Hawk Energy Club

Myrtle Beach Middle School

Myrtle Beach, SC

About Our Club

- Myrtle Beach Middle School
- Hawk Energy Club
- **Advisor:** Katie Forrest, 8th grade science
- **Student Leaders:** George Sourlis, Kaylynn Jamison, Nick Timmons
- **Project Title:** Dashboard: Tracking Energy Production and Usage
- This is the third year for the Hawk Energy club. We have compared energy usage from our old school to the new school, and we have learned about Solar and Geothermal Energy.
- Since we started our club with brand new members this year, we began by learning about the energy efficiency of our new school designed by FirstFloor, Inc. We focused on the Solar Panels, Geothermal Wells, Plug Loads, and Light Energy. We've installed and learned about the Dashboard that tracks the school's energy usage and production. We intended to finish out the year by tracking data from the dashboard and creating a Genius Hour Playground presentation for the school and any community members who wished to attend. Our goal was to open many people's eyes to the fact that we can do so much better in conserving energy for the future. That goal was cut short due to COVID-19.

Goal 1

Learn about different energy alternatives

- **Activities And Tasks**
  - Geothermal Wells and how they work
  - Lectures and hands-on activities from the NEED Science of Energy Kit
  - Light and Plug load calculations
- **Energy Content and Resources**
  - Energy websites linked on www.NEED.org and www.energywiseschools.com
  - Energy Wise notebook resources
  - Videos and Information linked to www.santeecooper.com
  - NEED Learning and Conserving Kit
  - NEED Science of Energy Kit
  - NEED Intermediate Energy Infobook Activities

Student Leadership

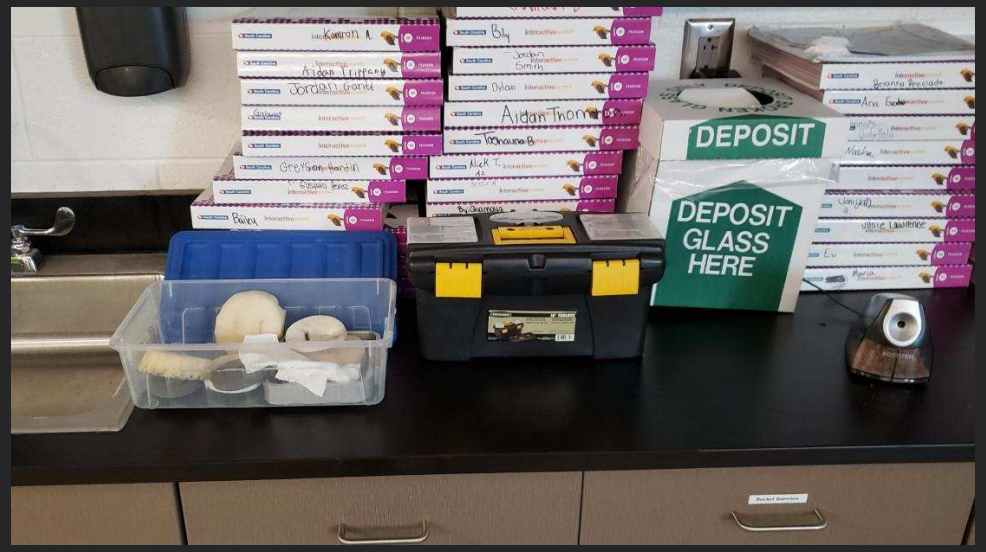
- 9 students total
- 2 ambassadors to greet guests
- 1 club secretary
- 4 patrol members
- 2 editors

Evaluation

- Discussed and evaluated visitor presentations
- Website discussion and evaluations
- Patrol forms evaluated
- ~~Tour of geothermal wells location~~ incomplete

