School Name: Scituate High School
Project Title: Scituate High School Need Project
Advisor's Name: Shannon Donovan

Summary: This year, our project focused on a variety of outreach programs as well as integrating environmentally friendly projects. We assisted with a teacher workshop to share how we use some NEED materials to teach younger students. We also spent a lot of time working on videos and researching a plastics recycling system. Our team created a new instagram account to share some of our work and further education to others. Our engineering classes also spent a lot of time learning about energy and applying what they learned to different design projects. We also planned for an aquaponics system and designed the system from the ground up.

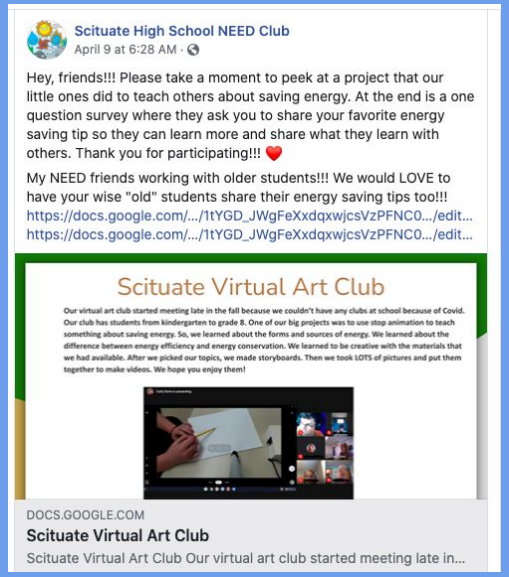
Activity: Social Media Outreach

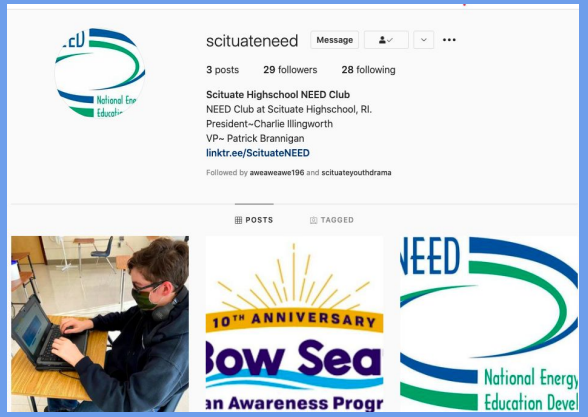
Goal: Build a community online to share information about the importance of protecting the environment around us

Activity and Tasks: We created a instagram account that informs people how to reduce their carbon footprint, save energy, and improve the environment. We also unkempt the facebook page for our club.

Energy Content and Activities: Wrote a post about what the NEED project is and stands for, shared a video about saving energy during the winter etc. We posted pictures of us at different activities that we did.

Student Leadership: All members have access to the accounts but posts are primarily made by Charlie.





https://www.facebook.com/SHSNEEDCLUB/
https://www.instagram.com/scituateneed/

Evaluation: The page continues to grow in the number of people reached.

Activity: Website

Goal: The NEED club created a website for anyone interested in learning more about our program and the projects we are conducting.

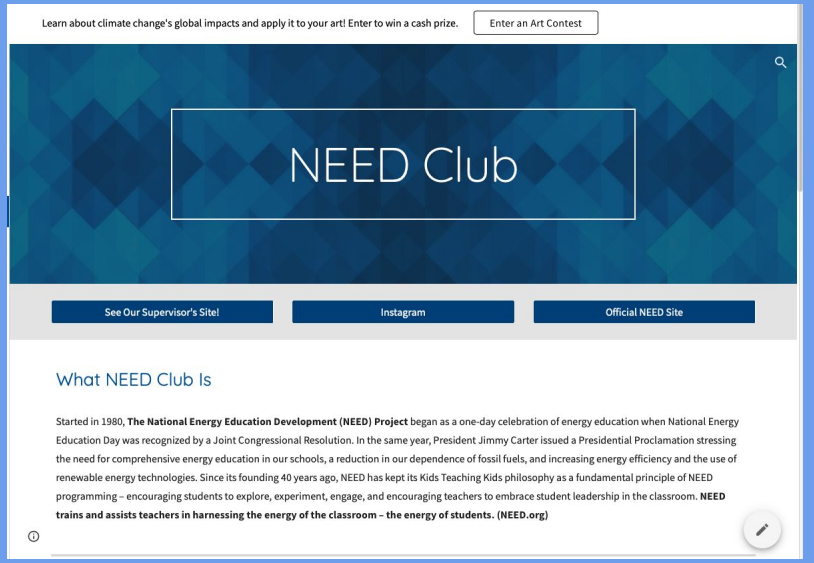
Activities and Tasks: It includes tabs on members, projects and events happening that you can participate in that are updated constantly.

