

RECYCLING ATTITUDES AND BEHAVIORS OF STUDENTS AT CARLOS PASCUA ZÚÑIGA HIGH SCHOOL

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by

Meaghan Busted

Kushal Palkhiwala

Melissa Roma

Bhavika Shah

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Professor Isa Bar-On, Advisor

Professor Ingrid Shockey, Advisor

Abstract

The goal of our project was to assess environmental attitudes and behaviors of students at Carlos Pascua Zúñiga High School specifically focusing on recycling. To achieve this we used observations, interviews, and surveys of students and faculty. Our findings suggest that there are internal and external factors that result in an apathetic student attitude towards recycling. These factors were analyzed in order to create a curricular guide for teachers including our findings, recommendations and activity suggestions.

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Executive Summary

Key Terms: Civic duty, Self-efficacy, Sense of place, Achievement goal theory

Introduction

The focus of our study was to immerse ourselves into the Carlos Pascua Zúñiga High School in San Rafael de Heredia to understand the attitudes and behaviors of the students towards recycling. This high school is currently in the process of being evaluated for Blue Flag status, started in 1996 as a nationwide effort to maintain the ecology of Costa Rican beaches. This program was expanded to include new categories such as Communities in 2002 and Educational Centers in 2004 (*Rios News*). Attaining this honor would greatly raise the environmental status of both the community and the high school. Thus the town has made efforts to promote environmental awareness, especially concerning recycling throughout the community.

San Rafael is one of only ten cantons in Costa Rica that has implemented a recycling program (Magera, 2008). As a result of their efforts, the community has collection bins throughout the town, distributes an informative guide for households, operates a collection truck, and runs a centralized location for separation, delivery and selling of materials.

The high school is struggling in its efforts due to a sense of apathy from that particular age group towards environmental efforts in the school and throughout the community. The manager of the collection center noted that there is a decrease in enthusiasm once the students commence high school (Personal communication, December 4th 2009). The attitudes and behaviors of this age group, however, will have a direct effect on the near future of the community. The environmental awareness of adults is often formed during adolescence, an age where children begin being able to understand the challenges environmental issues entail (DiEnno et al., 2005).

Goals and Objectives

The goal of our work was to assess environmental attitudes and behaviors of the students and to develop a guide to aid teachers in improving their environmental curriculum. Our guide describes how the student's personal efforts in improving their school and helping their community attain Blue Flag status may increase their sense of ownership and pride. The activities and processes mentioned in our guide may lead to a sense of ownership and societal belonging which could have a long lasting effect on their attitudes and behaviors. To achieve our goal we addressed the following objectives:

- Assess current state of recycling program

- Understand student interests and preferred learning methods
- Identify current student perceptions and behaviors
- Assess existing knowledge of recycling consequences
- Incorporate Blue Flag initiative into high school efforts
- Design a curricular guide to incorporate findings and suggestions

Methodology

In order to complete our objectives we focused our efforts on understanding the town and high school's recycling system and goals, student priorities and behaviors, and educational best practices to create the guide. To do so we conducted 30 student interviews and 9 faculty interviews, collected information from 100 surveys completed by students ranging from ages 13-17, and made observations of the logistics and participation in the recycling program at the high school. Based on our findings we were able to develop a guide to help faculty inspire student interest and participation in recycling.

Findings

We were able to categorize the findings into three themes: student attitudes and perceptions, administration goals, and administration challenges. From collecting and analyzing our data we were able to further extract several key points that were important to the creation of our curricular guide.

Student Attitudes and Perceptions

By analyzing our surveys and interviews, we found that four factors played a role in the students' overall attitude on the environment. The first was that the students were knowledgeable on the consequences of not recycling. The second was the perception that students are not valuable and respected members of the community. The third was that the students lacked a personal obligation to act on the known consequences of not recycling. Finally, student home life played a role in their apathetic attitude towards recycling as most families did not recycle at home. All four of these themes contributed to the students' careless attitude on recycling.

Administration Goals

The administration goals showed that the school is overall very interested in incorporating the environment into the curriculum. This, along with the goal to have a higher participation in the recycling program and to clean the school, fall under the Blue Flag criteria for being recognized as an educational center. In doing this, they also hope to improve the students' role in the community through outreach projects that would recognize their efforts. Through interviews, many teachers

expressed an interest in attaining the Blue Flag status for their school and based many of their future goals on meeting the standards set forth by this initiative.

Administration Challenges

Although faculty showed interest in furthering environmental education and increasing recycling participation there were several challenges that would need to be overcome. First, the school lacks the funding to increase the number of recycling bins and promotional material found around the school. Second, the teachers noted that they do not have time to assess the best methods and activities to address the environment in their core curriculum. There is also a severe lack of student interest in environmental topics and teachers find it hard to motivate them beyond offering incentives for participation.

Key Findings

Through all of the research we were able to identify several themes. First, the students were found to be knowledgeable on the consequences of not recycling. Though they were aware of these consequences, they did not act on their personal obligation to contribute to the global efforts of recycling. This combined with the fact that many students do not feel like valued members of the community contributed to the overall lack of motivation to participate in the recycling program.

Recommendations:

The Guide:

One of our main recommendations for the teachers is in the form of the curricular guide. The first main purpose of this guide is to bridge the lack of communication between the students and the teachers and clarify student perceptions to teachers. The second main purpose of this guide is to offer suggestions for activities that consider time and resource availability for teachers as well as student interest. Our goal is that the material of the guide will motivate students beyond the incentive program that is already present in their high school and allow them to feel like a part of the larger community that is their high school and town. Through the activities suggested in the guide, we hope to create a sense of ownership and pride within the students to address their current lack of personal obligation towards the environment. We believe that if students can feel a sense of ownership and place in their community as well as understand the consequences of not recycling on a personal level, the participation level will increase.

