

Barriers to Recycling in Castro Valley Public Schools

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Abstract In the spring of 2003, the Castro Valley Unified School District will implement a district-wide waste diversion policy that will override the current recycling practices at each school. The goals of this study are to measure the level of current recycling, the barriers to further recycling, and to identify possible ways to overcome the barriers at each school in the district. Data was collected through personal interviews with the recycling contact at each school. Thirteen schools were sampled: nine elementary schools, two middle schools and two high schools. The number of items recycled and the reported barriers varied among schools. Possible reasons for this include the differences in personnel motivation and the amount of effort each school has put into their recycling coordination. There are some interesting discrepancies between what schools reported during my surveys and what the district office reported to the California Integrated Waste Management Authority in their 2002 survey on waste diversion. As well, the school district reported different barriers to recycling than were reported by the individual schools. The difference in perceived barriers may simply be a product of different perspectives.

Introduction

More than seven million Californians are students, educators or staff (Best 2002). This is 4.8% of the state population (Census 2000). Waste from the 300 post-secondary, 8,000 public, and 4,000 private schools represents about two percent or more of California's total waste stream (Best 2002). State legislature sets goals for the quantity of materials diverted from entering the waste stream for city and county municipalities. The California Integrated Waste Management Authority (CIWMA) supervises the waste management activities across the state. Schools are targeted because they comprise a significant amount of waste production and the waste diversion knowledge gained in schools may translate to increased residential diversion when students teach their families how to recycle.

Waste reduction can benefit schools by reducing disposal costs, improving worker safety, reducing long-term liability, increasing efficiency of school operations, and decreasing associated purchasing costs (Best 2002). There are several important pieces of legislation that pertain to the issue of waste reduction in Alameda County Schools: California Assembly Bill 939, Alameda County's Measure D, and SB 373 (Table 1). California education and public resources codes provide further legal impetus for waste diversion programs to exist (Table 2).

This paper seeks to evaluate the waste reduction policies occurring at individual schools within the Castro Valley Unified School District (CVUSD) in the absence of a district policy. The CVUSD plans to implement a district wide policy beginning in the spring of 2003. This program will provide all necessary equipment and training as well as a financial incentive to schools that are able to divert 30% of their waste from landfill.

The Castro Valley Unified School District is provided with the recycling program because of a franchise agreement between the Castro Valley Sanitation District (CVSD) and the Waste Management of Alameda County, Inc. This agreement explicitly states as a service the, "collection, without charge, of recyclables from all schools within the district" and the, "collection, processing, and marketing without charge of compostable materials from all schools within the district" (Franchise 2001). This is a unique agreement with great benefit to the schools at no charge.

| Year | Title | Significance |
|-------------|-----------------------|--|
| 1989 | Assembly Bill 939 | Required that cities and counties increase the amount of waste diverted from landfill to 25% by 1995 and 50% by 2000. The state may fine non-complying local governments up to \$10,000 per day. |
| 1990 | Alameda Co. Measure D | Made requirements for Alameda County even stricter and longer term than those for state. Emphasizes the preservation of natural resources through sustainable consumption and disposal patterns. |
| 2001 | Senate Bill 373 | Adds sections to California education code to require that students' curricula include environmental education and that schools buy recycled products. Creates model programs by July 2002 to be evaluated January 2004. |

Table 1: Shows year, name, and substance of bills affecting waste management in Castro Valley, Alameda County, California.

| Code | Significance |
|------------------------------------|--|
| Education code 32370-32376 | Requires that schools buy recycled and environmentally sound products. |
| Public resources code 42620- 42622 | Requires that CIWMA assist schools to develop recycling programs. CIWMA must survey school districts to see if they are implementing waste reduction strategies. |

Table 2: Shows California education or public resources code and significance to waste school waste management.

Implementation of the recycling program is not only free from the CVUSD, but diversion of waste from the trash also saves money on trash collection fees. From 1 July 2001 until 30 June 2002, the CVUSD paid about \$150,000 for disposal services (Budget 2002). Large savings are possible if schools can reduce the amount of trash produced by 30%. As well, the district policy beginning spring 2003 will award \$2,100 if schools divert this 30%.

According to my personal communications with several custodians, the bulk of the work falls upon them when waste diversion projects are created unless a teacher or parent volunteer steps forward. The title of the head custodian is now described as 'buildings and grounds' because he is responsible for the electrical, plumbing, woodwork, and other general maintenance. Of the fifteen essential functions listed in the Buildings and Grounds Worker's job description, recycling is not included (Castro 2002). The custodian is expected to, "clean assigned school facilities" (Castro), and the unwritten expectation is that sorting garbage into trash and recycling will be done during this cleaning. Yet, the custodians are given no extra time or pay to perform these extra duties.

