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

Our Junior High Energy Club has had a good year this year. We have participated in many energy education activities, We have participated in recycling efforts through our school and Pepsico. We have had recycling debates. After Christmas this year we started discussing the ongoing debate of Energy Conservation with the reduction of fossil fuel usage. The national debate is the change from fossil fuel motor vehicles, to vehicles that use other means of fuel. To help us do this we conducted research into the different vehicles that are being used now in the United States. We looked at gas powered cars, flex fuel cars where you use both electric and back up with gas, electric cars, and hydrogen powered cars. We divided into groups, did our research, debated the differences. We invited someone that works with the hydrogen powered vehicles but they were unable to come until May. We have also been invited and have accepted the invitation to participate in the TVA Energy Right School Uplift Program. We were invited because of our pass energy efforts. We have started the process and look forward to working with this program.

This is most of our members.

Jessie is our President, Hanna is our vice president. There are 22 of us.



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 and other resources.

Student Leadership: 22 students took the poll and 20 to 22 students were involved in all activities Evaluation: Energy Poll scores were an average of 80% and upon completion were an average of 97%



Energy Poll



Cubelets. We connect them and it will roll, make a sound, has a light, and will rotate around 360 degrees. The right cubes have to be connected.



Our Circuits are closed we have light.



Plasma Ball. Energy at work.



Circuit Boards. Making Connections.

Making Electromagnets. A battery, a coil of wire, alligator clips, a nail and it will pick up paper clips. Tighten the coils and we picked up 10 paper clips.







Energy Conservation Goal#2: **To promote energy** conservation by reducing the amount of energy used.

Activities and Tasks: Obtain permission from the principal, consult with our advisor, obtain funds for projects.

Energy Content and Resources: NEED Energy Resources, Solar Car Model Kits and supplies, Renewable resources. Pepsico Rally. Student Leadership: 22 students conducted research, participated in debate, made models and participated in races, Presented recycling information to school body as part of farm day. Participated in a recycling activities. Evaluation: We had our debate and built our cars. over 100 recycling piggy banks were made. We reached 400 students on Farm Day plus visitors. We recycled over 15.608 pounds of eligible recyclables and placed 64th in the nation for total recycling. We reached 6000 or more through local paper, social media and direct contact.





What is PUFFY STUFF

Is it harmful to wildlife or pets? No. Although not particularly tasty, PUFFY STUFF Puffy Stuff is an all-natural packaging materia made from grain protein. Unlike other plantis even edible and digests easily. Try it! based loose fill, PUFFY STUFF is completely hiodegradable by ISO definition (100% consul Does it attract pests? No. Processing removes all food value from the grain and, in turn, the attraction of mice and other

Benefits compared to corn starch and conventional loose fill:

> PLIEFY STUFF has a faint smell similar to popcorn 100% biodegradabl This will not transfer to your product. PUFFY Zero petrochemicals STUFF actually absorbs odors!

- Unaffected by oil prices Competitive cost
- Easy disposal
- Reusable Hypoallergeni
- Static Free

Performs better in test

How does it break down? Jpon direct contact with water, the loose fill degrades to inert proteins which are quickly onsumed by soil bacteria.

is it environmentally safe? Absolutely...as safe as any grain. PUFFY STUFF is made from three ingredients. All of which are 100% safe for the environment.

Will it shrink away like corn starch loosefill? No. PUFFY STUFF is hydrophobic and is not subject to shrinking in humid conditions

put in a landfill, or even hosed down in your garden as fertilizer. How durable is Puffy Stuff? The product has a high density for rugged durability. It will not shrink to allow product migration and damage during shipping.

If not reused, PUFFY STUFF can be thrown away

Yes. By retaining a small amount of moisture, it

conducts the static charge away resulting in no

cling or damage to electrical and other sensitive

Does it have an odori

Is it static-free

Can it be reused

Where is it disposed

devices

Absolutely.

Office: 187-PUFFYUSA • Fax: 615-444-5433 • puffystufftn.com 123 West Market St., Lebanon, TN 3708



We participated in a piggy bank recycling activity. About 200 students participated in this activity. We had some winners that went to the district level competition but we have not heard any results. Cows, houses, pigs, and a variety of other characters. They were made from milk containers, boxes, coffee cans, water bottles, wood, and wipe containers, and other materials.







Pepsico Recycling Rally

Within the time period selected, your school has recycled...



RANK	SCHOOL NAME	CITY	STATE	CONTAINERS Collected*
61	New Century Middle School	Cameron	NC	91,638
62	Columbia-Montour Area Vocational-Technical School	Bloomsburg	PA	90,642
63	Jehue Middle School	Montclair	CA	88,109
64	Michie Elementary School	Michie	TN	87,747
65	York High School	Yorktown	VA	87,342
66	Corydon Elementary School	Corydon	IN	87,189
67	Suncoast School for Innovative Studies	Sarasota	FL	87,162
68	Tony Hillerman Middle School	Albuquerque	NM	85,018
69	St. Mary Parish Catholic School	Derby	KS	82,859
70	Lake Middle School	Uniontown	ОН	80,052

We placed 64th on the National Leaderboard for containers collected. We collected 15,608 pounds of recycling that were counted.

