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Recycling Influences: Exposure to Childhood Environmental Education

Janet Hollinger
Hamline University

RECYCLING INFLUENCES: EXPOSURE TO CHILDHOOD ENVIRONMENTAL EDUCATION

by

Janet Hollinger

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Primary Advisor: Karen Moroz
Secondary Advisor: Christina Zboril
Peer Reviewer: Jeff Peters

"If you can't excite people about wildlife, how can you convince them to love, cherish, and protect our wildlife and the environment they live in?"

— Wes Mannion, *The Crocodile Hunter: The Incredible Life and Adventures of Steve and Terri Irwin*

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The research question addressed was what do people who participate or do not participate in a neighborhood recycling program report regarding their exposure to childhood environmental education? It focuses on 2 communities in the southwestern United States. The author documents details of a qualitative survey as well as presents data from 2 seven-week-long observations. While the survey was minimal, the observation results show that only a small change can markedly affect the participation in recycling programs.

CHAPTER ONE

Introduction

This chapter includes my personal background, as well as the reasons that I have decided to conduct research into recycling. I have often wondered why a person does not recycle. I often wonder why a person litters. Many environmentally-friendly habits take just a small amount of time or effort, so why not take that time, and expend that effort? For this capstone, I will concentrate on neighborhood curbside recycling and explore the exposure to childhood environmental education of people who participate or do not participate in a neighborhood recycling program? What do people who participate or do not participate in a neighborhood recycling program report regarding their exposure to childhood environmental education?

Neighborhood curbside recycling is one example but my question could just as easily apply to other environmentally-friendly habits.

I have three research goals for this project. One, I want to understand the opinion of people who do and do not participate in this recycling program. Two, knowing the opinions of people who do not participate could provide me with an opening to discuss why recycling is important in an effort to persuade them to participate. Three, it could illuminate areas that need revision in current environmental education programs. I am motivated to conduct this research because I agree with Julianna H. Burchett, when she stated in her 2015 study:

> media reports of deteriorating ecosystems and environmental disasters should trigger an emotional reaction among people. People's initial reactions should not be to choose ignorance or be in denial of reality. Instead, they should be well educated and be able to comprehend the magnitude of environmental issues that are occurring and how these issues affect them. There should be no reason for environmental denial, as everyone should be educated enough to be fully aware of what is happening in the world. Additionally, society should have a basic understanding of the importance of various ecosystems and resources for human existence. (Burchett, 2015, p. 51)

With education, people may learn what they can do to prevent major environmental disasters, such as the reduction of available water in the West, the loss of habitat, and the potential hazards of plastic to the environment.

The first section of this capstone will describe the local recycling program, and how it can positively affect the environment, i.e. amounts of waste saved from going into dumps, and how my area compares to other cities. I will delve slightly into some educational standards for several states' public education. If children, and anyone for that matter, do not know there is a problem, they cannot work on finding a solution. Environmental Education is a key element in illuminating the problem. As part of the research, a survey will be conducted to illuminate some attitudes and/or motivations on recycling and gather some impersonal and confidential data about my neighborhood. I will determine the demographics of my neighborhood, as to range of income, level of education, ownership or rental of the home, and participation in other environmentally-

friendly habits. As part of this neighborhood, at this point, I do not know if I am part of the norm, or if I am a statistical outlier.

My Background

I cannot remember a time that I have not cared about animals, their welfare, and to some extent, the environment. I was always an animal lover, but have not been the most environmentally conscious person. All I know is I get so angry when people litter or waste water. That started later than my inherent love for animals of all kinds.

I have had some sort of pet at all times, for as long as I can remember. I started with a "Shetland Sheepdog" which was much more the size of a Collie. A short review of my many animals since then includes dogs, cats, opossums, ferrets, hamsters, a bird, rats, snakes, lizards, and tortoises. Though, I must admit, the majority of the reptiles listed above really belong to my daughter. A coworker turned my two daughters and me onto snakes. We were hooked, and got a snake for my daughters one Christmas.

I read frequently, and still do, and the majority of my time reading while young was spent reading anything about animals. The books written by James Herriot, an English veterinarian, fed my desire to be a veterinarian, and to visit the English countryside. I also had the good fortune to have great "friends" on television such as Jacques Cousteau, Marlin Perkins, and Walt Disney. In the late 1970s and early 1980s, I watched probably every episode of Mutual of Omaha's Wild Kingdom, and any Cousteau specials that I heard about. The Wonderful World of Disney was always fun to watch, but my favorites were always the animal and wildlife documentaries.

I also watched or read anything to do with Jack Hanna, Director of the Columbus Zoo at the time, or Joan Embery, the goodwill ambassador to the San Diego Zoo. A

good friend of our family worked at the very small, local zoo, and then moved on to the reptile house at San Antonio Zoo. Oh my, how I thought that he had hit the motherlode with that job! He bequeathed to me a set of Time-Life wildlife cards, you know, like the recipe cards, but with all the basic information on an animal on each of the cards.

During my work as a biological consultant for the local water authority on their construction sites, my appreciation for the desert grew. Even as a biological consultant, out in the areas being developed for water projects, where one would think very few people have been, there has been trash. In such a peaceful, beautiful, natural area, somehow, someone made the decision to litter.

The "aha" moment that landed me on this topic came one night as I was walking my dogs, and I noticed recycling bins on the sidewalk. I have recycled anytime that I could, and I thought to myself, what makes people NOT recycle? As I stated, I am a recycler, at home, work, and everywhere possible. I also have solar panels on my roof, and use solar outdoor lighting. My husband and I both drive hybrid cars. My tortoise helps me with my fruit and vegetable waste, as he is more than happy to eat it. My dogs also help with that, as they tend to hijack some of the tortoise's veggies.

Earlier in the Master of Arts in Education: Natural Science and Environmental Education (MAEd:NSEE) program, quite possibly during the Environment and Society course, I read a journal article by Louise Chawla, *Significant life experiences revisited: A review of research on sources of environmental sensitivity* (1998). Her article was a review of research by T. Tanner and various other authors on environmental education, also known as environmental sensitivity or environmental literacy. Chawla's (1998) article struck a chord with me, and has stayed with me even though I have taken such a

long time to finish the NSEE program. I plan to read more of her work and work that she has cited or are related to her work. For the meantime, I would like to learn a bit more about southern Nevada recycling.

I have almost always lived in southern Nevada, since I was two years old, so all I know is the desert habitat. Though I was not a child to spend much time outdoors, in the natural habitat, this subject of how life experiences affected later environmental sensitivity intrigued me. The people that Tanner and Chawla looked at are instrumental in Environmental Education and Ecology. I lived in much the same area that is now being studied, the suburbs of a major southwestern city. Surrounding this area is a desert, which reaches extreme temperatures in the summer, so extensive outside exploration was not an option. I regret not having much time in nature to explore. Later, I learned to appreciate nature to a greater extent, as I explored the mountains and the lake nearby. Though I am not going deeper into that exact area, I felt like discovering if there was any influence from childhood environmental education on later environmentally-friendly habits. I do not recall much, if any, school work that was centered on the environment or ecology while I was growing up. I wonder if others in my research area had different experiences.

Environmental Education History

I graduated from high school in 1986 and my high school provided some course choices within science, but nothing that would have focused on the environment. This seems typical of that time.

This got me thinking about the role of the environment and environmental awareness at that time. By that time, several milestones in environmentalism had

happened. Earth Day had been happening for 16 years by that time (Rome, 2010). *Silent Spring* by Rachel Carson was published in 1962, 24 years before (Carson, 1962). Yellowstone National Park was established in 1892 (NPS.gov). The National Park Service was officially created in 1916 (NPS.gov). Consideration for the environment was not a new fad at that time, and certainly has gained importance since then.

There is no excuse these days for a lack of environmental education. There appears to be evidence of the public's increasing desire to help the environment. Even in the middle of my city, at the college and university, without a billboard in support of preventing climate change in sight, there are recycling bins, just hoping that the passers-by will utilize them as intended. The university where I work has installed water bottle filling stations for filtered water. You may even trade in single-use water bottles for a reusable one. This is one example of the reduce-reuse-recycle standard widely known as the basis of environmental education. A person could eliminate from the landfill many disposable plastic bottles by using a reusable bottle of glass or metal.

Spinola (2015) stated that "The main goal of environmental education is to improve environmental literacy, including not just more knowledge but also a better attitude toward the environment and a higher prevalence of pro-environmental behaviours" (p. 392). Environmental education in schools does not seem to be ideal. There is minimal time spent on the subject in my county's school district. In the area that was studied, no environmental education is required to graduate from high school. From the high school catalogs that I was able to access, very little was there. There were no ecology classes, or environmental science/studies classes (Palo Verde 2015; Bonanza 2017; Clark 2017). With little available opportunity to learn and appreciate the

environment, would a person just happen to take up an environmentally-friendly habit, or two? This research hopes to get a glimpse at the answer to that question.

I would like to see more opportunities for children to learn about wildlife, environment, ecology, and, of course, climate change. As Wes Mannion (2002) said, "If you cannot excite people about wildlife, how can you convince them to love, cherish, and protect our wildlife and the environment they live in?" (p. 201). I feel this excitement must start in early childhood. If no one teaches a child about the wonder of nature, or what role a spider or snake plays in the ecology of the area, they will allow the uneducated masses to pressure them into killing a snake for no more reason than because it was there. If no one teaches a child about how recycling affects the planet, there will be never-ending heaps of trash ending up in countless "corners" of the planet.

I worked for a time at the local zoo, educating the public in addition to my duties as a keeper. Not quite Joan Embry or Jack Hanna, but it would do! About that time, there was also a crazy Australian on TV, Steve Irwin, who loved to get excited about the wildlife he found out in the countryside. To say the least, my daughters and I had to watch this show. My later coworkers at the water authority projects liked to mock Steve Irwin, "the Crocodile Hunter," but seriously, they would do the same out in the desert every chance they could! This idea of zoo education is what has influenced me to complete the MAEd in Natural Science and Environmental Education. Others, especially future generations, need to develop that enthusiasm for helping the environment. Ideally, environmental education can be the instigator.

International Recommendations for Environmental Education

The first international conference on Environmental Education (UNESCO, 1978) brought together 265 delegates and 65 observers from 66 UNESCO-member States. Even then, they admitted that man has hastened change in nature. Some of those changes will prove irreversible. (UNESCO, 1978). The conference made some recommendations, much too lengthy to list here, but overall, they suggested that environmental education be included in all levels of education, and incorporated into other educational areas, so that while centered on practical problems, the children would be able to use those critical thinking and decision-making skills in any discipline.

Summary

I want to understand the experience of people who do not recycle, do not take efforts toward helping the environment, and thus the whole planet. Even with nonexistent education on the environment, sustainability, or even water conservation, I grew up respectful of the environment, playing my part to conserve the resources and beauty of the planet we live on. I am curious as to why people do or do not play their part in helping the planet. As I stated, I had no environmental education growing up, and inversely, I do believe in climate change and global warming, and I want to do my part in stabilizing, if not reversing, the effects on our planet. In an ideal world, those participants who do not recycle have not had environmental education. If they have had environmental education, that means that there is a breakdown somewhere, and a thorough look into the curriculum should be conducted.

My literature review in the next chapter will look into environmental education and literacy, also delving into its history. Attitudes of certain groups will be reviewed, as

a representative sample of the population as a whole. Curricula and methods of environmental education will be considered and how that could help future generations.

CHAPTER TWO

Literature Review

Chapter Overview

The literature review included here is in support of the research question: What do people who participate or do not participate in a neighborhood recycling program report regarding their exposure to childhood environmental education? Several aspects will be considered. The first section will provide information on waste management and recycling in general. This information will educate on how much waste is added to landfills everyday, and how much can be kept from the landfills. This could illuminate the problem to the public and possibly influence them to recycle. Section two reviews environmental education and environmental literacy. We will look into its history, its goals, and levels of environmental literacy as indicated by previous research in the field. The third section will look into attitudes toward the environment in general, and recycling in specific, as it is the focus of my study. The fourth section ponders the creation of those people who are icons in the field of environmental education and environmental advocacy. I also will look into past and present school curricula to determine if it is helping or harming our future generations. That said, a review of the amount of waste and recyclables is next.

Municipal Solid Waste Generated

The Environmental Protection Agency (EPA) keeps data on the amounts of municipal solid waste (MSW) generated, and on the portion of that waste that is recycled,

composted, or sent to combustion. There is a massive amount of MSE generated as indicated by the research of Mouw and Taylor (2016). These authors stated that waste characterizations and recovery rate studies have shown U.S. households annually generate between 800 and 1,000 pounds of recyclables that could be placed in a recycling container. Figure 1 below shows how much waste could be eliminated from landfills. The amount listed is per household. The amount listed is what can be recycled and therefore removed from the total waste taken to the landfill. It does not include total waste, but imagine the total for these cities. Recycling is one way to reduce that amount.

Table 3 | Combined estimate of household recyclables generated per year

Community	Pounds of recyclables per year
Apex, N.C.	964
Asheville, N.C.	849
Austin, Texas	854
Cary, N.C.	925
Cincinnati	963
Fayetteville, N.C.	757
Fort Worth, Texas	804
Fuquay-Varina, N.C.	889
Garner, N.C.	750
Holly Springs, N.C.	856
Mass. subscription (rural)	856
Mass. subscription (suburban)	839
Minneapolis	896
Raleigh, N.C.	810
Saint Louis Park, Minn.	827
Tucson, Ariz.	880
Worcester, Mass. (high income)	1,005
Worcester, Mass. (med. Income)	857
Average	**866**

Table 2.1. Pounds of recyclables generated annually Mouw and Taylor (2016), published with permission.

Per the EPA website, in 2014, United States citizens, as a whole, generated 258 million tons of municipal solid waste, with 89 million tons of that sent to recycling or composting, for a 34.6% recycling rate (EPA Fact Sheet, 2014). Thirty-three million tons were combusted with energy recovery, while the remaining 136 million tons went to

landfills across the country. The breakdown of municipal solid waste that was able to be recycled is shown in figure 2.1.

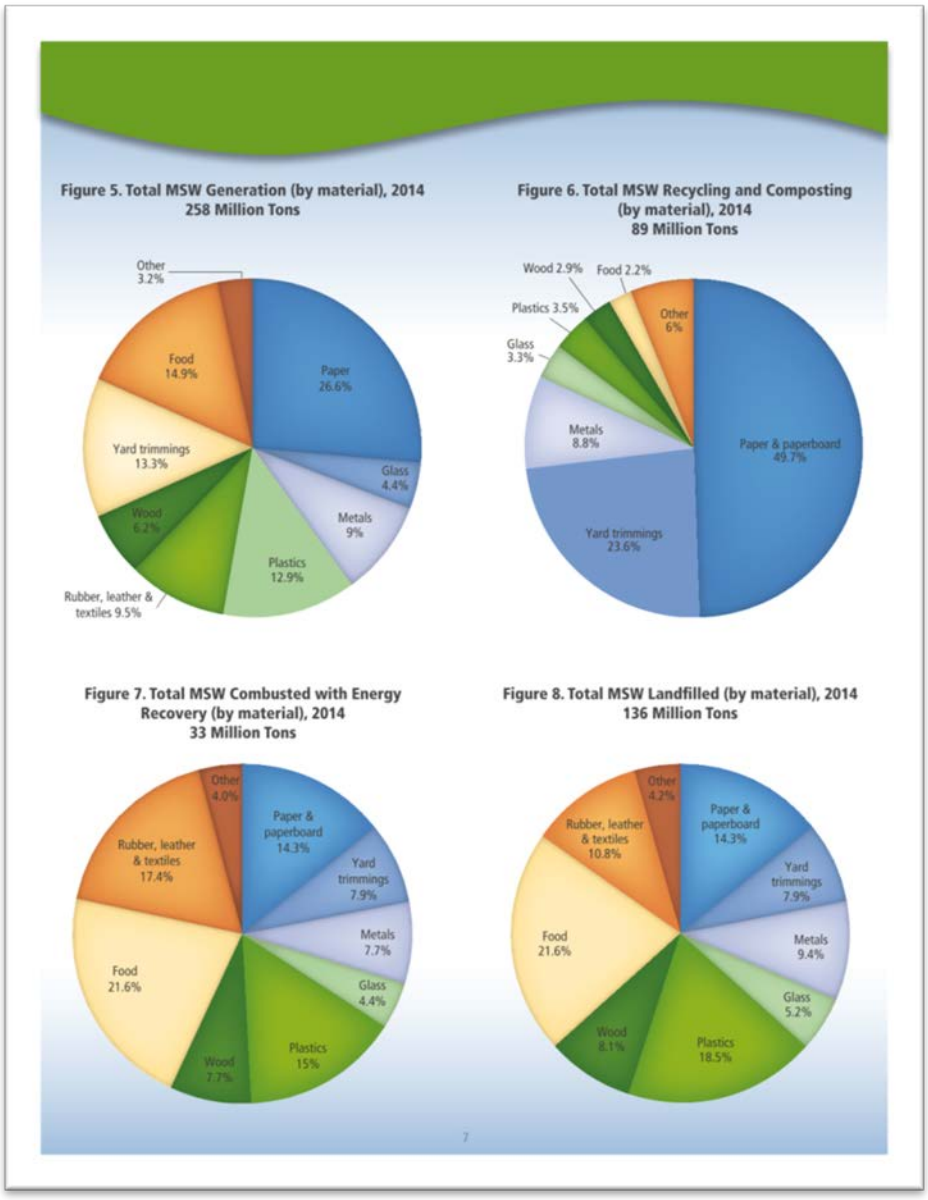

Figure 2.1. MSW Generation (by material), 2014. 258 Million Tons (before recycling, composting, or combustion with energy recovery) EPA, 2017. published with permission

Recycling Programs

Many neighborhoods in the United States have recycling programs in addition to their normal garbage collection program. Cities, townships, and other municipalities may

have residential curbside recycling programs (RCRP). These may or may not be mandatory, but the majority is not. There are several factors that come into play in the data that is gathered on curbside recycling. The 2016 State of Curbside Report (Marshall, 2017) investigated areas that affect recycling in the U.S. This report focuses on the amount of MSW collected, and what form of collection is most productive.