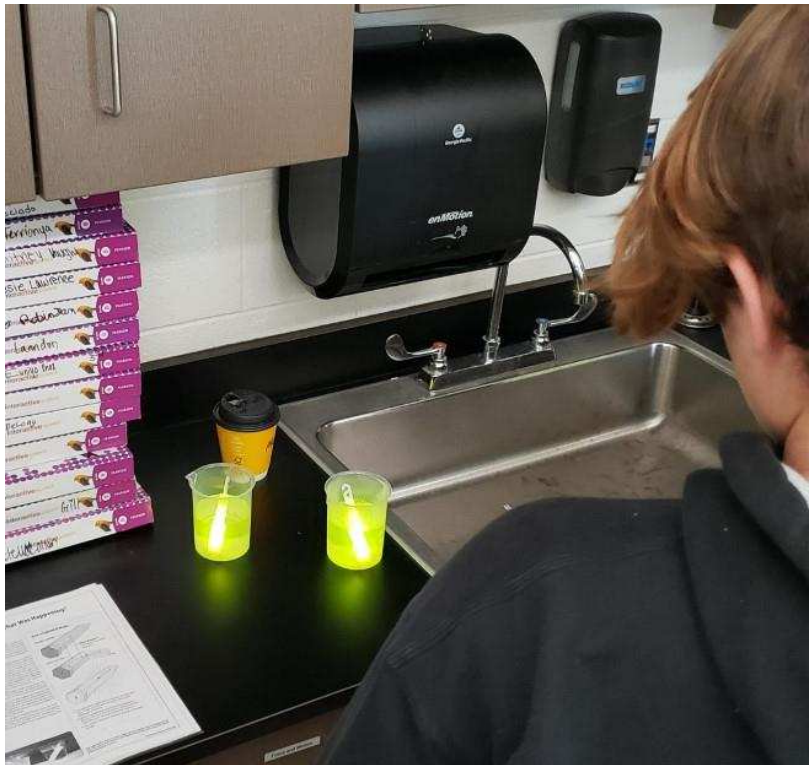
Geothermal Energy

The information Mrs. Keele taught us about Geothermal Energy really helped us to understand how it works to help keep our school warm on cold days and cool on warm days! --Hawk Energy Club student

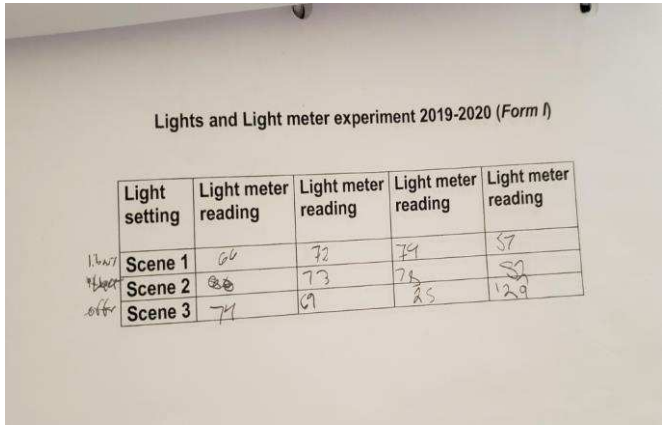


NEED Science of Energy Activities

What we learned: As we went through each of the activities, we realized that there is energy involved in so many things. Some of that energy, we can harness and use for everyday things, such as the apple activity or the thermal hand warmers. We use glowsticks all the time at parties and holidays, but we never realized that putting them in cold water would help conserve the energy the glow stick was giving off.



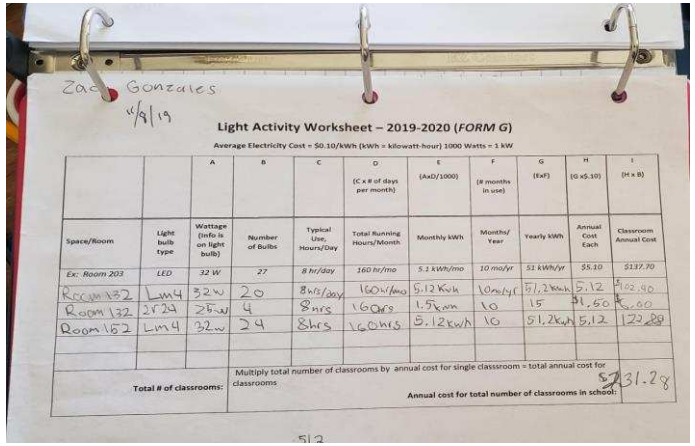

μA
Station
Materials
STATION
MATERIALS IN KIT
ADDITIONAL MATERIALS NEEDED
Teacher Demo
•2 Containers of sand
•Thermometers (metal)
•Hand generated flashlight
•Safety glasses



