

Waste Not, Want Not

What it takes to effectively create an effective Plastics Recycling Program in your school ultimately increasing the use of refillable water bottles.

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INTRODUCTION

It takes about 450 years for a plastic water bottle to decompose. That means if a plastic bottle is placed in the landfill today, it will take approximately 4.5 centuries or about 164,250 days to breakdown. In other words, **that same water bottle will be around until 2466!** Now that's something worth investigating!

What do you do when you see a trash can filled with plastic bottles and there is no recycling program in place? You develop a recycling program, that is what you do! What do you do to make sure these people understand the benefits of recycling? You put an awareness campaign in place educating them on the benefits of recycling and the benefits reusing refillable water bottles as opposed to disposable plastic water bottles. **This experiment will prove how we successfully educated the students of River Ridge Academy Middle School on the benefits of recycling plastic bottles and reusing refillable water bottles.**

By doing our part RRA will help reduce the amount of plastic placed in landfills and save on natural resources used to manufacture disposable plastics. In addition, by reusing refillable bottles, our students, staff and families will protect the earth and save money.

BACKGROUND RESEARCH

The team observed that there were a lot of plastic water bottles being thrown away in the regular trash cans and wanted to do something about it. Research showed 1500 water bottles are consumed every second in the United States and 50 billion are purchased every year with over 80% ending up in landfills and not being recycled at all. America uses over 17 million barrels of crude oil manufacturing plastic water bottles. That is enough oil to fuel 1.3 million cars a year! To put it in perspective, **ONE** recycled plastic water bottle can power a 60w light bulb for 6 hours!

Not only did the research show plastic water bottles have a negative effect on the planet and natural resources, but, they have an impact on the wallet! The average cost of a gallon of bottled water is \$1.22 versus a gallon of tap water costing \$0.004. A 17oz water bottle sold at RRA concessions and cafeteria is \$1; if that same person refilled a reusable water bottle in the water fountain refill station it would cost \$0.0002! The math was amazing!

Once the facts were gathered, the Social Studies teachers were involved in surveying the middle school students. The biggest question to be answered, “Will you recycle”? An overwhelming number of students responded yes, if it were convenient. Classroom recycling centers were then placed in every middle school classroom.

BACKGROUND RESEARCH (Cont.)

Now it was time for the “Awareness Campaign” which included hanging posters around the school and performing a skit at the monthly huddle to share these findings with the staff and students. At the end of the huddle the challenge was issued to begin making a difference at River Ridge Academy, Reduce, Reuse and Recycle was the overall message.

To further the mission to recycle plastics on the RRA campus, Publix, a community partner was contacted. The General Manager, Brian Goldstein came to RRA to meet. While some of their providers “reuse” shipping containers others deliver in some type of paper or plastic packaging. He spoke about how much recycling Publix collects as a company from unpacking all the grocery and merchandise for their store. Publix not only “recycles” their trash to keep it from landfills but, they sell their trash for \$96M per year! Mr. Goldstein agreed, beginning a recycling program was a step in the right direction for River Ridge Academy. (Publix delivered a container within 10 days for use in one of the common areas.)

HYPOTHESIS

A. *If plastic recycling centers are placed in the classrooms and common areas around the school, then the amount of plastic bottle recycling will increase on the River Ridge Academy campus.*

Dependent Variable: *place plastic recycling centers in classrooms and common areas around the school*

Independent Variable: *increase the amount of recycling of plastic bottles on our campus*

B. *If an “Awareness Campaign” is put in place to educate the students and staff of River Ridge Academy, then there will be an increase in refilling reusable water bottles at the water fountain refill stations*

Dependent Variable: *“Awareness Campaign” to educate the students and staff of River Ridge Academy*

Independent Variable: *there will be an increase in refilling reusable water bottles at the water fountain refill stations*

CONTROL

In this experiment the Middle School of River Ridge Academy will be used as their recycling efforts are recorded once Recycling Centers are placed in their classrooms and “Awareness Campaigns” have begun.

The 2nd grade of River Ridge Academy will be used as the control for this experiment as they will be left on their own to recycle after the Awareness Campaigns are begun. No recycling centers will be placed in their classrooms.

MATERIALS NEEDED FOR A CLASSROOM SURVEY

*Note: Need the same number of surveys as people to be surveyed



RIVER RIDGE ACADEMY

PLASTIC WATER BOTTLE SURVEY

1. Do you bring a disposable water bottle to school? (For example: Dasani, Publix, Aquafina) Yes or No
2. Do you normally throw your plastic water bottles in the trash? Yes or No
3. Do you feel that recycling is important? Yes or No
4. Do you recycle? Yes or No

*If you do recycle, how often do you recycle your trash?