Castro Valley is located in Alameda County, California. The CVUSD has 8,000 students and 400 teachers. In the CVUSD, there are fifteen public schools. The Adult school and the Special Education high school are omitted from this study because they are structurally different from the other schools. The adult school is not responsible for its own waste management and the Special Education school only has ten students. Of the thirteen schools included in this study, there are nine elementary schools, two middle schools, and two high schools. Each school has a different recycling structure; the elementary schools each have one custodian (Palomares and Stanton Elementary schools share a custodian) that is primarily responsible for the recycling activities. The middle schools have several custodians on staff, with the head custodian in charge of recycling (as well as many other duties). The two high schools have teachers that run the programs with the assistance of student groups.

By speaking with the recycling contacts at each school directly, I determine what items are recycled at the school. This study identifies the types of recycling existing at schools before the district wide policy is implemented, which may prove valuable for comparison purposes. Also, it provides input to improve the district program through input from each school. The goals of this study are threefold: (1) to identify which items are currently recycled by individual schools, (2) to identify possible barriers to successful implementation of a recycling policy, and (3) to determine what is needed to overcome the identified barriers. This study provides the CVUSD with information regarding the specific needs of each school as well as provides baseline data with which the CVUSD can compare their future recycling policy.

Methods

I developed a survey modeled from the statewide survey given to school district administrators by CIWMA in 2002. I used their lists of possible recyclables and possible barriers so that I might compare the results of the individual schools with those of CVUSD and school districts statewide. I added a number of open-ended questions that provide useful information on how to improve the recycling programs.

The first goal of my study is to measure the current level of recycling. I accomplished this in my survey through questions one, two, three, four, five, and seven (see survey in Appendix 1). I attempted to determine the barriers to recycling through questions six, eight, nine, eleven, twelve, thirteen, and fifteen. Lastly, I used questions nine, ten, fourteen, and fifteen to collect

any suggestions on how to overcome existing barriers to the success of the recycling program. I summarized the results from questions four and eight into figures to visually compare the data to the results from the CIWMA 2002 survey.

The surveys were administered verbally with the person most knowledgeable of the schools recycling activities. This distinction was made in conference with each school secretary. In most cases this was the head custodian, but the recycling contact also could be a teacher or principal.

Results

All thirteen schools in the CVUSD recycle in some way. The responses from questions four and eight on my survey (Appendix 1) can be directly compared to the responses from school districts statewide to the same questions (Figures 1 and 2). The statewide data used for the figures is the average of responses from school districts with 5-10,000 students. Eighteen recyclable items were investigated and the number of items reported as being recycled by each school is shown in Table 4. The data from Proctor Elementary school is omitted from Figure 1 because the principal was uncertain as to which items are recycled at the school.

The responses to question eight on my survey varied because the perception of a barrier is inherently subjective. Three schools reported having none of the listed barriers, and others reported having seven of the eight listed barriers. Other barriers mentioned that were not listed on the survey include theft, time, apathy, frequency of collection, and lack of proper containers.

The main suggestions of how to overcome barriers to recycling included using shorter dumpsters that the students can reach, providing a bucket to empty milk into so one can recycle the carton, and providing better incentives to the students for participation. One custodian mentioned that education should include the fact that everyone needs to work together for the program to be successful. Personal communication with one custodian suggests that the work needs to be better distributed.

| School | # of items recycled |
|-------------------|---------------------|
| Canyon Middle | 9 |
| Castro Valley E. | 10 |
| Castro Valley H. | 13 |
| Chabot E. | 14 |
| Creekside Middle | 9 |
| Independent E. | 14 |
| Jensen Ranch E. | 11 |
| Marshall E. | 10 |
| Palomares E. | 11 |
| Proctor E. | 3 |
| Redwood Alt. H.S. | 14 |
| Stanton E. | 17 |
| Vannoy E. | 11 |

Table 3: The number of items recycled by each school in CVUSD, out of 18 possible items