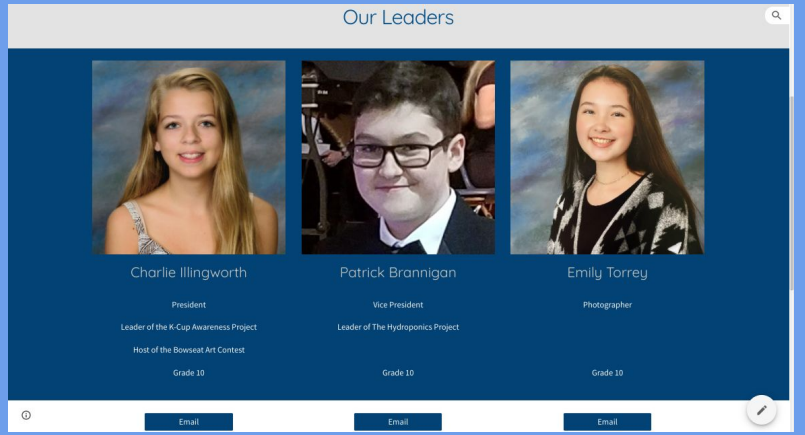
Energy Content and Activities: Our website talks about what NEED Club is and what we do, as well as detailing our current and past projects. The projects detailed on the website are in the following slide of this presentation.

Student Leadership: Members can edit the website with current events happening as well as inform others of changes. Members are also expected to keep pages for their projects up to date

Evaluation: We are now able to inform those around us about events and allow for more student participation.

https://sites.google.com/scituateschoolsri.net/joinourclub





Activity: Bowseat Art Contest

Goal: The goal of this project is to include those in our community by using their art skills to inform others about the climate change crisis.

Activities and Tasks: People can use any art form whether it be ceramics, drawing, painting or even poetry and writing.

Energy Content and Activities: Students who chose to participate learn about the theme for the year which is always environmentally related. This year's theme is water rising, about the rising sea levels.

Student Leadership: Charlie organized this and got it in the school newsletter and posted about it on the instagram.

Evaluation: We hope that even if kids don't submit a project, they at least learn about some of the environmental issue that face our globe.

	Junior Division	Senior Division
Gold Award	$1,000	$1,500
Silver Award	$750	$1,000
Bronze Award	$250	$500
Honorable Mention	$100	$250

Activity: Art Club Education

Goal: Educate Middle/Elementary School Virtual Art Club so they can submit their own Youth Awards Project

Activity and Tasks: Join the Art Club google meeting and talk to the students. Provide ideas to start their stop animations.

Energy Content and Activities: We talked with kids about ways they they can save energy in their own homes. We talked about turning off unnecessary appliances or lights among other simple things that they, as kids, can do to preserve energy. We took questions and did our best to answer them and provide ideas for their projects.

Student Leadership: Our President, Charlie, talked to the students with the two teachers to provide insight for their projects.

Evaluation: We were able to help the kids start their projects and hopefully they have submitted them for their own Youth Awards Project. We also mentioned that when they are old enough to be in NEED Club at our school, if they are still interested, they are very welcome to join.