Future areas of interest:

Our work is meant to be a step towards creating an overall sense of responsibility and pride in the students' environmental efforts and, in turn, instill a sense of place within their community.

Our work could be taken further in a few directions in the form of ideas for future study listed below:

1. Study of the lack of resources and recycling program logistics that are hindering the students' ability to recycle with ease.
2. Analysis and critique of our guide to identify its level of success as well as student and teacher response to it.
3. Application of our methods to additional Costa Rican high schools to better understand other sets of environmental attitudes and perceptions and perhaps create a generalized guide to apply to more than one high school.

Further Research Topics:

Our efforts to improve recycling participation could be viewed as one specific way to analyze and improve a students' perception of their role in the community. However, in order to fully comprehend the complexities of this issue, there are many further topics to be addressed. For example, what cultural aspects are hindering a student's ability to influence their community? Or, rather do the students even want to become stronger voices in their community or do they enjoy where they stand now? Although these and many other aspects should still be addressed, our hope is that this work will inspire a continued effort to improve student environmental attitudes and encourage Costa Rican students to voice their opinions and make a difference in their communities.

Conclusions

The analysis of our findings led to the conclusion that a general apathetic attitude towards recycling was present in students, which translated to their lack of participation. However, through our work we were able to identify particular problem areas that caused this lack of participation and motivation and suggest effective techniques to overcome them through the curricular guide. The process of achievement of the Blue Flag status for the high school will be helpful in improving these student attitudes and perceptions towards the environment.

Authorship Page

The research and writing of our report was equally completed by all group members. Together, we composed, edited, and finalized the introduction, background, methodology, results, and conclusions and recommendations.

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Chapter 1: Introduction

“We need to do something soon or the day will come when resources will be so scarce, and the planet will be so beyond repair that no other type of peace will be possible. The existence and merit of this distinction that Blue Flag offers tells us the conviction of whether or not the future of Costa Rica will be green weighs heavily on the national conscience.”

President Oscar Arias Sanchez (Costa Rica Best Land)

Costa Rica is well known for its breathtaking beauty and ecological diversity. In order to protect its valuable resources, President Oscar Arias Sanchez has set specific goals in recent years to promote sustainability. In 2007, he introduced a nationwide set of steps to promote “Peace with Nature”. This includes a goal to achieve carbon neutrality by 2021 as well as a resolution to incorporate environmental education in elementary and high school curricula (*Sanchez, Oscar Arias. “For We Have Promises to Keep.” Lee Kwan Yew School of Public Policy. Singapore. 3 December 2008*). In 1996, Costa Rica initiated a nationwide effort, known as the Blue Flag Ecological Program, to preserve its beaches. This program was expanded to include new categories such as Communities in 2002 and Education Centers in 2004 (*Rios News*).

One of the communities currently being considered for the Blue Flag designation is San Rafael de Heredia. This community is located within the canton of San Rafael an hour north of San Jose. San Rafael is already a leader in environmental awareness and initiative in the canton, but receiving Blue Flag recognition would raise the environmental status of the community. In the past seven years, they have made significant efforts to increase environmental education and recycling participation in the town. Elementary schools in the community base many projects and homework assignments on recycling. One particular elementary school, the Miguel Aguilar Bonilla School, even has a local recycling collection center within the school. Additionally, San Rafael is one of only ten cantons in Costa Rica that has implemented a town-wide recycling program (Magera, 2008). Through the program the community has installed collection bins throughout the town, distributes an informative guide for households, operates a collection truck, and runs a centralized location for separation, delivery and selling of materials.

Although community leaders in San Rafael have taken the initiative to increase recycling efforts, we have noted through our observations and interviews with community leaders that there is inconsistent participation from members of the community. We chose to focus our efforts on improving participation in one age group. While there is a significant amount of environmental education and participation at the elementary school level, a local recycling official noted that there

is a decrease in enthusiasm once the students commence high school (Personal communication, November 4th 2009). This age group is particularly important to address because their attitudes and behaviors regarding environmental impact will have a direct impact on the future of the community. Not only does “the level of environmental sensitivity possessed by an adult appear to be formed during the teenage years” but this age group also “may be capable of comprehending the complex situations environmental issues entail” (DiEnno et al., 2005, pg. 13). In order to address an age group that can make the largest impact in the near future, we conducted a study with students, ranging from 7th to 11th grade, at the Carlos Pascua Zúñiga High School in San Rafael.

The goal of our work was to assess environmental attitudes and behaviors of the students, particularly with regard to recycling, and to develop a guide to aid teachers in improving their environmental curriculum. The guide is meant to inspire student participation in recycling and awareness of their environmental impact. The purpose of our efforts was to improve the students’ role in the community and create a feeling of civic duty within the students of the high school. Our guide describes how the student’s personal efforts in improving their school and helping their community attain Blue Flag status will increase their sense of ownership and pride. .

Chapter 2: Literature Review

In order to better understand the motivational issues that educators face while working with adolescents, we researched several topics to support our theses. Below is a discussion of these issues including the benefits of recycling, environmental efforts in Costa Rica, the recycling program of San Rafael, and effective teaching methods for reaching a teenaged audience.

2.1: Recycling and Blue Flag Initiatives in Costa Rica

The environmental and financial benefits of recycling have become well known as it has begun to play a bigger role in communities around the world. Recycling reduces the need for landfills, decreases emissions of greenhouse gases, and also protects the earth's natural resources. Economically, it increases the number of manufacturing jobs due to the large amount of recycled content incorporated in common items. Additionally, recycling saves energy because manufacturers do not have to start creating a product from raw materials (*Recycling: Reduce, Reuse, Recycle*).

