf">http://campus.greenmtn.edu/syllabi/env2005/ENV_2005_S07_pylesj.pdf</a>
13	Harvard University	Resource Efficiency Program	Coordinator, FAS Resource Efficiency Program	<a href="http://www.greencampus.harvard.edu/rep/">http://www.greencampus.harvard.edu/rep/</a>
14	Harvard University	Graduate Green Living Program	Coordinator, Graduate Green Living Program	<a href="http://www.greencampus.harvard.edu/greenliving-hres/">http://www.greencampus.harvard.edu/greenliving-hres/</a>
15	Harvard University	Harvard Law Green Living Program		<a href="http://www.greencampus.harvard.edu/greenliving-hls/">http://www.greencampus.harvard.edu/greenliving-hls/</a>
16	Johns Hopkins University	ECO-Reps	Manager of Energy and Environmental Stewardship	

17	Keene State College	Eco-Reps	Assistant Recycling Coordinator	<a href="http://www.keene.edu/rocks/">http://www.keene.edu/rocks/</a>
18	Mount Holyoke College	ECO-Reps	Director Environmental Health and Safety	<a href="mailto:ecoreps-l@mtholyoke.edu">ecoreps-l@mtholyoke.edu</a>
19	North Carolina State University	Generating Residential Environmental Education Now (GREEN)	Outreach Coordinator of Waste & Recycling	<a href="http://www.ncsu.edu/energy/main.php?s=2&amp;c=2-5">http://www.ncsu.edu/energy/main.php?s=2&amp;c=2-5</a>
20	Phillips Exeter	E-Proctors	Sustainability Coordinator	
21	Princeton University	Eco-Reps	Sustainability Manager, Engineering and Construction	<a href="http://www.princeton.edu/~greening/">http://www.princeton.edu/~greening/</a>
22	Sewanee: University of the South	Environmental Resident Program		<a href="http://ers.sewanee.edu/">http://ers.sewanee.edu/</a>
23	Smith College	Earth Reps	Dir Camp Operations & Facilities	
24	Stanford University	Dorm Environmental Representatives		<a href="http://sustainability.stanford.edu/projects/ereps.html">http://sustainability.stanford.edu/projects/ereps.html</a>
25	Tufts University	Eco-Representatives		<a href="http://www.tufts.edu/tie/tci/EcoReps.html">http://www.tufts.edu/tie/tci/EcoReps.html</a>
26	University of Arizona	Eco-Reps	Eco-Reps Coordinator	
27	University of British Columbia	Residence Sustainability Coordinators		
28	University of California, Berkeley	Residential Sustainability Education Coordinators (RSECs)	Recycling & Refuse Manager	<a href="http://www.ocf.berkeley.edu/~recycle/ssec/programs/rsec.html">http://www.ocf.berkeley.edu/~recycle/ssec/programs/rsec.html</a>
29	University of Colorado at Boulder	Eco-Leaders	Associate Director, Environmental Center	
30	University of Dayton	EcoReps	Environmental Sustainability Coordinator	
31	University of New Hampshire	UNH Energy Waste Watch Challenge	Coordinator	<a href="http://www.unh.edu/etf/challenge.html">http://www.unh.edu/etf/challenge.html</a>
32	University of Northern Iowa	UNI Energy Team		<a href="http://www.uni.edu/energy">www.uni.edu/energy</a>
33	University of Texas at Austin	EcoReps	Sustainability Coordinator	
34	University of Vermont	Eco-Reps	Eco-Reps Program Coordinator	<a href="http://www.uvm.edu/ecoreps">www.uvm.edu/ecoreps</a>
35	Yale University	Student Taskforce for Environmental Partnership (STEP)	STEP Student Director	<a href="http://www.yale.edu/STEP/">http://www.yale.edu/STEP/</a>

### Appendix C: Operating Eco-Reps Programs as of Spring 2009

	Institution	Program Name	Year Started	Public	Private	Enrollment**	Student-Led	Faculty/Staff Led	Paid	Volunteer	Website
1	Bard College (NY)	Bard Environmental Resource People (BERPs)	2005		x	1873				x	
2	Barnard College (NY)	Eco-Reps	2007		x	2359	x		x		x
3	Bates College (ME)	Eco-Reps	2007		x	1776					
4	Bowdoin College (ME)	ECO-Reps	2004		x	1723			x		x
5	Brandeis University (MA)	Campus Sustainability Initiative Eco-Reps	2008		x	3196					x
6	Brown University (RI)	Eco-Reps	2004		x	6008	x				
7	Carnegie Mellon University (PA)	Eco-Reps	2005		x	5849	x		x		x
8	Coastal Carolina University (SC)	ECO-Reps	2006	x		7573			x		x
9	Columbia University (NY)	Eco-Reps			x	5602	x				x (not updated)
10	Connecticut College (CT)	House Environmental Representatives (HEPs)			x	1845				x	
11	Dartmouth College (NH)	ECO Repts			x	4157			x		
12	Dickinson College (PA)	Residential Eco-Interns	2005		x	2388				x	x
13	Duke University (NC)	Students for Sustainable Living	2005		x	6394			x		
14	Harvard University (MA)	Resource Efficiency Program	2002		x	6678			x		x
15	Harvard University (MA)	Harvard Law Green Living Program	2005		x	6678			x		x
16	Ithaca College (NY)	Resource Representatives Program	2004		x	6031				x	x
17	Johns Hopkins University (MD)	ECO-Reps	2006		x	4744			x		x
18	Johnson State College (VT)	Eco-Reps		x		1601					
19	Keene State College (NH)	Eco-Reps	2007	x		5002			x		



20	Mount Holyoke College (MA)	ECO-Reps & Eco-Liaisons	2002		x	2240			x		
21	North Carolina State University (NC)	Generating Residential Environmental Education Now (GREEN)	2006	x		24741			x		
22	Penn State University (PA)		developing	x		37988					
23	Phillips Andover Academy (MA)*	E-Stewards	2007		x	1105					
24	Phillips Exeter (NH)*	E-Proctors	2002		x	1000				x	x
25	Pratt Institute (NY)	Eco-Reps	2009		x	3109					
26	Princeton University (NJ)	Eco-Reps	2004		x	4981			x		
27	Rice University (TX)	EcoRep Program	2008		x	3051	x				x
28	Roger Williams University (RI)	Eco-Reps Program	2009		x	4353			x		x
29	Seattle University (WA)		developing		x	4253					
30	Sewanee: University of the South (TN)	Environmental Resident Program	2002		x	1483				x	
31	Skidmore College (NY)	ECO-REP Program	2008		x	2717		x	x		x
32	Smith College (MA)	Earth Reps			x	2596				x	
33	Stanford University (CA)	Dorm Environmental Representatives (e-reps)			x	6532	x				
34	SUNY Stony Brook (NY)		developing	x		15924					
35	Tufts University (MA)	Eco-Representatives	2000		x	5044			x		x
36	University of Arizona (AZ)	Eco-Reps		x		29719				x	
37	University of British Columbia (BC)	Residence Sustainability Coordinators	2003	x		30170	x			x	
38	University of California, Berkeley (CA)	Residential Sustainability Education Coordinators (RSECs)		x		25151					x (but outdated)
39	University of California, Irvine (CA)	Eco-Reps Program	developing	x		22122					
40	University of Colorado at Boulder (CO)	Residence Hall Eco-Leaders		x		26725			x		

41	University of Dayton (OH)	EcoReps			x	7731					
42	University of Kentucky (KY)	Eco-Reps Program	2008	x		18770					
43	University of New Hampshire (NH)	Ecological Advocates	2006	x		12218				x	
44	University of Northern Iowa (IA)	UNI Energy Team	2004	x		11086			x		
45	University of Rochester (NY)	EcoReps Program	2008		x	5355					x
46	University of South Carolina (SC)	Eco-Reps Program	2008	x		19765					
47	University of Tennessee, Knoxville (TN)	Eco-Reps Program		x		21717					
48	University of Texas at Austin (TX)	EcoReps	2005	x		37389				x	
49	University of Vermont (VT)	Eco-Reps	2004	x		10504		x		x	x
50	Western Washington University (WA)	Residence Hall Sustainability Program and Eco-Reps	2007	x		13406					x
51	Yale University (CT)	Student Taskforce for Environmental Partnership (STEP)	2004		x	5277	x			x	x
*secondary boarding schools											
** undergraduate enrollment according to Petersons.com											