To ensure that the level of understanding is the same, some terms that were defined in the report are addressed here. These terms come from the 2017 Curbside Report, but also apply to the area studied.

"Automatic collection" means that households are automatically included in a recycling program when they sign up for trash pickup. In my study area, it is automatic when a homeowner or renter signs up for trash pickup service.

"Curbside" means that the household inhabitants are not required to deliver their recyclables to a central location. They are able to place the recycling containers in front of their house. This is the type of program incorporated in the area of my study.

There are two methods of collection. "Single-stream" is another term for commingled recycling. All materials are placed into one container, termed a cart. The cart is large, typically the same size or larger than a trash can used for regular trash pickup. The area in my study initially started with "multi-stream" collection, where each household is required to separate the materials. Glass in one bin, paper and cardboard in another, and plastic and aluminum in yet another. Other areas in the city do have the "single-stream" collection method. My study area was converted to single-stream collection before my observations were concluded.

A pound per household per year ("lbs/hh/yr") is the unit of measure in the waste management field.

Now that you have learned what the terms mean, we can dig deeper into the details.

Participation Rates in Single- and Multi-Stream Recycling

Curbside Report

My study area started the observation periods with automatic, multi-stream curbside recycling. Marshall (2017) reports that using a multi-stream approach can affect the participation in the recycling program. In the multi-stream approach the residents must sort their waste and according to the Results of the Curbside Report (Marshall, 2017) showed that participation was greater in areas that had automatic, single-stream, curbside recycling. According to the report the single-stream areas on average collect more than dual- or multi-stream areas. Approximately midway through my observations, my study area changed to the single-stream recycling method.

Automatic collection results in 100lbs/hh/yr more than opt-in service (Marshall, 2017). The larger carts used for single-stream also resulted in 100lbs/hh/yr more than separate bins (Marshall, 2017). Results of the Curbside Report (Marshall, 2017) also noted no significant effect on the amount of waste recycled between programs that collected weekly versus every other week. The program in the study area started with collection every other week, but converted to weekly later. The Curbside Report (Marshall, 2017) reports that Programs that accepted glass collected over 100lbs/hh/yr more than those programs that did not. The area studied does collect glass. There can be

quite a difference of total waste collected between recycling methods, and next we will consider other influences.

A typical reason for lowered rate of recycling is confusion as to what exactly is recyclable (Hines, Hungerford & Tomera, 1987; Larsen, 1995; Oskamp, et al., 1991; Wright, 2011). This can be remedied by the municipalities providing information, or the company that is contracted to pick up the waste providing information. In the area to be studied, specific types of items may be recycled.

Collection Basket	**Item Description for Specific Collection Basket**
Red Basket:	Aluminum cans, tin cans and plastic bottles. Make sure your plastics are recyclable by looking for the recycling symbols that have a 1 or 2 inside the triangle.
White Basket:	Newspapers, telephone books, and magazines.
Blue Basket:	Glass bottles. Do not break glass. IMPORTANT: Keep all glass jars and bottles separate from other recyclables. DO NOT include mirrors, plate glass, chinaware or ceramics.
Corrugated Cardboard:	Flatten cardboard boxes and place them next to the recycling baskets.

Table 2.2. Items Collected and Processed for Recycling in the Research Area
Republic Services, 2017. used with permission

Plastic types that can be recycled can vary by area. In the area that is being studied, only 2 types may be. An example of a type one plastic would be a water bottle. A type two plastic would be a milk jug or a detergent jug (Eartheasy, 2012). If a person is unsure of what types of plastics can be recycled, that could prevent recycling of any plastics to save the hassle.

Some studies show that the inconvenience of recycling can be a barrier to the behavior (Fung & Adams 2017; Schultz, Oskamp & Mainieri 1995; Gamba & Oskamp 1994; Nixon & Saphores 2009). In the area studied, many of these barriers have been eliminated. Curbside recycling has replaced delivering the materials to a central plant. The material is also picked up automatically, once or twice a week, bins or carts are provided, and no extra fee is assessed. I am not sure if anything additional can be done to make it easier than automatic, single-stream, curbside recycling programs.

With Mouw and Taylor (2016) showing that a household averages over 800 pounds of recyclable material a year, and The Curbside Report (Marshall, 2017) showing that only roughly 357 pounds per household per year is collected, an average recovery of 35-45% of possible recyclables, more work needs to be done to increase participation. This could be remedied by starting, or adding more, environmental education opportunities in schools, and out.

Environmental Education - A Bit of History

"Environmental education's mission is twofold: foster an unwavering love for nature, and then teach about environmental issues." (Kitch, n. d.) On one hand, much information can come from outside sources, such as websites, television, friends, and the like. What happens when there is no formal environmental education? Does that lead to

no sensitivity to environmental issues? If no education is provided on environmental issues, will there be no environmental action?

As stated in Chapter One, environmental education is not a new invention or development. Environmental education (EE) has been around much longer than the actual term has been. Sarabhai (as cited by Mathar, 2015) notes that as early as the 18th century, progressive thinkers suggested that education include a focus on the environment. The foundation for environmental education is ancient, when cultures were dependent on the natural resources around them and the elders in the communities would pass on lessons to the next generation (Sauvé, 2005). They also tried to keep a balance in that relationship with nature, not taking more than their immediate needs, so that nature would continue to provide for years to come. Leopold stressed the importance of that relationship with nature (Sauvé, 2005).

Another current is conservationism. According to Sauvé (2005) a favorite tenet of the conservationist movement is "Reduce, Reuse, Recycle". This fundamental commandment, if you will, has remained a staple of environmental education even now into the present 2018. Sauvé (2005) agreed with Leopold and felt that if a person had a relationship with nature, conservation could be achieved. Sauvé (2005) reports that Leopold focused his methods on college-aged students, not children, but it seems logical that a relationship takes time to build and should start earlier than college. I feel that careful tending to this relationship is needed, over years in some cases, instead of starting the process when some students already have their habits ingrained. Like mathematics, one must start with the basics and learn from there.

Chawla (1999) found that environmentally active adults overwhelmingly had an excess of outdoor experience as children. The same was not found for those that had outdoor experience as adults. Kitch (n. d.) noted that Leopold had an outside childhood, and was under the impression that others had also, and that future generations would continue that pattern. Kitch (n. d.) argues that the pattern of an outside childhood has ended. More children spend time indoors now than outdoors. Kitch (n. d.) reports in a Centers of Disease Control study stated that only 6% of children aged 9-13 played outside on their own. Leopold's assumption that all children play outside does not fit today's mold. This is why environmental education must start earlier.

Sauvé (2005) discovered that Sobel was opposite of Leopold's opinion in that environmental education should start early. In his research, Sauvé (2005) noticed that in specific, Sobel insisted that there be age-appropriate environmental education provided, which included stories about nature and animals, particularly baby animals, for the youngest group of children. Pre-teens would continue building the relationship, learning issues affecting the environment. From there, teenagers would start coming up with solutions for those issues. In the end, the result would be a lifelong environmentally-conscious citizen. This repetition of building a relationship with nature and the planet as a whole would lead to an environmentally literate individual.

Environmental Literacy

Spinola (2015, p. 392) feels that "The main goal of environmental education is to improve environmental literacy, including not just more knowledge but also a better attitude toward the environment and a higher prevalence of pro-environmental behaviours."

The focus of UNESCO was to create and grow interdisciplinary education toward solving the environment's problems, or improve students' decision-making skills to do so (UNESCO 1978). Building these critical thinking skills can be beneficial in all areas, but for my purposes here, I would like to find out if the education provided influences the students' behavior.

Research by Craig and Allen (2015) examined if environmental education in K-12 schools had an influence on students. Using pre- and post-tests on students in third grade to gauge any increase in knowledge from in-class instruction and its at-home application, the authors report a substantial increase in correct answers on the post-test. The accompanying at-home application included identifying energy consumption at home. They were to identify what consumed the most electricity in the home, what types of light bulbs were being used, and if electrical components were turned on when not being used. Craig and Allen's results showed that the in-class education was working. Home energy usage decreased. As a final hypothesis, the study also hoped to see a decrease in energy usage at the school that the students attended. Again, there was a decrease in energy usage. These smaller research projects can grow and after close analysis and looking at all project results, can be used on a larger scale.

There have been several assessments created to measure the level of environmental literacy in certain populations. The National Environmental Education Foundation (2015) conducted a survey on adults, the NEEF Benchmark Survey, which provided "benchmark data on environmental attitudes, environmentally-friendly behaviors, and environmental knowledge" (p. 14). The results showed that all American adults seem to engage in some sort of environmentally-friendly

behavior. Sadly though, the Gallup Poll, as quoted by NEEF, also showed that Americans are less concerned with environmental problems (water, air) now than in 2000. These same Americans feel that the quality of the environment is improving. This lesser feeling of concern by adults should be examined more to ensure the correct and adequate information is given to the current population or younger people as they are the ones that must ensure adequate environmental quality in the future.

Environmental sensitivity, environmental education and environmental literacy are all important in steering children towards environmentally responsible behaviors. These bring up the notion of attitudes toward environmental education and habits that are environmentally-friendly. Are these habits being taught, and where?

Local Public School Curricula

I see a lack of environmental education overall. Early, ongoing environmental education can lead to environmental literacy. As with literacy in other areas, the most common of which is reading, it is built through continuing education. Environmental education in some school districts does not fall under that ideal. There is minimal time spent on the subject in the school district and state in which I am conducting my study. In the area that was studied, no environmental education is required to graduate from high school.

A review of public school district curricula was done to determine the extent of education provided to in the area of environmental sustainability or environmental literacy in the area where the studied was conducted. This was done because of the foundational belief by the researcher that the abundance or lack thereof can affect the attitudes toward the environment of children later in life.

Within the local public school district, research into the curriculum for the state yielded little. According to the state department of education where the research took place the state educational standards in social studies were just updated. The Science Standards that I was able to locate, for grades Kindergarten through Fifth Grade in the local public school district, are posted online through nextgenscience.org. Reviewing these, it seems to me that the students receive far less information about the environment than needed, as we live in a severely drought-stricken area of the country. At the very least, water-saving habits should be taught.

Elementary school level. The economy component of the social science curriculum for pre-kindergarteners includes learning that resources can be limited and that they should turn off lights and water when not using them. Kindergarteners also learn that people affect the world, and ways to reduce that impact. These two aspects are related as conserving resources will reduce humans' impact on the planet.

My review of the standards indicated that First-graders have nothing remotely related to environmental education. In Second grade, the students' parents are invited to talk about natural resources near their home. This assumes that the parents have a certain level of knowledge. In many cases, as indicated in the influential variables section later in this review, knowledge is the barrier to action. Second graders are also encouraged to "reduce, reuse, recycle" as part of the health curriculum outside of the core of reading, writing, and math. This health curriculum seemed to be an afterthought in the 2017 curriculum I reviewed. Second Grade students will learn to identify how natural resources were used to produce goods and services in the past and present. They will also learn to describe multiple ways in which natural resources

impacted economic decision-making in the past. This relates to the economic aspects of resources.

Third-graders discuss solutions to reduce the impact of natural disasters. Third Grade students will explain how scarcity of resources is unique in different places in the world and how this impacts individual economic decision-making.

Fourth-graders get a substantially improved amount of education related to the environment. In Physical Science, they discover fossil fuels, and the impact that those fuels have on the environment. They also learn that some resources are renewable, while others are not. In Economics, they learn about the state's natural resources. Fourth-graders are reminded of recycling while also discussing littering and water conservation. Fourth Grade describes the intended and unintended consequences of decisions made regarding limited and shared resources in the state. In Earth Science, these students compare solutions to protect humans from natural Earth processes.

Fifth-graders discuss ways communities can protect and conserve the natural resources and environment. (NSACSS)

Middle school. The lack of environmental education education continues through middle school in the state where the research takes place. According to the state's department of education sixth-graders learn about "human impact" as part of their science concepts. It does not go into any further detail. Seventh-graders learn about the Earth's resources. As part of their at-home learning, seventh-graders are suggested to help with recycling at home. My review indicated that eighth-graders' environmental education is completely absent.

High school. In high school, under the Geoscience umbrella, students may choose to learn about the changing climate, and human sustainability (Bonanza 2017; Clark 2017). Geoscience is one of the choices students may take as part of their mandatory science requirement for high school graduation. Two or three courses in science are required by the school district in my area, depending on diploma desired. One must be Biology or Biology Honors. Depending on diploma chosen, the other science, or one of the other sciences must include a lab.

On review of the course catalog for a science and math magnet school, it had the standard biology, chemistry, geoscience, and physics options. It also offered some additional options for the magnet students, and those students at an exceptional level of science. Several Advanced Placement (AP) courses are available in the 2017-2018 course catalog: AP Biology, AP Chemistry, AP Environmental Science, and AP Physics.

AP courses are not always an option in the area that I studied, as there is a charge for taking the AP test for the classes, and as part of the university system in the area, I know from personal experience that many students do not take AP courses due to the level of difficulty, and the student's level of college-readiness. Magnet and above-average students also had Anatomy & Physiology, Genetics, Geology, and Zoology options. The non-AP courses are instead counted as elective courses toward graduation, not toward the students' science requirements. When an AP course does not apply to a students' science requirements it could possibly steer a student away from taking those.

Upon researching a course catalog for a regular, non-magnet school, far fewer options are available. While the same Geoscience and AP Environmental Science was

present, only two additional science options were available: Anatomy & Physiology, and STEM Robotics (Bonanza, 2017). Again, nothing referencing environmental education.

The Geoscience course descriptions from the two schools differ, but agree upon the areas of the Earth and its environment.

AP Environmental Science descriptions differ, which surprised me, as Advanced Placement is a national program, and I assumed there would be a standard description of the content. The non-magnet school provides the framework and skills to study environmental science, while the magnet school recognizes that humans cause some change, and want to problem-solve, while providing the same skills. These findings in the local education curricula differ immensely from those in other states.