Oscar Arias Sanchez, the president of Costa Rica, has been very dedicated to environmental causes. For instance, he has pledged to make Costa Rica a carbon neutral country by 2021. To support this goal, Arias has lead the way with various legislations including the “General Law on Waste” passed by the Ministry of Energy and Environment (MINAE). This law was created in an effort to make the generator, producer, and consumer responsible for the waste management rather than the state (Wilhelm, Colleary). Other similar efforts of organizations, corporations, and communities have made achieving carbon neutral status by 2021 a realistic goal.

One such effort is the Blue Flag Program, which started as a way to protect and develop the coastal communities of Costa Rica in an environmentally friendly manner. The Blue Flag program consists of evaluation criteria that include water quality, health care, road maintenance and more. If a community successfully meets the criteria with a 90% rating they receive the honor of being a Blue Flag community. The program's success has led them to include inland communities as well (*Municipalidad de San Rafael de Heredia*). The municipality website for San Rafael states the purpose of the Blue Flag program is “to encourage non-coastal communities to organize themselves in an effort to protect natural resources, tourist attractions and so provide a better quality of life for local people and visitors to the participating communities”(Municipalidad de San Rafael de Heredia).

Environmental education and solid waste disposal each represent 10% of the inland community evaluation criteria (*Municipalidad de San Rafael de Heredia*). This demonstrates the need for

the betterment of the environmental perceptions and actions of the high school students, especially with a focus on recycling. Attainment of this status through student driven projects may create a sense of pride in the students' school and community as well as provide a cleaner environment for them to learn in. This Blue Flag initiative will further our goal of improving environmental attitudes and behaviors within the high school.

2.2: San Rafael Recycling Program

San Rafael is noted for their ecological efforts in comparison to surrounding communities, specifically regarding recycling. Their recycling program, established approximately seven years ago, has two major components including a centralized recycling center devoted to the collection, separation and selling of all recyclables and a recycling guide which is distributed to households around the town. Recyclables from households and schools are picked up by a truck once every two weeks and brought to the collection center where they are sorted and processed. Residents can also bring the materials to the collection center. The recycling center collects regular paper and newspaper, cardboard, glass and plastic and sells much of it back for reuse.

Although San Rafael has a notable recycling program, they still face challenges regarding participation. The manager of the recycling center mentioned that families either do not understand the separation process or are too lethargic to complete the separating themselves (Personal communication, November 4th 2009). Furthermore, a study done on the economic viability of solid waste recycling in San Rafael de Heredia noted that the collected recyclables only represented about 8% of the waste generated in the municipality (Magera, 2008). The recycling center manager approximated that 10% of the town participates in the recycling program. Her goal would be to see this level increase to at least 50% participation. The manager noted that in her opinion and observations, participation is highest amongst children and adults between the ages 25 and 60 and lowest between adolescents between 13 and 25 (Personal communication, November 4th 2009).

Further research showed that the school could play a major role in achieving Blue Flag status for the town due to the 10% weight on environmental education alongside achieving their own Blue Flag status as an educational center. This information coupled with the managers opinion, led us to conduct research regarding student attitudes towards recycling.

2.3: High School Students' Attitudes towards Recycling

The high school was chosen as the target age group for this study due to the potential impact their actions could have on the community, however further research demonstrated that this

age group often displays apathy towards academics and surrounding issues. TheodoreSizer, who conducted an extensive study on high school students said that they were, “all too often docile, compliant, and without initiative” (Bishop, 1989, pg. 6). Such characteristics make teaching students about important issues very challenging. However, it is necessary to try to inspire a change in these attitudes because of the impact that high school students have on their surroundings in the present and in their immediate future. In an article on motivation and education the importance of the time students spend in school states, “in their formative first two decades, individuals spend about 15,000 hours in schools. Thus schools represent a primary socializing influence that has enormous impact on the course of people lives and, in turn, on society” (Motivation and education: The self-determination perspective, pg. 1). Students can also act as teachers while they are in high school. Parents and siblings are influenced by the messages students bring home from school. Current research shows that parents are more environmentally aware and participate more in recycling after their children have received a course on the environment (Evans & M. E. Marchant, 1996).

It is also important to focus on high school students because adolescents are still impressionable and with the proper education can accept concepts such as civic duty and sense of pride. One particular theory, self-efficacy is the belief that one’s actions have an effect on the surroundings. Self-efficacy is believed to be one of the biggest motivations to create deep “cognitive strategies” (Greene, Miller, Michael Crowson, Duke, & Akey, 2004). A more in depth education may help a student become someone who is a result of their interaction with the world and someone who influences the “nature and quality of those interactions” (Greene et al., 2004, pg. 463). The key to developing such meaningful interactions is to motivate high school students so that they realize the importance of their time and thoughts as a student (Greene et al., 2004).

In addition to environmental and financial benefits to recycling, these efforts lead to many societal and psychological advantages. Participation in recycling instills attitudes of positive environmental behavior and societal belonging. Such an activity is an ideal choice when attempting to improve environmental attitudes and perceptions. As clearly stated in one study, “...intrinsic rewards are those that are derived from the satisfactions people receive through their participation in an activity; they include psychological benefits such as increased self-esteem, feelings of altruism, and enhanced connection with one’s community”(Ebreo, Hershey, & Vining, 1999, pg. 110). This led to further investigation of motivating techniques to increase participation.

Overcoming high school student apathy and motivating them to participate actively in positive environmental behavior can seem like a daunting and impossible task. Some techniques for

motivation are more effective than others but a common theme present in the key techniques visible is creating a sense of belonging within the student. One particular study clearly stated that a “students’ subjective sense of school-belonging recently has been identified as a potentially important influence on academic motivation, engagement and participation...” (Goodenow, 1993, pg. 1). Another theory in long-term motivation named achievement goal theory, “predicts that the purposes students have for engaging in achievement tasks will influence their level of task engagement” (Greene et al., 2004, pg. 464). These theories to encourage active and interested behavior in students reach past surface interactions and into the deeper relationship between adolescent place and motivations. Our research has helped us understand what motivating techniques are most effective, specifically having students attain a sense of ownership and civic duty about their community and high school. Incorporating these techniques into teaching methods is essential to the improvement of student attitudes toward recycling.