## Appendix D: Program Coordinator Interview Guide

*Thank for you taking the time to speak with me today. This interview is a part of my research collecting case studies of Eco-Reps Programs focusing on administrative structure and evaluation methods. Today's interview will allow me to gather your perspective on the program as a whole. Following IRB guidelines, my intent in this research is to preserve anonymity but you should realize that there is the chance for a possible breach of confidence. Do you understand this and are you willing to participate in this interview? May I record this conversation?*

1. Tell me the story of how your program began.  
[Year started? obstacles to start-up? Key proponents?]
2. Do you feel there are any theoretical and/or philosophical frameworks that guide your program? (such as business models, consumer behaviors, and/or social marketing)  
[Do frameworks affect administrative structure of the programs, including staffing, budgeting, evaluation, and oversight?]
3. What is the basic structure of your program? How does it work?  
[# students involved? Who coordinates? Who advises/supervises coordinator? Desired outcomes? Budget? Students compensated?]
4. What kind of physical spaces do you have? (office, meeting, storage, etc.) Are you in need of space? (more, additional, different)
5. What are key aspects of your program that make it work?
6. What are the primary challenges that your program faces?
7. What impact does the program have on participating students? On the campus as a whole? [What type of formal or informal evaluation methods do you use in your program?]
8. Have you ever had to provide justification for your program after it was started?  
[annual review process?]
9. Has your program evolved at all since you started it? In what ways?

10. What's the future of your program? What do you need to reach those goals?  
How these goals fit into your institution's mission and future direction?
11. As Program Coordinator, do you feel you have the institutional support you need for the program? What's missing?
12. Are there any other points about the administrative structure of your program or evaluation methods that you'd like to share?

- \* Request any documentation including original program proposals, job descriptions, budgets, organizational charts, websites, etc.
- \* Ask if there are other people that would be useful to talk to.

For deviant case:

1. Tell me the story of why your program went on hiatus.
2. How did the new program come to be? How does it differ from the original program.

**Appendix E: UVM Population, Physical Size, Utility, and Greenhouse Gas Emissions 2000-2007**

Fiscal Year	Population							Physical Size	
	Full Time Students	Part-Time Students	Summer School Students	Faculty	Staff	TOTAL	change per year* (Total)	Total Building Space	change per year
	#	#	#	#	#	#		Square feet	
<b>2000</b>	8,038	2,080	3,327	1,059	1,939	<b>16,442</b>		3,774,367	
<b>2001</b>	8,086	1,995	3,562	1,073	1,977	<b>16,693</b>	1.52%	3,790,982	0.44%
<b>2002</b>	8,331	1,983	3,645	1,070	1,996	<b>17,025</b>	1.99%	3,813,819	0.60%
<b>2003</b>	8,746	2,221	3,391	1,111	2,032	<b>17,502</b>	2.80%	4,214,119	10.50%
<b>2004</b>	8,984	1,956	3,103	1,115	2,086	<b>17,243</b>	-1.48%	4,230,309	0.38%
<b>2005</b>	9,674	1,923	2,924	1,120	2,148	<b>17,789</b>	3.17%	4,286,814	1.34%
<b>2006</b>	9,936	1,934	2,920	1,147	2,218	<b>18,155</b>	2.06%	4,430,952	3.36%
<b>2007</b>	10,314	1,925	3,060	1,181	2,221	<b>18,702</b>	3.01%	4,785,088	7.99%
<b>Average change per year</b>							<b>1.87%</b>		<b>3.52%</b>

\*change per year equation = ((Year 2 - Year 1) / Year 1) \* 100

Fiscal Year	Electricity <sup>1</sup>		Waste Management				GHG Emissions <sup>3</sup>	
	Electric produced off-campus	change per year	Landfilled Waste	change per year (Waste)	Recycling & Compost <sup>2</sup>	change per year (Recycling)	Net Emissions	change per year
	kWh		Short Tons		Short Tons		(MT eCO <sub>2</sub> )	
<b>2000</b>	51,933,143		1,626		730		42,592	
<b>2001</b>	50,829,765	-2.12%	1,700	4.55%	753	3.15%	46,572	9.34%
<b>2002</b>	51,711,308	1.73%	1,734	2.00%	919	22.05%	44,624	-4.18%
<b>2003</b>	52,537,128	1.60%	1,674	-3.46%	783	-14.80%	51,735	15.94%
<b>2004</b>	55,656,983	5.94%	1,768	5.62%	885	13.03%	51,349	-0.75%
<b>2005</b>	57,539,017	3.38%	1,881	6.39%	785	-11.30%	47,043	-8.39%
<b>2006</b>	56,966,809	-0.99%	1,848	-1.75%	959	22.17%	39,898	15.19%
<b>2007</b>	59,268,484	4.04%	1,747	-5.47%	926	-3.44%	50,051	25.45%
<b>Average change per year</b>		<b>1.94%</b>		<b>1.13%</b>		<b>4.41%</b>		<b>3.17%</b>

<sup>1</sup> This is total KWH for utilities in Residential Life, General Fund, and Auxiliary. Auxiliary/entail includes revenue-generating places on campus, for ex: the bookstore). All included in square footage.

<sup>2</sup> includes paper, containers, cardboard, shredded paper, books, food waste, compostable bioplastic, kitchen grease, wood, scrap metal, tires, appliances, concrete/C&D, Computers, e-waste, surplus/resuse.

<sup>3</sup> Greenhouse Gas emissions include electricity, heating/cooling, fleet, commuting, agriculture and solid waste. Tons solid waste composted counts as a carbon offset.

**UVM Utility and Greenhouse Gas Emissions per Capita 2000-2007**

Fiscal Year	Kwh/Capita		Trash/Capita		Recycling/Capita		GHG/Capita	
	kwh	change per year	short tons	change per year	short tons	change per year	MT eCO <sub>2</sub>	change per year
2000	3158.50		0.10		0.04		2.59	
2001	3045.04	-3.59%	0.10	2.98%	0.05	1.60%	2.79	7.70%
2002	3037.37	-0.25%	0.10	0.01%	0.05	19.66%	2.62	-6.05%
2003	3001.84	-1.17%	0.10	-6.09%	0.04	-17.12%	2.96	12.78%
2004	3227.74	7.53%	0.10	7.20%	0.05	14.72%	2.98	0.74%
2005	3234.47	0.21%	0.11	3.13%	0.04	-14.02%	2.64	-11.20%
2006	3137.75	-2.99%	0.10	-3.73%	0.05	19.70%	2.20	-16.90%
2007	3169.16	1.00%	0.09	-8.23%	0.05	-6.26%	2.68	21.78%
<b>Average change per year</b>		<b>0.10%</b>		<b>-0.68%</b>		<b>2.61%</b>		<b>1.27%</b>

**UVM Utility and Greenhouse Gas Emissions per Square Foot 2000-2007**

Fiscal Year	Kwh/Square Foot		Trash/Square Foot		Recycling/Square Foot		GHG/Square Foot	
	kwh	change per year	short tons	change per year	short tons	change per year	MT eCO <sub>2</sub>	change per year
2000	13.76		0.000431		0.000193		0.0113	
2001	13.41	-2.55%	0.000448	4.09%	0.000199	2.70%	0.0123	8.87%
2002	13.56	1.13%	0.000455	1.39%	0.000241	21.31%	0.0117	-4.76%
2003	12.47	-8.05%	0.000397	-12.63%	0.000186	-22.89%	0.0123	4.92%
2004	13.16	5.53%	0.000418	5.21%	0.000209	12.59%	0.0121	-1.13%
2005	13.42	2.02%	0.000439	4.99%	0.000183	-12.47%	0.0110	-9.59%
2006	12.86	-4.22%	0.000417	-4.95%	0.000216	18.19%	0.0090	17.95%
2007	12.39	-3.66%	0.000365	-12.46%	0.000194	-10.59%	0.0105	16.16%
<b>Average change per year</b>		<b>-1.40%</b>		<b>-2.05%</b>		<b>1.26%</b>		<b>-0.50%</b>

## Appendix F: Residential Student Survey and Drawing Entry Form

### Survey of Environmental Behaviors in UVM Residence Halls

Thanks for helping out! Your participation in this survey will greatly assist my understanding of how students feel and participate in environmentally related behaviors in UVM residence halls. This survey should only take about 15 minutes of your time, **and if you submit this survey by April 1st, 2008, you will have the opportunity to put your name in a drawing for one of four \$50 i-Tunes gift certificates!!**

If you have any questions, feel free to contact me at [christina.erickson@uvm.edu](mailto:christina.erickson@uvm.edu).

