Solid Waste Association of North America (SWANA)
2016 Excellence Award Entry
Communication, Education & Marketing Category

Title of Entry: 4Rs Student Activity Book
Name of Entrant / Jurisdiction: Castro Valley Sanitary District
Population: 55,000 (16,000 households)
Cost per Household for Project: $0.17
Approximate Budget: $4,500

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EXECUTIVE SUMMARY

Castro Valley Sanitary District (CVSan)’s 4Rs Student Activity Book is a printed coloring and activity book that is presented with CVSan’s 4Rs Field Trips for third grade students. The 4Rs Student Activity Book was created in 2015 and features newly illustrated characters who help explain the concepts of zero waste through the tenets of the 4Rs (Reduce, Reuse, Recycle, and Rot). The book is a take-home educational tool that students bring home to their families, one of CVSan’s target audiences. Critical thinking, problem solving, and family-friendly activities in the activity book correlate to California Common Core State Standards. CVSan invites SWANA to consider this application as a demonstration of innovation and creativity. The 4Rs Student Activity Book was developed and written by CVSan staff, meets a need in the industry to present zero waste concepts to grade school children, and is innovate and thoughtful in its approach.

RESEARCH

For 20 years, CVSan has been presenting a 4Rs Field Trip to third grade students whose schools reside within CVSan boundaries. The Field Trip’s current itinerary includes a presentation about the 4Rs (Reduce, Reuse, Recycle, Rot) and Zero Waste, a viewing of a DVD produced by Alameda County Waste Management Authority entitled, “Doing the 4Rs”, a garbage sort, recycled papermaking, time to work on an activity book, and a tour.

Despite changes and improvements to the Field Trip over the past two decades, one element remained the same. Since 1996, CVSan purchased activity coloring books for participants through organizations such as Keep America Beautiful, and customized the cover with CVSan’s name and website. The content was acceptable, but limited, and the styling was inconsistent with CVSan’s brand guidelines (Supplemental A). Through surveys, staff learned that teachers were not satisfied with the coloring books, and referred to them as “too childish” and “busy work.” Staff looked for improved activity books, but could not find a coloring workbook available which explained zero waste through the tenets of the 4Rs.

In the spirit of conducting research in order to design and author an activity book for CVSan, on August 6, 2015, staff drove 10 minutes to a local Lakeshore Learning Store, which carries educational materials for elementary classrooms. For $6.39 (down from $9.99 to $7.99 plus an extra 20% off sale items), staff picked up a Common Core language arts and math resource book for Grade 2 (Supplemental A). Staff’s objective was to learn how students coming out of the second grade had been presented critical thinking and problem solving activities in order to correlate the Activity Book to Common Core State Standards and present concepts in ways that all third grade students, ages 8-9, would be familiar with. For a nominal investment in both staff time and dollars, staff walked away with a gem of a resource.
PLANNING & GOAL SETTING

Parallel to these efforts, staff finalized a Zero Waste Communications Plan on July 20, 2015 which identified CVSan’s target audiences including parents and students (Supplemental A). Staff’s goals were:

- Starting August 2015, plan, design, print, and have delivered activity books by December 31, 2015.
- Design and edit the books in-house within a budget of 30 hours.
- Reuse existing stock images and newly illustrated characters.
- Present zero waste concepts to correlate with California Common Core State Standards for Grade 2 (so that all third graders would be comfortable with the presentation whether their field trip is at the beginning or end of the school year).
- In authoring the activity book copy, thoughtfully consider CVSan’s diverse demographics, and widen traditional stereotypes in the storyline and prompts.

Including $3,000 for 1,500 printed activity books and $1,500 for 30 staff hours, the program budget was $4,500. The actual expenses are described under Implementation.

IMPLEMENTATION

In order to distribute age-appropriate Activity Books to the first class of the target audience by January 6, 2016, staff used fall 2015 to conceptualize, design, and develop the book, using new illustrated characters that had been created for CVSan’s school programs. The Activity Book was one of several places where the characters were used last year. No outside consultants were used to develop or create the Activity Book; a contracted vendor completed the printing. Images throughout the Activity Book were reused from CVSan’s stock image library, and the books were printed on 100% post-consumer recycled paper by a Bay Area Green Business.

The Activity Book (Supplemental B) is thoughtfully ordered and authored, kicking off with a letter to the student with one of our key messages, “Select Your Path to Zero Waste!” from the characters Little Miss Reduce (Reduce), Again! (Reuse), Blue (Recycle), and Green (Rot). Each of the first four two-page spreads features one of the Rs, in order. The definition of each R is provided at the top, appearing as it would in a school textbook. Quotes in italics are directly out of the publicly-funded DVD, “Doing the 4Rs”, which students watch during the Field Trip (Supplemental A). Direct quotes are used to reinforce messaging. A tip or statement at the bottom challenges students to try something new as a take-home message, along with a topic-specific webpage for more information and tips. In the past, only crayons were distributed to students with the coloring books. With the advent of the Activity Book, students have graduated to both crayons and pencils.