2.4: Motivating Techniques through Education

Motivating students to participate in environmental activities for reasons beyond incentives is a task that requires connecting with the individuals on a conceptual level. Techniques that motivate students beyond the incentives could result in the creation of a sense of ownership and a feeling of accomplishment in the students. An article about the development of children’s motivation describes two essential aspects that make up motivation. “One set involves self-perception constructs that include individuals’ sense of their competence and agency to achieve different outcomes. Another set concerns the purposes individuals have for engaging in different activities and their interest in and valuing of the activities”(Eccles, Rodriguez D, & Wigfield, 1998, pg. 74). Ideally, the use of these motivating techniques in teaching would instill a sense of ownership and pride within the students to internally motivate them to participate.

Our research shows that effective teaching methods include inherent strategies that relate to the students on a personal level. A study on high school students’ cognitive engagement “found that meaningful processing strategies lead to greater performance on achievement measures over the material studied than shallow strategies”(Greene et al., 2004, pg. 463). Another common occurrence demonstrated the importance of close teacher-student contact to foster an inviting relationship that encourages involvement (Chickering & Gamson, 1987), (Anderman, Hodge, & Murdock, 2000). In addition to close teacher contact, many studies established the value of education relevant to the student on a personal level. One particular study mentioned that it is a problem that the “curriculum of content, the bread and butter of the school program, still is not reflective of what is known about

the nature and needs of early adolescents”(Clark & Lounsbury, 1990, pg. 133). Incorporating student interests, goals and needs into the curriculum significantly increases student attention to the topic at hand.

Additional effective teaching methods include understanding the means that students from this age group learn best from. Active learning is a key technique in obtaining student interest and attention in a topic (Chickering & Gamson, 1987), (Clark & Lounsbury, 1990). A study conducted on eighth grade in particular mentioned that “while students seemed willing enough to do what they are told to do, their lack of ownership in the activities was an obvious barrier to effective learning” (Clark & Lounsbury, 1990, pg. 136). Also at this age, cooperation between students is a successful technique in motivating students to participate. The eighth grade study also suggested that “if schools are serious about meeting the developmental needs of this age group, they will organize activities and schedules in such a way that the youngsters will be able to legitimately interact more” (Clark & Lounsbury, 1990, pg. 135). All of these teaching methods encourage educators to incorporate student wants into their curricular practices. Teachers must also ensure they are respectful of the diverse learning needs of students and apply their techniques accordingly.

Through our research we have discovered environmental efforts being made in Costa Rica as well as information about the specific recycling program of San Rafael. In addition to this, we have a deeper understanding of why high school students are the focus of our study. This includes their role in the community and general apathy towards the environment. Our research of teaching methods to overcome this lack of motivation provided ideas such as active learning and relevant teaching as effective techniques to incorporate into the curricular guide. We will now address the methodological strategies needed to meet our objectives.

Chapter 3: Methodology

Objectives of Our Study

Our goal was to assess attitudes and behaviors of high school students in San Rafael with regard to their awareness of the environmental impact of community recycling. To understand the scope of these issues we immersed ourselves into both the community San Rafael, and of Carlos Pascua Zúñiga High School. Doña Katia Matamoros, the librarian and recycling director of the high school, was our main liaison. We focused our efforts on understanding the town and high school's recycling system and goals, student priorities and behaviors, and best educational practices to develop a teaching guide to help faculty inspire student interest and participation in recycling.

3.1: Identifying Environmental Goals and Initiatives of San Rafael

Our objective when conducting interviews and observations in the community was to understand the town's ecological initiatives and future plans. This included the recycling program already in place, as well as the town's goal of attaining the Blue Flag status. With this information we could ensure that our efforts in the high school would parallel the town's goals.

Interviews with municipality, public service officers and the director of the recycling center helped us to identify the initiatives already underway in the community as well as the students' role in these efforts. We analyzed the achievements and shortcomings of the town's current recycling program and their goals for the future. This included the operational logistics of the recycling center and the bi-monthly recycling truck. To gain an educational perspective, we visited a local elementary school and interviewed faculty on their environmental education efforts and the children's involvement in the recycling program.

Personal observations were used to record town-wide efforts and initiatives to encourage recycling. Recycling signs in public places such as parks, government buildings, and bus stations were noted as well as the location and contents of recycling bins. We also made observations at the recycling center in the town to understand the processes of delivery, separation, and selling of materials.

3.2: Identifying Environmental Goals and Initiatives of the High School

We observed and interviewed students and faculty to identify their ecological initiatives and aspirations for the near future of their environmental curriculum and recycling program with regard to attaining the Blue Flag status as a goal for the school. Teachers were asked about the benefits this

honor would bring to the school and the community, as well as the role that recycling education and participation would play in this.

To understand the school's recycling program, we took a tour of the school to observe the quality and quantity of recycling bins and promotional materials present. Faculty interviews provided us with logistical information about the collection and pickup of recyclables as well as details about the formation of the current recycling system and potential areas for improvement.

3.3: Analyzing Student Knowledge, Attitudes, Perceptions & Behaviors in Regard to Environmental Impact

Surveys, personal observations, and student and faculty interviews were conducted to understand student awareness, attitudes and behaviors with respect to environmental impact. This included perceptions about their role in the environmental initiatives in the school as well as San Rafael.