Environmental Education in Other States

I thought I would review some standards from other states, possibly more "ecologically-minded" states. Possibly, this poor standard of environmental education was limited to the state where this research took place. I hoped to find that that was indeed the case. With education, more people attain that knowledge needed to act. I was unable to find anything for the Alaska Department of Education & Early Development that was specific to scientific ideas. The standards reviewed in this section are from The Oregon Department of Education and the Vermont Department of Education. Both of these states also use the same Next Gen Science Standards (NGSS, 2017) as does the state where this research took place.

In Oregon, looking at the Social Science standards, Kindergarten students learn how people can care for the environment. First Grade students learn about local natural

resources and how people use them. Second Graders have nothing in my designated field, but I am impressed with what Third Grade students learn:

> Explain the influence of humans (traders, immigrants, indigenous, current residents) on Oregon's and the Northwest's physical systems; Identify and analyze Oregon's natural resources and describe how people in Oregon and other parts of the world use them; Identify how people have adapted to and have changed the physical geography of the community; Identify how people or other living things might be affected by an event, issue, or problem. (OR DOE, 2011, p. 5)

Fourth Grade also is quite involved with the environment: land and resource conflicts, different political views, boundary disputes, and cultural differences involving Oregon; how people in Oregon have modified their environment and how the environment has influenced people's lives; how technology and society influence Oregon's sustainability (dams, wind turbines, etc.). Fifth Grade learns how physical and political features influence the environment, and how technology and society influence sustainability in the United States (OR DOE, 2011). I was rather impressed at the vast improvement in environmentally-centered information given to students in Oregon.

In Global Citizenship, Pre-Kindergarten and Kindergarten students in Vermont learn how they affect the environment. First and Second Graders again, identify ways in which they affect the environment, but also discuss ways to help preserve it. Vermont Second Graders actively take care of the environment by learning to garden and recycle. Vermont also goes the extra mile by teaching students about businesses and activities that use local resources.

Third and Fourth Grade Students in Vermont make contributions to preserving natural resources and discuss environmental issues. Fifth and Sixth Grade students in Vermont learn how people have changed the environment for specific purposes, gain details of how those activities have impacted the environment, and discuss outcomes and solutions. The students take into consideration the long-term effects of, and different perspectives on, these environmental issues.

Reviewing the curriculum standards from Oregon and Vermont provide evidence that the state where the research takes place is neglectful in the amount of attention it gives to the environment and its issues. Even the high schools, with all of their elective choices, offer little in the environmental education field. Even outside of the classroom, there is minimal information out there for preschool and elementary age kids in my area.

When conducting my research, I did manage to find a link to resources outside of the public school system that can benefit students. This was mainly designed for teachers to bring in presenters, or plan a field trip. It is not something that seemed readily available to parents or students, as I was specifically looking for this. Camps, workshops, and hikes can all benefit children and their desire to explore nature. Sadly, on hikes, one can come upon litter on the trail. That can become a teaching moment. The teacher or guide or parent can ask the children about the litter, what can be done about it, and talk about what happens to waste. They can come up with an idea to reduce the amount of waste they produce.

As Wes Mannion said, “If you cannot excite people about wildlife, how can you convince them to love, cherish, and protect our wildlife and the environment they live

in?" (Irwin & Irwin, 2002, p.201) Knowledge of and skill in using environmental action strategies is a great predictor of responsible attitude toward the environment later. Students should be learning these action strategies throughout childhood, and into adulthood for them to become a habit. I feel this excitement must start in early childhood.

Influential Variables

This section delves into the possible influences upon a person that would sway their environmental behavior. What are the reasons they have the opinions they have? What influences, if any, can they name that steer them one way or another?

In 1987, Hines, et al reviewed 128 separate studies to find which variables are associated with responsible environmental behavior. Several demographic categories were involved in this meta-analysis. Others have also made meta-analyses, or reviews of literature, collecting demographic data such as income, education, age, and gender.

Age. A few thoughts come to mind here. Children are in school, learning new things, possibly about the environment, so you would think a young age group would be evident as highly likely to recycle. From another perspective, you also have the thought that if at least one of the household members is retired, that person would have more time to devote to the collection and separation of the recyclable materials. Hines, et al (1987) noted that younger subjects were more likely to exhibit responsible behavior. Other researchers have shown the same results (Gamba & Oskamp 1994; Larsen, 1995). Larsen also indicated that Van Liere and Dunlap, Samdahl and Robertson, and Howenstein also confirmed the same conclusion. Lansana (1992) and Nixon and Saphores (2009) found of their study samples, the opposite was the case. Participants

under the age of 40 were less likely to recycle. The subjects within the age range of 40-64 recycled more often. With one household member over the age of 65, recycling was seen more often. So in many cases, one cannot depend on age as a determining factor for recycling.

Income. A higher income was only slightly more likely to influence the person to act responsibly. A weak relationship was shown, at best. (Hines, et al, 1987; Vining & Embreo 1990; Nixon & Saphores 2009). Again, one cannot depend on this as a factor.

Education level. Again, Hines, et al. (1987) showed that higher educated persons were only slightly more likely to exhibit responsible behavior. Lansana's (1992) results showed that those with 7-12 years of education were more likely to recycle. No correlation was shown by Nixon and Saphores (2009). More education seems to be a slight factor in determining the likelihood of recycling.

Gender. Studies have opposing information on this area. Several have no relationship indicated between gender and behavior (Oskamp, et al., 1991; Gamba & Oskamp 1994; Vining & Embreo 1990). In Wright's 2011 study, no relationship was indicated, but her review of the research showed that previous studies showed leanings in both directions. Per Wright (2011), Clay (2005) and Mohai (1992) both saw results showing men recycled more. Indications lean toward men recycling more.

Household status. Larsen (1995) stated that homeowners were found to be more likely to show responsible environmental behavior. This was seconded by Nixon and Saphores (2009). Lansana (1992) postulated that this could be due to apartment dwellers' lack of space to store the recyclable waste and any containers used to hold it. Wright (2011) quoted Berger as suggesting a lack of access to recycling services, which could

again be attributed to apartment dwellers. This would likely not be an issue at the present time.

Race or ethnicity. Race or ethnicity and its influence on responsible environmental behavior has produced little research. Per Nixon and Saphores (2009), Johnson, et al. found minorities to be less likely to recycle. In the study by Nixon and Saphores (2009), however, whites and ethnicities other than African-American have similar likelihood of recycling. African-Americans did indeed have a lower rate of the habit in their study.

Subject knowledge. In most studies that have been conducted, knowledge, possibly gained from previous environmental education, plays a significant role in the responsible environmental behavior of a person. Knowledge of the issues or of action strategies is noted in several studies. (Hines, et al 1987; Larsen, 1995; Oskamp, et al., 1991; Wright 2011) This education can be split into two aspects: knowledge of the environmental issues, and knowledge of actions. Basic knowledge of the issues was shown as lacking in studies by Hines, et al. (1987) and Wright (2011). With adequate knowledge of issues, the recycling habit was more likely to be observed. This research question seeks to determine this.

In many studies, even as early as 1977, the lack of specific information on what actions can be taken is indicated as a barrier to recycling, as well as other responsible environmental behaviors. (Simmons & Widmar 1990; Vining & Ebreo, 1990; Schultz, Oskamp & Mainieri 1995; Oskamp et al., 1991; Sia, Hungerford & Tomera, 1986). Again, adequate environmental education could eliminate the barrier.

Wright, in 2011, gathered data that indicates the need for education on how to recycle properly. This corroborates the comments from the recycling and waste management section, where confusion as to what is recyclable is a barrier to increasing participation in recycling programs. The public needs more information distributed, stating how and what to recycle. Some subjects in Lansana's study (1992) were completely unaware of the recycling program that had been initiated 2 months prior to the start of the study. Awareness and knowledge seem to be key factors.

Knowledge of the environmental issues and knowledge of how to take action on those issues was a factor in the analysis. Classroom discussions of environmental issues, alternative solutions to solve them, and development of skills to investigate, problem-solve, and take action should take place to create more environmentally sensitive individuals.

Finally, Fung and Adams (2017) saw lack of knowledge, or more specifically, awareness, as an influence in their study. They suggest that awareness begets passion for the issue. While knowledge is key, individuals' attitudes toward recycling is also a major factor.

Attitudes

Guagnano, Stern and Dietz (1995) saw the influences of attitudes on recycling as simple as giving the participants recycling bins. That simple possession overcame most barriers to the action. However, in some instances, the perceived personal costs came into play, which flowed through awareness of recycling consequences and ascription of recycling responsibility. In their study, it seemed that just having the bin given to the participants was enough to overcome those hurdles, possibly showing the recycling habit

as a social norm, thus increasing social pressure. Hopper and Nielsen (1991) took this a bit further. They saw the social norm internalized and becoming a personal norm. Their model still showed influences of awareness of consequences and ascription of responsibility on the final action of recycling. Their data showed that recycling is a form of altruistic behavior, as the action of recycling was influenced greatly when the awareness of consequences was high.

Homer and Kahle, in their 1998 study of natural food shopping, saw that values may create attitudes, which influence behavior. People with a strong value or opinion on a certain topic will exert control over that aspect, creating an attitude. Attitudes go on to influence the behavior.

The study of attitudes as influencing responsible environmental behaviors can fall under a few subheadings. Hines, et al (1987), in their meta-analysis of research on responsible environmental behavior saw a new sort of relationship develop. They looked at cognitive variables, psycho-social variables, and demographic variables. They determined that persons with an internal locus of control, meaning that they think they are more likely to make an impact, are more likely to exhibit environmentally responsible behaviors (ERB). Hines et al. (1987) noted this as also being supported by studies from Arbuthot (1977), Hungerford and Peyton (1981), Champeau and Peyton (1983), and Simmons and Widmar (1990). With an internal locus of control, the person feels that they can solve the problem, even as one lone individual. Persons with an external locus of control feel that anything that they do will not matter, and that the action must come from a higher power, be it God or government.

Those that feel personally responsible for the environment also are more likely to engage in ERB. Individuals with positive attitudes toward the environment as a whole, and toward environmental action showed more engagement in ERB. The model Hines et al. (1987) came up with was more of a flow chart, with no linear path, and no obvious singular factor leading to responsible environmental behavior (see Figure 2.2).

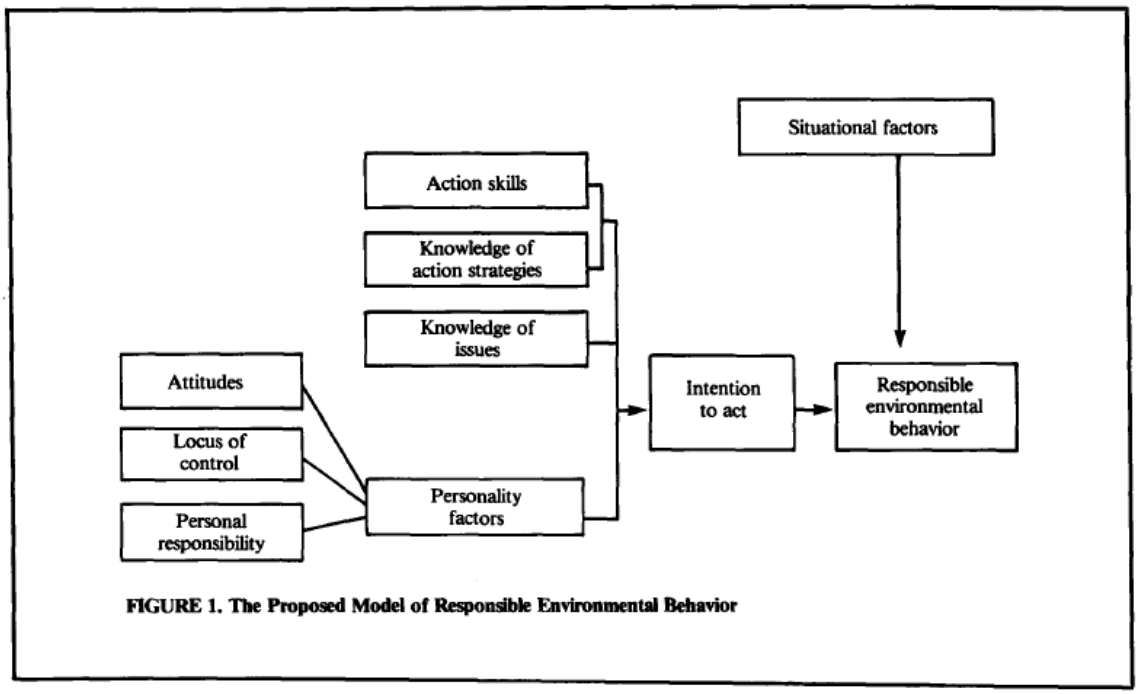

FIGURE 1. The Proposed Model of Responsible Environmental Behavior

Figure 2.2. Hines, Hungerford, and Tomera 1987. published with permission

According to Larsen (1995), those who recycle are more likely to be concerned with other aspects of environmental stewardship. Those who recycle feel more personally responsible for the planet. In Larsen's 1995 work, Van Liere and Dunlap and Baldassare and Katz indicated that those who recycle are more likely to be younger, liberal people, statistically more women, and Democrats. One habit can lead to other habits being taken on.

Hines, et al (1987) said that researchers cannot believe every statement that a respondent or participant makes, termed a “verbal commitment” in their analysis, so they tested self-reported versus actual behavior. Their research showed that those that made the verbal commitment were indeed more likely to exhibit the responsible environmental behavior. They even had results increase by their observation than by self-reporting.

This issue of stating one thing, while doing another was also referred to by Wright (2011), although she did not conduct an observation to confirm this when conducting her study. This phenomenon was observed much earlier by Bickman (1972). He purposely put soda cans out, near trash cans, with models to help influence them to one action or the other. Not one of the students observed picked up the soda can, even when the model did so. In another experiment, he put trash near a tipped over trash can. Only eight persons picked up the litter, out of 506 total people observed, even when the people had to step around or over it. After watching people go past it, every fifth person was interviewed asking if litter was everyone’s problem, or just the problem of those whose job it is to pick it up. Ninety-four percent stated that it was everyone’s problem. Clearly a discrepancy between statement and action. The National Environmental Education Foundation (2015) also sees that trend in their study.

People seem to like to follow the herd. Cialdini (2003) experimented with litter in a clean environment and a littered environment. Following a model’s lead, the most littering happened when the model walked by the litter in the messy area. The least amount occurred when the model littered in a clean area.

A recent CNN online article suggested that people trash items that do not represent them, exhibited by a coffee cup with their name spelled incorrectly, as opposed

to correctly. If it is spelled wrong, the customer threw it away instead of putting it into a recycling bin (Prisco, 2017). A similar situation was observed with aluminum cans. The person observed would trash the can if it was not in its original state, but when pristine and uncrumpled, it was recycled. The CNN article also referred to Cialdini's 2003 experiment (Prisco, 2017). So-called "trash" is trashed, instead of being recycled.

Early models of pro-environmental behavior show that the thinking at the time was if you educated people, they would do it (Kollmuss & Agyeman 2002). Hines, et al (1987) were some of those that completely remodeled that thinking. In the model by Varela-Candamio, Novo-Corti and García-Alvarez (2018), education did have an effect on Awareness, Attitudes, and Motivation. Awareness and Attitude both influence Intention. Their results and model show that Intention and Environmental Education are the two predictors of Green Behavior. That again shows how much education affects the behavior. Education does not work alone. If a person does not have the attitude or intention, education can go to waste.

Rajecki, as quoted by Kollmuss and Agyeman (2002), came up with a few theories on why the education just didn't permeate the psyche of the individuals. He stated that indirect experience was not strong enough. Also, again, people follow the herd. People follow what is around them. If recycling is not the norm, it is unlikely that a person will go against that norm. Another thought of his was that people's minds change over time. What is important now may not be in two months. Lastly, he considered the questions a bit vague. "What do you think about the environment?" versus, "what do you think about recycling?" will elicit vague and more specific answers, respectively.

Kollmuss and Agyeman also quoted Stern, Dietz, and Karlof (1993) with their proposed equation: Motivation = egoistic orientation + social orientation + biospheric orientation. As expected, egoistic orientation, removal of harm to oneself, is the strongest of the three. Biospheric, the removal of harm to non-humans, is the weakest.