Always

Only when it is convenient/visible

Never

*If recycling was more convenient and readily available, would you do it?

Yes or No

PREPARING AN EDUCATIONAL SKIT

- . Speak with the school principal or classroom teacher, find an event where the most students will be reached
- . Meet to outline important facts that need to be included
- . Create a dialog and assign parts to each team member
- . Involve the audience by picking a “catchy song” or cheer
- . Design and build props for the skit that explain the message (Use as many recycled/reused materials as possible)
- . Ask a member of the community to join the presentation to add importance or interest
- . PRACTICE, PRACTICE, PRACTICE
- . Arrive early to make sure the stage is properly set
- . When it is time to perform, make sure all performers speak slowly and clearly
- . At the end, issue the challenge, bow and thank everyone for their time



Beaufort County Waste mascot, Rerun joined us for our school wide Huddle to help with the importance of the “plastic recycling challenge”.

EDUCATIONAL SKIT SAMPLE SCRIPT

Slide #1

!!!!SHOCKERS!!!!

FACT 1: 1,500 bottles of water are consumed every second.

FACT 2: Every day the United States uses 90,000 feet of paper.

FACT 3: 17,000,000 barrels of oil are used to produce water bottles ever year. That would heat and cool 190,000 homes and fuel 1,000,000 cars for 1 year.

FACT 4: If all our newspaper was recycled we would save 250M trees per year.

FACT 5: If you lined up all the water bottles that are not in recycled in 1 day you could go from San Francisco, CA to New York City and back. That totals 5,127.6 miles! That's over 1,868,506.4 miles per year!

FACT 6: 2B trees are used each year to produce paper products in the United States. That means each year RRA uses 7,000 trees and you personally use 7 trees.

FACT 7: It takes about 6 decades or 60 years for a water bottle to decompose in the landfill.

FACT 8: Each person in the United States uses about 680 pounds of paper per year.

Slide #2



Old
School
Papers



Campaign
Posters



Plastic Grocery
Bag



Juice
Pouch



Plastic Sandwich Bag



Plastic Water
Bottles

Slide #3

RAIDER CHALLENGE

- ✓Join us for the 1st RRA Campus and Bluffton Parkway Cleanup
Saturday, November 14th from 1p to 3p
- ✓Be mindful.....Please Reduce, Reuse & Recycle

Slide #4

River ridge raiders

your mission

REDUCE, REUSE & RECYCLE

MATERIALS NEEDED FOR CLASSROOM RECYCLE CENTER

**Note: Before beginning this project make sure you look around for reusable containers. These materials will provide 2 bins (1 for plastic and 1 for paper) for 15 classroom recycle centers.*

30 Milk Crates (Reused from the Cafeteria)

60 Pieces of White Card Stock

Paper Cutter

Printer

Completed Classroom Recycling Center



MATERIALS FOR COMMON AREA RECYCLING CENTER

- (4) 2x2 Pine Boards (8' Long)
- (1) ¼" 4x8 Sheet of Plywood
- (2) 8' Furring Strips
- (2) 8' Pieces of ½" Corner Trim
- (40) Wood Screws
- (20) Finishing Nails
- (4) Cans of Green Spray Paint
- (1) Quart of Purple Paint
- 12' of Rubber Tubing
- Labels: (28) Juice Pouches, (3) Sheets of Cardstock

Building Recycling Center



Finished Product



RIVER RIDGE RAIDERS RECYCLE



This is the recycling center built for the River Ridge Academy Cafetorium. It is used during school and at after hour events. The maintenance staff has joined in and is helping us with getting our recycling to the outside pickup area. Her name is "Marita".



In the above picture, the orange bag to the left and the clear bag to the right of the center show plastic bottle recycling that was done at a school event for fathers and their students. Everyone is pitching in at RRA to do their part!!!!

MATERIALS NEEDED TO CREATE POSTERS

- **INSPIRATION**
- ½ Sheet of Cardboard
- Markers/Colored Pencils/Crayola Crayons
- Scissors
- Glue
- Pencil
- Tape
- Pen
- Miscellaneous Repurposed Items

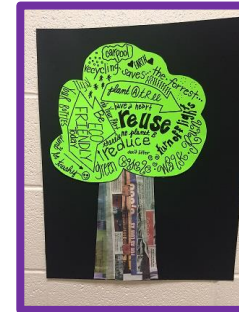
(juice pouches, empty plastic bottles, colored paper, newspaper, shoe box lid etc.)