A survey, completed by 30 student interviews, was conducted to comprehend the student understanding of the consequences of not recycling. One hundred surveys consisting of seven questions were distributed and completed by a convenience sample of students, ranging in age from 13 to 17 with an approximately equal distribution of males and females. The survey covered various topics including environmental education, outside influences on student recycling behaviors, student interests, and preferred methods of learning. One question was designated to assessing the current level of student knowledge on environmental topics and consequences to evaluate prior environmental education received. Survey questions are shown in Appendix A.

We also observed the students' recycling behaviors throughout the school campus. Observation stations were established near the library, the school's fruit store, and the cafeteria to notice the behavioral patterns of students as they passed the most prominent recycling bins in the school. We analyzed these data with regard to participation and the efficiency of the program.

Student interviews helped to further our understanding of environmental attitudes and tendencies in the high school as well as student perceptions about their role in community efforts. As group interviews tend to generate more quality responses from students, this method was employed with students in grades 7 to 11 (Ruiz-Mallen, Barraza, Ruiz-Malla (c)n, & Barraza, 2006). We conducted some groups with only females or only males, while others were integrated. From the group discussions, we investigated their family recycling habits as well as their own, and what motivated them to have these behaviors. We also discussed their interest in learning more about the

environment and whether or not their teachers include lessons about the environment in their classes.

Interviews with eight teachers in mathematics, information technology, religion, etiquette, and science were conducted addressing the same issues stated above for student interviews. From faculty we asked about the extent to which environmental awareness is incorporated in the school's curriculum. We also asked about any incentives used to encourage recycling as well as their observations about student response to these efforts.

Interviews with both parties were conducted to assess the students' role in the Blue Flag program as well as all initiatives in the high school and the surrounding community. This was to identify the level at which the students felt that they could make a difference in the community and whether or not they felt a sense of ownership in these efforts.

3.4: Understand Student Interests and Preferred Learning Methods

The survey was also meant to assess the students' use of time outside of school and their preferred methods of learning about the environment. These questions ensured that our recommendations would be relevant to this particular group of students and would be conducted in a way that held their interest.

Student and faculty interviews allowed us to gain insight into student interests and hobbies to complement the basic information we had attained through surveys. We tried to identify with the students in order to understand any cultural differences present and to be able to ask more effective and relevant questions. We interviewed school faculty to get an alternative perspective on student interests, as teachers have constant interaction with students and detect subtleties that students may not express verbally.

3.5: Development of Curricular Material

Our research in the high school included generating material to use in the creation of a guide for teachers interested in motivating their students to recycle more. The material presented in this guide was a combination of our own data and additional research regarding best practices for motivating high school students to recycle as well as foster long lasting positive environmental attitudes and behaviors. The most successful methods and ideas were extracted and adapted to what we had learned about our audience.

Chapter 4: Results

This chapter details our findings from personal observations in and around the community of San Rafael, surveys of students and interviews with students and faculty at the Carlos Pascua Zúñiga High School. Of the 1500 students at the school, we surveyed 100 students and conducted 30 student interviews and 9 faculty interviews over the course of 3 days. Our analysis uncovered several underlying conflicts, which currently present obstacles to the success of the recycling program. Four themes emerged that indicated the most prevalent causes for these obstacles: negative student perception of their societal role and value, apathetic student attitudes towards the environment, a lack of time and resources for students and teachers, and environmental education shortcomings. Below we expand upon these themes and provide evidence for the theories that were extracted. To begin we will examine the community of San Rafael and how the environment is incorporated into the town's infrastructure.

4.1 Community of San Rafael

Our observations and interviews in the community indicated that San Rafael is a town dedicated to building awareness for environmental concerns, especially through attaining the Blue Flag status. Our observations around the town including the central park, church, bus station, and surrounding neighborhoods demonstrated that San Rafael is pro-active in maintaining its respectable ecological standing. Many signs encouraged citizens to recycle by reminding them of the current state of cleanliness sustained in the town's public areas. The municipality building was host to a poster display of facts and statistics about the town's recycling efforts complete with visual evidence of how aluminum cans were crushed, condensed, and reused to preserve landfills. This type of display was not present in the high school which again demonstrates the lack of connection between the high school and town-wide efforts. Interviews with members of the town such as the recycling director, Don Fernando Matamoros as well as the collection center manager revealed the sense of pride they have in their town's recycling success. We discovered that surrounding towns have referenced San Rafael's recycling program when looking for inspiration to start their own.

Although there were many positive aspects of San Rafael's environmental initiatives, we also discovered several shortcomings. For example, from our interview of the collection center manager we learned of the confusion that arises over material pickups. "The truck comes to collect at households approximately every 15 days but the schedule is not consistent and often unpredictable" (Personal communication, 11/10/09). This information, combined with the lack of instruction on

how to separate recyclables may contribute to the estimation that “only 10% of the community recycles” (Personal communication, 11/10/09).

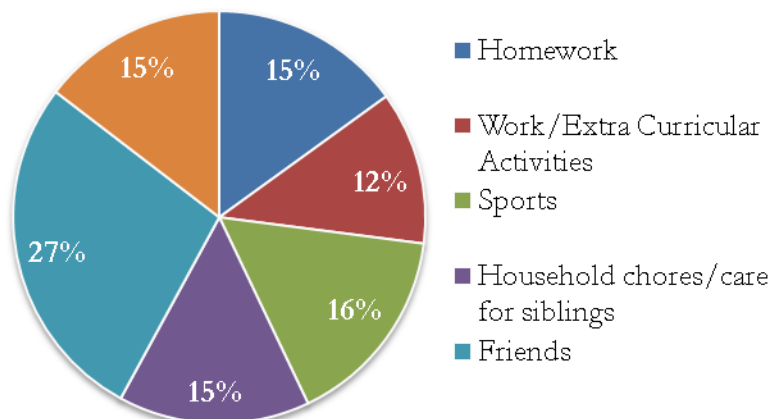
4.2: Factors that Affect Student Attitudes, Perceptions and Behaviors

We have identified several key areas that describe our overall student findings.