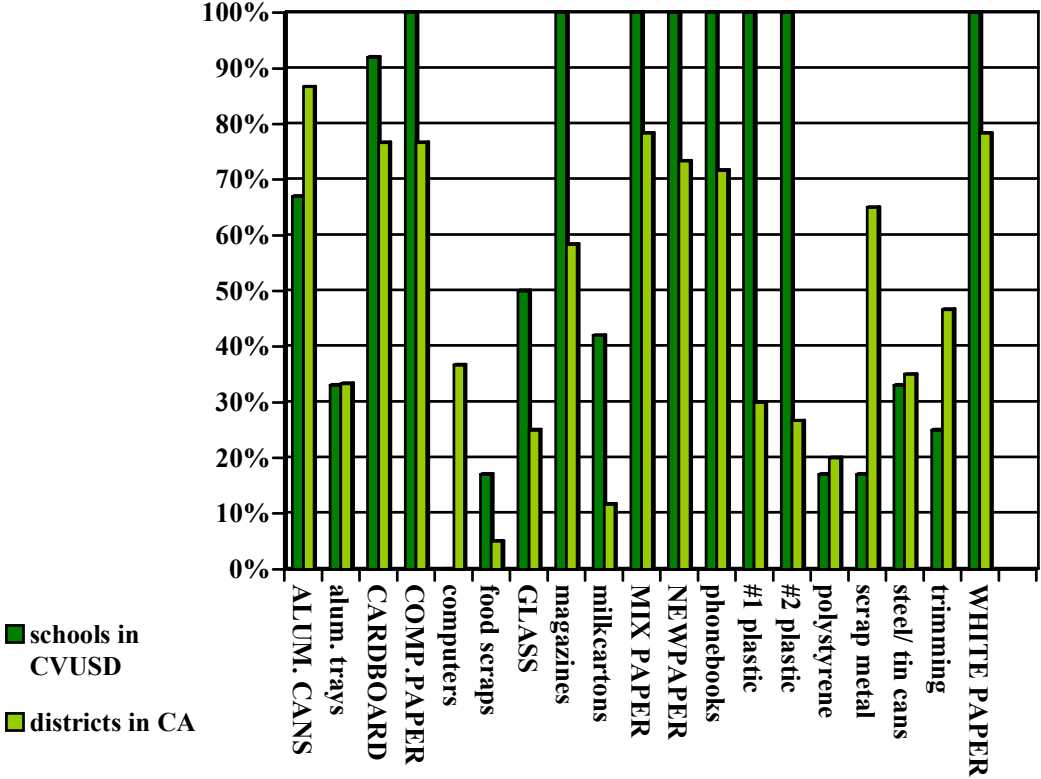


Figure 1: The percentage schools in CVUSD that recycle each of the 18 recyclable items listed compared to the percentage of school districts in California with some or all of their schools recycling the item. The items reported by the CVUSD in the statewide survey as recycled by some or all of their schools are printed in bold on the x-axis. Statewide district data is from CIWMA survey (Best 2002).