1) Prior to this survey, had you heard of the UVM Eco-Reps Program?

- Yes  
 No

2) If you answered “yes” to the preceding question, could you roughly state the purpose of the Eco-Reps Program in a sentence or phrase?

3) Do you think the Eco-Rep in your building has been visible enough?

- Yes  
 No  
 Not Sure  
 Don't think we have an Eco-Rep

4) Please rate the effectiveness of the following ways for the Eco-Reps Program to convince you to live more sustainably.

	very ineffective	somewhat ineffective	somewhat effective	very effective
Posters, bulletin boards, bathroom “inSTALLments”	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Face to face conversations in your room	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Face to face conversations in your residence hall	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



	very ineffective	somewhat ineffective	somewhat effective	very effective
Special events such as light bulb swaps and waste sorts	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Special programs such as local food nights, eco-films, etc.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

5) Have Eco-Rep campaigns/events influenced you to change your behavior in the following areas? (Some example campaigns/events include light bulb swaps, waste sorts, food waste audits, One Less Cup, RecycleMania, drink local (water))

	not at all	somewhat	a great deal	n/a—I'm already doing all I can in this area!
Save energy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Conserve water	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Reduce trash through reusing or buying less	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Reduce trash through recycling more	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Reduce food waste	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Use fewer disposable items	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Compost food waste	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Use public transportation or carpool	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

6) If you mentioned changing your behavior in the above question, can you give some examples of what specifically you have changed?

7) What or who influences you to change behaviors or take action? [check all that apply]

- Friends
- Family
- Classmates
- Faculty

- Social networking (i.e. Facebook, myspace, etc.)
- Internet
- Other Media (i.e. newspapers, tv, radio, films, etc.)
- Celebrities
- Financial considerations
- Moral or ethical considerations
- Choice
- Other (please explain)

8) Describe your primary motivation for changing behaviors or taking action.

9) What are your reasons for not changing behaviors or taking action? [check all that apply]

- Too busy
- Not interested
- Too complicated
- What I do as an individual doesn't make a difference
- Financial considerations
- Moral or ethical considerations
- Other (please explain)

10) If you leave the lights on in your room when you leave, check all reasons that apply:

- n/a – I always turn the lights off when I leave
- comfort
- inconveniently located switch
- forgot to turn off
- someone else may be using the room soon
- I intend to return soon
- Other (please specify)

11) If you usually leave your computer on, check all reasons:

- n/a – I don't have a computer in my room
- n/a – I always turn my computer off when I leave
- I put it on stand-by or sleep mode
- It is a server
- I need to access it from a remote location
- I believe that turning it on and off wastes energy
- I believe that turning it on and off damages it
- It is more convenient to leave it on all the time
- Other (please specify)

12) Do you use powerstrips in your room?

- Yes
- No

13) Do you actively turn off the powerstrips when not using devices plugged into it?

- Yes
- No
- Sometimes
- N/A

14) Do you feel like you can control your room's heat well enough?

- yes
- no – no way to control the temperature
- no – thermostat isn't responsive
- no – don't know how to

15) If you could not control your room's heat, how often do you have to open your windows during heating season to cool off?

- Never
- Rarely
- Sometimes
- Most of the time
- All of the time

16) How knowledgeable do you feel about...

	very unaware	average	very knowledgeable
What can be recycled on campus	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ways to conserve energy in your room/res. hall	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ways to conserve water in your room/res. hall	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Alternatives to disposable items (especially coffee cups and water bottles)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How public transportation works in Burlington	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
What happens to food waste from the dining halls	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

17) True or false – UVM recycles the following items:

	True	False
laundry detergent bottles	<input type="radio"/>	<input type="radio"/>
pizza boxes	<input type="radio"/>	<input type="radio"/>
yogurt containers	<input type="radio"/>	<input type="radio"/>
glass bottles and jars	<input type="radio"/>	<input type="radio"/>
cardboard	<input type="radio"/>	<input type="radio"/>
aluminum cans	<input type="radio"/>	<input type="radio"/>
paper	<input type="radio"/>	<input type="radio"/>
plastic take-out containers	<input type="radio"/>	<input type="radio"/>
plastics #1-7	<input type="radio"/>	<input type="radio"/>

18) The following items should be placed in the green "Techno Trash" bins in your complex's main lobby, to be disposed of in an environmentally friendly way by UVM Recycling...

**True False**

- |  |                       |                       |
|--|-----------------------|-----------------------|
| batteries  | <input type="radio"/> | <input type="radio"/> |
| mercury light bulbs (including compact fluorescents) | <input type="radio"/> | <input type="radio"/> |
| electronics (such as cell phones)                    | <input type="radio"/> | <input type="radio"/> |

19) Please rate the convenience of recycling in the following types of campus buildings (very inconvenient, somewhat inconvenient, somewhat convenient, very convenient)

	very inconvenient	somewhat inconvenient	somewhat convenient	very convenient
Your room	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Your residence hall/complex	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Classroom buildings	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Davis Center	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Bailey-Howe Library	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Outdoors	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

20) How often do you use a reusable/refillable mug when purchasing hot beverages?

- Never
- Rarely
- Sometimes
- Most of the time
- All of the time

21) How often do you use a reusable/refillable water bottle?

- Never
- Rarely
- Sometimes
- Most of the time
- All of the time

22) Do you leave the water running while brushing your teeth?

- Yes
- No
- Sometimes

23) Do you leave the water running while shaving?

- Yes
- No
- Sometimes
- N/A

24) Do you make a conscious effort to take short showers?

- Yes
- No
- Sometimes

25) When doing laundry, do you run full loads?

- Yes
- No
- Sometimes

26) Do you have any suggestions for the Eco-Reps Program in reaching out to students to help reduce our collective environmental impact? Any feedback on our work to date?

27) You are:

- Male
- Female
- Transgender

28) Your major:

29) Your age:

30) Your class year:

- First year
- Sophomore
- Junior
- Senior
- Other (please describe)

31) Your residence hall:

32) Your residency status:

- In-state student (Vermont)
- Out-of-state student
- International student

Please click on “submit survey” to enter the drawing for one of four \$50 I-Tunes gift certificates.

## Drawing Entry Form

Since the survey itself is anonymous, you will need to complete and submit this entry form by April 1st, 2008 in order to participate in the drawing for **one of four \$50 gift certificates for i-Tunes!**

This form is completely separate from the survey that you filled out, and there is no way for us to connect your name to the survey that you submitted.