Shoe Box Lid



Plastic Water Bottle



Newspaper

REUSABLE WATER BOTTLE AWARENESS POSTER CAMPAIGN



Sample of recycling awareness posters
placed throughout RRA Campus

Made from past
election posters and
newspaper

HOW TO INVOLVE THE COMMUNITY

Identify community members that share a common goal. It was important that the recycling centers had recognizable symbols and perhaps a company name. Publix was asked to become involved because they have recycling bins in front of every store. When checking out a website you will find out who the general manager is for the store. Contact them to set an appointment.

AGENDA USED FOR PUBLIX MEETING

*When creating an agenda, make sure to cover your topic in an organized fashion.
This way the meeting will run smoothly.

River Ridge Raiders Recycle

December 17, 2015

INTRODUCTION (Lauren Cleveland)-What is eCybermission?

*eCybermission is a virtual science fair sponsored by the US Army.

WHAT IS OUR MISSION? (Caitlyn Skalla)

*We have chosen a mission for the environment relating to recycling of plastic materials. We are working to make a difference in our community, both inside and outside of our school.

WHY WE HAVE ASKED YOU HERE TODAY? (Mac Noyes)

*During our mission we noticed Styrofoam trays are being used in our lunch room. We found out that our school cafeteria uses about 450 of these trays per month.

STYROFOAM FACT-(Lauren Cleveland)

*When placed in a landfill, Styrofoam disintegrates in 500 years to never!!!!

WE NEED YOUR HELP-(Caitlyn Skalla)

*We are asking Publix to partner with River Ridge Academy because of your success in recycling egg cartons and meat trays. We would like to bring our trays to your store and recycle them.

WE WILL.....(Mac Noyes)

*We will clean the lunch trays and deliver them to Publix every 4 to 6 weeks.

Will you partner with our Plastics Recycling team?

METHODS/PROCEDURES FOR CONDUCTING EXPERIMENT

Step 1-Visual observations of classroom trashcans to determine the number of plastic water bottles thrown away.

Step 2-Develop plastics recycling survey and distribute to Social Studies teachers.

Step 3-Analyze surveys to determine results.

Step 4-Begin educating students and faculty on the benefits of recycling by performing a skit at a student gathering.

Step 5-Collect “reusable” materials, when available, to build classroom recycling centers and gather other materials to complete centers, clearly labeling the purpose of each container.

Step 6-Place recycling centers in classrooms in a convenient location.

Step 7-Continue education by placing posters throughout your campus and promote refilling reusable water bottles.

Step 8-Involve community members to help create credibility for plastic recycling on and off campus.

Step 9-Build central recycling center for common area to help increase convenience of plastic recycling and place in common area .

Step 10-Pick up recycled plastic bottles in the classrooms and common area on a routine basis to begin gathering data.

Step 11-Check water fountain useage to determine if students are refilling reuseable water bottles. (*)

Step 12-Record data from classrooms.

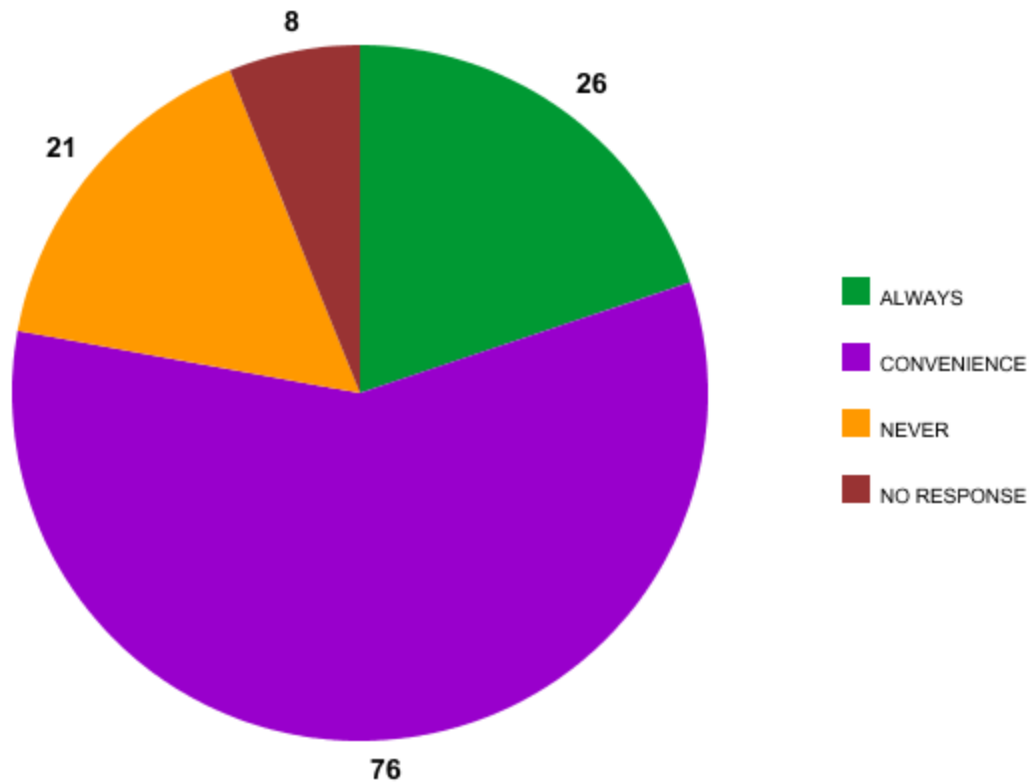
Step 13-Record data from water fountain refill stations. (*)