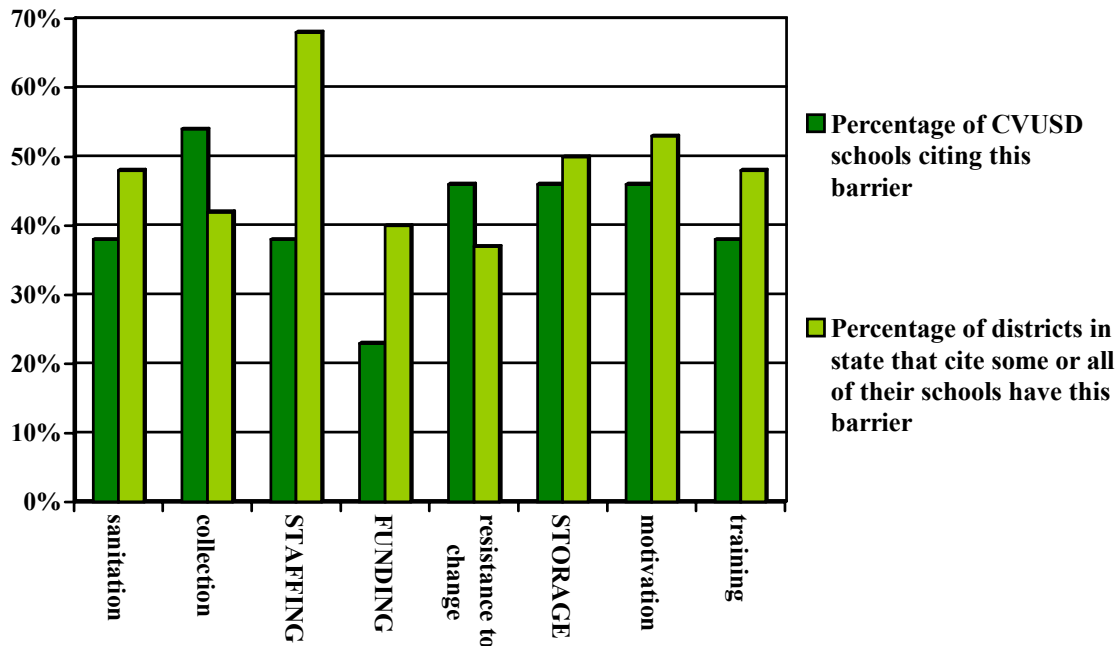


Figure 2: The percentage of schools in CVUSD that reported each of the listed barriers compared to the percentages of districts in California that reported experiencing the recycling barrier. The barriers reported by CVUSD in the statewide survey are in bold print on the x axis. Statewide district data is from CIWMA survey (Best 2002).

Discussion

A successful district-wide recycling program needs to accommodate the issues existing at individual schools. For example, different grade levels have different needs; high and middle schools need equipment to rinse soda cans while elementary schools need buckets to empty milk into before recycling. Schools need to schedule time to do meaningful waste-diversion activities, maybe even hire staff to facilitate programs. The Castro Valley Sanitation District organizes quality education programs and works to improve recycling in Castro Valley schools. The CVUSD is fortunate that the sanitation district provides recycling services at no charge. These arrangements make Castro Valley schools unique.

The information known by the recycling contact varied greatly among the thirteen schools I interviewed. At Proctor Elementary, the head custodian was unavailable due to an injury, so I interviewed the principal. She did not seem to have much understanding of what is recycled at her school, let alone how to improve the program. This school sharply contrasts other schools where the recycling contact goes beyond the call of duty. At Castro Valley Elementary, the custodian personally recycles items, such as aluminum cans, that are not recycled at school.

Soda cans create an interesting obstacle at schools like Canyon Middle School where aluminum ceased to be recycled due to safety concerns. Soda left in these cans attracted yellow jackets which severely threaten students allergic to wasp stings. Soda leaking out of the recycling bin also dissolved some electrical wiring in the ground, creating extra maintenance work. These issues must be addressed prior to implementing a district wide recycling policy.

The amount of information provided by recycling contacts varied as well as the quality of information. I noticed that some custodians felt very comfortable sharing the triumphs and difficulties of their jobs while others were more reserved. This probably stems from job insecurity as well as a lack of dialogue about waste diversion policies. Some recycling contacts reported no barriers to recycling. Perhaps discussing recycling issues may be seen as tantamount to admitting blame for inefficiencies. One custodian mentioned that he did not mind discussing all his concerns because he will be retiring soon. He said that he used to be like most other custodians who would answer questions guardedly, if at all. This may explain why staffing is seen as a barrier at the district level, but only 38% of CVUSD recycling contacts agree.

Younger students participate in recycling activities more readily than older students (after sixth grade), but are less capable of lifting heavy bins, especially into the large (about two meter tall) dumpster. The younger students are more motivated with simple incentives. The students need to be motivated to counteract feelings of apathy toward the program. The principal at Marshall School agreed and emphasized that as the students get older the incentives need to improve. This principal suggested popular assemblies, but incentives can include monetary awards and improved educational materials.

The issues that the individual schools in CVUSD experience are not unique to those schools. Of course, each school needs individual attention to bring all the schools to a competent level of waste diversion. However, barriers that exist in Castro Valley schools are also experienced by other schools and school districts in the state. Figures 1 and 2 compare the results from my survey with those of the 2002 School waste diversion survey.

Although questions four and eight in my survey are the same as those asked in the 2002 survey (Best 2002), the entities surveyed are different, so the responses cannot be directly compared. Districts respond to each question with either some, all, or no schools in their district. So, districts where one school recycles glass can respond affirmatively although many of their schools do not recycle glass. Reporting an entire district as participating just because one school

in the district does give an overestimate of the level of recycling occurring. This distinction makes less difference in school districts with written recycling policies

Castro Valley can be compared to other California districts (5-10,000 students). The results outline how the percentage of Castro Valley schools responding a certain way compare to the percentage of districts in California responding. One large difference is that 100% of CVUSD schools recycled both #1 and #2 plastic and only 26% of statewide districts reported that some or all of their schools recycled plastic. This may result from the fact that most plastic bottles present at schools come from teachers, who may recycle more often than students. Plastic bottles are easy to recycle in Castro Valley because all aluminum, glass and plastic mix in a single stream container.