Activity: RIOER Meeting

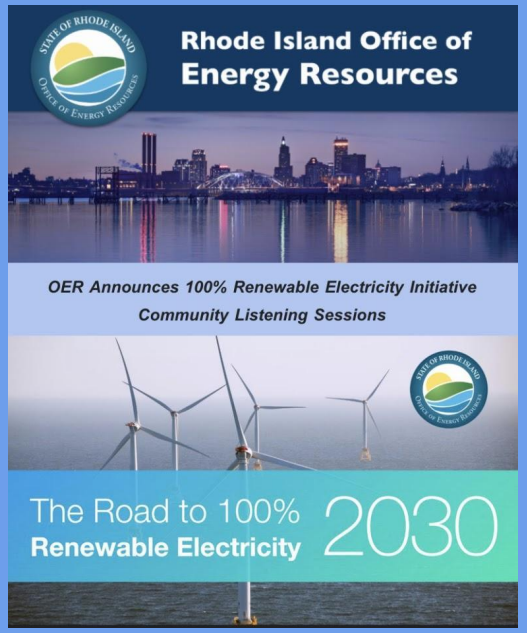
Goal: Learn about sustainable energy and programs in Rhode Island

Activity and Tasks: We attended a Community Listening Session hosted by the Rhode Island Office of Energy Resources on what Rhode Islanders can do to be more energy efficient. (December 10, 2020)

Energy Content and Activities: We learned about how home construction and design contributes to energy efficiency.

Student Leadership: Charlie and Patrick represented our NEED chapter.

Evaluation: We concluded that more webinars such as this targeted towards a larger group of people could greatly benefit the community as a whole. Additionally, ones targeted towards younger audiences could be very beneficial to our planet's future.



During each session, OER staff will briefly summarize the goals of the effort and work to date, leaving remaining time for dialogue with attendees. Attendees are encouraged to bring questions, comments, ideas, concerns, and recommendations.

There are two opportunities to engage:
November 20, 1:00-2:00 PM
December 10, 5:30-6:30 PM

To protect the safety and wellbeing of the public and staff, Community Listening Sessions will be held virtually via Zoom. Pre-registration is encouraged.

Activity: K-Cups

Goal: Stop or greatly reduce the use of K-Cups in our joint Junior-Senior High school.

Activities and Tasks: Educate teachers on the impact of K-Cups on the environment, take apart K-Cups for proper recycling, formulate a plan for what we can do with the broken down K-Cups.

Energy Content and Activities: We compost the used coffee grounds from the K-Cups, clean and deconstruct the rest to be recycled. We are trying to get the teachers to switch to reusable K-Cups because they are much more sustainable and better for our environment.

Student Leadership: Charlie runs this project and the other members assist with work.

Evaluation: This project has taken lots of time and this year we focused more on planning and deconstructing because we understand the need for sanitation during the Covid-19 pandemic.

K-CUPS

Attention teachers and other staff members. NEED club is still collecting used K-Cups. Place them in the bins in the freezer so that we can collect them to clean.

K-Cups

The amount of K-Cups we use is harming sea life. 100,000 marine creatures a year die from plastic entanglement and these are only the ones that are found. This contributes to ocean acidification. Acidification is the ongoing decrease in the pH of the Earth's oceans, caused by the uptake of carbon dioxide from the atmosphere. Carbon dioxide is from factories that produces plastic and other products. Did you know that if the pH of water is too low or too high, the aquatic organisms living within it will die. Fish need anywhere from 6.5-9.0 pH levels to survive. If the pH is out of these levels, the fish can become stressed and dieThe decrease in pH will kill all marine life. We eat fish and other sea creatures and there will be no more if this decrease keeps going on.

The amount of K-Cups in landfills can wrap around the Earth ten times. That's 249, 010 miles.

People spend an average of $800 a year on K-Cups. When you use coffee grounds you only spend $190 a year. That is $610 cheaper.

The United States used 101.3 quadrillion British thermal units or Btu.