Step 14-Contact local media to help increase awareness for your program.

Step 15-Once the experiment is complete, continue with “Awareness Campaigns” to keep reduce, reuse, recycle in students minds until it becomes a habit.

***Note: This step can only be included if you have water fountains that have a separate fill section for water bottles and keeps a total of useage**

WHEN WE ASKED----"WILL YOU RECYCLE?"



RIVER RIDGE ACADEMY MIDDLE SCHOOL STUDENT RESPONSES

RECYCLING AFTER CLASSROOM CENTERS WERE PUT IN PLACE



Bottles laid out in
middle school hall



Perspective of
how long



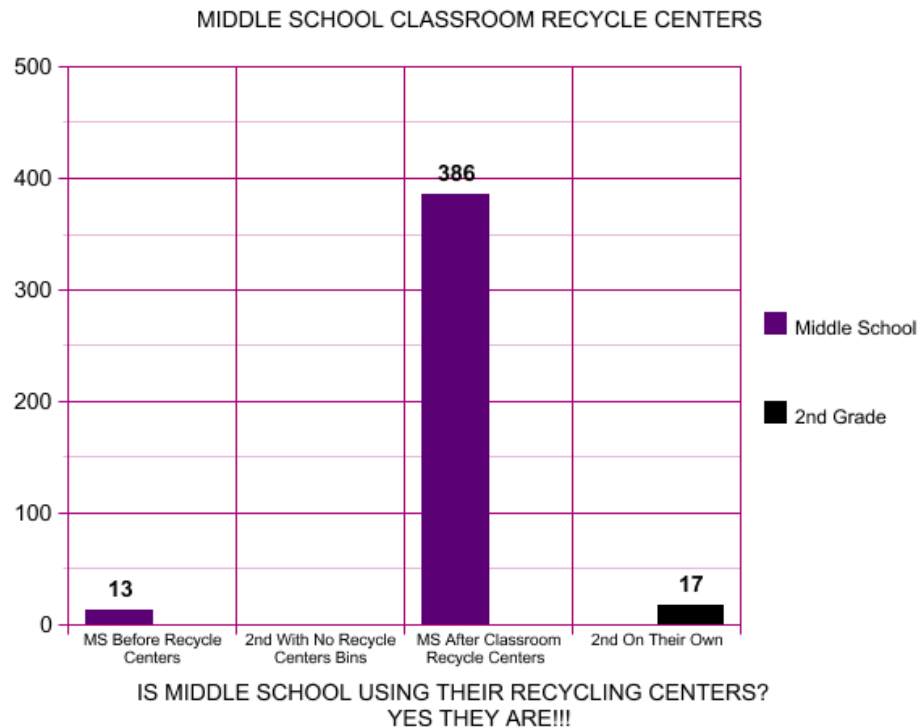
Perspective of
width



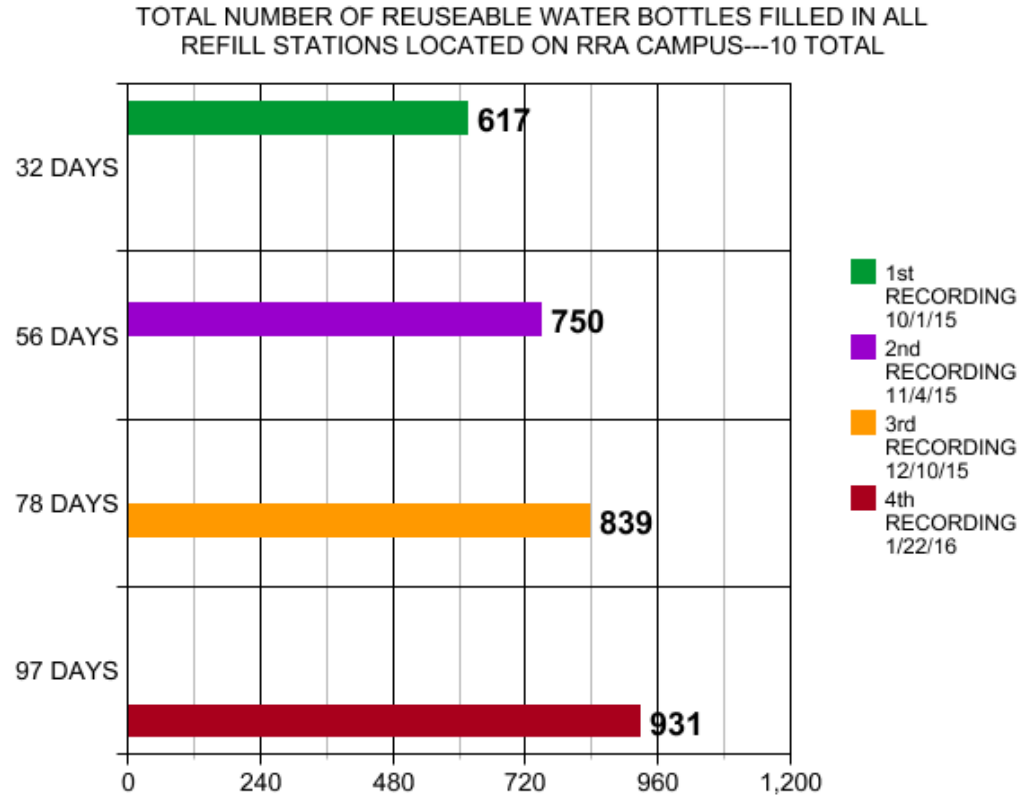
A man's work is
never done

The team collected plastic recycling from RRA Middle School classrooms. They started with no plastic water bottle recycling and went to 386 plastic water bottles being collected in a 60 day period.

FROM 13 TO 386 IN 60 DAYS!!!



ARE REUSABLE WATER BOTTLES CATCHING ON? YES THEY ARE



Units are in
onehundreds, so
617 means
61,700

CONCLUSION

At the conclusion of this experiment it was obvious that the recycling centers placed in the middle school classrooms increased plastic recycling. As a result of the “Awareness Campaign” students began to understand that while recycling was important it was equally important for them to begin using reusable water bottles and refill them at the water fountain refill stations. This was evident from the number of plastic waters/containers collected from the classroom recycling centers and from the increase of usage at the water fountain refill stations.