**Please provide contact information about yourself.**

Name

E-Mail Address

Telephone Number

Thank you for completing this survey! If you have interest in seeing the results of this research please contact [christina.erickson@uvm.edu](mailto:christina.erickson@uvm.edu)



## Appendix G: Focus Group/Interview Questions

### **Eco-Reps Advisory Team Interview Questions**

*Thank for you taking the time to speak with me today. This interview is a part of my research looking at the effectiveness of the Eco-Reps on residential student behaviors. Today's interview will allow me to gather your perspective on the program as a whole. Following IRB guidelines, my intent in this research is to preserve anonymity but you should realize that there is the chance for a possible breach of confidence. Do you understand this and are you willing to participate in this interview? Further, are you willing for this conversation to be audio-taped?*

1. From your perspective, which indicator is the important to the success of the program?
2. From your perspective, how is the Eco-Reps Program doing in terms of recruitment?
  - a. What successes do you see in recruitment?
  - b. What challenges do you see in recruitment?
  - c. What ways could the Program enhance recruitment?
  - d. What impact do thematic residence halls (such as the GreenHouse Residential Learning Community and Slade Hall) have on recruitment?
3. From your perspective, how is the Eco-Reps Program doing in terms of retention?
  - a. Of what importance is retention to the program (both completing a full year and students returning as Eco-Reps for a second or third year)?
4. From your perspective, what are the financial benefits of the Eco-Reps Program for the university?
5. From your perspective, what are the cultural benefits of the Eco-Reps Program for the university (thinking of UVM as the “Environmental University”)?
6. From your perspective, what are the limitations of the Eco-Reps Program?
7. Do you have any additional comments or suggestions to make regarding the Eco-Reps Program?
8. Do you have suggestions on other people that I should speak with regarding the Eco-Reps Program?

### **Upper-Level Administrator Interviews Questions**

*Thank for you taking the time to speak with me today. This interview is a part of my research looking at the effectiveness of the Eco-Reps on residential student behaviors. Today's interview will allow me to gather your perspective on the program as a whole. Following IRB guidelines, my intent in this research is to preserve anonymity but you should realize that there is the chance for a possible breach of confidence. Do you understand this and are you willing to participate in this interview? Further, are you willing for this conversation to be audio-taped?*

1. From your perspective, what are the educational benefits of the Eco-Reps Program?
  - a. For the student Eco-Reps?
  - b. For residential students?
  - c. For others?

2. From your perspective, what are the financial benefits of the Eco-Reps Program for the university?
3. From your perspective, what are the cultural benefits of the Eco-Reps Program for the university (thinking of UVM as the “Environmental University”)?
4. From your perspective, what are the limitations of the Eco-Reps Program?
5. Do you have any additional comments or suggestions to make regarding the Eco-Reps Program?
6. Do you have suggestions on other people that I should speak with regarding the Eco-Reps Program?

### **Residential Life Staff (RDs, ARDs, and RAs) Focus Group Questions**

*Thank for you taking the time to speak with me today. This focus group is a part of my research looking at the effectiveness of the Eco-Reps on residential student behaviors. Today’s conversation will allow me to gather your perspective on the program as a whole. Following IRB guidelines, my intent in this research is to preserve anonymity. I’ll ask that everyone in the group to not repeat what they have heard others say, but there is always the chance that someone will repeat what you have said. Everything you say will be kept confidential by me (the researcher).” Do you understand this and are you willing to participate in this focus group? Further, are you willing for this conversation to be audio-taped?*

1. What is your understanding of the goals of the Eco-Rep Program?
2. To what extent do you think we meet those goals?
3. For those of you with an Eco-Rep in building/complex, to what extent have you interacted with the eco-rep in your building/complex?
4. From your perspective, what benefits do individual Eco-Reps receive from participating in the program?
5. From your perspective, what benefits do your residents receive from having an eco-rep in the building/complex?
6. For those of you without an Eco-Rep in building/complex, what do your residents lose from not from having an eco-rep in the building/complex?
7. From your perspective, what are the limitations of the Eco-Reps Program?
8. In what ways could Eco-Reps better serve your residents?
9. Do you have any additional comments or suggestions to make regarding the Eco-Reps Program?
10. Do you have suggestions on other people that I should speak with regarding the Eco-Reps Program?

### **Former Eco-Rep Interviews Questions**

*Thank for you taking the time to speak with me today. This interview is a part of my research looking at the effectiveness of the Eco-Reps on residential student behaviors. Today's interview will allow me to gather your perspective on the program as a whole. Following IRB guidelines, my intent in this research is to preserve anonymity but you should realize that there is the chance for a possible breach of confidence. Do you understand this and are you willing to participate in this interview? Further, are you willing for this conversation to be audio-taped?*

1. From your perspective, what are the educational benefits of the Eco-Reps Program?  
For the student Eco-Reps?  
For residential students?  
For others?
2. Thinking back on your time as an Eco-Rep, how did that experience influence your
  - a. academic career?
  - b. professional/career plans?
  - c. overall experience in the residence halls?
3. From your perspective, what are the limitations of the Eco-Reps Program?
4. Do you have any additional comments or suggestions to make regarding the Eco-Reps Program?
5. Do you have suggestions on other people that I should speak with regarding the Eco-Reps Program?

## Appendix H: Eco-Rep 2007-2008 End-of-the-Year Feedback

**Thank you so much for all your work with the Eco-Reps Program this year. While the program continues to make great progress, we do acknowledge that there is certainly still room for improvement. For this reason, we are asking you to take a few minutes and fill out this evaluation form. Your honesty and frankness are appreciated. All feedback is anonymous.**

---

Please rate the following. Feel free to make any further related comments on the back side.

	Strongly Agree		Neutral		Strongly Disagree
1. I had a positive experience being an Eco-Rep.	1	2	3	4	5
2. I helped other students in my res. hall learn about how their personal choices impact the environment.	1	2	3	4	5
3. I developed skills as a peer educator.	1	2	3	4	5
4. I developed skills as a leader in my res. hall.	1	2	3	4	5
5. If I needed assistance, I felt I could ask my fellow Eco-Reps for help.	1	2	3	4	5
6. My experience as an Eco-Rep helped me develop my educational goals.	1	2	3	4	5
7. My experience as an Eco-Rep helped me develop my career goals.	1	2	3	4	5
8. As a result of being an Eco-Rep, I've changed my personal behaviors (related to our topics of waste reduction and energy conservation).	1	2	3	4	5
9. The Program Coordinator provided enough information and guidance.	1	2	3	4	5
10. I was provided the necessary resources to complete my work each week.	1	2	3	4	5
11. I was held accountable for my work.	1	2	3	4	5
12. I noticed a difference in students' behavior in my res. hall as a result of my work as an Eco-Rep.	1	2	3	4	5
13. The amount of background information I was provided with each week was: <i>(circle one)</i>	too much	just right	not enough	I don't know	I never read it



19. Please rate the usefulness of the following for your own personal learning and/or use as an Eco-Rep.	<b>Useful</b>		<b>Neutral</b>		<b>Not Useful</b>
a. Blog	1	2	3	4	5
b. Eco-Reps Website	1	2	3	4	5
c. Orientation Ropes Course	1	2	3	4	5
d. Field Trips	1	2	3	4	5
e. CAB Meetings	1	2	3	4	5
f. Workshops	1	2	3	4	5

20. What other workshop/training themes would you recommend for Eco-Reps?

21. I believe that I would have been more effective as an Eco-Rep if...

22. One of my highlights of the year was...

23. I'd like to be an Eco-Rep again next year (*circle one*)    yes        no

a. If no, why?

\_\_\_\_\_moving off campus    \_\_\_\_\_ not enough time    other:

\_\_\_\_\_

Please provide any other comments or ideas below. Thanks!

## Appendix I: UVM Eco-Reps Program Proposal Memo

### MEMORANDUM

TO: Stacey Miller, Director, Residential Life  
Annie Stevens, Assistant VP for Student & Campus Life  
Roy Ferland, Assistant Director, Residential Life  
Diane Figari, Assistant Director, Residential Life  
Alvin Sturdivant, Assistant Director, Residential Life

CC: Sal Chiarelli, Director, Physical Plant  
William P. Ballard, Assoc. VP for Administrative & Facilities Services

FR: Erica Spiegel, UVM Recycling/Solid Waste Manager  
Gioia Thompson, UVM Environmental Council Coordinator

RE: Implementation Plan for "Eco-Rep Program" in Residence Halls

Date: July 6, 2004

As you may know, in the Spring 2004 semester we began implementing a pilot program in the residence halls known as the Eco-Rep Program. We conducted this pilot program with in-kind contributions of our time, and with Physical Plant funding that was originally earmarked for waste/recycling collection in the Residence Halls.

Thus far, the program has been very successful and we have heard positive responses to the concept from staff, faculty and Residential Life staff (RA's and CC's). Twenty-six first and second year students were involved in the program. There has been great interest in translating the overall vision of being an "environmental university" to individual behaviors and student culture.