Activity: Aquaponics

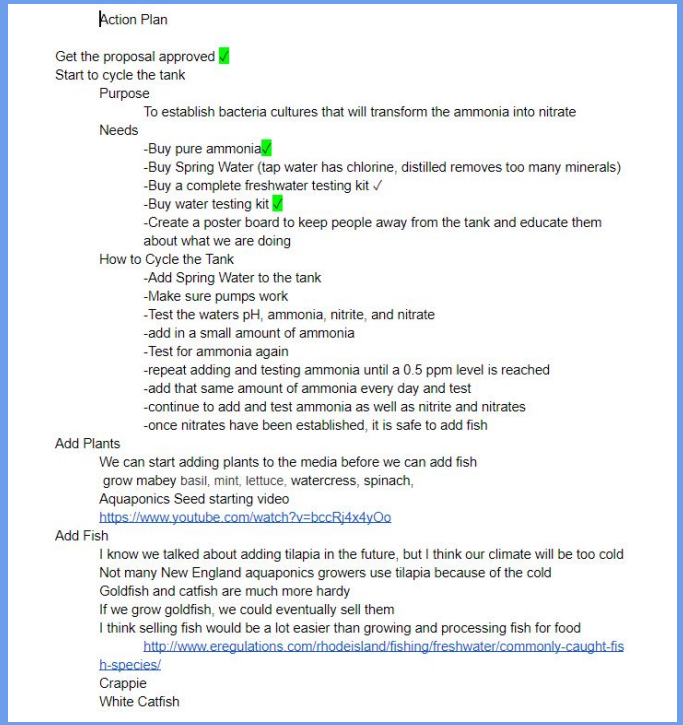
Goal: We want to create a hydro/aquaponic system in the school to provide some fresh fish and veggies to the school and the community.

Activities and Tasks: We have to work out a design for a hydro/aquaponic system, and make sure our targeted species of plants and fish are compatible with the system without an inflated budget.

Energy Content and Activities: Hydro/aquaponic systems are much more energy and water efficient ways of producing food on a small and large scale.

Student Leadership: Patrick has been heading the design with frequent input from the other members of the club.

Evaluation: This project was halted when formal meetings ceased, and has not been able to continue production due to lack of materials and equipment. Despite the pandemic, we are continuing planning for this project. Although we cannot build it this year due to restrictions, we have a solid groundwork of planning to continue as soon as possible.



Action Plan

Get the proposal approved ✓
Start to cycle the tank
- Purpose
  - To establish bacteria cultures that will transform the ammonia into nitrate
- Needs
  - -Buy pure ammonia✓
  - -Buy Spring Water (tap water has chlorine, distilled removes too many minerals)
  - -Buy a complete freshwater testing kit ✓
  - -Buy water testing kit ✓
  - -Create a poster board to keep people away from the tank and educate them about what we are doing
- How to Cycle the Tank
  - -Add Spring Water to the tank
  - -Make sure pumps work
  - -Test the waters pH, ammonia, nitrite, and nitrate
  - -add in a small amount of ammonia
  - -Test for ammonia again
  - -repeat adding and testing ammonia until a 0.5 ppm level is reached
  - -add that same amount of ammonia every day and test
  - -continue to add and test ammonia as well as nitrite and nitrates
  - -once nitrates have been established, it is safe to add fish

Add Plants
- We can start adding plants to the media before we can add fish
- grow mabey basil, mint, lettuce, watercress, spinach,
- Aquaponics Seed starting video
- https://www.youtube.com/watch?v=bccRj4x4yOo

Add Fish
- I know we talked about adding tilapia in the future, but I think our climate will be too cold
- Not many New England aquaponics growers use tilapia because of the cold
- Goldfish and catfish are much more hardy
- If we grow goldfish, we could eventually sell them
- I think selling fish would be a lot easier than growing and processing fish for food
- http://www.eregulations.com/rhodeisland/fishing/freshwater/commonly-caught-fish-species/
- Crappie
- White Catfish