If the subject of recycling or environmentally responsible behavior does not interest a person, their attitude will divert their mind from it, thus not registering the information, or quickly forgetting it.

A good study of what influences a person to recycle is Botetzagiasa, Dimab, and Malesiosca, 2015. From their research, they saw that Perceived Behavioral Control (PBC), or what you feel that you have control over, is the number one predictor in recycling. This is also known as Locus of Control in other studies. The second most accurate predictor was Moral Norms, "an internalized, personal, feeling of moral obligation to 'do-what-feels-right' and not on some need to conform to social standards and to avoid social injunctions" (Botetzagiasa, Dimab, & Malesiosca, 2015, p.65). This can also be seen as a feeling of personal responsibility. These influences can be seen in environmental experts.

What Influenced the Notable Figures in the Environmental Education Field?

Were they born into an environmentally friendly family? This section of the literature review looks into the background and experiences that may have influenced the influential researchers of today. When one thinks about it, one may come to the immediate conclusion that they were outdoors from birth, every day. In many cases, that would not be far from the truth.

In Tanner's study (1980), thirty-five of the forty-five active, informed citizen conservationists did mention the outdoors as a primary formative factor, while nine other respondents implied the same. In many studies since Tanner's in 1980, specifically Chawla's 1999 review of Tanner, she showed that other researchers (Peterson; Palmer; Peters Grant; Gunderson; James; Sward) have confirmed that early experiences in the outdoors, predominantly in a pristine, natural setting, usually alone or with a select few family members or friends, have been the most significant event or reason for the respondents to be in the positions that they were in at the time of the study . Tanner determined that "children must first learn to love the natural world before they can become concerned with maintaining its integrity" (p. 23).

Tanner (1980) conducted his study on staff and officers in four national environmental organizations, the National Wildlife Federation, The Nature Conservancy, the National Audubon Society, and the Sierra Club. In Chawla's revisiting of Tanner's work, she showed those who followed his lead in focusing on environmental activists include Peters Grant, James, Sward and her own study (Chawla 1999). All of these studies came to the same conclusion as Tanner did in his study (1980).

Peterson (1982) was shown by Chawla(1999) to have conducted much the same study, but focused on environmental educators. She confirmed the dedication of the educators to their profession within her study. One must mention that Peterson conducted interviews with her population, whereas Tanner and most others conducted surveys or questionnaires. Peterson started a path to be followed, researching environmental educators and not environmental action leaders. In Chawla's review, she

cited Palmer, Gunderson, and James and their research into the significant moments in environmental educators' career decisions.

In the research above, and many that are not, there is a term "environmental sensitivity" that is mentioned as the necessary foundation to activism. Hungerford and Volk (as cited by Chawla, 1998) refer to environmental sensitivity as a prerequisite to environmental action. A linear sequence is hypothesized from entry (this is indicated as environmental sensitivity) to ownership to empowerment. (Chawla. 1998) Peterson identified Tanner's work as the most pertinent research yet done with regard to environmental sensitivity (Chawla 1998).

Sia, Hungerford and Tomera (1986) felt that environmental problem-solving skills and citizen participation were neglected in the previous research. They theorized that the variables that encourage environmental literacy may be the same as those that predict responsible environmental behavior. "These variables are (1) knowledge of issues, (2) beliefs concerning issues, (3) individual values, (4) individual attitudes, (5) locus of control, (6) environmental sensitivity, (7) knowledge of and skill in the use of environmental action strategies, and (8) ecological concepts" (Hungerford & Tomera, via Sia, Hungerford & Tomera 1986). They selected variables from their theoretical framework and from previous studies that were suggested to have predictive power.

From Sia, et al's 1986 findings, a profile emerged. A high environmental activist is composed of the following characteristics:

Substantial knowledge of and moderate skill in the use of environmental action strategies	A moderately negative attitude towards pollution

Versatility in using the environmental action categories in taking environmental action	A slightly ambivalent attitude towards technology
A considerable degree of environmental sensitivity	The likelihood of being androgynous in psychological sex role classification
A perception of being moderately effective as an individual but more so as a group member (i.e., the locus of control variables)	

Table 2.3 typical characteristics of environmental activists

Summary

From the information presented in this chapter, there should be no program barriers to recycling. The whole process has been made simple and convenient for the participants in my study. There is no fee, a company provides bins or carts, and there is curbside pickup. Indeed, some areas of town do need to separate the waste materials, but many do not. In the time that a can may be thrown into a trash can, it can be thrown into the appropriate bin or cart, as the case may be.

Demographically, I see no reason that the people in the area of my study would be differentiated. Not much by the way of significant differences was noted in past studies on demographic influences. Since we all are in houses with garages and yards, there should theoretically be no storage issues for the recyclables.

That being said, I would think that the level of education of knowledge is the mediating factor in my population. Even if they have not had any environmental

education in the past, as long as they have received specific instructions on the hows and whats of recycling, there would be no reason not to recycle.

Chapter Three will describe the action research methods that will be used to explore the purpose of the study. The purpose of this study is to help understand what influences recycling behavior, and if the level of environmental education affects that behavior. The research will take place at a neighborhood with 85 houses. The action research will begin with observations of recycling participation. Then residents will participate in a survey. I will use the survey responses after the observations as a quantitative measure of mindset. The data will then be collected and analyzed to answer the research question: What do people who participate or do not participate in a neighborhood recycling program report regarding their exposure to childhood environmental education?

Chapter Three

Methodology

Introduction

This study was conducted to see examine the question: What do people who participate or do not participate in a neighborhood recycling program report regarding their exposure to childhood environmental education? Two sister housing developments were studied. Two separate observations of seven weeks each were conducted, as well as a survey distributed. This would be termed as a mixed-methods study (Creswell, 2014).

The groups studied consisted of my own gated neighborhood, as well as the sister gated neighborhood, located immediately to the north. I served as a "passive observer" in the study (Mills, 2014), wishing only to find out the level of environmental literacy, and attitudes of the others around me. I have noticed in the neighborhood that a good portion do not recycle, and therefore I wanted to conduct an official observation, and also survey the residents.

Paradigm

As stated previously, an observation was conducted, and also a survey. After researching the literature, discrepancies between the actions and statements of the neighborhood participants was also desired to be documented. The observations were conducted initially, and followed with the distribution of the survey, hoping to discover the reasons that those who did not recycle provided for their nonparticipation. According

to Mills (2014), this study would exhibit the Explanatory Sequential Mixed Methods Design. With this method, I would observe without any interference, the actions of the participants, as described below, and then gain any explanations as to how the observation resulted.

Participants

The area studied is a suburban area, just outside a major southwestern city. The first gated community, which will be referred to as SW1, consists of 45 separate single-family homes. The sister neighborhood, located immediately to the north, referred to as SW2, consists of 40 separate single-family homes. The smallest homes in the area studied are one story, three bedroom, 2 bathroom, and 1800 square feet. The largest are two story, 5 bedroom, 3 bathroom, and up to 2914 square feet. According to Realtor.com, the neighborhood median price of the homes is $299,500 (see Figures 3.1 and 3.2). Renters can expect to pay $1651 per month. More specific demographics are included in Chapter Four.

Figure 3.1. An aerial view of SW1 obtained from Google Earth

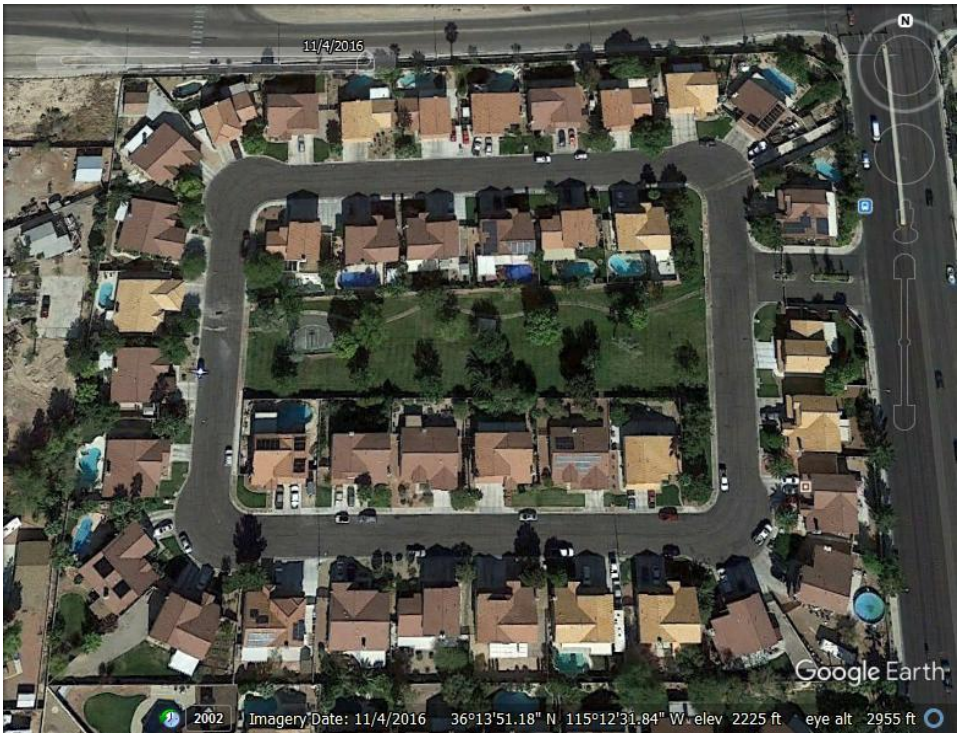

Figure 3.2. An aerial view of SW2 obtained from Google Earth

Again, the researcher served as a “passive observer” in the study (Mills, 2014), wishing only to find out the level of environmental literacy, and attitudes of the inhabitants of the study area. These participants conducted their normal recycling habits while I conducted the following observations.

Recycling Observation

Republic Services is the company providing recycling services to this area. Collection in this area during the first observation was biweekly, automatic, and curbside. The method for the neighborhoods studied initially was the method that uses three separate bins, known as multi-stream recycling. This method of recycling requires the customers to separate the recyclables into three separate bins. One bin is for glass, one is for paper, and the last one is for aluminum and plastic. The initial schedule for recycling service was every other Thursday.

As stated in Chapter Two, one method used in this county is via the commingled, All-in-One Recycling™ (https://www.republicservices.com/residents/all-in-one-recycling). This method was in place during the second observation period. Service was scheduled every Wednesday, automatic, and curbside. This method allowed the customer to place all recyclables into one larger container, which makes it easier and more convenient for the customers. It is generally referred to as single-stream recycling. As stated in Chapter Two, this method collects less than the single-stream method.

Figure 3.3. A standard trash can and a commingled recycling container

Figure 3.4. Image of a commingled recycling container, bins for sorting recycling, and standard trash can

The observation periods were originally conducted to see how many or what percentage of the neighborhood residents actually participated in the curbside recycling. The first observation was completed for seven recycling cycles, over fourteen weeks. Before my second observation period, the service was changed to weekly, single-stream. The second observation was also for seven cycles, also over seven weeks. This also allowed me to note if participation increased due to the more convenient all-in-one bins. An Excel worksheet of the results of the observations was maintained. A few other details were noted, such as if they had a pool, or if they had solar panels.

Once the observation periods were concluded, the survey was distributed.

Survey

After completing the observation, I wanted to know the reasons that those who did not recycle any of the observed weeks chose not to. I created a survey using google forms. Questions were gleaned from previous studies, and combined with questions specific to my study. I based most of the survey questions from the Attitudes Toward Recycling (ATR) Scale that Larsen (1995) utilized. Responses were multiple-choice, Likert scale, and open ended. It should take a maximum of 15 minutes to complete. I distributed by posting announcements at the community mailboxes, as well as at each residence. The two neighborhoods also have a combined Facebook group, so I also advertised and linked to the survey from that page.

Previous environmental education of the respondent could influence the habits of the participants. As part of the consent form, I alerted the participants that the object of this survey is to see if there is a correlation between the amount, or lack thereof, of previous environmental education and this eco-friendly habit.

The survey was approved by the Hamline University Human Subject Research Committee. The complete survey is shown as Appendix B. With the survey results in hand, I hope to exhibit a correlation between education and action, or have some additional insight into reasoning for or against recycling, in the summary of the research.

Summary

What do people who participate or do not participate in a neighborhood recycling program report regarding their exposure to childhood environmental education? The results of this study hope to show a correlation between the level of environmental education and the participation in a single, common, eco-conscious habit. Depending on the results received, more environmental education may be needed, or possibly different

information provided, such as what can be recycled. Respondent participation in the survey of 50% may be a bit out of reach, but I hope to be able to see a correlation with the number of responses received.

I am choosing mixed methods action research that relies data from surveys and observations. I am going to survey my residents about their mindsets and measure their level of environmental education. I am going to administer an observation over a period of eight weeks. I am going to analyze surveys and observe my participants for specific influences.

Chapter Four will present and analyze the quantitative data collected from surveys and the qualitative data collected from observations and survey responses. I will discuss themes and pattern that emerge from the data. I will connect the themes and patterns from the data analysis to themes and patterns in the literature.

Chapter Four

Results

Introduction

Chapter Four will present and analyze the quantitative data collected from surveys and the qualitative data collected from observations and survey responses. I will discuss themes and pattern that emerge from the data. I will connect the themes and patterns from the data analysis to themes and patterns in the literature review.

As stated previously, this mixed-methods study was conducted to see examine the question: What do people who participate or do not participate in a neighborhood recycling program report regarding their exposure to childhood environmental education? Two sister housing developments were studied. Two separate observations of seven weeks each were conducted, as well as a survey distributed.

The groups studied consisted of my own gated neighborhood, as well as the sister gated neighborhood, located immediately to the north. I served as a "passive observer" in the study (Mills, 2014), wishing only to find out the level of environmental literacy, and attitudes of the others around me. I have noticed in the neighborhood that a good portion do not recycle, and therefore I wanted to conduct an official observation, and also survey the residents. These participants conducted their normal recycling habits while I conducted the observations.

Survey requests/notices were distributed via the neighborhood Facebook page, and via notices posted on each individual mailbox. The question pool consisted of thirty-three questions total for all participants. Four additional questions were written specifically for those who do recycle, and four were written for those who do not recycle, for a total of thirty-seven questions for each participant. Of the eighty-five possible respondents, eight surveys were submitted. The median age of the participants was 42.125 years. Likert scales were used, as well as true-false, yes-no, and open ended. Analysis showed eleven negative and ten positive items in the "attitude toward recycling" section of the survey.

Demographics

To start, an observation was conducted, and also a survey. The area studied is a suburban area, just outside a major southwestern city. The first community, which will be referred to as SW1, is a gated community consisting of 45 separate single-family homes. The sister neighborhood, also gated, located immediately to the north, referred to as SW2, consists of 40 separate single-family homes. The smallest homes in the area studied are one story, three bedroom, 2 bathroom, and 1800 square feet. The largest are two story, 5 bedroom, 3 bathroom, and up to 2914 square feet. According to Realtor.com, the neighborhood median price of the homes is $299,500. Renters can expect to pay $1651 per month.

From the survey results, half of the participants were from SW1, while the remainder were from SW2. All of the eight survey participants own the residences, as opposed to renting.

I provided 5 ranges for income levels. The majority, three, of survey respondents fell into the "above $150,000" range, while two fell under the "$100,000-$150,000" range. One each fell into "below $50,000", "$50,000-$75,000", and "$75,000-$100,000."