Total weight of all eligible and other materials recycled: 15,608 lbs. Total estimated # of eligible beverage containers recycled: 109632 containers.

	Material Type	Bins	Account	Time Captured (EST)	
O	6 Materials Selected	Jumbo (60+ gal.)	My whole school	4/15/2023 7:17:16 AM	
O	6 Materials Selected	Jumbo (60+ gal.)	My whole school	4/15/2023 7:16:40 AM	
O	6 Materials Selected	Jumbo (60+ gal.)	My whole school	3/30/2023 12:27:24 PM	
O	6 Materials Selected	Jumbo (60+ gal.)	My whole school	3/9/2023 II:05:34 AM	
O	6 Materials Selected	Jumbo (60+ gal.)	My whole school	I/I7/2023 II:32:39 AM	

The National Energy Fuel Debate

The nation is in a debate about green energy and fossil fuels. In fact it has been stated that all cars be electric by 2035. We had a discussion about the different cars available today and we discussed cost, easy access, availability, energy usage, and upkeep on these cars. After our discussion we investigated and researched the four cars that are in use in the nation today. We also looked at the availability of resources such as charging stations, length and cost of batteries and the fuel.

The Hybrid and gas cars were the cheapest to buy.

After our research we had a debate among our groups about the pros and cons of each vehicle.



Cost of Car

We looked at the cost of batteries and how often they have to be replaced.

The Hydrogen car does not have a battery.

The gas car has a battery with a cost between \$100-\$200 that has to be replace every 5 or 6 years. The Hybrid car is between \$2000 and \$8000 and last for 6 to 7 years. The Electric car was a minimum \$20,000 to \$40,000 and last 4 to 5 years and then you have the problem of disposing of the battery and that is about half the cost of an electric car.



Student Reserch

Cost of Fuel

The cost of fuel for the gas car is approximately \$3300 a year. The price of a hybrid is about \$1,600 per year.

The eclectic car cost about \$6.63 per hour and takes about 3 hours to charge, and about \$56 a month for approximately \$672 a year. The availability and access to charges depends on the area. We have about 2 within about 100 miles and none locally. House installation cost between \$2000 and \$5000 for plug system and wiring installation.

Hydrogen car is about \$50 for around \$300 miles and we took the average mileage driven and graphed it. Hydrogen cars are mostly found in the state of California.



Mileage

Mlleage varied depending on the vehicle. We took an average of the data we collected. Gas cars between 4 and 5 hundred miles per tank. Hybrid cars between 300 and 400 miles per tank nad charge. Electric between 100 and 400 per charge. (Not sure what explained the difference). Hydrogen (Fuel Cell) between 300-400 per fuel times.

Gas powered cars seem to do better on mileage over all.



Our Cars

So, then we decided to have some fun. We decided to make electric cars running on batteries, solar panel cars with solar panels, and hydrogen powered cars. Unfortunately the hydrogen powered model cars were expensive and our Principal decided not to order them. Our sponsor is looking for a way to buy the parts and put them together for next year. On to the building and racing of our cars.



Our Mini Solar Cars. We didn't race these.

Real Tiny Parts. Hard to wire the motor. They did work.



Making our Race Cars



We are using the gear or pulley system, attaching our wheels and motors. These models can either run off of battery, our electric car, or off of solar panels for our solar car. Which car will go the fastest. We know that as long as we have sunlight our solar car will go.







As soon as Coley hit the sun her wheels started spinning. On to the races We conducted two races, one with solar panels and the other with batteries for Electric cars.

Solar panel car race. Jessie won Some groups cars did not work. They either did not run or the wheels would not turn on the pavement.

Battery powered, electric, race. Jessie won again followed closely by Taylor. Taylor's went to the right.





Ford Challenge.

We were challenged by the Ford Company to design a future electric car and submit them. So we embraced the challenge and we submitted our entries. Here are a few of our designs in case you see them in the future.









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 conducted our study on Energy Efficient Vehicles. This study covered several months of research, discussion, debate, graphing and comparing data. There is no real conclusion, the reason we are still having a national debate. All vehicles have their pros and cons. All but the hydrogen car uses fossil fuels in some degree but the gas cars use more. The electric car has the lithium battery that is expensive to replace and one video clip we watch questioned the resale value of an electric car since the battery doesn't have a long lifespan and cost about half the initial cost of the vehicle. We did come to the conclusion that in our immediate area we will have to rely on either a gas or a hybrid car because of the lack of charging stations. If what we heard recently, that by 2035 all cars have to be electric, that a lot of work will need to be completed for that to happen.

We have used NEED Activities and Resources among renewable and nonrenewable resource materials. Energy activities and energy audit.

We have reached about 10,000 people as a result of our work.

We were invited by the state of Tennessee to participate in the TVA Energy Right School Uplift program because of our energy program and the training our sponsor has received in the past.

She has received the information and is starting training on the program which will start in the Fall. She has told us because of our present and past work we have a headstart on the program and through this program we will help our school through and energy process that will help our school become more energy efficient. So we look forward to an active next year with energy.