Lights and Light meter experiment 2019-2020 (*Form I*)

Light setting	Light meter reading	Light meter reading	Light meter reading	Light meter reading
Scene 1	66	72	79	57
Scene 2		73	78	57
Scene 3	71	69	25	129

Light Activities/Calculations



Zac Gonzales

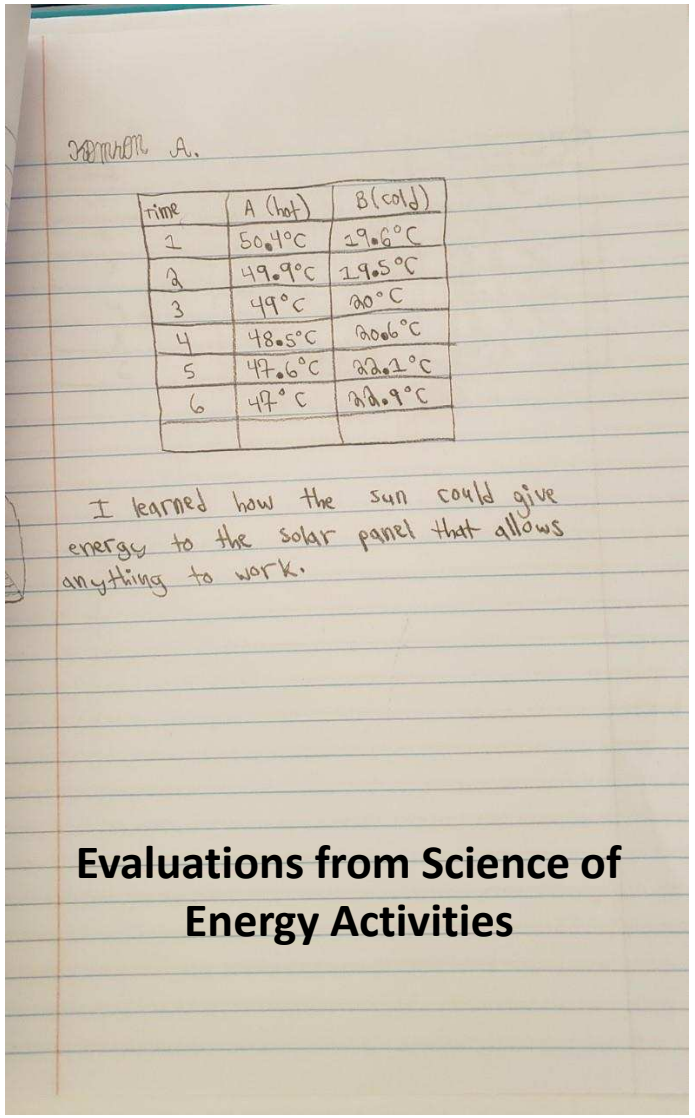
4/9/19

Light Activity Worksheet – 2019-2020 (*FORM G*)