4.2.1 Life outside of School:

An important part of understanding student attitudes was to consider their daily lives as a whole, including their activities outside of classes. As the students were surveyed and interviewed, clear themes regarding their lives outside of school became apparent. From the data collected from the survey shown in the pie chart below, the most common use of time after school is spending time with friends.

Figure 1: Student Use of Time Outside of School



Data collected from a survey of 100 students, ages 13 -17, demographics described in section 3.3

This information on student priorities and commitments is important when creating a guide for teachers to ensure our activities are relevant to student interests. “We should take into consideration what [student] passions are; they may be better influenced through art or music” (Personal communication, 18 November, 2009). From the results shown above, we determined that students spent most of their time outside of school with their friends. This indicates that students might be more interested in social collaborative activities rather than isolated ones. Therefore, games or group projects might be a good way to address them.

4.2.2 Family Influences

An important aspect of understanding student attitudes with regard to the environment was learning more of their outside influences, specifically in their homes. During interviews, students indicated that they received little to no education from parents regarding environmental issues. Many students also believed that their lack of recycling participation came from a lethargic attitude toward such practices in their family life (Personal communication, 23 November, 2009). This apathy in adults could be fostered due to the lack of organization and efficiency in the recycling program in the town. It is possible that the majority of the community does not have a strong sense of responsibility about their environmental impact and therefore is easily discouraged from participation when it is not convenient. This apathetic attitude may then be passed on to adolescents, which could have a drastic affect on their recycling attitudes and behaviors.

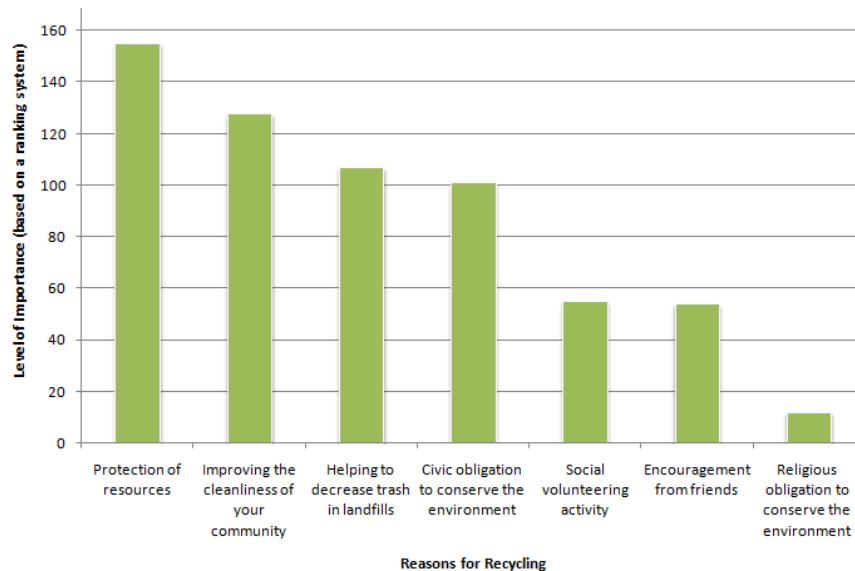
4.2.3: Value in Community

When students were interviewed regarding their role in the community, the majority of younger students (7th and 8th grade) responded by saying that they do not feel that they are respected members. “Most adults do not care about our opinions.” (Personal communication, 23 November, 2009). When older students (9th through 11th grade) were asked about the same issue, we received mixed responses. We noticed that many students who responded positively were hesitant and lacked confidence in their opinions and appeared to be heavily influenced by their friends. On the other hand, students with negative responses were strong in their beliefs. Such responses and observations led us to believe that since students are not considered valuable members of the community during their high school years, this may be causing a lack of self-efficacy in the students. .

4.2.4 Recycling Awareness and Motivation

At the elementary school we could see that a significant amount of time and energy was spent on educating students about environmental issues. It was apparent through student interviews and surveys that the knowledge had not been lost between primary and secondary school; from the survey questions we discovered that the majority of respondents already understand the consequences of not recycling. The survey question asked students to rank what they considered the most important consequence or if they knew the consequences at all. As you can see from the bar graph below, the most common responses were contamination and destruction of the earth.

Figure 2: Student Ranking of Important Reasons for Recycling



Data collected from a survey of 100 students, ages 13 -17, demographics described in section 3.3

As a follow up to this survey, we learned from student and faculty interviews that students do not understand the implications of their individual actions. One hundred percent of interviewed students responded that their only motivation for recycling is extra points. One student stated, that “students at this school recycle only because of the extra credit. If there were no extra points given, no one would recycle” (Personal communication, November 18, 2009).

4.3: Faculty and Administration Attitudes and Perceptions

Through faculty interviews, we uncovered several themes regarding their perceptions of student attitudes toward recycling as well as their interest in improving this.4.3.1 Interest in Improvement of Environmental Education

Through faculty interviews it was apparent that teachers were enthusiastic towards incorporating environmental education into their curriculum. “It is important to continue teaching these students about the environment and I would be interested in finding an easier way to do this” (Personal communication, 23 November, 2009). Teachers expressed interest in delving past the surface motivators of the recycling program to reach the students through deeper meaning education. Many discussed the desire to instill a sense of responsibility and consciousness for the environment, but hadn’t found an effective way to do so yet. One particular teacher captured this

idea perfectly when she stated “we can improve the system by getting them to care about the environment without needing to give them an incentive for it” (Personal communication, 18 November, 2009).

