The Energizers Of Michie Elementary School Jr High Energy Conservation Advisor-Ms. Debra Steen

Our Junior High Energy Club has had an amazing year this year. We have participated in many energy education activities. We learned about different types of energy and its usage. We learned about houses and conserving energy through proper insulation. We learned how to determine energy loads and how to measure if there is energy loss around doors. We have participated in recycling efforts through our school and Pepsico. Because of our energy efforts in the past, this year we were invited by TVA Energy Right to participate in their School Uplift Program. We accepted that invitation and proceeded to find out what our challenges would be. As part of this program we did a community outreach to provide energy sources and tips for them to use. The Energy Club taught grades Kindergarten through 6th grade different lessons on the different types of energy and energy conservation. We colored sheets, played trivia, made posters, and even gave an energy quiz. We hung posters on the walls of the school about different energy tips. We set our challenge goal to reduce our energy usage by two percent. The TVA engineer provided us with ways to accomplish this and we set about trying to accomplish these goals.

Our Energy Club consist of 20-25 members that vary on a daily basis. Stella is our president, Jax is our VP, these are a few of our members.



Re-energize

Goal #1 Focus on deepening energy content knowledge

Activities and Tasks: Obtain permission from advisor, take the NEED Energy poll, participate in energy activities Energy Content and Resources: NEED Energy poll, Teacher resources, Science of Energy, Energy House, and other resources. Student Leadership: 27 students took the poll and 43 students were involved in the activities. Evaluation: Energy Poll scores were an average of 85% and upon completion were an average of 98%



Energy Poll





We made solar cars using plastic board, gears, rubber bands, and rubber tires, and motor. We attached a solar panel to the motor to make it turn the motor that engaged the wheel.

Plasma Ball. Energy at work.



Cubelets. We connect them and it will roll, make a sound, has a light, and will rotate around 360 degrees.



We made houses and insulated them with different materials. Which house is insulated the best? We placed hot hands in the house to see which one would hold the heat the longest.





We learned to check the power loads of different machines. They pull a load even if they are not running. We also checked the energy loss around doors. Because we learned some of the doors weather stripping was bad and

TVA Energy Right School Uplift Program Goal #2 Focus on energy conservation education-school and community.

Activities and Tasks:Obtain permission from our advisor, obtain permission from our principal, complete the School Uplift program tasks and goals. Goals are to teach the lower grades and community about energy conservation, reduce out energy consumption by 2%.

Energy Content and Resources: NEED resources, Science of Energy, Energy House and other teacher resources, and resources from TVA Energy Right.

Student Leadership: There are approximately 45 students who took part in this part of the project.

Evaluation: Did we complete our goals set to complete the project?

Our goals to reduce energy by 2%

- 1. Make school aware of our energy usage per month.
- 2. Turn all TV's to sleep mode or energy saver mode.
- 3. Turn lights off throughout the building when not in use.
- 4. Find lights that stay on continuously. (Not sure where light switches are located.)
- 5. Do the Energy Checklist for powering down during extended school breaks.
- 6. Repair weather strips around doors.
- 7. Do away with individual classroom appliances.
- 8. Enter the power usage (electric and gas) into TVA database. (We went from 81% efficiency to 85% efficiency with the installment of LED lights throughout building.

The spreadsheet provided by the TVA Engineer that we had to fill out with our goals and accomplishments.

	Measure Description	Implementation Steps	Reference	Assigned To	Expected Start	Expected	Completed?	Actual Completion	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr
	· · · · · · · · · · · · · · · · · · ·		Material		Date	Completion Da	-	Date	×	×	x	Ψ.		Y	*	•
	Unplug all unnecessary ice Machines during periods of extended breaks (such as summer/winter break). This is for both the kitchen and concessions units.	Implement school shutdown checklist before breaks and ensure ice machines are included as one of the ECMs.	Chapter 4	megan	9/1/2023		Ongoing		0%	0%	074	100%	0%	0%	0%	0%
Un kin kin Re arc ins so spi sei	Unplug any unnecessary refrigeration equipment in kitchen and concessions stand during periods of low usage (such as summer and winter breaks)	Implement shutdown checklist and include concessions and kitchen refrigeration as ECMs	Chapter 4	megan	9/2/2023		Ongoing		0%	0%	0%	100%	0%	0%	0%	0%
	Replace worn weather stripping on exterior doors as needed to reduce heat loss. No air gaps should be visible around perimeter of doors.	Procure and replace weather stripping on exterior doors as needed.	Chapter 11	megan	9/4/2023		Ongoing		0%	0%	0%	100%	0%	0%	074	0%
	Install occupancy sensors to control lighting in currently uncontrolled spaces within school building (mechanical spaces, closets, gm, cafetoria, etc). Install wall mounted sensors for small spaces and celling mounted sensors for all large areas.	Procure and install occupancy sensors and necessary infrastructure (wiring, mounting).	Chapter 6	megan	9/1/2023		Yes									
	Repair existing faulty/disconnected interior occupancy sensing lighting controls.	Perform audit through school building during unoccupied time to identify lighting controls which have failed "on". Procure and install new sensors as needed.	Chapter 6	megan	9/2/2023		Yes									
	Ensure all exterior lighting is controlled by photocell sensors and that sensors are functioning properly	Perform audit around school building during daylight to determine which futures have failed "on". Procure and install daylight sensing controls and necessary infrastructure (wiring, mounting).	Chapter 6	megan	9/3/2023		Yes									
	Install occupancy sensing VendingMiser controls to all refrigerated beverage vending machines to reduce power consumption during periods of low occupancy	Procure and install vending machine controls (VendingMiser). Timer plugs can also be considered as an alternative.	Chapter 10	megan	9/4/2023		Yes									
	Reduce number of personal appliances (such as minifridges) that are brought into the school. If unable, encourage them to be high efficiency ENERGYSTAR rated.	Provide common appliances for teachers/staff to share. For personal appliances, replace old equipment with new high efficiency appliances.	Chapter 10	Megan			Ongoing		100%	100%	: 100%	100%	100%	100%	100%	1000
	Institute classroom shutdown procedure and educate teachers/students on how to comply. Procedure should include ensuring all window blinds are lowered, unplugging all decorative lighting and appliances (such as microwexes, coffeemakers, etc.), and shuting down all	Create and implement daily, weekly, extended break, and summer shutdown checklist as part of preventative maintenance schedule.	Chapter 4	Megan			Ongoing		100%	100%	: 100%	100%	100%	: 100%	100%	1002