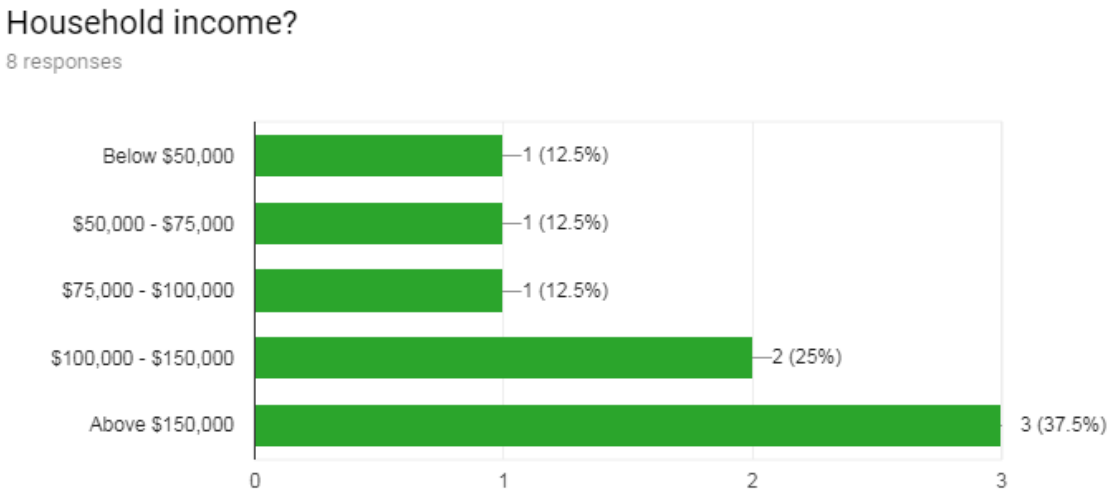

Figure 4.1 survey result-household income

Of the survey participants, the majority have lived in the subject area for over twelve months. This could mean that the 2 observation periods were conducted with very much the same residents. A good baseline to show any change of participation in curbside recycling.

How long have you resided in this house? 8 responses

20 years
5 years
3 years
6 years
Two years
18 years
6 months

19

Figure 4.2 survey result-length of time in the residence

I inquired if the residents owned a pool or not. The result to that question was exactly 50% yes, 50% no. I also wanted to know if the residents utilized solar power for any portion of their energy consumption.

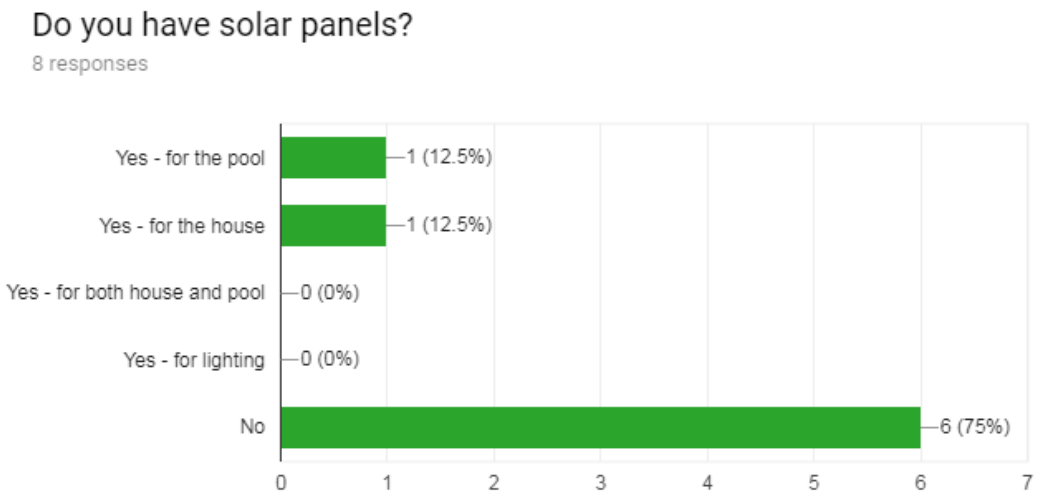

Figure 4.3 survey result-solar panels

From the survey results, just two use solar power. In the aerial view from Google Earth, figures 3.1 and 3.2, more of the residents of the study area do indeed use solar panels to assist with energy consumption.

The education level of each household was determined. From the chart below, we can see that the largest household size was five members. Five of the heads of households had completed a four-year Bachelor's Degree, or higher. Two of the remaining heads of households completed some college, while the remaining one completed high school or obtained a GED. Of the other members of the households, four

had completed a Bachelor's Degree, while another four have completed some college. I included other household members in the education question, as a child coming home from learning about being ecologically conscious at school could pass that information on to their parents, or take it upon themselves to start recycling.

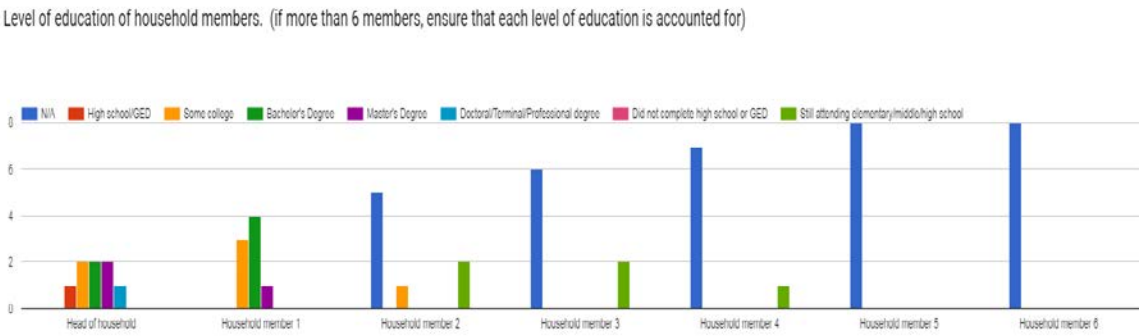

Figure 4.4 survey result-education level

My research question is What do people who participate or do not participate in a neighborhood recycling program report regarding their exposure to childhood environmental education? I added some questions focusing on the respondents' previous environmental education.

The question whether the respondent attended school in Clark County can determine if the respondent has been in the area for a while, therefore I can pose that any environmental education received would have been from the local school district. Only 3 survey respondents attended school in this district.

The following results show a range of several different generations, which would be able to affect the level of environmental education received.

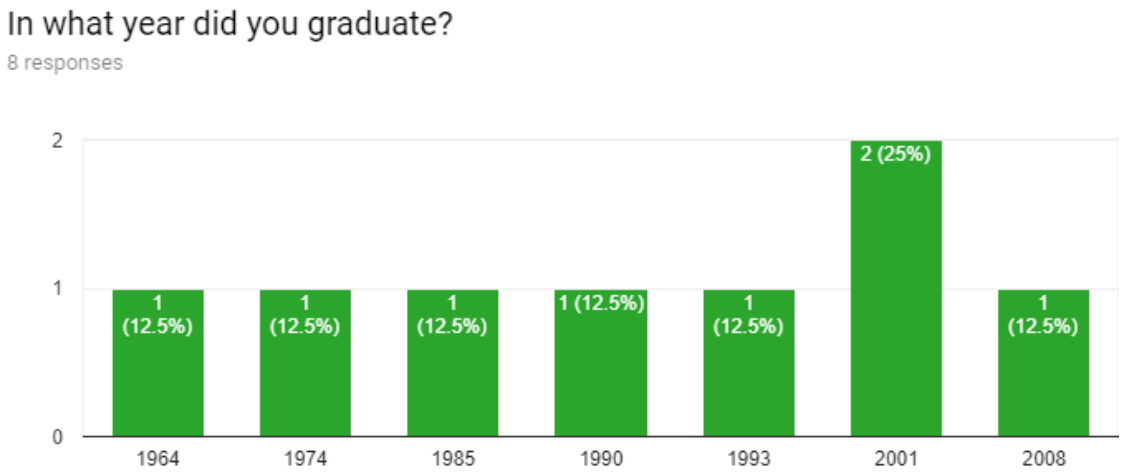

Figure 4.5 survey result-year of high school graduation

Older generations, those graduating in the 1960s and 1970s would likely have the least amount of environmental education, where more recent graduates would likely have a higher level.

Since school districts differ in their requirements, and of course from decade to decade, requirements can differ, I asked the residents how much environmental education that they have had, if any, and what they could tell me about it A reply of one equated to "no environmental education in past", while a score of five meant the respondent had a "Substantial amount of knowledge". My respondents tended to fall on the lower end of

the scale, five of them having seemingly little or no past environmental education.

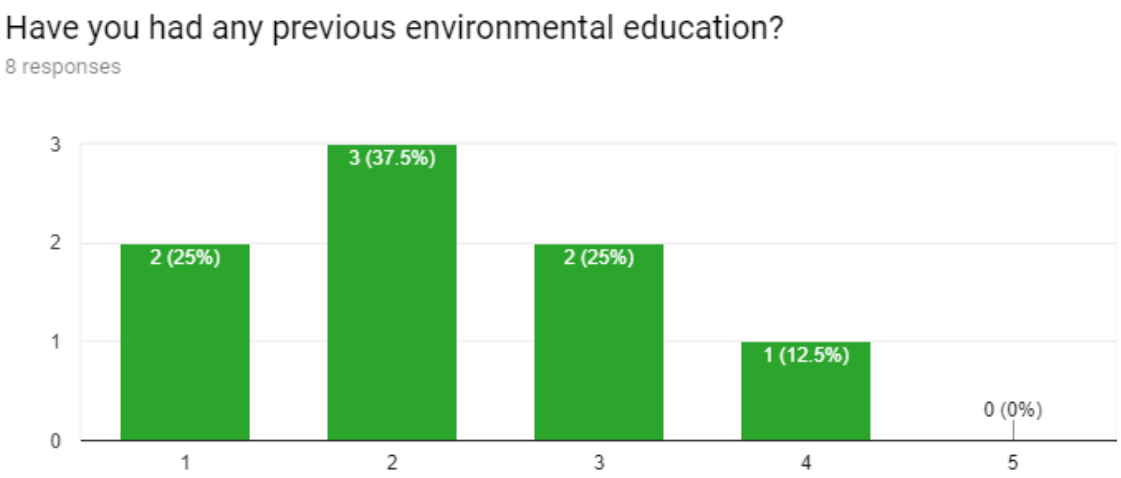

Figure 4.6 survey result-previous environmental education

Can you explain your level of environmental education? 8 responses
Limited
College Courses
No
Basically anything I have read on my own, or heard on the news
None
Living overseas for 20+ years, exposed to places like East Germany show the value in good environmental practices.
Several organizations that I am a member of such as, Las Vegas Urban League, Alpha Kappa Alpha Sorority, Inc., have held environmental education awareness and issues workshops, in which I attended.
I basically had to research that myself.

Table 4.1 survey result-previous environmental education

Recycling Attitudes

I based my survey questions on the Attitudes Toward Recycling survey questions used by Larsen in 1995. The Likert scale range was one for strongly disagree, with five being strongly agree. A factor of one was given for strongly disagree, and five for strongly agree. There were thirteen Likert scale questions with five positive and eight negative. For an area that was highly eco-friendly, for example, a high average would be sought for the positive questions, with a low average desired for the negative questions.

The majority of the responses to questions did indeed fall upon those lines. An average of above 3.0 was seen for four of the five positive questions.

Survey Question	Likert Average (1-5 scale)
People should share the responsibility of cleaning up the environment	4.375
I would take an active role in recycling	4.125
I would take advantage of recycling programs available to me	4.375
I think all packaging, no matter the cost, should be recyclable	3.125
I would recycle even if pickup services for recycling were not available	2.875

Table 4.2 Positive survey questions

When asked if they would recycle even if pickup services for recycling were not available, the answer was somewhat less enthusiastic, 2.875.

The answers to the next questions to some extent support those previous results. One irregularity in the responses for this set of negative questions is the above average score (3.25) on the question, “I only generate a small amount of waste.”

Survey Question	Likert Average (1-5)
I only generate a small amount of waste	3.25
Enough is being done to clean up the environment	2.5
I see no reason to recycle	1.625
Some people exaggerate the true amount of pollution in the world	2.75
I would not vote in favor of a measure to ban styrofoam packaging	2.625
I see no purpose in sorting garbage	2.125
We should not clean up all waste disposal sites	2.375
I don’t believe I am responsible for clean up	2.25

Table 4.3 Negative survey questions

All of the eight survey-takers agreed that the world's oceans are indeed in need of cleaning up by people. One of the eight felt recycling was too much bother. Seventy-five percent of the respondents felt that past waste was an issue worth addressing.

Actions available to take

A full one hundred percent of respondents stated that they would recycle magazines and plastics. The participants were less sure about using water-saving devices and phosphate-free detergent. Water-saving devices would be welcome in 87.5% of homes, while use of phosphate-free detergent earned 62.5% positive response. While no negative responses were given, the remaining replies were unsure.

A minority of the group, 37.5%, could answer affirmatively if they were asked to volunteer for a clean up group. Again no hard negative responses were given, but the majority of respondents were unsure of their participation in volunteer groups.

Responses on actual participation

The remaining survey questions were written for determining if there were indeed two separate groups, those who do recycle, and those who do not, and to dig deeper into why or why not.

Residents who Recycle

Seven of the eight stated that they do indeed recycle. Of those seven, six stated an increase in their recycling participation. All seven recyclers recycle paper, plastic and aluminum. Six recycle cardboard, and five recycle glass. I wanted to see how dedicated to waste management these residents were, and inquired into composting. Only one of the respondents composts as well as recycling.

The majority of the respondents who recycle reported that they do so in order to help the environment, while the others also had positive reasons for doing so.

Can you explain why you recycle? 7 responses
The program is very useful
Better for the environment
My parents set an example and I follow it.
Keeps the environment easier to clean
support the community recycle program
To assist with keeping a cleaner environment, especially in the city limits
Wanted to help the environment and needed somewhere to start.

Table 4.4 survey result-reason why recycle

Residents who do not Recycle

The lone resident that does not recycle reports that an all-in-one bin was received, however, they do not possess a recycling calendar. The resident does imply that they are more likely to recycle now with the all-in-one bin, which requires no sorting. When offered an open-ended question about their reason why they do not recycle, their response:

Can you explain why you have chosen not to recycle? 1 response
With a large family, I'm lucky anything hits the trash can....I can't imagine having to police it for recycling too.

Table 4.5 survey result-reason why do not recycle

On closer look at the lone respondent who does not recycle, they graduated in the same county as I did, in 1990, which is not too far after my graduation, and as I stated previously, I had no environmental education during my public education. They stated that they have read anything that they know on their own, or heard the information on the news. Their household income falls above $150,000/year and they have owned the house for six years. The three members of their household have all completed some college. The house has a pool, but no solar panels for any use.

As for the non-recycler's attitude toward recycling, the answers were misleading. In many of their answers to the various positive and negative statements, they aligned with those that do recycle. They agreed that they would recycle magazines and plastics, and would use water-saving devices. They disagreed with the question whether the world's oceans are not in need of cleaning up by people. They disagreed with the statement that they only generate a small amount of waste. Their answer was not enough

was being done to clean up the environment. They agreed that they are responsible for clean up, and that people should share that responsibility. Their answer disagreed with the statement that some people exaggerate the amount of pollution. They also would vote to ban styrofoam packaging. Of the twenty-one questions in the attitudes toward recycling section of the survey, the resident who does not recycle had the same answers as those residents who do recycle.

Recycling Observation

Collection in this area during the first observation was biweekly, automatic, and curbside. The method for the neighborhoods studied initially was the method that uses three separate bins, known as multi-stream recycling. The initial schedule for recycling service was every other Thursday.

The commingled method was in place during the second observation period. Service was scheduled every Wednesday, automatic, and curbside.

The following data is inclusive of all of the residents of the study area, all 85 homes, as opposed to only the 8 survey respondents.

The observation periods were originally conducted to see how many or what percentage of the neighborhood residents actually participated in the curbside recycling. The first observation was completed for seven recycling cycles, over fourteen weeks. Before my second observation period, the service was changed to weekly, single-stream. The second observation was also for seven cycles, over seven weeks. This also allowed me to note if participation increased due to the more convenient all-in-one bins. An Excel worksheet of the results of the observations was maintained. A few other details

were noted, such as if they had a pool, or if they had solar panels. The complete data is shown as Appendix A, but an example is below.

SW 1	POOL??	SOLAR??		12/22/2016	1/5/2017	1/19/2017	2/2/2017	2/16/2017	3/2/2017	3/16/2017
4804										
4805										
4808	yes									
4809	yes	yes		X	X		X	X	X	
4812		yes		X			X	X	X	X
4813										
4900		yes								
4901	yes									
4904		yes								
4905	yes									
4908										
4909	yes	yes								
4913	yes			X	X	X	X	X	X	

Table 4.6 observation sample

During the first observation period, between eight and thirteen residents from the combined two neighborhoods put at least one of their three bins at the curb for pickup on the designated days. The average number over the 7 recycling dates was 10.714, with separate neighborhoods SW1 at 6.286 and SW2 at 5.143.