For the topic of Reduce, the character Little Miss Reduce (a canning jar with banana peel arms) waits to be colored. Open-ended questions invite students to inform the reader through their writing. To challenge the student on perceptions of what qualifies a fruit or vegetable to be beautiful enough to be sold at market and eaten, a caption next to a carrot with five limbs asks, “Do you think eating this carrot will taste good or bad? Why?”
Math-based problem solving uses used clothing and sports equipment to proposition Reuse as a social norm, instead of encouraging shopping at the mall or a big-box retailer. Multi-cultural names of children are used to diversify and connect Castro Valley students with the prompts. In addition to more common names of 8-year olds such as Riley, names such as Ju-hee, Aahna, and Malik are also fictitious characters. Traditional gender roles such as girls buying clothes and boys shopping for sports are widened as Desmond donates three shirts, and Chloe finds balls at the Swap Shop.

Recycle and Rot concepts are presented through vowel recognition, open-ended questions, and fractions. The images of a worm bin and a composter are visually depicted from a side view and birds-eye view, with sections shaded to represent parts of a whole. To add value to the Activity Book, and provide ideas for projects at home with families, staff developed a variety of age-appropriate activities and experiments that encourages students to interact with various materials (paper, fabric, plastic, leaves) and elements (wind, water, earth); no batteries required. The activity book is a significant improvement over the previous book which had been used during the past two decades, as described under Research.

The books were funded by Import Mitigation funds from Alameda County Waste Management Authority. The actual cost was $1,735.58 for 1,500 books and $1,000 for 20 staff hours, a total cost of $2,735.58. The project was under the $4,500 budget by $1,764.42. In the first school year, 2015/16, staff plans to teach 708 students in 30 classes, with a reach of approximately 3,000 resident (family members), which makes the per person cost $1.09. Over five years, the cost will average $0.64 per person.

RESULTS

Between January 6 - March 1, 2016, staff taught 19 4Rs Field Trips to a total of 455 students. Those 455 students were instructed by their teachers to complete the Activity Book, and bring it home to share with their families, approximately 1,900 CVSan residents. There are 11 3rd grade classes remaining this school year with 253 students; a total of 708 students with a reach of approximately 3,000 residents.

Of the 19 teachers who attended this school year’s field trips, and received the new Activity Books for their classes, 100% had a positive response to the updated book. In a SurveyMonkey response on February 1, 2016, one teacher’s feedback read, “I have been on this trip probably 10 times and I think that this was the best trip that I have had to CVSan…I was happy to see that the activity book has been updated.”

All of staff’s goals were met and exceeded:

- Starting August 2015, plan, design, print, and have delivered activity books by December 31, 2015.
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EVALUATION

CVSan has a goal of Zero Waste, or 90%+ diversion by the year 2029. One of the objectives from CVSan’s Zero Waste Communications Plan is to increase awareness of Zero Waste using the 4Rs through 2016. Through the strategy of providing education to third grade students and their families, the tactic to create and distribute an age-appropriate activity book to all third grade students during CVSan’s 4Rs Field Trip that correlates to Common Core State Standards has been an initial success.

Staff learned a couple of important lessons in the process of developing the activity book for future communication, education, and marketing tools. Firstly, in order to prepare a message for an audience, it is critical to first study how the audience is currently receiving messages. Public agencies and jurisdictions “compete” for the attention of customers and residents, so creating a relatable and intriguing piece adds value and entices the reader to hang on a little longer. Secondly, posing questions and thought-provoking images is a method that CVSan will consider for future tools to communicate about controversial topics such as zero waste. Because zero waste is a relatively young concept, CVSan anticipates additional communication, education, and marketing pieces to come alongside and expand explanations and opportunities for community members to select their path to zero waste.

This activity book can be replicated in other communities by utilizing a similar storyline, order of concepts, and method of presenting questions. As an example, the names of the fictitious characters described in the Reuse section could be changed to represent ethnic groups in a particular area in North America, or broadly represent people groups from around the world. Educational standards for a particular area could be researched and used as a template for prompts and questions. CVSan looks forward to refining and producing its 4Rs Student Activity Book for years to come.
Previous Activity Coloring Book - 1996-2015

CVSan Zero Waste Communications Plan – July 20, 2015
Common Core Language Arts & Math Book – August 6, 2015
Purchased from Lakeshore Learning Store

“Doing the 4Rs” DVD Screenshot – Shown during 4Rs Field Trip
“If it’s broke, fix it!”
New CVSan 4Rs Student Activity Book – December 23, 2015
Full Activity Book in Supplemental B; Side-by-Side Comparison

4Rs Field Trip – February 23, 2016
Students working on their Activity Books (photo/video release signed)

New CVSan 4Rs Student Activity Book – December 23, 2015
Full Activity Book to follow as Supplemental B
Dear Student,

Reducing waste, reusing things, recycling, and composting every day keep materials out of the landfill and make a big impact. CVSan has a goal to reach Zero Waste by the year 2029.

Select Your Path to Zero Waste!
Little Miss Reduce, Again!, Blue, and Green

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**REDUCE**

Definition: Reduce means to make less waste, to use less and buy less. Reduce is the first and most important “R” since we can reduce waste before it happens.

