

Washington Episcopal School



Pollution Solution Sustainability Project

STEM Teacher Mrs. Owens Class

As part of the entrepreneurship unit of a 3rd grade STEM class students chose to develop a school wide campaign to research, educate individuals, and improve the community's sustainability practices. Students had the option to pick any social or environmental issue related to a STEM topic and chose to focus on energy conservation while blending the project with community outreach.

Students gathered information related to sustainability that included energy conservation and reusing, reducing, and recycling, heard from a county official on recycling, conducted a recycling audit, learned from NEED and facilities professionals about energy conservation, conducted an energy audit, developed sustainability educational signage, developed energy conservations packets for students and staff, conducted in person training, held a multi-grade level energy fair, installed more recycling receptacles, developed new recyclable programs for plastics, commingling, and markers, replaced cafeteria containers with eco-friendly materials, created a call to action form, inspired further sustainability initiatives within the school government, student clubs and the Parents Association, provided free sustainable materials to families, analyzed recyclable and waste audits, and made positive energy related sustainable and lasting change at the school and within the greater community in the area of sustainability.

3rd Grade Students Ambitious Project Goals

Background: STEM students learned about goods and services, including energy consumption, packaging and more. Students reflected on their actions and carbon footprint. Students developed an entrepreneurial campaign that made goals for their lives, their families, the school community, friends, and neighbors to reduce their carbon footprint on the earth.

The first step was to write a business plan and outline their objectives and the steps needed to meet these objectives.

Business Plan:

- ▶ Public Service Business
 - ▶ Business Name
 - ▶ Market research
 - ▶ Data Collection
 - ▶ Goals and Objectives
 - ▶ Target Market
 - ▶ Vehicles of Delivery
 - ▶ Marketing Strategies
 - ▶ Sustainability of Plan
 - ▶ Evaluation and Reflection
 - ▶ Future Steps
- ▶ After brainstorming, research, observation, collaboration, and compromise, students set these **achievable goals**:
 - ▶ 1. Increase sustainable knowledge around energy consumption, reusing, reducing, and recycling
 - ▶ 2. Increase sustainable practices around energy consumption, reusing, reducing, and recycling
 - ▶ 3. Reduce energy consumption and waste and reduce trash
 - ▶ 4. Foster stewards of sustainability in the school community so positive change would go beyond the school community



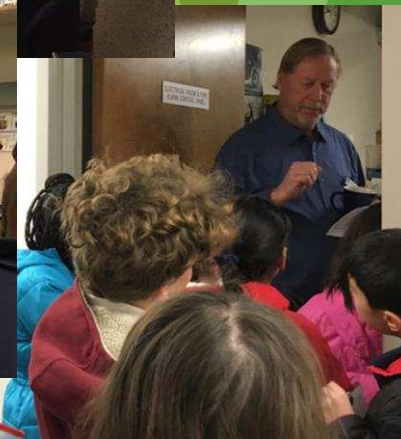
Actions and Activities to Meet Goals showcased:

- ▶ Problem Solving, Critical Thinking, Communication, Collaboration, Teamwork, Design Thinking Method, Observation, Data Research, and Analysis
- ▶ Students focused on how to make immediate and lasting positive change in energy conservation and sustainability
- ▶ Students developed ideas to make the project robust and not only influence their grade, but the whole school community. Then they decided that each person in the community could be stewards of positive change in the further reaching community. They said, knowledge is power and most people don't know or think about have to reduce their carbon footprint.
- ▶ Students worked as a grade to organize which classes would give the marketing pitches on which days to which classes, what classes would audit recycling bins, which classes would print and deliver flyers and handouts, which classes would deliver reusable give-aways, etc.
- ▶ Students enjoyed the freedom to make decisions and learned and readdressed portions of the project when challenges arose.



Actions and Activities to Meet Goals:

- ▶ 1. Learn and research more about energy reduction and sustainable practices. (For example shared collective knowledge, energy fair, and had 4 guest speakers including a county recycling specialist and NEED auditors.)



* Images of more audits, research, data collection, and speakers.



Actions and Activities to Meet Goals:

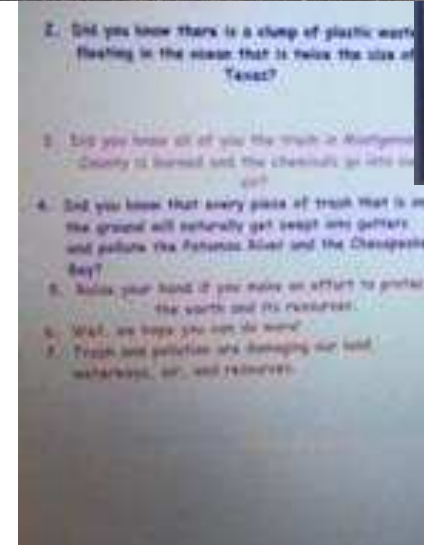
2. Educate the school community, families, friends and neighbors through a sustainability guide that outlined sustainable practices around energy consumption, reusing, reducing, and recycling and 14 pitches to the community about sustainability and energy reduction method.

*Images of class room pitches



Actions and Activities to Meet Goals:

- Creation of Handout, Information Guides, Call to Action and Commitment Forms, Marketing pitch script, Fliers



Actions and Activities to Meet Goals:

3. Expand current recycling programs campus wide by contacting local government and organizations to start marker, plastic bag, and commingling recycling, get receptacles for these programs and develop energy and waste reduction strategies.