A transition period was noted during the first few weeks of the second observation. I collected data for ten weeks total. The first three, however were atypical. The first week was still under the multi-stream method, with three bins. Six participants from SW1 and four participants from SW2 were noted for that week. The following week was the last date with the three bins, and all residents were required to put them out. However, the bins were not picked up before the following week's observation, so those two weeks cannot be included in the data collected.

The second observation period saw a marked jump in participation. After that transition period, SW1 had thirty-three participants, while SW2 had eighteen. For the

next six weeks after that, SW1 had between eighteen and thirty participants each recycling day, for an average during the entire second observation period of 27.285.

SW2 had a range of nine to twenty-four during the final six weeks, for a 19.857 average over the entire period.

The increase is easy to see. SW1 went from an average participation rate of 6.286 to 27.285. SW2 increased from an average of 5.143 to 19.857 participants.

CHAPTER FIVE

Conclusion

This chapter includes my interpretation of the results found in Chapter Four regarding the question, What do people who participate or do not participate in a neighborhood recycling program report regarding their exposure to childhood environmental education?

Environmental education has been in existence for quite some time, but I feel that it has not reached its full potential. I see a lack of environmental education overall. Early, ongoing environmental education can lead to environmental literacy. As with literacy in other areas, the most common of which is reading, it is built through continuous education. Environmental education in some school districts does not fall under that ideal. There is minimal time spent on the subject in the school district and state in which I am conducting my study. In the area that was studied, no environmental education is required to graduate from high school.

In my opinion, not enough people are utilizing eco-friendly habits such as water conservation, solar energy, and recycling programs. As the saying goes, “every little bit counts”, and just participating in one of these areas can do wonders if a large enough population joins in. Per Mouw and Taylor (2016), households average over 800 pounds of waste per year that does not get into recycling. Multiply that by the billions of people in the United States, and it becomes a staggering amount.

Few assumptions can be made by looking at the survey results, due to the low rate of survey return. From what I can see from the responses, the majority do recycle and have positive attitudes toward recycling and toward keeping waste to a minimum. The one dissenter apparently has quite a few people in the house and making sure recyclables are separated from the true waste takes time that the respondent does not have. However, even their survey responses imply that they feel positively toward the environment.

The observation provides us with data that can substantiate previous research, in specific, research as to what variables affect recycling participation. In chapter two, I indicated what factors could influence the habit: age, income, education level, gender, household status, race/ethnicity, and subject knowledge. From the survey, we may extrapolate that the majority, if not all, of the survey respondents were included in both observation periods. If we take that onto the entire population, that is a healthy portion of the study residents. That said, nothing would have changed in those factors. From the survey responses, no education would have likely changed. The only variable is that the population had single-stream, all-in-one carts instead of the three multi-stream bins. While it is possible that the residents of the area did attain additional subject knowledge due to the documents provided with the carts, I would venture to say that that would not have had much influence on the high participation rate in the second observation. I understand that the one non-recycler respondent for the survey stated they received a cart, but no calendar. While it is possible that the information that was attached to the recycling carts on the day of delivery could have been lost somehow, that would not affect the stated reason as to why that person does not recycle. If they truly wanted to

recycle, they would place the material in the cart, and would be easily able to ascertain what day of the week was recycling day by observing all of the other carts at the curb.

This does not help answer my research question, What do people who participate or do not participate in a neighborhood recycling program report regarding their exposure to childhood environmental education? More research would be required. From my results, the level of environmental education had no affect on whether the person recycled or not. The non-recycler stated that they did their own research, and learned on their own. That normally would seem to influence them to actually recycle. The residents that do recycle vary on the amount of environmental education that they have attained.

Due to the shift from multi-stream recycling to single-stream recycling during the middle of my project and observation period, and the few results on the survey, I felt as if I should change the focus of my research more to what influences a person to recycle, but then I felt that that would be somewhat changing my paper to fit my results, which is something that should not be done in academic research.

This subject was important to me because I feel that recycling is such a little thing to do. I was never involved with EE growing up, and I recycle. Why doesn't everyone?? From my survey and observation, it seems to be just the work involved in separating the materials, which has been made easier in areas that have the single-stream program.

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APPENDIX A

Data from First Observation

Sweetwater l	POOL??	SOLAR??		12/22/2016	1/5/2017	1/19/2017	2/2/2017	2/16/2017	3/2/2017	3/16/2017	3/30/2017
Sunking St											
3800											
3804	yes										
3808											
3809									X		
3816											
3817	yes										
3820	yes										
3824	yes										
Sunbrite Ave											
4801											
4804											
4805											
4808	yes										
4809	yes	yes		X	X		X	X	X		X
4812		yes		X			X	X	X	X	X
4813											
4900		yes									
4901	yes										
4904		yes									
4905	yes										
4908											
4909	yes	yes									
4913	yes			X	X	X	X	X	X		X
Hidden Plateau St											
3801	yes					X	X			X	
3805	yes			X	X	X	X	X	X	X	X
3808	yes										
3809											
3813											
3816	yes										
3817											
3821	yes										

Sweetwater I	POOL??	SOLAR??		12/22/2016	1/5/2017	1/19/2017	2/2/2017	2/16/2017	3/2/2017	3/16/2017	3/30/2017
3825	yes										
Golden Haven Ave											
4800											
4804											
4805	yes										
4808											
4809	yes										
4812	yes										
4813	yes				X		X	X	X	X	X
4900		yes									
4901	yes										
4904	yes										
4905	yes										
4908	yes										
4909	yes										
4912	yes			X	X	X	X	X	X	X	
total count recycling/day				5	5	4	7	6	7	5	5

Sweetwater II	POOL??	SOLAR??		12/22/2016	1/5/2017	1/19/2017	2/2/2017	2/16/2017	3/2/2017	3/16/2017
Wharton St										
3900										
3904										
3908										
3912										
3916	yes									
3920	yes									
Lufkin Ave										
4801										
4804										
4805										
4808										
4809	yes									
4812										
4813										
4900										
4901										
4904										
4905				X	X	X	X		X	X
4908					X		X	X	X	X
4909					X		X	X	X	X
4913										
Uvalde St										
3901	yes									
3905	yes									
3909					X					
3913	yes			X		X			X	X
3917							X			
3921				X	X	X			X	

Sweetwater II	POOL??	SOLAR??		12/22/2016	1/5/2017	1/19/2017	2/2/2017	2/16/2017	3/2/2017	3/16/2017
Quinlan Ave										
4800										
4804					X			X		
4805	yes									
4808										
4809	yes									
4812	yes									
4813	yes									
4900	yes									
4901										
4904	yes									
4905	yes									
4908										
4909	yes				X			X		
4912	yes				X	X	X	X	X	X
total count recycling/day				3	8	4	5	5	6	5

APPENDIX B

Data from Second Observation

Sweetwater l	POOL??	SOLAR??		3/29/2018	4/12/2018 last day with separate crates	4/18/2018 first day with all-in-one bin	4/25/2018	5/2/2018	5/9/2018	5/16/2018	5/23/2018	5/30/2018	6/6/2018
Sunking St													
3800					X		X						
3804	yes				X		X		X	X	X		X
3808					X	X	X		X			X	X
3809					X		X					X	
3816					X	X	X		X		X		
3817	yes				X	X	X			X	X	X	X
3820	yes				X	X	X		X	X		X	X
3824	yes				X	X	X			X			
Sunbrite Ave													
4801						X	X						
4804					X	X	X	X	X	X	X	X	X
4805				X	X	X	X	X	X	X	X	X	X
4808	yes				X	X	X	X	X	X	X	X	X
4809	yes	yes			X		X		X		X	X	X
4812		yes		X	X	X	X	X	X		X	X	
4813											X		
4900		yes			X	X	X	X	X	X	X	X	X
4901	yes												
4904		yes			X	X	X	X	X	X	X	X	X
4905	yes								X				
4908								X	X				
4909	yes	yes			X	X	X	X	X	X	X	X	
4913	yes			X	X	X	X	X	X	X	X		X
Hidden Plateau St													
3801	yes				X	X		X	X	X	X	X	X
3805	yes			X	X	X	X		X	X	X	X	X
3808	yes				X	X		X	X	X	X	X	X
3809							X		X			X	
3813				X	X	X	X	X	X	X	X	X	X

Sweetwater I	POOL??	SOLAR??		3/29/2018	4/12/2018	4/18/2018	4/25/2018	5/2/2018	5/9/2018	5/16/2018	5/23/2018	5/30/2018	6/6/2018
3816	yes				X	X	X			X	X	X	X
3817							X	X		X		X	
3821	yes				X	X	X		X		X	X	X
3825	yes												
Golden Haven Ave													
4800					X	X	X		X	X	X	X	X
4804						X		X				X	X
4805	yes						X						
4808					X	X	X		X	X			X
4809	yes					X			X	X	X		X
4812	yes				X	X	X		X	X	X	X	
4813	yes			X	X	X	X		X	X	X	X	X
4900		yes					X						
4901	yes									X	X	X	X
4904	yes				X	X	X	X	X	X	X	X	X
4905	yes				X	X	X	X		X		X	X
4908	yes							X		X		X	X
4909	yes				X	X	X	X	X	X		X	X
4912	yes					X			X	X	X	X	
total count recycling/day				6	30	30	33	18	29	28	26	30	27

Sweetwater II	POOL??	SOLAR??	3/29/2018	4/12/2018 last day with separate crates	4/18/2018 first day with all-in-one bin	4/25/2018	5/2/2018	5/9/2018	5/16/2018	5/23/2018	5/30/2018	6/6/18
Wharton St												
3900												
3904												
3908								X		X		X
3912								X		X		
3916	yes				X	X		X	X	X	X	
3920	yes					X						
Lufkin Ave												
4801					X	X		X	X	X	X	X
4804					X	X	X		X	X		X
4805					X	X	X	X		X		
4808					X			X	X		X	
4809	yes						X			X	X	
4812												
4813						X	X		X			
4900						X				X		
4901					X			X	X	X	X	X
4904					X	X		X	X	X	X	X
4905					X	X		X	X	X	X	X
4908					X		X	X	X	X	X	X
4909					X		X	X			X	X
4913					X	X		X	X	X	X	X
Uvalde St												
3901	yes				X	X	X		X	X		X
3905	yes				X			X	X		X	X
3909			X					X	X	X		X
3913	yes				X	X			X	X		X
3917			X		X			X	X	X		X
3921					X				X		X	X
Quinlan Ave												

Sweetwater II	POOL??	SOLAR??		3/29/2018	4/12/2018	4/18/2018	4/25/2018	5/2/2018	5/9/2018	5/16/2018	5/23/2018	5/30/2018	6/6/18
4800											x		
4804				x					x	x		x	x
4805	yes					x	x	x	x	x	x		x
4808										x			
4809	yes					x	x		x	x	x	x	
4812	yes						x			x		x	
4813	yes					x		x	x		x	x	
4900	yes					x			x	x	x	x	x
4901						x	x		x		x	x	
4904	yes						x		x				
4905	yes					x		x		x		x	
4908												x	
4909	yes								x			x	
4912	yes			x			x		x		x	x	x
total count recycling/day				4		22	18	9	24	23	24	22	19

APPENDIX C

Survey Questions with Responses

8 responses

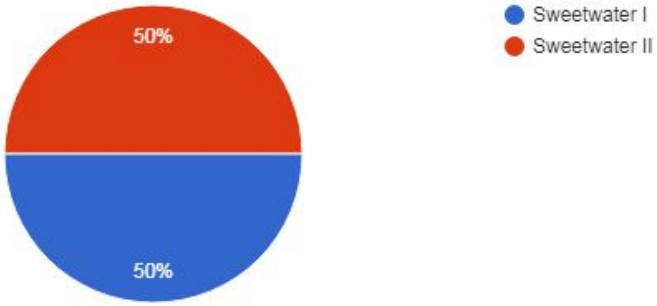
Accepting responses

SUMMARY

INDIVIDUAL

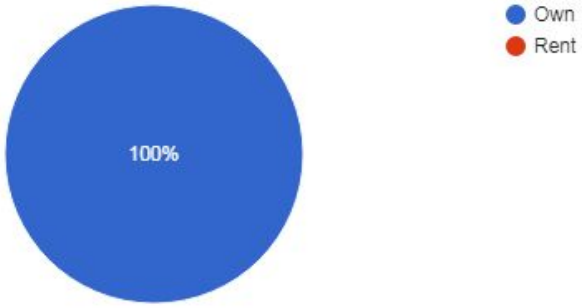
Which neighborhood do you reside in?

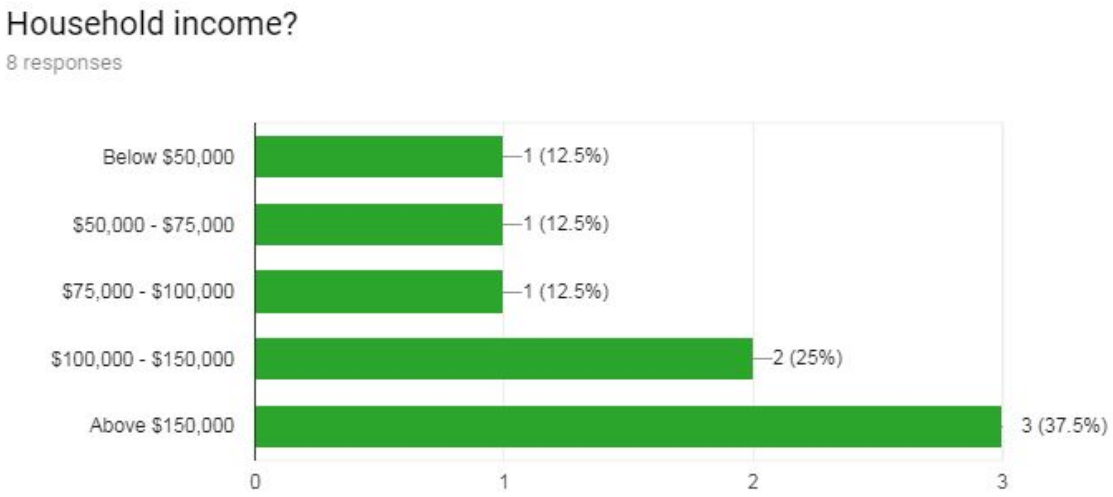
8 responses



Do you own or rent?