We are now seeking support from Residential Life and others to make Eco-Reps a *permanent* program to run the entire school year. We are available to meet with some of you to discuss this. Below is the program outline for you to review and the plan for the 2004-2005 school year.

Feel free to contact Erica Spiegel, Recycling/Waste Manager, 656-4191, for more information. (Please note that Gioia Thompson, Environmental Coordinator, is on leave of absence until September 1, 2004.)

## UVM ECO-REP PROGRAM OVERVIEW

### How did Eco-Reps Come About?

The University of Vermont has a reputation among higher education institutions for commitment to environmental excellence. This generally manifests itself through academic course offerings and research, and through facilities operations practices that promote environmental stewardship.

Unfortunately, there is a “disconnect” between the overarching environmental commitment of the institution and individual student behavior and culture. UVM, as an institution, has pledged to support the greenhouse gas emissions reduction goals of the New England Governors and we have a comprehensive recycling program in place. Yet at the same time, we see declining recycling rates, and an increase in waste generation and energy consumption on campus.

In the past, we’ve relied on a patchwork of volunteer environmental clubs or the occasional R.A. or work study employee who maybe had an interest in recycling. Results have been marginal. Without a *systematic* approach to educate resident students about their connections to UVM’s overall environmental commitment, this disconnect will continue and may ultimately damage UVM’s “green” reputation.

To address this concern, we introduced a pilot **Eco-Rep** program centered in the residence hall community. The program makes connections between individual behaviors and environmental stewardship, and promotes students teaching their peers about environmentally responsible living right in their own residence halls.

The program is modeled after two highly successful programs at *Tufts University* and *Harvard University*. Both of these institutions employ (paid) students to implement activities and educate their fellow students about environmental and conservation behaviors. Both found that hiring an Eco-Rep in each hall was an effective way to promote important ecological issues.

### Program Structure

For the pilot program at UVM, we informally advertised to hire Eco-Reps at the end of the Fall semester (see sample flyer). We received an overwhelming response. Student applicants were not only from environmental studies and sciences; they came from areas as varied as engineering, art, English, psychology and anthropology (see sample application.) Many applicants expressed a desire to get “involved” and help promote the environment, but most were not necessarily members of environmental clubs such as CEL or VSTEP. In February, we hired 26 students to serve as Eco-Reps in their respective halls.

We developed an Eco-Rep Training Manual and held an orientation session for all Reps. The manual outlines numerous environmental topics as they relate to campus operations and life in the residence halls. We covered issues such as recycling, composting, water conservation, energy and electrical use. Eco-Reps were given specific activities and ideas to implement in their halls. We met with them on a bi-weekly basis to go over tasks and plan activities for the coming weeks.

Eco-Reps were hired as temporary wage employees within the Physical Plant. Each Rep was paid for 4 hours per week, and they kept track of their weekly activities in written form. We believe that paying the Eco-Reps, even for a nominal amount, ensures accountability, reliability and commitment to complete their assigned tasks. (We are also exploring options to include a one-credit hour “service learning” component to the program, but have not yet identified a faculty member to be involved.)



For comparison, the Harvard program employs 18-20 students each semester, who work 6 hours per week at a rate of \$10 per hour. They also employ two Eco-Rep Captains who work 10 hours per week. The Tufts University program employs 20 students each semester and provides a \$150 stipend to each Eco-Rep. Both programs also employ a half-time program coordinator.

The bulk of the coordination of our pilot Eco-Rep program was done by Erica Spiegel, Recycling/Solid Waste Supervisor. In retrospect, the coordination tasks (hiring students, administration, facilitating meetings, mentoring, outlining tasks, etc.) turned out to be a sizable job. It is *not* a task that can reasonably be added to Erica's existing duties. Clearly, the program needs a dedicated person such as a part-time Graduate Student Assistant to coordinate the work of the Eco-Reps.

### Proposed Program Budget 2004-05

Below is the proposed program budget for a full school year. We are hoping that Residential Life, Physical Plant and/or AFS could fund part or all of this program.

Item	Explanation	Annual Cost *
0.30 FTE "Eco Rep Program Coordinator" (graduate student assistant)	30 weeks (2 semesters) 12 hrs/week \$12.00/hour rate	\$4,320
2.0 "Eco-Reps Captains" (Redstone and East Campus)	30 weeks 10 hrs/week \$8.00/hour rate	\$4,800
30 "Eco-Reps"	30 weeks 5 hrs/week \$7.50/hour rate	\$33,750
Educational materials & supplies	Training manuals, printed materials, flyers, art supplies, bulletin board materials, etc.	\$900
Office Support	Work space, phone, computer, misc office support will be "in kind" through Physical Plant	\$ 0
<b>Annual TOTAL</b>		<b>\$43,770</b>

- Note: there is no fringe benefit on matriculated full-time student employees.

### Potential Benefits Of Eco-Rep Program

We realize the requested budget amount may be considered substantial. But, we believe the Eco-Rep program is a strategic "investment" in the University's long-term environmental goals. There are several intangible and tangible benefits to the Eco-Rep program.

Intangible benefits are numerous:

- Promotes community-building in residence halls centered on ecological living and helps foster “ecological literacy” in all residents as future citizens.
- Engages students who might not otherwise get involved in residential hall activities.
- Supplements and supports programs sponsored by Resident Assistants, IRA and Community Councils. (e.g., hosting speakers, contests, activities)

Anecdotally, we know that reduced energy consumption and waste *will* lead to operational cost savings. Unfortunately, these tangible benefits are difficult to measure, but we can speculate on the following:

- If by employing Eco-Reps, we can reduce the amount of trash generated in the residence halls by 10%, we can potentially **save \$6,000** in landfill disposal fees.
- If we can reduce electricity costs (usage by students) in the halls (currently \$800,000/year) by just one percent (.01%), we can potentially **save \$8,000**.
- If we can reduce current water usage in the halls (\$360,000/year) by just one percent (.01%), we can potentially **save \$3,600**.

For the above reasons, we believe that Eco-Reps should be supported as a regular ongoing program activity by Residential Life.

### **Next Steps**

We are planning to move ahead and continue implementation of Eco-Reps this Fall. Recruiting Eco-Reps will take place during Opening week and Student Activities Festival.

A part-time Graduate Student Assistant (through Rubenstein School of Environment & Natural Resources) has already been hired to help coordinate the program, and will work out of an office at 284 East Avenue.

Seed money to start the program is coming from the Residential Life Solid Waste operating budget that Erica manages, but supplemental funds from utility budget or other program budgets will be necessary.

We, along with the Graduate Student Assistant, will attempt to devise ways to “measure” actual dollar savings as a result of the Eco-Rep program.

**Appendix J: UVM Eco-Reps Program Outcomes, Activities, and Indicators, Fall 2007**

<b>Mission:</b> <i>By promoting environmentally responsible behaviors in University of Vermont residence halls, the Eco-Reps Program strives to create an environmentally literate student population and reduce the campus' ecological footprint.</i>				
<b>Outcome 1:</b> To have an academically diverse group of student Eco-Reps representing each residence hall on campus.				
<b>Project Activities</b>	<b>Indicators</b>	<b>Data Source</b>	<b>State of Data</b>	<b>Progress</b>
1.1 Recruit and hire students representing a range of majors and living in residence halls across the campus.	1.1.1 Students with majors other than environmental studies/science; an Eco-Rep in each residence hall on campus; What percentage of residential students have an Eco-Rep in their Building	1.1.2 Eco-Rep (Applicant & Hired) data	1.1.3. data from 04-05; 05-06; 06-07	1.1.4 Wide variety of majors; application rate is increasing; hiring rate is increasing