“You can reduce waste by changing what you buy and where you buy it.”

“When you buy, sell, or donate used clothing, you are reusing so you are helping save natural resources, saving money, and having fun too.”

Create an “Eat Me First” bin in your refrigerator and place foods in the bin that need to be eaten soon! Print a sign from our website below or make your own.

www.cvsan.org/reduce

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**REDUCE ACTIVITY**

**Writing to Inform**

What is your favorite fruit or vegetable?________________

Why is it your favorite fruit or vegetable? Write a complete sentence. ____________________________________________________________

Do you think eating this carrot will taste good or bad? Why? ______________

Unusually shaped fruit and vegetables still taste delicious even though they are shaped differently!
REUSE

Definition: **Reuse** means using an object or material again, either for its original purpose or for a similar purpose, without significantly altering the physical form of the object or material.

“If it’s broke, fix it!”

Do you reuse food storage or takeout containers, shopping bags or water bottles? That’s great reuse!

www.cvsan.org/reuse

REUSE ACTIVITY

Solve each problem. You can draw pictures to help you. Show your work in the box.

1) Desmond found 3 shirts to donate. Ju-hee found 2 shirts to donate. Aahna found 8 shirts to donate. How many shirts did the students donate in all? ________ shirts

2) At 9:00, 3 students arrived at the Bike Shop to fix their bikes. At 9:30, 5 students arrived at the Bike Shop. At 10:00, 4 students arrived at the Bike Shop. How many students arrived at the Bike Shop in all? ________ students

3) At the Swap Shop, Taylor found 3 basketballs. Chloe found 4 softballs. Malik found 6 soccer balls. How many basketballs and soccer balls did they find? ________ balls

4) Riley went to the Swap Shop. Riley paid $5 for a used pair of soccer cleats. She paid $3 for a used pair of soccer shin guards. How much did Riley spend altogether on soccer gear from the Swap Shop? $ ________

RECYCLE

Definition: **Recycling** is the manufacturing process in which old materials are made into new products.

“Aluminum cans are made from bauxite, a precious natural resource we have to dig up. Aluminum cans are 100% recyclable and can be made into new things, like an aluminum bat!”

“When we recycle things, they can be made into new things, and then used over and over.”

www.cvsan.org/schools

RECYCLE ACTIVITY

Vowels: There are five main vowels: a, e, i, o, and u. Complete each word below that relates to recycling with the correct vowel:

C___n   B___ttl___
P___p___r  Gl___ss
M___t___l   Pl___st___c
Recycling Tr___ck

Activity for Home:
What is your favorite item to recycle? ___________

Why is it important to recycle? ___________

____________

____________

____________

Do you think all schools should be recycling? Why?

____________

____________

____________
ROT
Definition: Rot means to decompose and break down.

Food scraps, food-soiled paper, and plant debris turn into finished compost!

“Adding compost to soil improves soil health. Healthy soil helps grow healthy plants. It really is a cycle!”

Have you ever seen a piece of moldy bread or a browning banana? Those are natural examples of rot and how nutrients return to the earth.

www.cvsan.org/fsr

ACTIVITY AT HOME

1. Color both sides of the pinwheel.
2. Cut out the pinwheel along the dashed lines.
3. Carefully punch out the 4 holes. Gently bend each hole to line up with the center dot.
4. Put a craft brad through the holes, the center dot, and a reused straw. Spin your pinwheel!

ACTIVITY AT HOME: PINWHEEL

ROT ACTIVITY

Understanding Fractions: A fraction represents parts of a whole. The top number tells how many parts are shaded. The bottom number tells how many parts in all.

Write in the number in each fraction that tells how much is shaded:

- Worm Bin: 4
- Composter: 3
ACTIVITY AT HOME: BACK OF PINWHEEL
(DRAW A PICTURE OR MAKE A DESIGN)

REDUCE & REUSE ACTIVITY

REUSE A T-SHIRT.

Step 1: Cut sleeves off of shirt. Step 2: Cut neck out of shirt.

MAKE A REUSABLE BAG!

Step 3: Turn shirt inside-out. Step 4: Sew bottom edge together!

REUSE ACTIVITY: ORIGAMI BOAT FOLDING

Before recycling a piece of paper, reuse it for origami!

RECYCLE ACTIVITY: BAG-A-BAG AT HOME

Collect film plastics in one plastic bag at home, tie a knot, and place the whole bag in your recycling cart at home. Do you know what kinds of clean film plastics can go in your bag-a-bag?

1. Plastic Bags
2. Cling Wrap
3. Clear Reclosable Bags
4. Plastic Film Packaging (bubble wrap, poly wrap, air pillows with air released)
5. Lamination
ROT ACTIVITY: LEAF RUBBING

How many veins do you see? ________

1. Collect fresh leaves of different sizes.
2. Place a leaf on a clipboard or desk.
3. Place the last page of this Activity Book on top so that the leaf is inside one of the three rectangles.
4. Carefully peel the paper wrapper off of a crayon or use a crayon already without its wrapper.
5. Gently rub the side of the crayon over the rectangle until you see the image of a leaf. Then answer the question.
6. Compost the leaves!