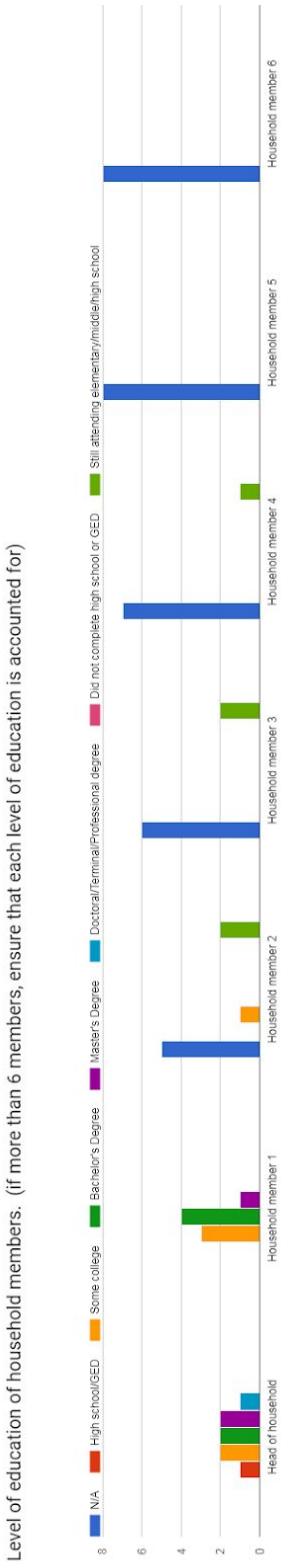
8 responses

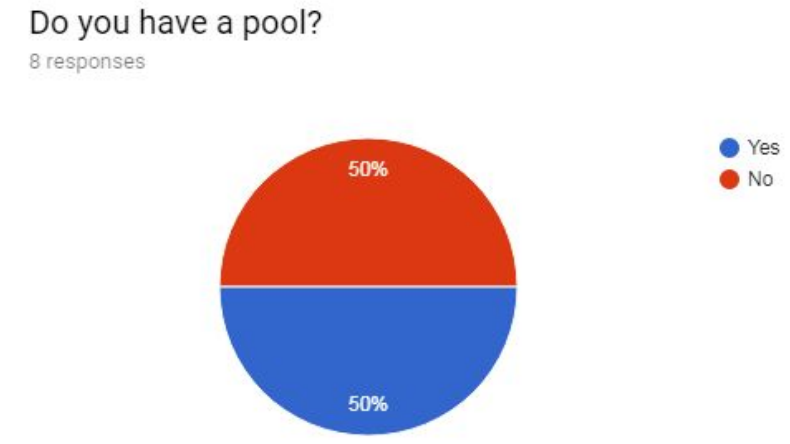


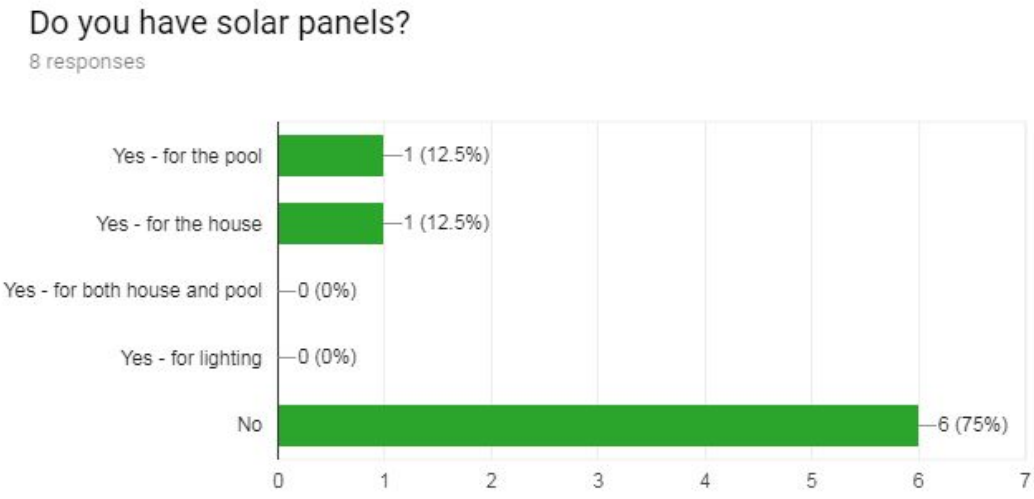


How long have you resided in this house? 8 responses

20 years
5 years
3 years
6 years
Two years
18 years
6 months
19


Level of education of household members. (if more than 6 members, ensure that each level of education is accounted for)
N/A
High school/GED
Some college
Bachelor's Degree
Master's Degree
Doctoral/Terminal/Professional degree
Did not complete high school or GED
Still attending elementary/middle/high school
8
6
4
2
0
Head of household
Household member 1
Household member 2
Household member 3
Household member 4
Household member 5
Household member 6

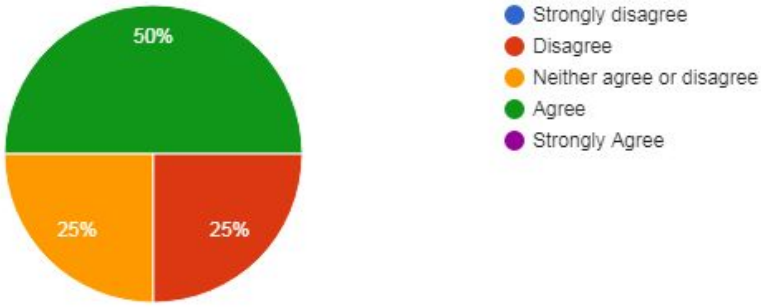




Attitude toward Recycling

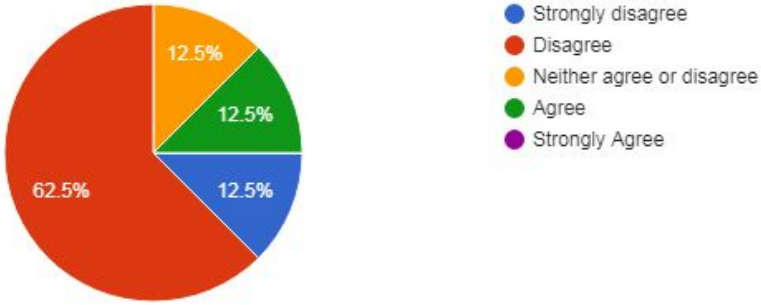
I only generate a small amount of waste

8 responses



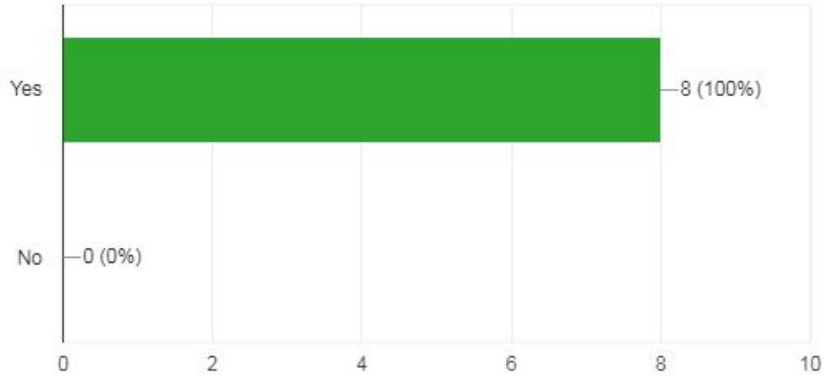
I don't believe I am responsible for clean up.

8 responses



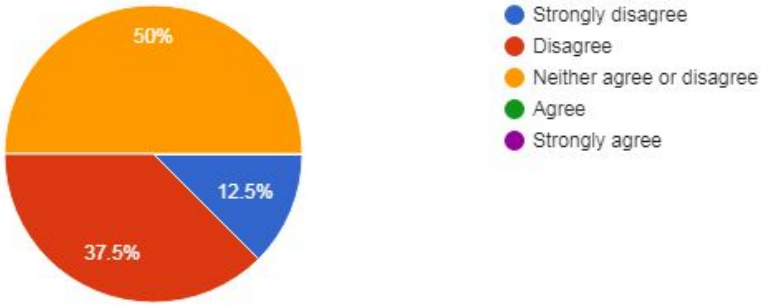
I would recycle magazines

8 responses



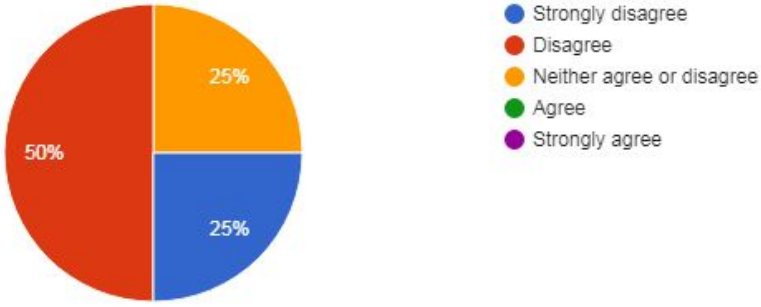
We should not clean up all waste disposal sites.

8 responses



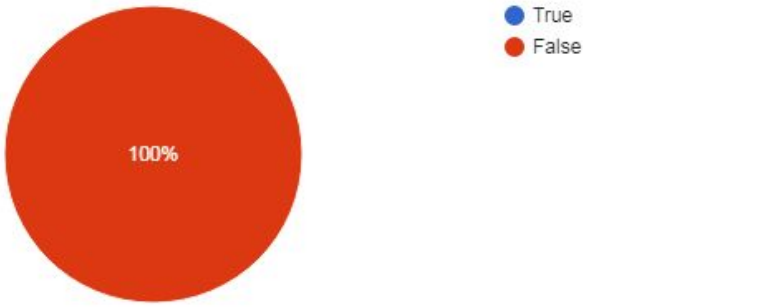
Enough is being done to clean up the environment

8 responses



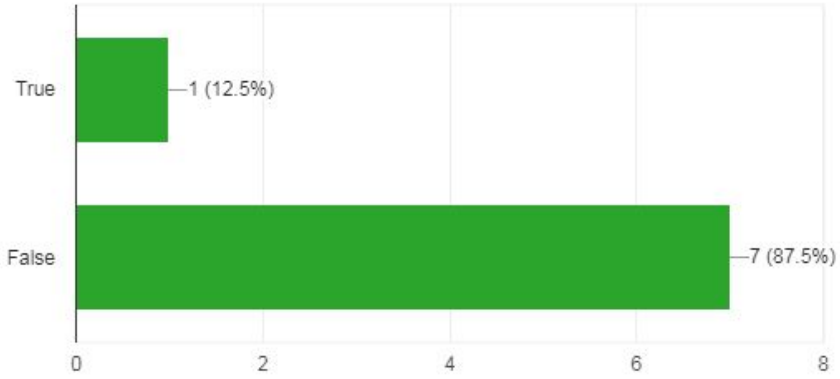
The world's oceans are not in need of cleaning up by people.

8 responses



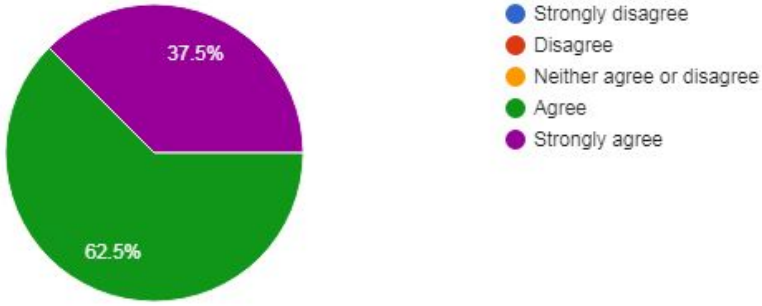
Recycling is too much of a hassle to bother with.

8 responses



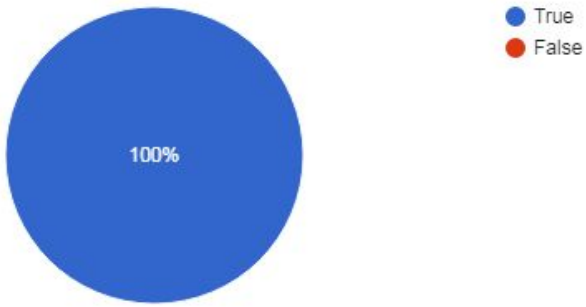
People should share the responsibility of cleaning up the environment.

8 responses



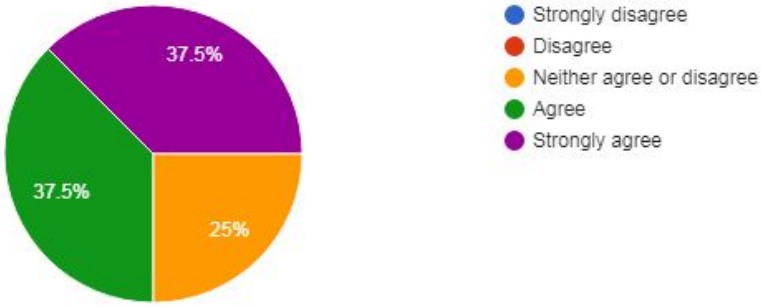
I would recycle plastics.

8 responses



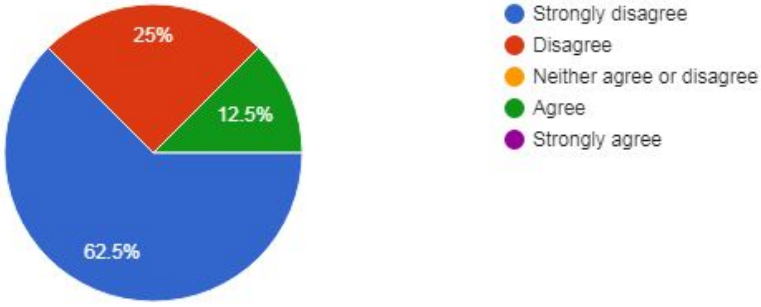
I would take an active role in recycling.

8 responses



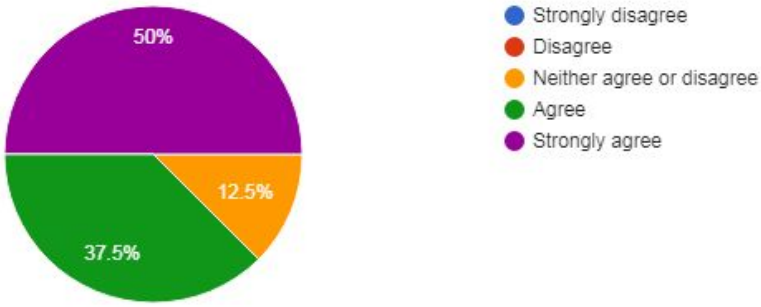
I see no reason to recycle.

8 responses



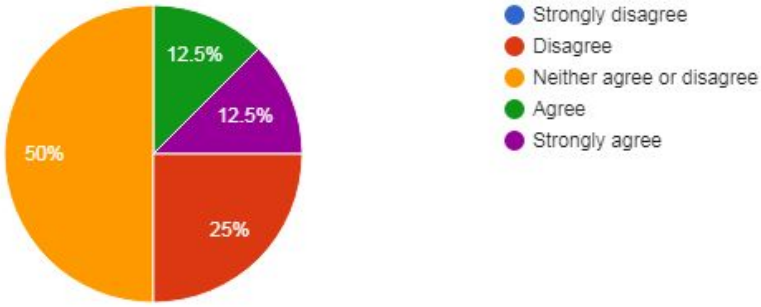
I would take advantage of recycling programs available to me.

8 responses



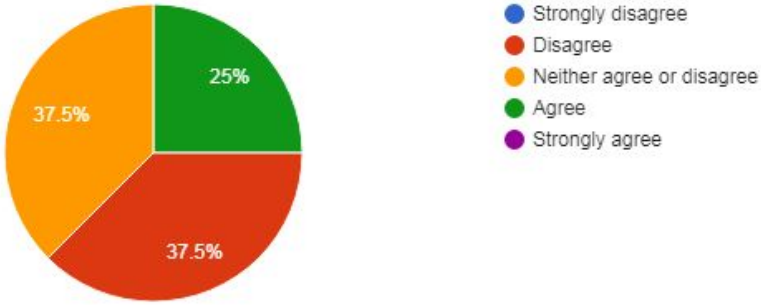
I think all packaging, no matter what the cost, should be recyclable.

8 responses



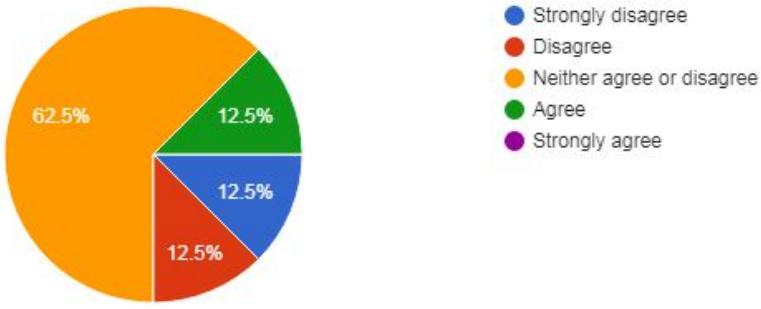
I would recycle even if pick up services for recycling were not available.