Community involvement had an impact as well. Having Beaufort County and Publix as partners strengthened the project’s credibility both inside of River Ridge Academy and outside. An example of this was the Bluffton Sun accepting an invitation to come to RRA and interview the teams about the research, experiments and findings of the projects.

As the recycling “Awareness Program” continues at RRA, the data collected will need to be recorded per recycling center collection to include the date and location. This way success can be recorded and specifically measured for each part of the school. In turn, data collected will need to be recorded per water fountain refill station to include date and location. This way success of this part of the experiment can be recorded and specifically measured for each part of the school.

As the “Awareness Program” grows outside of RRA’s walls it will be interesting to see how it will effect the community of Bluffton and beyond.

While recycling is a way for RRA to help the planet and reduce the amount of trash that is placed in the landfills, it is more important to get students to reduce the amount of plastic water bottles used in total. Replacing these with reusable water bottles and refilling them in the water fountain refill stations is a better option for the school and for the environment.

The key to truly protecting the planet is for RRA’s students, staff, families and communities to “reduce” the amount of “trash” they make. “Reducing” trash is and will be the only way to make a difference in everyone’s carbon footprint!

Community Awareness Recordings

<http://www.teachertube.com/video/cybermission-2016-412832>

This video was produced for our local T.V.

<http://www.teachertube.com/video/river-ridge-recycle-campaign-412803>

This video was produced for campaign in school wide “huddle”

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