**Outcome 2:** To have a meaningful, educational, and empowering experience for the student Eco-Reps.

Project Activities	Indicators	Data Source	State of Data	Progress
<p><b>2.1</b> Have a program that is rich in content and empowers the students to further their personal practices as well as become educators and leaders among their peers.</p>	<p><b>2.1.1</b> A well-written Eco-Rep manual and supporting website; Time for reflection and application of experiences; Time for group-building experiences</p>	<p><b>2.1.2</b> Eco-Rep manual &amp; website; Eco-Rep blog Meeting Agendas Eco-Rep End-of-Year Feedback Forms</p>	<p><b>2.1.3</b> manuals from 04-05, 05-06, 06-07 <a href="http://www.uvm.edu/ecoreps">www.uvm.edu/ecoreps</a> Blog from 05-06, 06-07 Agendas from 04-05, 05-06, 06-07</p>	<p><b>2.1.4</b> Positive feedback from students on their experience; constructive ideas have been incorporated (eg. Ropes course as part of training day)</p>
<p><b>2.2</b> Academic Credit option (ENVS 095: Eco-Reps: Educating the Residential Campus)</p>	<p><b>2.2.1</b> Course added to ENVS listings; number of students enrolled</p>	<p>Eco-Rep Interviews</p>	<p>Feedback forms from 05-06, 06-07</p>	<p><b>2.2.4</b> First ENVS 095 class in Fall 2007</p>
		<p><b>2.2.2</b> Course Catalog; registrar; course evals</p>	<p><b>2.2.3</b> n/a</p>	

<b>Outcome 3:</b> To have the Eco-Reps program formally integrated into the institution.				
<b>Project Activities</b>	<b>Indicators</b>	<b>Data Source</b>	<b>State of Data</b>	<b>Progress</b>
<p><b>3.1</b> Formalize connections with the Residential Life Department (CABs, etc.)</p> <p><b>3.2</b> Establish connections to the Academic side of the institution</p> <p><b>3.3</b> Maintain connections with the operational side of the institution.</p> <p><b>3.4</b> Have an independent budget for the program (or line items for program expenses in Res. Life, Physical Plant, Environmental Council budgets)</p>	<p><b>3.1.1</b> Regular meetings with Director of Res. Life (twice/year) with reflection and feedback</p> <p><b>3.2.1</b> Establish Eco-Reps as an academic course</p> <p><b>3.3.1</b> Regular meetings with Physical Plant personnel (twice/year) with reflection and feedback</p> <p><b>3.4.1</b> Financial resources to pay program coordinator, Eco-Reps, overhead costs, and necessary supplies for programs and activities</p>	<p><b>3.1.2</b> Eco-Reps Advisory Team meeting agendas; interviews with Director of Res. Life, Environmental Coordinator, Recycling Manager</p> <p><b>3.2.2</b> proposal submitted to ENVS 1/07</p> <p><b>3.3.2</b> Eco-Reps Advisory Team meeting agendas</p> <p><b>3.4.2</b> Res.Life, Physical Plant, and Environmental Council Budgets</p>	<p><b>3.1.3</b> Meeting agendas from 06-07</p> <p><b>3.2.3</b> Course accepted; running in Fall 2007</p> <p><b>3.3.3</b> Meeting agendas from 06-07</p> <p><b>3.4.3</b> Unable to discern as there is not a line-item for Eco-Rep related expenses</p>	<p><b>3.1.4</b> Res. Life relationships are strengthening (eg. Program Coordinator gives annual presentation about Eco-Reps Program to Res. Life Team (RET); RDs are doing more recruiting; Eco-Reps are asked to co-sponsor one event per semester with their CAB)</p> <p><b>3.2.4</b> First ENVS 095 class in Fall 2007</p> <p><b>3.3.4</b> Bi-weekly check-ins with Environmental Coordinator and Recycling Manager</p> <p><b>3.4.4</b> Twice per year meetings with Advisory Team (January/May)</p>

<p><b>3.5</b> Program Coordinator as an official half-time staff position</p>	<p><b>3.5.1</b> Official staff position</p>	<p><b>3.5.2</b> Human Resources records</p>	<p><b>3.5.3</b> n/a</p>	<p><b>3.5.4</b> There is a need for the Program to have its own budget (or to have line items in other budgets so that there can be an accurate measurement of program expenses)</p>
<p><b>Outcome 4:</b> To promote environmental stewardship and ecological literacy among UVM's residential students.</p>				
<p><b>Project Activities</b></p> <p><b>4.1</b> Raise awareness about ecological issues</p>	<p><b>Indicators</b></p> <p><b>4.1.1</b> A residential student population who can speak to environmental issues and relevance of those issues to their lives.</p>	<p><b>Data Source</b></p> <p><b>4.1.2</b> eco-literacy survey; Res. Life surveys</p>	<p><b>State of Data</b></p> <p><b>4.1.3</b> 2000 survey (Env. Council); Need to create questions to add to annual Res. Life survey</p>	<p><b>Progress</b></p> <p><b>4.1.4</b> Eco-literacy survey was attempted again in 2006 but did not get a large enough sample</p>

**Outcome 5:** To engage students by increasing their knowledge and skills to make ecologically-sound living decisions on campus, and in their future lives (off-campus and post-graduation).

Project Activities	Indicators	Data Source	State of Data	Progress
<p><b>5.1</b> Encourage environmentally conscious behavior</p>	<p><b>5.1.1</b> Increased student participation in environmental behaviors; increased environmentally-themed programming in residence halls; increased number of environmentally-related student projects in courses and student organizations</p>	<p><b>5.1.2</b> utility, waste, and recycling statistics;</p> <p>CAB/RA/Eco-Rep program reports;</p> <p>Survey of courses and student orgs. with env-related projects</p> <p>off-campus student surveys</p>	<p><b>5.1.3</b> need to get updated stats from Environmental Coordinator;</p> <p>Reports from 06-07</p> <p>Need to look at data about number of courses and organizations</p> <p>Need to create a survey instrument for off-campus students</p>	

<b>Outcome 6:</b> To decrease the overall campus ecological footprint.				
<b>Project Activities</b>	<b>Indicators</b>	<b>Data Source</b>	<b>State of Data</b>	<b>Progress</b>
<b>6.1</b> Increase efficiency and conservation practices for water and electricity  <b>6.2</b> Increase recycling and composting rates  <b>6.3</b> Decrease trash amounts	<b>6.1.1</b> Decreased gallons/year; Decreased KwH/year  <b>6.2.1</b> Increased tons/year of recycling and compost  <b>6.3.1</b> Decreased tons/year of trash  <b>6.4.1</b> Decreased overall greenhouse gas emissions	<b>6.1.2</b> utility statistics  <b>6.2.2</b> recycling & composting statistics  <b>6.3.2</b> garbage statistics  <b>6.4.2</b> greenhouse gas data	<b>6.1.3</b> need to get updated stats from Environmental Coordinator  <b>6.2.3</b> need to get updated stats from Environmental Coordinator  <b>6.3.3</b> need to get updated stats from Environmental Coordinator  <b>6.4.3</b> need to get updated stats from Environmental Coordinator	
<b>Outcome 7:</b> To clarify any financial savings to the university.				
<b>Project Activities</b>	<b>Indicators</b>	<b>Data Source</b>	<b>State of Data</b>	<b>Progress</b>
<b>7.1</b> Calculate potential savings from activities such as light bulb swaps	<b>7.1.1</b> Reports to departments regarding potential savings	<b>7.1.2</b> data from bulb swaps	<b>7.1.3</b> reports from 05-06; 06-07	<b>7.1.4</b> Calculated an estimated savings of over \$6000 for bulb swaps in 06-07



**Outcome 8:** To promote community-building in the residence halls.

<b>Project Activities</b>	<b>Indicators</b>	<b>Data Source</b>	<b>State of Data</b>	<b>Progress</b>
<p><b>8.1</b> Co-sponsor programs with Residential Life staff</p> <p><b>8.2</b> Engage residential students in conversations and activities using the environment as the context</p>	<p><b>8.1.1</b> Programs offered jointly on a regular basis</p> <p><b>8.2.1</b> Programs/activities with Residential Life staff will have an environmental theme</p>	<p><b>8.1.2</b> Event planning forms</p>	<p><b>8.1.3</b> Reports from 06-07</p>	<p><b>8.1.4</b> Spring 07 was the first semester of requiring Eco-Reps to co-sponsor one event per semester with their Community Action Board (CAB). In 07-08 Eco-Reps will do two events over the year with their CAB</p>