Through teacher interviews we learned that the curriculum contains a list of objectives pertaining to their subject that must be taught by the end of each semester. Because they have such a short period of time with the students, teachers felt it was difficult to incorporate the environment and recycling into their lessons while also meeting the goals set forth by administration. Additionally, several teachers supported the idea that “it is difficult enough to keep students interested in the target material let alone incorporate the environment into the curriculum” (Personal communication 23 November, 2009). When asked about the possibility of a guide to help them plan activities to help them overcome these challenges, the teachers were optimistic and agreed that they would benefit from the convenience of utilizing our materials rather than initiating the change on their own.

4.3.2 Student Value in Community

Teacher interviews supported much of what the students had said about their role in the community. “Adolescents’ opinions are generally not respected in this society until they reach the age of 21” (Personal communication, 18 November, 2009). (Personal communication, 23 November, 2009). Many teacher interviews indicated agreement on this theme and expressed an interest in improving it. As one teacher stated, “it would be great if the students could feel like they were making a difference in their community” (Personal communication, 18 November, 2009).

4.3.3 Student Attitudes on Environment

Teacher interviews revealed that they do not believe that students appreciate the frailty of what makes their country beautiful such as beaches, volcanoes, and rainforests. Although they believe that the students are fully aware of the consequences of not taking care of them, they are lacking personal obligation. “The students have learned the consequences of not recycling but they think that their small amount of trash is not going to make a difference; they are not seeing the big picture” Another teacher supported this belief by describing that “students don’t understand that even if they only litter a small amount, their friends most likely have the same attitude and it will add up before there is time to change” (Personal communication, 25 November, 2009).

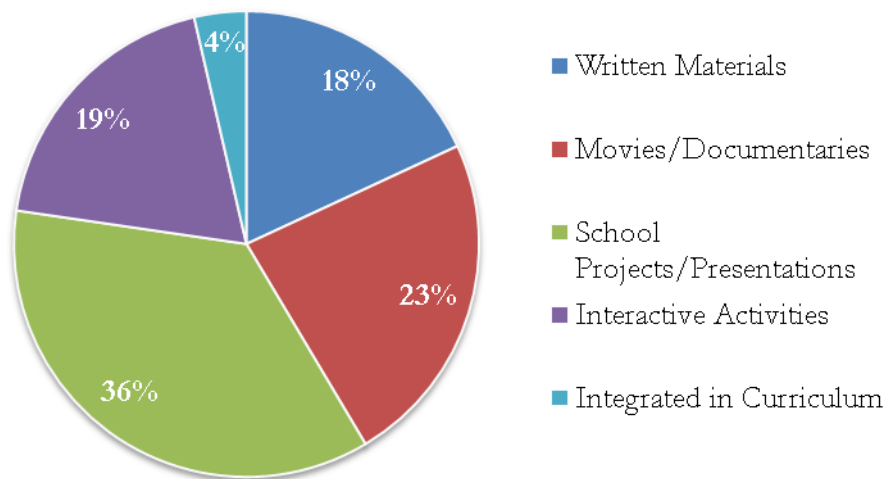
4.3.4 Blue Flag Initiative in the High School

In addition to improving environmental education, many teachers showed enthusiasm for the Blue Flag status, which is a goal the school would like to reach in the coming years. From interviews and research, we learned that the town of San Rafael has the potential to attain this status as a community, but the high school can also be recognized as a separate educational center. One teacher described attaining the Blue Flag status as “a great honor that would attract more people to come to our school system” (Personal communication, 23 November, 2009). One trend we heard was that cleanliness is an important factor of this program and many of the students seem to appreciate cleanliness in the community and at the school. If the school received recognition as a Blue Flag school, one teacher said “it would give the kids something to be proud of in their school and further drive the community effort” (Personal communication, 18 November, 2009). Though most teachers were aware of this honor, some were not completely clear on how to reach this status or what the benefits were but were interested in learning more.

4.4 Student Preferred Educational Methods

From the survey we were able to determine the most preferred means of learning about the environment. The most common methods were movies and documentaries and school research projects and presentations. This information shows that students enjoy active learning activities in which they are engaged through either an external stimulus or interactive activities instead of learning directly from a textbook or teacher.

Figure 3: Student Preferred Educational Methods



Data collected from a survey of 100 students, ages 13 -17, demographics described in section 3.3

4.5: Resource and Funding Shortcomings

Through our initial observational tour of the high school, it was immediately apparent that there was a lack of materials for the collection and promotion of recycling. There were no collection bins located in the library, cafeteria, hallways, or classrooms as well as a lack of posters or other materials promoting recycling. The school's collection center was positioned in the middle of the hallway connecting the fruit store to the cafeteria, which is an inconvenient location for students to recycle easily as it is located a few feet away from the sidewalk and not close to either place where students purchase food. Through observatory stations at high traffic locations, we noticed that the students did not have a high participatory rate in recycling and often filled the collection centers with trash, which showed that there may not be enough bins reserved specifically for trash. Observations also showed that the present bins were not adequately labeled and that there were no materials around the school encouraging participation in recycling.

Doña Katia Matamoros, as well as several other teachers, expressed a need for more bins around the school but acknowledged that there was not enough money to purchase them (Personal communication, 17 November, 2009). When asked about the revenue from the sale of aluminum cans, a student reported that the computer in the library was purchased with this money and the recycling club is currently saving to buy another.

4.6: Key Findings and Guide

Based on all of the interviews, surveys, and observations that were conducted at the Carlos Pascua Zúñiga High School we were able to make some interesting discoveries about the overall perceptions and attitudes of students on recycling. First of all, it was very clear that the students had knowledge of consequences of not recycling. Despite this knowledge, students do not act on their personal obligations. Many students also believed that their voice is not heard nor respected in the community. The combination of these factors and the lack of encouragement from family and community members contributed to our conclusion that the students foster apathetic attitudes and perceptions on the environment and thus lack proper motivation to participate in the recycling program.