8 responses



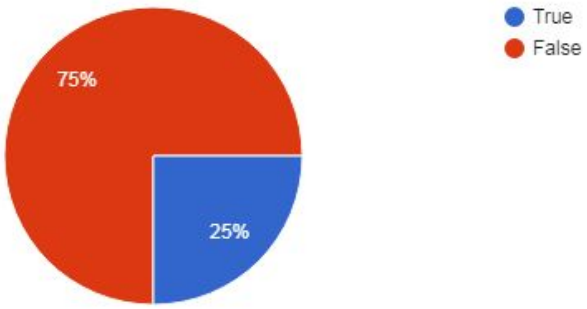
Some people exaggerate the true amount of pollution in the world.

8 responses



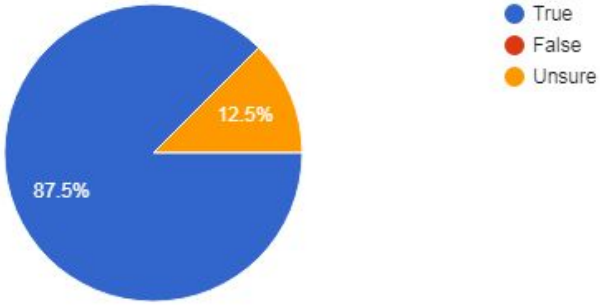
Non-recycled waste created in the past is not an issue worth addressing.

8 responses



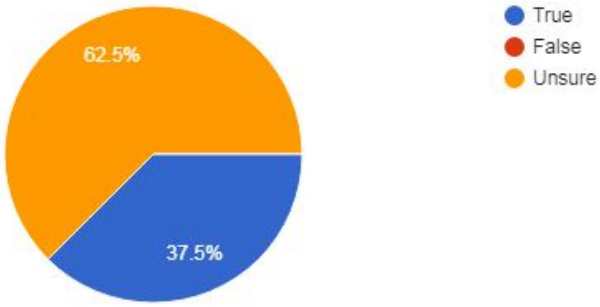
I would use water saving devices in my home.

8 responses



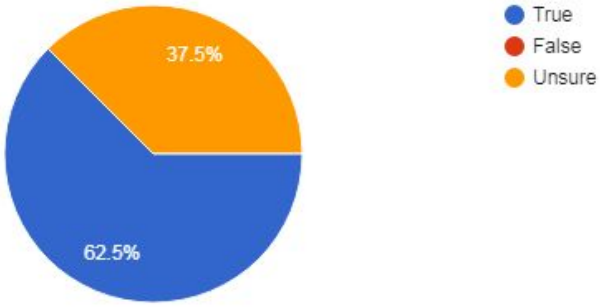
If I were asked to volunteer for a clean up group, I would.

8 responses



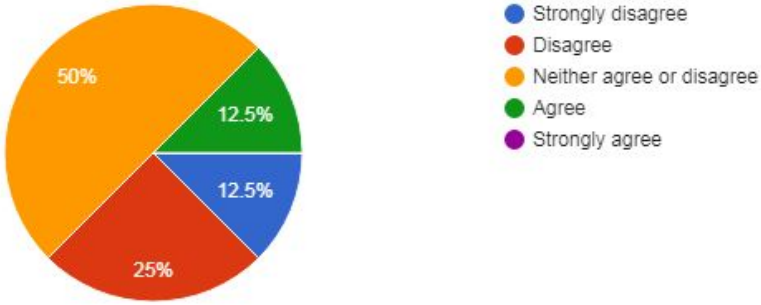
I would use phosphate free laundry detergent.

8 responses



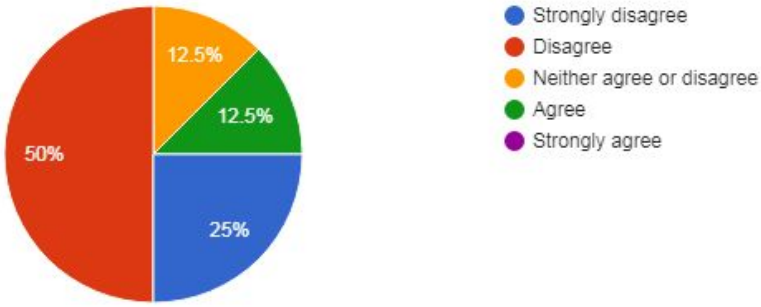
I would not vote in favor of a measure to ban styrofoam packaging.

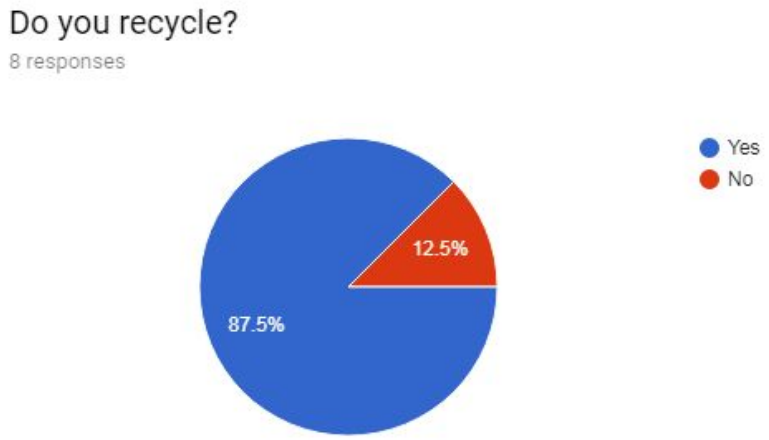
8 responses



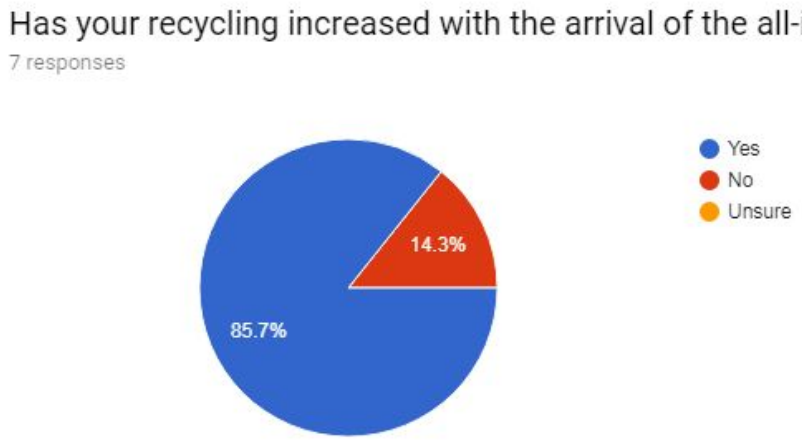
I see no purpose in sorting garbage.

8 responses



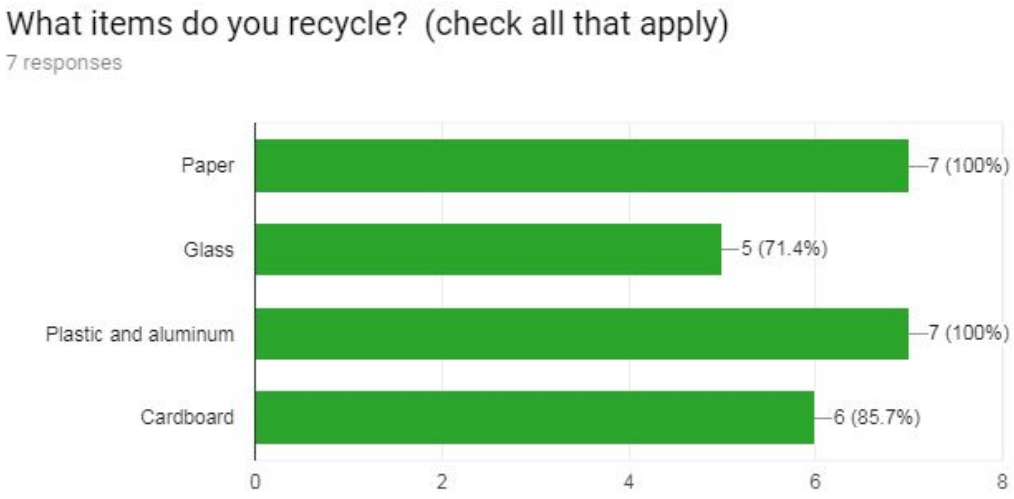


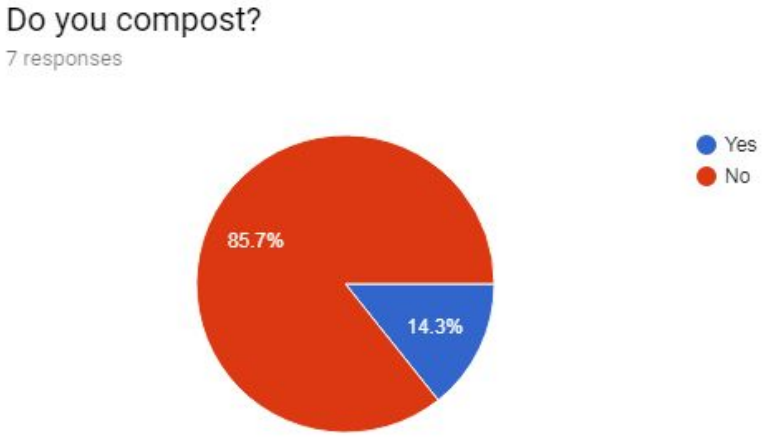
For those currently recycling



Can you explain why you recycle? 7 responses

The program is very useful
Better for the environment
My parents set an example and I follow it.
Keeps the environment easier to clean
support the community recycle program
To assist with keeping a cleaner environment, especially in the city limits
Wanted to help the environment and needed somewhere to start.

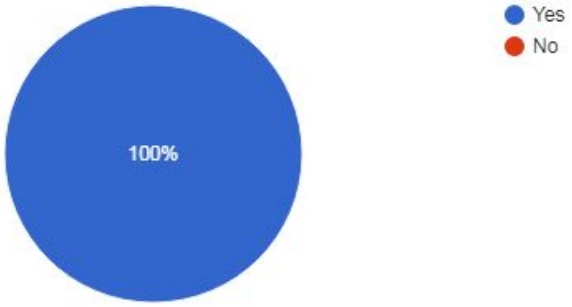




For those not currently recycling

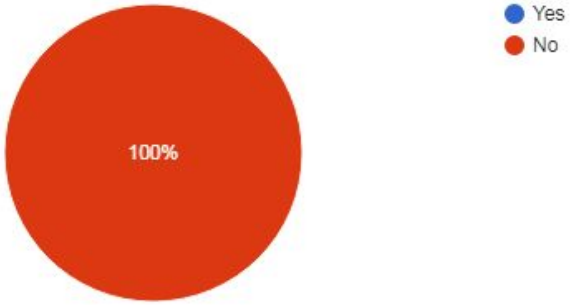
Did you receive a recycling cart?

1 response



Do you have a recycling calendar?

1 response

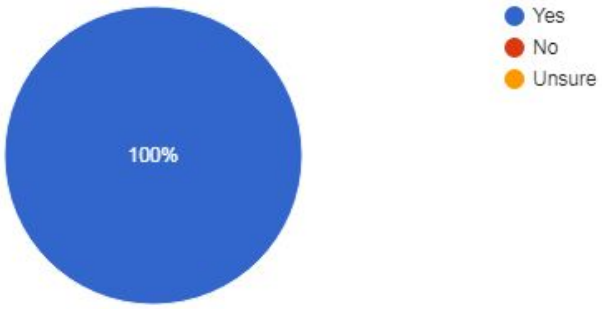


Can you explain why you have chosen not to recycle? 1 response

With a large family, I'm lucky anything hits the trash can....I can't imagine having to police it for recycling too.

Since we have transitioned to all-in-one bins, have you been or are you more inclined to recycle now that you are not required to separate the recyclables?

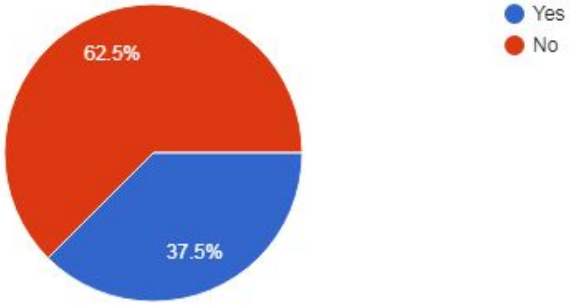
1 response

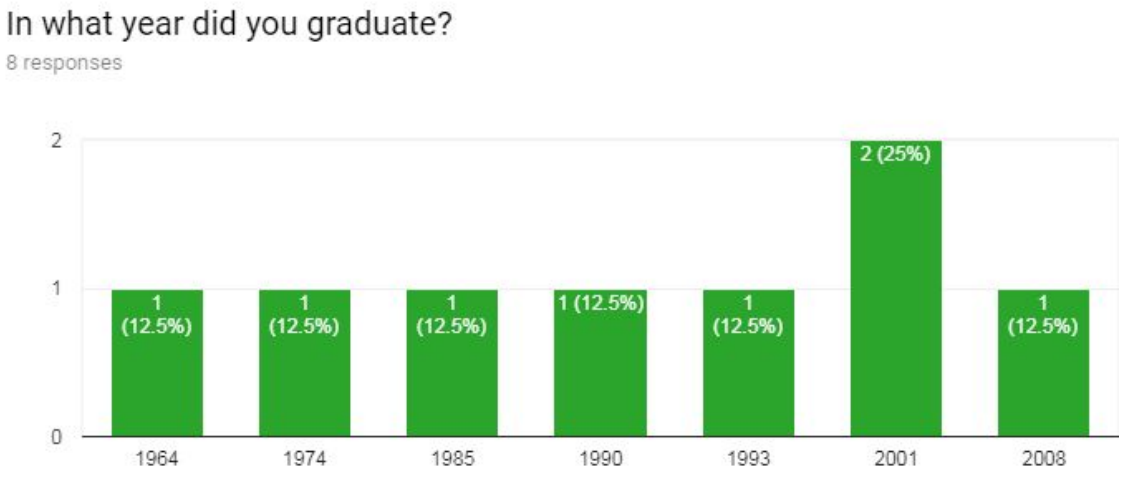


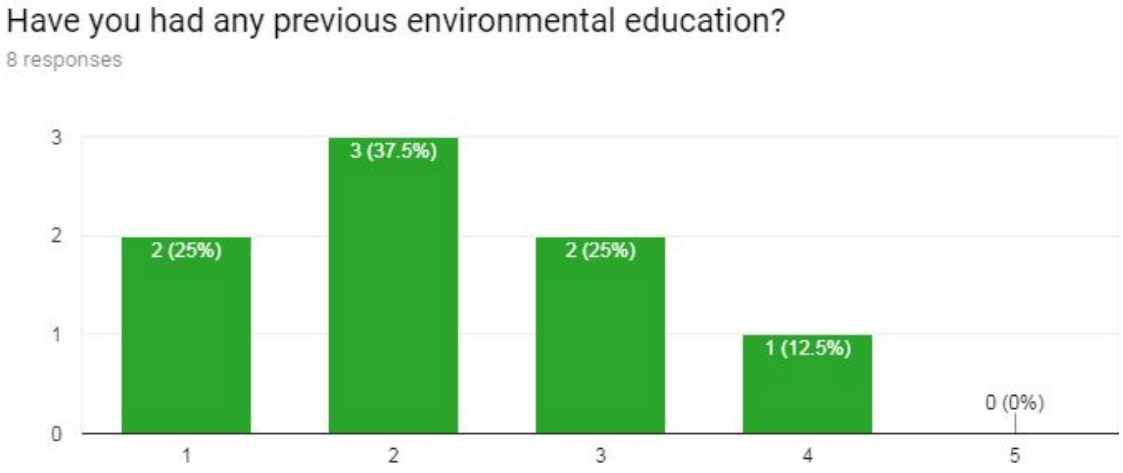
Previous environmental education of respondent

Did you attend school in the Clark County School District?

8 responses







Can you explain your level of environmental education? 8 responses

Limited
College Courses
No
Basically anything I have read on my own, or heard on the news
None
Living overseas for 20+ years, exposed to places like East Germany show the value in good environmental practices.

Several organizations that I am a member of such as, Las Vegas Urban League, Alpha Kappa Alpha Sorority, Inc., have held environmental education awareness and issues workshops, in which I attended.
I basically had to research that myself.