**Appendix K: Application & Acceptance Rates and Demographic Data of UVM Eco-Reps**

<b>Demographics of UVM Student Eco-Reps</b>														
	<b>Fall 2009</b>	<b>%s</b>	<b>Fall 2008</b>	<b>%s</b>	<b>Fall 2007</b>	<b>%s</b>	<b>Fall 2006</b>	<b>%s</b>	<b>Fall 2005</b>	<b>%s</b>	<b>Fall 2004</b>	<b>%s</b>	<b>Spring 2004</b>	<b>%s</b>
<b>Total # Applications Received</b>	<b>57</b>		<b>44</b>		<b>77</b>		<b>40</b>		<b>57</b>		<b>28</b>		<b>28</b>	
<b>Female</b>	<b>47</b>	<b>82%</b>	<b>39</b>	<b>89%</b>	<b>55</b>	<b>71%</b>	<b>29</b>	<b>73%</b>	<b>41</b>	<b>72%</b>	<b>17</b>	<b>61%</b>	<b>20</b>	<b>71%</b>
<b>Male</b>	<b>10</b>	<b>18%</b>	<b>5</b>	<b>11%</b>	<b>22</b>	<b>39%</b>	<b>11</b>	<b>28%</b>	<b>16</b>	<b>28%</b>	<b>11</b>	<b>39%</b>	<b>8</b>	<b>29%</b>
<b>First Years</b>	<b>0</b>	<b>0%</b>	<b>8</b>	<b>18%</b>	<b>27</b>	<b>35%</b>	<b>22</b>	<b>55%</b>	<b>30</b>	<b>53%</b>	<b>10</b>	<b>36%</b>	<b>17</b>	<b>61%</b>
<b>Second Years</b>	<b>49</b>	<b>86%</b>	<b>26</b>	<b>59%</b>	<b>44</b>	<b>57%</b>	<b>15</b>	<b>38%</b>	<b>20</b>	<b>35%</b>	<b>17</b>	<b>61%</b>	<b>11</b>	<b>39%</b>
<b>Juniors</b>	<b>4</b>	<b>7%</b>	<b>8</b>	<b>18%</b>	<b>6</b>	<b>8%</b>	<b>3</b>	<b>8%</b>	<b>7</b>	<b>12%</b>	<b>1</b>	<b>4%</b>	<b>0</b>	<b>0%</b>
<b>Seniors</b>	<b>4</b>	<b>7%</b>	<b>2</b>	<b>5%</b>	<b>0</b>	<b>0%</b>	<b>0</b>	<b>0%</b>	<b>0</b>	<b>0%</b>	<b>0</b>	<b>0%</b>	<b>0</b>	<b>0%</b>
<b>Work Study Eligible</b>	<b>18</b>	<b>32%</b>	<b>7</b>	<b>16%</b>	<b>16</b>	<b>20%</b>	<b>13</b>	<b>33%</b>	<b>17</b>	<b>30%</b>	<b>8</b>	<b>29%</b>	<b>0</b>	<b>0%</b>
<b>No Work Study</b>	<b>29</b>	<b>51%</b>	<b>23</b>	<b>52%</b>	<b>41</b>	<b>54%</b>	<b>23</b>	<b>58%</b>	<b>37</b>	<b>65%</b>	<b>20</b>	<b>71%</b>	<b>0</b>	<b>0%</b>
<b>Unknown Work Study</b>	<b>16</b>	<b>28%</b>	<b>14</b>	<b>32%</b>	<b>20</b>	<b>26%</b>	<b>4</b>	<b>10%</b>	<b>3</b>	<b>5%</b>	<b>0</b>	<b>0%</b>	<b>28</b>	<b>100%</b>
<b># of Res. Halls represented (resident of building)</b>	<b>24</b>	<b>65%</b>	<b>21</b>	<b>60%</b>	<b>29</b>	<b>83%</b>	<b>22</b>	<b>63%</b>	<b>23</b>	<b>88%</b>	<b>15</b>	<b>58%</b>	<b>17</b>	<b>65%</b>
<b>Total # positions in Res. Halls</b>	<b>37</b>		<b>35</b>		<b>35</b>		<b>35</b>		<b>26</b>		<b>26</b>		<b>26</b>	
<b># ENVIS/Env. Sci./Combo major</b>	<b>26</b>	<b>46%</b>	<b>17</b>	<b>39%</b>	<b>31</b>	<b>40%</b>	<b>29</b>	<b>72%</b>	<b>29</b>	<b>51%</b>	<b>14</b>	<b>50%</b>	<b>11</b>	<b>39%</b>
<b># of other majors</b>	<b>31</b>	<b>54%</b>	<b>27</b>	<b>61%</b>	<b>46</b>	<b>60%</b>	<b>11</b>	<b>28%</b>	<b>28</b>	<b>49%</b>	<b>14</b>	<b>50%</b>	<b>17</b>	<b>61%</b>
<b># Returning Eco-Reps</b>	<b>8</b>	<b>14%</b>	<b>4</b>	<b>9%</b>	<b>6</b>	<b>8%</b>	<b>3</b>	<b>8%</b>	<b>6</b>	<b>11%</b>	<b>6</b>	<b>21%</b>	<b>0</b>	<b>0%</b>

<b>Demographics of UVM Student Eco-Reps</b>														
	<b>Fall 2009</b>	<b>%s</b>	<b>Fall 2008</b>	<b>%s</b>	<b>Fall 2007</b>	<b>%s</b>	<b>Fall 2006</b>	<b>%s</b>	<b>Fall 2005</b>	<b>%s</b>	<b>Fall 2004</b>	<b>%s</b>	<b>Spring 2004</b>	<b>%s</b>
<b>Total # of Eco-Reps Hired</b>	<b>37</b>	<b>65%</b>	<b>38</b>	<b>86%</b>	<b>31</b>	<b>40%</b>	<b>24</b>	<b>60%</b>	<b>22</b>	<b>39%</b>	<b>23</b>	<b>82%</b>	<b>27</b>	<b>96%</b>
<b>Female</b>	<b>29</b>	<b>78%</b>	<b>33</b>	<b>87%</b>	<b>24</b>	<b>77%</b>	<b>19</b>	<b>79%</b>	<b>16</b>	<b>73%</b>	<b>13</b>	<b>57%</b>	<b>19</b>	<b>70%</b>
<b>Male</b>	<b>8</b>	<b>22%</b>	<b>5</b>	<b>13%</b>	<b>7</b>	<b>23%</b>	<b>5</b>	<b>21%</b>	<b>6</b>	<b>27%</b>	<b>10</b>	<b>43%</b>	<b>8</b>	<b>30%</b>
<b>First Years</b>	<b>0</b>	<b>0%</b>	<b>8</b>	<b>21%</b>	<b>8</b>	<b>26%</b>	<b>12</b>	<b>50%</b>	<b>11</b>	<b>50%</b>	<b>9</b>	<b>39%</b>	<b>16</b>	<b>59%</b>
<b>Second Years</b>	<b>33</b>	<b>89%</b>	<b>23</b>	<b>61%</b>	<b>19</b>	<b>61%</b>	<b>10</b>	<b>42%</b>	<b>9</b>	<b>41%</b>	<b>13</b>	<b>57%</b>	<b>11</b>	<b>41%</b>
<b>Juniors</b>	<b>1</b>	<b>3%</b>	<b>5</b>	<b>13%</b>	<b>4</b>	<b>13%</b>	<b>2</b>	<b>8%</b>	<b>2</b>	<b>9%</b>	<b>1</b>	<b>4%</b>	<b>0</b>	<b>0%</b>
<b>Seniors</b>	<b>3</b>	<b>8%</b>	<b>2</b>	<b>5%</b>	<b>0</b>	<b>0%</b>	<b>0</b>	<b>0%</b>	<b>0</b>	<b>0%</b>	<b>0</b>	<b>0%</b>	<b>0</b>	<b>0%</b>
<b>Work Study Eligible</b>	<b>7</b>	<b>19%</b>	<b>6</b>	<b>16%</b>	<b>5</b>	<b>16%</b>	<b>8</b>	<b>33%</b>	<b>6</b>	<b>27%</b>	<b>7</b>	<b>30%</b>	<b>0</b>	<b>0%</b>
<b>Temp. Employees (not W.S. eligible or unsure)</b>	<b>30</b>	<b>81%</b>	<b>32</b>	<b>84%</b>	<b>26</b>	<b>84%</b>	<b>16</b>	<b>67%</b>	<b>16</b>	<b>73%</b>	<b>16</b>	<b>70%</b>	<b>27</b>	<b>100%</b>
<b># of Res. Halls represented (placements)</b>	<b>35</b>	<b>95%</b>	<b>34</b>	<b>97%</b>	<b>25</b>	<b>71%</b>	<b>19</b>	<b>54%</b>	<b>18</b>	<b>69%</b>	<b>13</b>	<b>50%</b>	<b>17</b>	<b>65%</b>
<b>Total # positions in Res. Halls</b>	<b>37</b>		<b>35</b>		<b>35</b>		<b>35</b>		<b>26</b>		<b>26</b>		<b>26</b>	
<b>Off-Campus/Non Residential Eco-Reps</b>	<b>2</b>		<b>2</b>	<b>5%</b>	<b>1</b>	<b>3%</b>	<b>n/a</b>		<b>n/a</b>		<b>n/a</b>		<b>n/a</b>	
<b># ENVIS/Env. Sci./Combo major</b>	<b>17</b>	<b>46%</b>	<b>16</b>	<b>42%</b>	<b>12</b>	<b>39%</b>	<b>16</b>	<b>77%</b>	<b>9</b>	<b>41%</b>	<b>11</b>	<b>48%</b>	<b>11</b>	<b>41%</b>
<b># of other majors</b>	<b>20</b>	<b>54%</b>	<b>22</b>	<b>58%</b>	<b>19</b>	<b>61%</b>	<b>8</b>	<b>33%</b>	<b>13</b>	<b>59%</b>	<b>12</b>	<b>52%</b>	<b>16</b>	<b>59%</b>
<b># Returning Eco-Reps</b>	<b>5</b>	<b>14%</b>	<b>4</b>	<b>11%</b>	<b>4</b>	<b>13%</b>	<b>3</b>	<b>13%</b>	<b>3</b>	<b>14%</b>	<b>5</b>	<b>22%</b>	<b>0</b>	<b>0%</b>