Hi I'm _____ with your at home energy tip of the day. When you go shopping for new appliances look for the energy star. These appliances use less energy and can lower your bill. You can also use more renewable energy such as solar energy and wind energy.

I hope these tips helped you save on energy bills! Now back to the studio.

Hi I'm ______ with your at home energy tip of the day! One way to save on your energy bills is to take shorter and colder showers. Not ice cold, but just not as hot as you usually take them. Just a little cooler water will help you save energy. Another way is to swap light bulbs for LED bulbs in your lamps and ceiling fixtures. These are great ways to save money each month.

Hope these tips help you save money on your energy bills! Now back to the studio



News crew giving energy conservation tips to the people at home and school. Michie News





Hi I'm ______ with your at home energy tip of the day One way to save energy is to monitor your at home energy usage. Look at your bill each month so you can see what you are actually using. Also, in the summer time you can close curtains to make sure that you don't have sunlight shining through your windows. When it is colder outside, you can open your curtains so the sunshine can warm the room!

Community outreach. We are handing out NEED energy conservation kits to the people at the ball game. Some went all the way to Red Bay Alabama. We had a good night demonstrating which light bulb conserved the most energy.



Lesson Plan: Conserving Energy

Lesson 1: Conservation of energy and identifying different types of energy

Solar energy facts

- Comes directly from the sun
- renewable energy source
- Solar panels are used to collect solar energy
- Largest energy source
- Can be used for heating homes and water

Nuclear power facts

- Made when uranium atoms are broken up into smaller atoms
- Used to spin turbines
- Heats water to make steam
- Nonrenewable

Wind energy facts

- Generated from wind
- Generated from wind turbines
- Clean for the environment
- Renewable

Hydroelectricity

- Electricity by moving water
- Creates less pollution
- Renewable
- Oldest energy source

Natural gas

- Fossil Fuel
- Affordable and safe for the environment Nonrenewable
- Coal
- - Nonrenewable Used to power trains
 - Black or dark brown in color

 - Can be used to heat water to make steam, then steam moves to generators and produces electricity



The coloring books they colored on the different types of energy.



Teaching the different classes about the different types of energy.



Lesson Plan: Conserving Energy

Lesson 2: The Energy Pledge

Step 1: Identify the Pledge

What energy saving behaviors could be practiced to preserve energy?

- Change light bulbs to LED bulbs, they offer significant energy savings compared to other light bulbs. Wash clothes in cold water if possible Clean or replace filters in your home regularly, old or dirty filters make systems work harder and run longer than necessary. Air seal your home, this can save up to 10% on home heating and

- cooling costs.
- Use natural light if possible
- When cooking and baking, DO NOT look into the oven, the temperatures could drop up to s degrees fahrenheit, making your oven need to use more energy to return to your temperature

Step 2: Adopt the pledge

Activity: Create pledge cards.

- Give students piece of paper
- Have students trace their hand onto the paper (help if needed) Cut out hands

- On each finger write a way of how students can conserve energy Write name on the palm of the students hand Hang the hand on the wall by sign that says "our energy pledge" or around the classroom

Hauser

Step 3: Reinforce the pledge At the beginning of each meeting, ask who has followed the pledge and then ask for examples.