Combining our research with our findings at the school, we created a guide that would serve several purposes. First, it would show teachers general information about the student population they may not necessarily know through their day-to-day contact. Also, it would explain effective teaching methods preferred by this group of students to help teachers reach their audience on a

deeper level. The overall goal of the guide is to increase student participation in recycling, create a sense of place for them in their community, and instill a sense of civic duty in their actions.

Various environmental awareness activities are provided that incorporate our findings of student interests and effective methods. For example, one goal of the guide is to promote reciprocal motivations between families and students, as home life was one of the contributing factors towards negative student attitudes. To do this, our guide included activities that help students involve their families in environmental education and participation such as an at-home recycling journal. We also wanted to utilize our own resources to assist the teachers, so we started a “sister school” relationship between a school in the United States and the Carlos Pascua Zúñiga High School to excite students about a cultural exchange.

Many activities in the guide were designed to increase student participation in the Blue Flag Program as well as immerse the students in the community. This was done with the hope that it would improve their sense of belonging and civic duty in community efforts. In addition to this, we included activities that would hopefully instill a feeling of ownership for the recycling program in the high school as well as the Blue Flag initiative. For example, one idea is to have students contact companies we have provided to collect donations for collection bins to put around the school as well as decorate the bins and create posters to promote recycling behavior in the high school. With this initiative, we hope that students will feel for a sense of accomplishment in their school and community, rather than participating to comply with authority’s efforts.

4.7. Summary

Our hope is that through meaningful and interesting exercises, students will begin to realize the importance of caring for the environment at their age. Through increasing participation in recycling as well as contributing to the Blue Flag initiative, we hope that students will feel a sense of accomplishment and pride in their efforts. Our goal is that this will encourage students to feel as if they are making a difference in a greater cause and will foster a sense of place and civic duty for adolescents in community efforts.

Chapter 5: Recommendations and Conclusion

Through our interviews and surveys, we have uncovered several major factors affecting the recycling attitudes of students at Carlos Pascua Zúñiga High School. There is a lack of resources available in the school for the collection and promotion of recycling. We also identified deeper factors that could be affecting a student's motivation to participate past the level of convenience. One important finding was that students do not feel like they have a strong role in the community, which may lead them to feel that their efforts are not appreciated. Another factor is that students do not have a sense of personal obligation. Although the students understand global consequences of not recycling, they do not feel that their small amount of trash is making a difference. These factors all come together to create a general apathetic attitude toward recycling in students and therefore a lack of participation.

In order to address this, we have created a guide for teachers including our findings and activity ideas to instill a lasting effect on the students' attitudes toward recycling. One way to promote a sense of ownership in the program and help students feel as though they are contributing to a greater effort was to incorporate activities that address the Blue Flag status. Ideas were also designed to help students understand the personal consequences of their actions. Overall, we believe that incorporating these concepts into curricular activities will lead to an increase in recycling participation in the students.

Our hope is that these students will continue their efforts through adulthood, and our guide will address the next generation of high school students to gradually improve the overall recycling participation rate as a community. If successful, our work could be applied to other towns as well. As a further study, it would be beneficial to the school if researchers could address their lack of resources and study in depth the logistics that are hindering the students' ability to recycle with ease. In addition to this, our guide should be analyzed and critiqued in further years to identify its level of success as well as student and teacher response to it.

In order to fully comprehend the complexities of a student's place in a community, there are many topics to be addressed beyond recycling participation. For example, what cultural aspects are hindering a student's ability to influence their community? Or rather, do the students even want to become stronger voices in their community or do they enjoy where they stand now? One interesting research topic could be to compare and contrast Costa Rican and American lifestyles and cultures to analyze their effect on an adolescent's role in their community. Although these and many other

aspects should still be addressed, our hope is that this work will inspire a continued effort to improve student environmental attitudes and encourage Costa Rican students to voice their opinions and make a difference in their communities.

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Appendix A: Survey Distributed to Students

- 1) **What grade are you in?**
7th 8th 9th 10th 11th 12th
- 2) **How do you typically spend your time after school each day? Check all that apply.**
 School work
 Job
 Clubs and Activities
 Volunteer
 Help around house/care for siblings
 Spending time with friends
Other _____
- 3) **If you have a job, how many hours per week do you work? Circle One.**
Don't have a job 1-5 hrs/week 5-10 hrs/week 10-15 hrs/wk Mas de 15 hrs
- 4) **What clubs or activities are you involved in at school? If yes, why do you participate, if no, why not?**
- 5) **Do you:**
 - a. **Feel that you are a respected member of the community? (Circle one)**
YES NO
 - b. **Feel personally responsible for the consequences of not recycling? If so, how?**
 - c. **Feel influenced by your friends to recycle? If yes, how so?**
 - d. **Think that your friends care about protecting the environment? Why or why not?**
- 6) **Please rank the following motivations for recycling based on importance to you. (1 being the most important through 7 being the least important)**
 Civic obligation to conserve the environment
 Encouragement from friends
 Helping to decrease trash in landfills
 Improving global warming
 Improving the cleanliness of your community
 Religious obligation to conserve the environment
 Social volunteering activity
- 7) **Do you want to learn about the environment and how to protect it? Why or why not?**
- 8) **How have you learned about the consequences of not recycling? Check all that apply:**
 School
 Parents
 Friends
 Television & Media
 Books
 Other _____

_____ I haven't learned about the consequences

9) How would you learn best about the environment? Check all that apply:

_____ Reading Materials

_____ Movies

_____ Games

_____ Presentations

_____ Research Projects

_____ Hands-on Activities

_____ As a part of your current curriculum

_____ Other _____