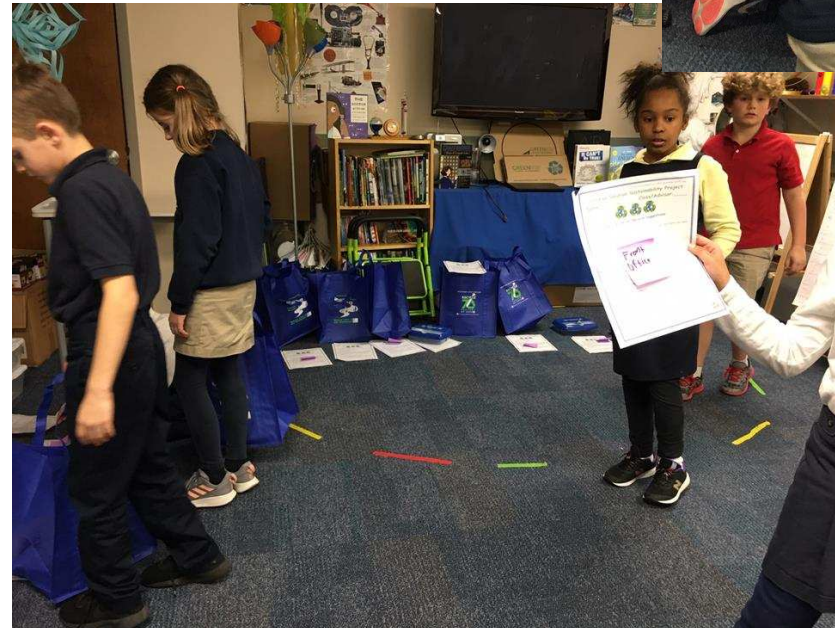
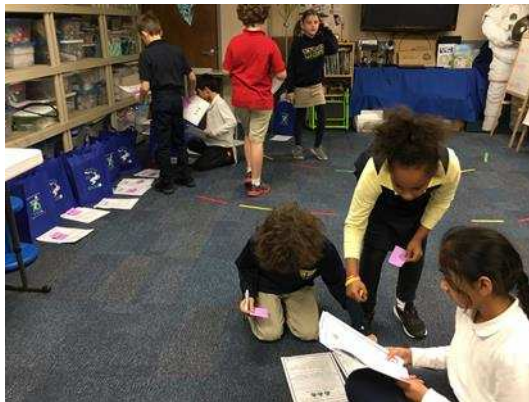
Actions and Activities to Meet Goals:

4. Improve and secure sustainable materials and practices for classroom, public space, and cafeteria. (For example no more single use non-biodegradable utensils and cups.)



Actions and Activities to Meet Goals:

5. Student commitment and buy in for the sustainability programs through call-to-action, commitments, and educational handout that offered students and staff free sustainable materials such as a repurposed key chain, a reusable container, and a reusable bag. School community members had to answer questions regarding energy reduction practices and pledge an idea of how they would adopt new sustainable living goals.



Energy Content of Project and Resources throughout the Activities

Examples include:

Science of
Energy
Energy Sources
Supply Chain
Energy Uses
Waste and Manufacturing
Impact
Energy Conservation
Environmental Impact
Global Warming

Sought support from NEED,
and County Environmental
Protection, along with
other outside community
supporters.

In the Energy Audit students learned about energy consumption and quantified figures. Next students audited the building with NEED personnel. Students found sustainable practices on campus such as:

Reflective roof

Insulation and solar film

Climate controlled zones

Motion toilets, faucets, and lights

LED lighting in key places

Students discovered areas for improvement with an overabundance of lighting and energy gobblers like space heaters. Space heaters were removed and natural light was used instead of artificial light.

Students were inspired to make changes and/or adopt energy conservation practices at home.

Students also explored and celebrated energy in the Energy Fair that 3rd grade participated in to showcase energy conservation.

Waste Reduction Content of Project and Resources throughout the Activities

Examples include:



In the Trash and Recycling Audit students learned about the importance of reducing and reusing materials, and as a last resort recycling recyclable materials. Students conducted trash and recycling audits before and after the roll out of their project and found on the last audit that:

Trash was ~35-40% full - DECREASE OF 10-15%

Paper was side - 100% full on both sides - 50% INCREASE ON ONE SIDE OF DUMPSTER

Commingle was ~50-60% full - INCREASE OF 15-25%

Goals met with clear improvement after the project started



Student Testimonial and a Reflection of Community Education and Involvement

“This is the best school project any class has done here in the 6 years I have been at this school because it really taught me a lot and it will help save the earth!”
4th grade WES student.

Students spoke to teachers and helped them determine new ways and materials to better their energy consumption and recycling in different classrooms with different needs. Suggestions included using motion sensor lights, removal of space heaters and unnecessary lamps, and turning off overhead artificial light when natural light was sufficient, using reusable materials, ordering paper cups instead of non-recyclable #6 plastic cups.

Students also gave out numerous reusable containers to the many students and staff who made a commitment to take on new sustainable practices at school and at home!

Student Leadership and Management

The Pollution Solution Sustainability Project was student inspired, student run, and student maintained and left a lasting impression and change on our school community and beyond.

Students know from class discussion and reflection that this is just the beginning and that their efforts in one class have now inspired school wide conversations about energy reduction and sustainable practices in student government, classrooms, student conservation committees, the Parents Association, and more.



Evaluation, Documentation and Results

- ▶ Through audits, community conversations, individual commitments, and tons of positive feedback about how much this project taught community members young and old about how they can reduce their carbon footprint students were thrilled to meet their goals to:
- ▶ 1. Increase sustainable knowledge around energy consumption, reusing, reducing, and recycling
- ▶ 2. Increase sustainable practices around energy consumption, reusing, reducing, and recycling
- ▶ 3. Reduce energy consumption and waster and reduce trash
- ▶ 4. Foster stewards of sustainability in the school community so positive change would go beyond the school community