Average Electricity Cost = $0.10/kWh (kWh = kilowatt-hour) 1000 Watts = 1 kW

		A	B	C	D (C x # of days per month)	E (AxD/1000)	F (# months in use)	G (ExF)	H (G x$.10)	I (H x B)
Space/Room	Light bulb type	Wattage (info is on light bulb)	Number of Bulbs	Typical Use, Hours/Day	Total Running Hours/Month	Monthly kWh	Months/ Year	Yearly kWh	Annual Cost Each	Classroom Annual Cost
Ex: Room 203	LED	32 W	27	8 hr/day	160 hr/mo	5.1 kWh/mo	10 mo/yr	51 kWh/yr	$5.10	$137.70
Room 132	Lm4	32w	20	8hrs/day	160hr/mo	5.12 Kwh	10mo/yr	51.2kwh	5.12	102.40
Room 132	2x24	25w	4	8hrs	160hrs	1.5kwh	10	15	$1.50	$6.00
Room 162	Lm4	32w	24	8hrs	160hrs	5.12kwh	10	51.2kwh	5.12	122.88
Total # of classrooms:		Multiply total number of classrooms by annual cost for single classroom = total annual cost for classrooms							Annual cost for total number of classrooms in school:	$231.28

Light Activities/Calculations

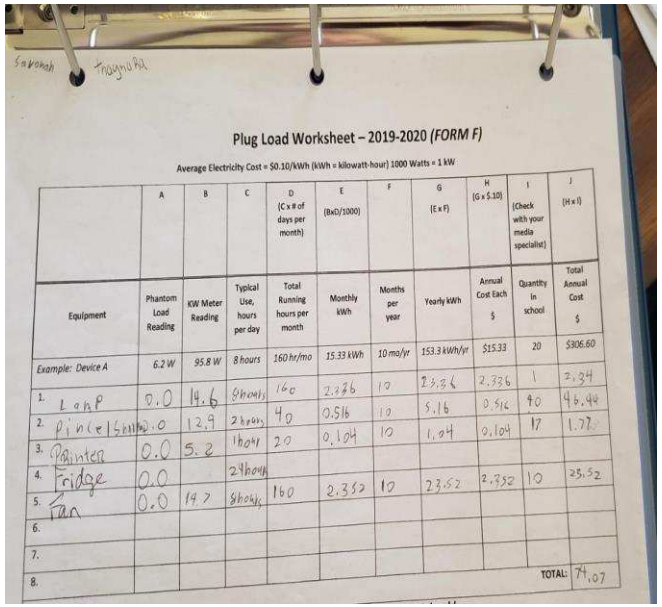


Trial A.

time	A (hot)	B (cold)
1	50.4°C	19.6°C
2	49.9°C	19.5°C
3	49°C	20°C
4	48.5°C	20.6°C
5	47.6°C	22.1°C
6	47°C	22.9°C

I learned how the sun could give energy to the solar panel that allows anything to work.

Evaluations from Science of Energy Activities



Savannah Tinagmiut

Plug Load Worksheet – 2019-2020 (*FORM F*)

Average Electricity Cost = $0.10/kWh (kWh = kilowatt-hour) 1000 Watts = 1 kW

	A	B	C	D (C x # of days per month)	E (BxD/1000)	F	G (E x F)	H (G x $.10)	I (Check with your media specialist)	J (H x I)
Equipment	Phantom Load Reading	KW Meter Reading	Typical Use, hours per day	Total Running hours per month	Monthly kWh	Months per year	Yearly kWh	Annual Cost Each $	Quantity in school	Total Annual Cost $
Example: Device A	6.2 W	95.8 W	8 hours	160 hr/mo	15.33 kWh	10 mo/yr	153.3 kWh/yr	$15.33	20	$306.60
1. Lamp	0.0	14.6	8hours	160	2.336	10	23.36	2.336	1	2.34
2. Printer	0.0	12.9	2hours	40	0.516	10	5.16	0.516	90	46.44
3. Printer	0.0	5.2	1hour	20	0.104	10	1.04	0.104	17	1.77
4. Fridge	0.0		24hours							
5. Fan	0.0	14.7	8hours	160	2.352	10	23.52	2.352	10	23.52
6.										
7.										
8.									TOTAL:	74.07

Plug Load Activities/Calculations

Goal 2

•Teach students and educators how to be more energy efficient

Activities And Tasks

- ~~Dashboard Presentations~~ incomplete
- Energy websites linked on www.NEED.org and www.energywiseschools.com
- Energy Wise notebook resources
- Light energy patrols/patrol forms
- NEED Learning and Conserving Kit (KW meter, light meter, flicker checker)
- NEED Science of Energy Kit
- ~~Genius Hour Playground Presentations for MBMS~~ incomplete