WAYS TO CONSERVE ENERGY. **THE ENERGY PLEDGE!**

Tallieb



OFF

Pire







We taught energy conservation lessons, hung energy tips in the halls and played Energy Trivia

Lesson Plan: Conserving Energy

Lesson 3: Trivia Review

Step 1) Split into two teams

Questions (answers are highlighted)

- What technology needs to be powered down at the end of every day?
 - A) Notebook
 - Calculator Laptor
 - D) Backpack

2 When should you turn off lights in a room? A)In the middle of the day B) Never C) When everyone leaves the room

3 Which of the following do NOT use electricity?

- A) TV
- BŚ Clock Desk

4 Which of the following makes electricity?

- A) Sun B) Wind
- C) Rivers and dams
- All of the above
- 5 Why do we need to close doors

A)	6 Which of the following uses electricity?
A)	Printer
B)	Laptop
C)	Monitor
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7 Which appliance uses the most electricity?

A)	Oven
D)	Dishanak

Microwave



8 Which device still uses electricity even when turned off?

9 Which of the following is a nonrenewable resource?

A)	Coal
B)	Hydropower
C)	Wind energy
D)	Color on one

10) Which of the following uses electricity

- A)
- Cellphone B)
- C) Fan

NOTE: If finished early, create a poster that represents how to power down a classroom. Then let the students vote on their favorite one. STUDENTS CANNOT VOTE FOR THEMSELVES! After that, students present their posters.

GET INTO GROUPS OF 3



Dishwasher

Turn off lights

A)	TV
B)	Cellphone

Laptop

All of the above

A)	Coal
B)	Hydropower
C)	Wind energy
ni –	Solar energy

- Printer



Lesson Plan: Conserving Energy

Lesson 4: STEM heroes

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- Botanist A botanist studies plant life, they work in botanical labs to study the effects of pollution on plants. Botanists get paid 49k - 110k per year. TVA.com/powered-by-people-you-know/Adam-Datt
- Reactor Engineer Reactor engineers are the technical authority responsible for the oversight of research, design, maintenance, and operating power plants. Their salary is anywhere from 67k to 144k per year.

TVA.com/powered-by-people-you-know/David-Yance

Zoologist 3.

A zoologist studies animals that are both in captivity and in the wild. Their average salary.

TVA.com/powered-by-people-you-know/Liz-Hamrick

Show videos from the links and then hand out STEM heroes worksheet



Helping the students with their project.

AM A FUTURE STEM HERO

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AM A FUTURE STEM HERO

I AM A FUTURE STEM HERO



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I AM A FUTURE STEM HERO

EF-F

AM A FUTURE STEM HERO



Lesson Plan: Conserving Energy

Lesson 5: Community Month

- Pass out the papers and use the opportunity to ask questions to the class about "The Three R's" (Reduce, Reuse, and Recycle)
- 2) Do the "What powers my community worksheet
- 3) Have students discuss this subject while they color
- 4) Ask the students after completing the sheet if they learned anything new





Poster Information

This is my last lesson teaching conserving energy! I have enjoyed teaching you so much, and I hope you remember at least some of this at a later date. Your last project will be to make a poster on Canva and turn it in to me, my email is enclosed at the bottom. Instructions:

- Break into groups of three.
- Make an informational poster on how you can power down anything in classrooms, homes, workplaces or anywhere else that you can think of.
- Put a picture next to any ideas that you have, and make sure you have at least five ideas.
- I will come one more time for you to present your posters
- Your class will vote on the best poster YOU MAY NOT VOTE FOR YOURSELF

I have enjoyed teaching your class and I am grateful for each of you!



Turn off lights when you leave the room, you will conserve energy.

Make sure to turn off your water when not in use.

Make sure to unpluge deves

The younger students made posters on paper. The older students made them on canva.



Use windows instaed of AC

Use solar energy

Classroom Door Competition Energy Conservation







We have had a good year and have completed a lot of NEED Activities that were not pictured in this scrapbook. We have learned a lot and have reached a lot of people through local papers, our morning school news, and social media pages.

We have participated in the TVA Energy Right School Uplift challenge. During this challenge we have learned a lot about energy usage. How we use energy and how we can save energy. We have taught grades Kindergarten through the sixth grade about energy conservation. We have helped them complete projects that have to do with energy conservation, the three R's, how energy is used in the school and at home and ways to save at both places. We have made posters with the students concerning the types of energy, the three R's, what power sources used in our community and STEM heroes.

We have hung posters in the hall that educate people about energy conservation and ways to look for energy savings.

We had a classroom door competition on Energy Conservation with awards being given for Most Creative, Most Unique, Best Overall, Most Informative, and Most Interactive.

We have used NEED Activities and Resources such as the energy conservation home kits, the energy houses used for insulation and other energy activities and the energy audit.

We have recycled over 9000 pounds of recycling materials that were entered into the Pepsico Recycling Program.

We have reached about 15,000 people as a result of our work.

We have worked hard on our TVA Energy Right School Uplift Project. We will not hear until May 2, during a media release, the results that were entered and the documentation we provided. We know that so far we have earned a grant for \$10,000 and are finalist in the grant for \$25,000. These funds are a reward for the students and teachers hard work during this project. We voted as a school on how these funds would be spent. The outcome was for the funds to be spent on a robotics project and a teacher snack bar, so that refrigerators etc. could be centrally located, reducing our energy usage.

We look forward to an active year next year continuing our energy education.