Whether at the state, district, or school level, education and outreach programs need to emphasize cooperation. All the weight of implementing the recycling program cannot fall on one person; everyone needs to contribute with full participation. If everyone worked to care for their trash and recycling, then the custodian would feel much more respected and recycling programs would be more successful.

The percentage of school districts in California that report a specific barrier as occurring in some or all of their schools is a less direct measure than asking the schools directly. In CVUSD, the only barriers reported by the district were staffing, funding, and storage while on site collection was the most often cited by the schools. This difference in reported barriers vs. actual barriers may pervade the other districts in the state-wide study. One would need a more extensive sampling scheme to make any statement about how well the district responses match those from the schools they represent.

It is interesting that the barriers the CVUSD reported having encountered at 'some' of its school were not reported as barriers at very many schools. There may be several explanations: the barriers reported by the district included staffing, funding, and storage issues. Staffing and funding are issues that are managed on the district level with definite effects to the quality of the school program. So, school personnel may not identify with those problems as readily as they do with, for example, storage because it is something they have control over. The staff is not going to point to themselves as a problem, even though they admit significant difficulties accomplishing all their duties the finite time available to work.

Resistance to change, collection, sanitation, storage, and motivation were reported in six or more of the thirteen schools surveyed. Resistance to change and motivation are subjectively measured factors, so it is not unusual that the district did not view them as significant barriers while many custodians did. However, that so many barriers were reported by custodians not mentioned in the district office brings to attention the difference in perspective between those in the office and those on site.

Future research possibilities regarding waste management policies in schools can look more broadly at how efficient schools are at preventing recyclable materials from entering the wastestream. Although I have quantified what items are recycled at each school, a waste audit is necessary to determine how much recyclable material is present in the school waste stream. The main area for growth in the waste diversion arena is compostables. Sorting food scraps requires well trained students and a streamlined system to get the compost out of the school to avoid attracting pests. Further efforts that improve the lines of communication between district officials and the grounds workers on site will definitely improve the efficiency of the recycling program by dealing with difficulties immediately and incorporating the suggestions of grounds keepers into the administrative waste reduction policies.

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Appendix 1: Waste management survey used in study.

1. Does the school or district coordinate recycling activities?
2. Does your school have a kitchen? How many times a week is it used?
3. Does your school have a garden? How many times a month is it used?
4. Are any of the following materials collected for recycling within the school: (Y,N, don't know)
 - Cardboard
 - White paper
 - Computer paper
 - Mixed office paper
 - Newspaper
 - Magazines
 - Phone books
 - Aluminum cans
 - Aluminum trays
 - Steel/tin cans
 - Scrap metal
 - Glass
 - Polystyrene
 - #1 plastic (PETE)
 - #2 plastic (HDPE)
 - Milk cartons
 - Computers
 - Tree trimmings
 - Food scraps
 - Other _____
5. Are the following materials composted within the school?
 - Grass clippings
 - Bush/tree clippings
 - Milk cartons
 - Paper
 - Food scraps
 - Other _____
6. Which items are difficult to recycle? Why?
7. Which if any, of the following WASTE PREVENTION activities are practiced in your school? (Y, N, don't know)
 - On-site composting/vermicomposting (composting with worms)
 - Grasscycling (leave grass clippings vs. collecting)
 - Mulch tree trimmings
8. Has the school encountered the following barriers in implementing waste reduction activities? (Y, N, don't know)
 - Sanitation or safety concerns
 - On-site collection

- Staffing and/or supervision
- Funding or start-up costs
- Resistance to change
- Storage of materials
- Motivating staff and students to participate
- Training staff and students about the program
- Other _____

9. Has the school already overcome some barriers? How? Why was the situation difficult?

10. How could the previously identified barriers be overcome?

11. What incentives (disincentives) are there for the **school** to maximize recycling and reduce waste landfilled?

12. What incentives (disincentives) are there for the **custodians** to maximize recycling and reduce waste landfilled?

13. Are the students or teachers involved in the collection process (not just placing recyclables in bins)? Are there recycling bins in every classroom?

14. What do students need to do for a recycling program to succeed?

15. How effective is the outreach/ education of students, teachers, and staff to reduce the waste landfilled? How could this area be improved?

16. Who is the school contact for waste reduction/recycling activities that completed the survey?