Student Leadership

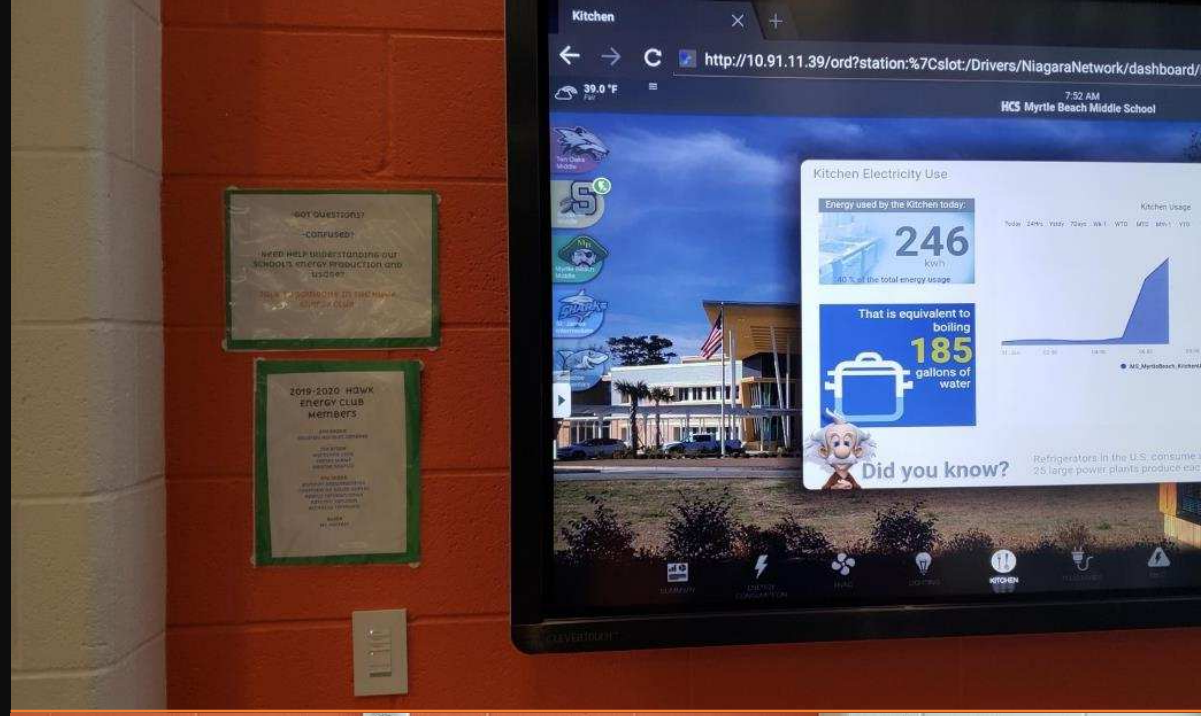
- 9 students total
- 2 ambassadors to greet guests
- 1 club secretary
- 4 patrol members
- 2 editors