**Appendix L: Desired Coverage Rate in Residence Halls, as of 2007**

<b>Athletic Campus</b>	
Harris/Millis (530)	4
Living/Learning A-E (535)	5
Marsh/Austin/Tupper (391)	3
U Heights North/South (756)	4
<b>Central Campus</b>	
Chittenden/Buckham/Wills (373)	3
Converse (148)	1
<b>North Campus</b>	
Jeanne Mance (137)	1
Mercy (150)	1
Back Five (Hunt, McCann, Ready, Richardson, Sichel) + Cottages (210 total)	*
<b>Redstone</b>	
Christie/Wright/Patterson (391)	3
Coolidge (135)	1
Mason/Simpson/Hamilton (390)	3
Redstone Hall (27)	*
Slade (24)	*
Wing/Davis/Wilks (440)	3
<b>Total Eco-Reps</b>	<b>32</b>
* not necessary, but possible	

## Appendix M: Demographics of Survey Respondents

Table 46. Respondents' Age (n=423)

<b>Age</b>	<b>Frequency</b>	<b>Percent</b>
18	180	42.6%
19	177	41.8%
20	50	11.8%
21	14	3.3%
22	2	.5%

Table 47. Respondents' Gender (n=424)

<b>Gender</b>	<b>Frequency</b>	<b>Percent</b>
Female	310	73.1%
Male	113	26.7%
Transgender	1	.2%

Table 48. Respondents' Class Year (n=423)

<b>Year</b>	<b>Frequency</b>	<b>Percent</b>
First Year	299	70.7%
Sophomore	104	24.6%
Junior	14	3.3%
Senior	6	1.4%

Table 49. Respondents' Residency Status (n=422)

<b>Residency</b>	<b>Frequency</b>	<b>Percent</b>
Out-Of-State	300	71.1%
In-State Student (Vermont)	121	28.7%
International	1	.2%

Table 50. Respondents' Residence Hall (n=424)

<b>Residence Hall (w/ Total Number Of Beds)</b>	<b>Frequency</b>	<b>Percent</b>
Marsh (130)	21	5%
Austin (130)	23	5.4%
Tupper (130)	30	7.1%
Harris (265)	88	20.8%
Millis (265)	81	19.1%
Mason (130)	26	6.1%
Simpson (130)	13	3.1%
Hamilton (130)	15	3.5%
Chittenden (124)	32	7.5%
Buckham (124)	25	5.9%
Wills (124)	42	9.9%
Converse (148)	28	6.6%

### Appendix N: Log of Requests for Eco-Reps Related Information January-July 2008

<b>Date</b>	<b>Title</b>	<b>Institution</b>	<b>Regarding</b>
1/18/2008	Sustainability Coordinator	University of Kentucky/AASHE	National Eco-Rep Survey results
1/22/2008	Sustainability Coordinator	Okemo Mountain	Spot a mug program
1/24/2008	ENVS student	UVM	environmental club information
2/7/2008	student	Truman State University	local foods/Sodexo
2/19/2008	student	Norwich University	waste sorts
2/22/2008	student	UVM - Black Student Organization	clothing swap event
2/25/2008	student	UVM - Delta Delta Delta	green living presentation
2/25/2008	student	UVM - VSTEP	compost
2/29/2008	VISTA	Montpelier Conservation Commission	job opportunities for Eco-Reps?
3/3/2008	student	UVM	compost in Harris Hall
3/4/2008	Program Coordinator	PaperClip Productions	webcast on Eco-Reps Programs
3/6/2008	student	UVM	light bulbs
3/11/2008	Program Coordinator	Mug Program	One less bottle campaign
3/12/2008	Director of Sustainability	Rice University	saw article, new EcoReps program at Rice
3/14/2008	Dean of the College	VT Technical College	reducing energy consumption in res halls
3/24/2008	Director	Ourearth.org	linking websites
3/25/2008	Program Coordinator	Healthy City	campus greening questions for boyfriend's school
3/26/2008	student	UVM -CDAE 124	Green up day collaboration
3/31/2008	RD for Harris-Millis	UVM - Harris/Millis	prizes for environmental justice event
4/3/2008	Recycling Manager	University of Pennsylvania	EcoRep job description
4/7/2008	Eco-Reps Program Coord.	University of Kentucky	new EcoRep program
4/8/2008	Study	UVM - HWRLC	environmental health program

4/9/2008	Staff	AASHE	EcoRep workshop for student summit at AASHE fall conference
4/16/2008	Staff	Lund Center	ecoliving presentation
4/18/2008	Marketing Director	UVM -Davis Center	One less cup day, Eco-Rep for the DC
4/19/2008	student	Johnson State College	research essay on EcoReps programs
4/21/2008	students	UVM -ENVS2	OLB stickers, handouts
4/26/2008	student	San Diego State University	research project on Eco-Reps
5/1/2008	Director of Physical Plant	SUNY Cortland	how to start an EcoReps program
6/2/2008	Project Coordinator	UVM - VT Child Health Improvement Program	wants to post InSTALLments in their bathrooms
6/3/2008	Sustainability Intern	Concordia University	Do It In the Dark Campaign
6/5/2008	Resource Intern	AASHE	want to post my dissertation under Academic resources section
6/5/2008	Sustainability Coordinator	Skidmore College	Eco-Reps conference calls, new pilot program in Fall
6/13/2008	Student Sustainability Coord.	University of Rochester	Advise on starting an Eco-Reps Program
6/25/2008	Director of Sustainability	University of Oregon	wants me to present at a state-wide sustainability conference on Eco-Reps programs
6/30/2008	Founder & CEO	Conscious Lifestyle	wants to offer \$1,000 grants to Eco-Reps programs
7/13/2008	Eco-Coordinator	Johnson State College	dorm composting advice