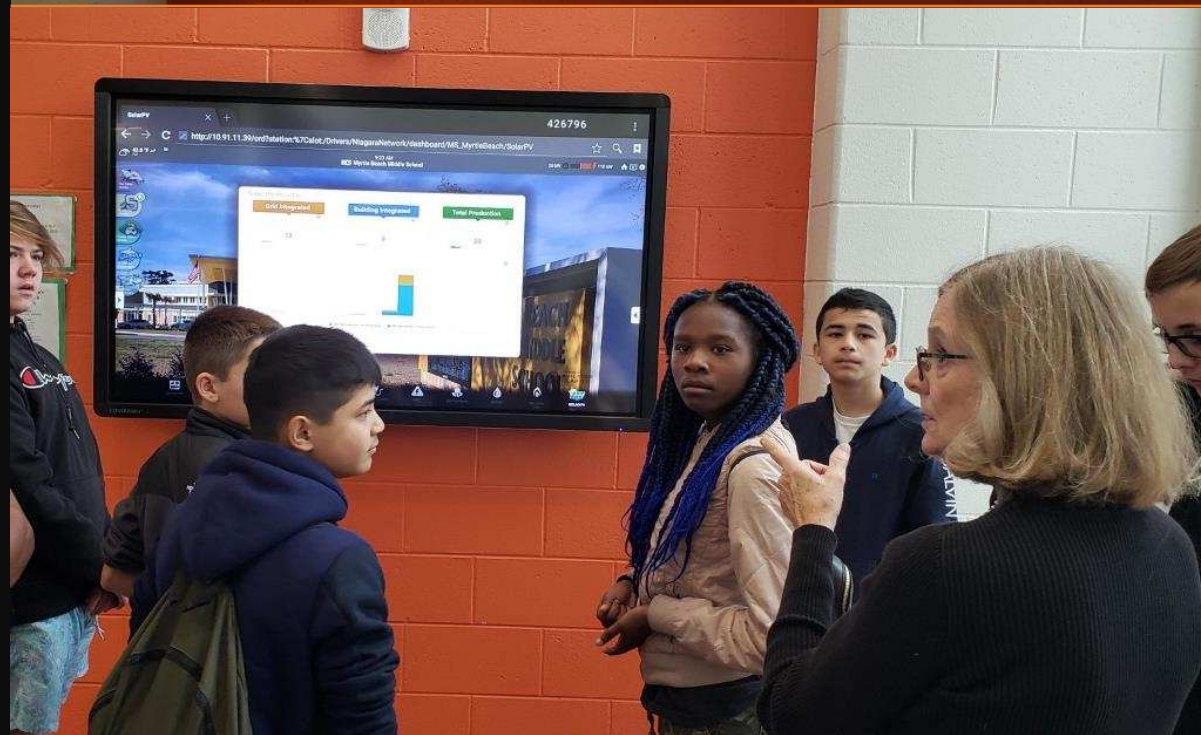
Evaluation

- ~~Patrol forms evaluated~~ incomplete
- ~~Presentations created to share alternative forms of energy~~ incomplete
- ~~Posters created and Television displaying the dashboard~~ incomplete

Dashboard

- **The Dashboard was up and running in August. By the end of November, our principal had a monitor installed in the cafeteria for everyone to be able to monitor the school energy usage.**
- **The Dashboard contains 10 different pages that can give you more information on water usage, kitchen energy usage, solar energy production, etc.**
- **The students were learning how to analyze the information from the dashboard so they could create presentations to teach others about how our school can be Net Positive.**






-GOT QUESTIONS?
-CONFUSED?
-NEED HELP UNDERSTANDING OUR SCHOOL'S ENERGY PRODUCTION AND USAGE?
TALK TO SOMEONE IN THE HAWK ENERGY CLUB!
2019-2020 HAWK ENERGY CLUB MEMBERS
8TH GRADE
EDUARDO MORALES JIMENEZ
7TH GRADE
MARIANNA LOVE
JAMES SKEWS
GEORGE SOURLIS
8TH GRADE
KAMRON ABDUMAJITOV
THAYNARA DE SOUZA GOMES
NEKRUZ IBROHIMJONOV
KAYLYNN JAMISON
NICHOLAS TIMMONS
GUIDE
MS. FORREST


Kitchen
361260
http://10.91.11.39/ord?station:%7Calot:/Drivers/NiagaraNetwork/dashboard/MS_MyrtleBeach/Kitchen
MCS Myrtle Beach Middle School
295
That is equivalent to boiling 222 gallons of water
Did you know?

Summary and Goals for next year!

- **We have really enjoyed learning about energy conservation; how solar panels and geothermal wells work. We also were thrilled to have the dashboard finally working. Unfortunately, we were unable to track the data because of the COVID-19 closure. Next year, we will begin tracking that data and we would like to do more to educate the community about our school and its use of alternative energy. The district is already looking to build more Net Positive schools, based on the data coming back from the five they have.**