



Heritage Middle School

Finding Energy - Let our conscience about energy be our guide

(The Blue Fairy: Pinocchio)

Advisors: Debbie Pellington, Chad Brisentine and Amber Northern

STUDENT LEADERS
DILLON HITTLE, MOLLIE KINKEAD,
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The Energy Leadership Team - The Energy Rebels - used Disney as a theme to guide energy activities this year to make energy connections with peers at school, at home and with those in the community. Some of the many activities that the Leadership Team conducted this year included calculating their personal energy footprint in order to find ways to personally save energy. The students then used that knowledge to educate others about the importance of energy efficiency and conservation. The Leadership Team compared the differences between the three types of lightbulbs and then taught the 6th graders all about incandescent, CFL, and LED lightbulbs. Other activities included evaluating water temperatures at school and at home and assessing insulation at school and at home to pinpoint places where energy could be saved.

Additional energy activities included two energy fairs at local elementary schools teaching 5th graders about energy topics such as sound, light, kinetic, and potential energy, creating educational energy school displays, creating circuits, displays, and testing kinetic and potential energy through homemade roller coasters. As Phil in Hercules said to "Go the distance," the Energy Rebels went the distance this year with **energy!**



Mission: Here we gooo! (Peter Pan) It's All About Energy

This year the Energy Rebels had a goal which centered around a quote by Walt Disney in which he said, “A person should set his goals as early as he can and devote all his **energy** and talent to getting there.” Our goal was to use our talents and energy to increase our own knowledge about energy and then teach students in our school, our families at home and our community members about energy in a variety of ways throughout the school year.

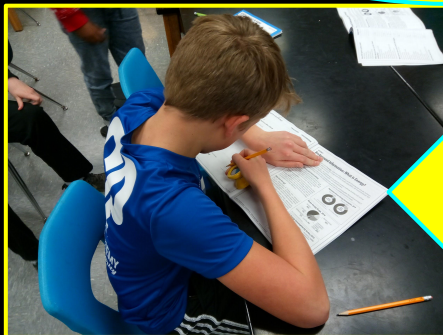
We completed many activities to reach our goal this year. We increased our own energy knowledge by evaluating our own energy usage and found that many of us were energy wasters. 100% of the Energy Rebels found a way that they could increase their personal energy conservation. We also increased our energy knowledge by learning about different energy topics such as facts about energy, sound energy, insulators and conductors, and light energy from leaders from The Ohio Project. We then used this knowledge to teach over 130 -5th grade students about energy at our local elementary schools. In addition, we used our knowledge and leadership skills to teach over 100 sixth graders in our school community about the differences between an incandescent, a CFL, and an LED lightbulb and those students were then proactive in having additional CFL lighting installed in our school.

Other activities to meet our goals included: installing energy saving items at home such as bathroom and kitchen aerators, low flow shower heads, weatherstripping, energy efficient light bulbs, educating our family members about energy saving items and energy efficiency. We also checked our heating and cooling temperatures in our homes and made suggested on temperature settings that would save save energy. We also used our “energy” and leadership to create educational energy displays at our school to help teach our school community about how they too can be Energy Rebels.

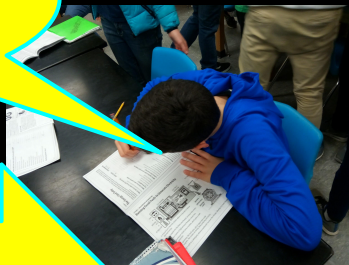
ENERGY BUCKS - Goal: Students evaluated their own lives to learn how much energy they use and to investigate ways to save energy.

That's a lot of money!

"Houston, we have a problem" (The Alamo)
I am wasting too much energy

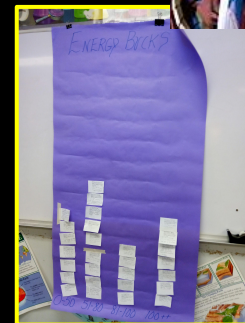
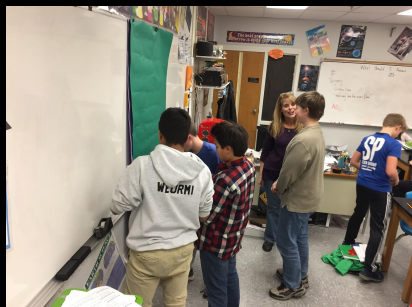
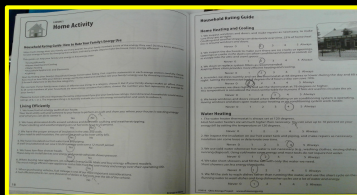


Calculating
personal energy
usage



Name Brayden
Total Energy Bucks Used 128
Explain one change you can make to save energy and why that change saves energy OR explain one thing you can change to save energy and why that change will save energy.
I can turn off lights when I leave room

100% of students determined ways to save energy

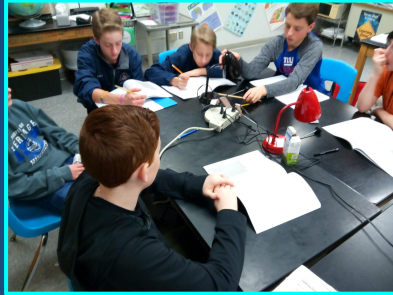


Graphing energy
savers and
energy wasters

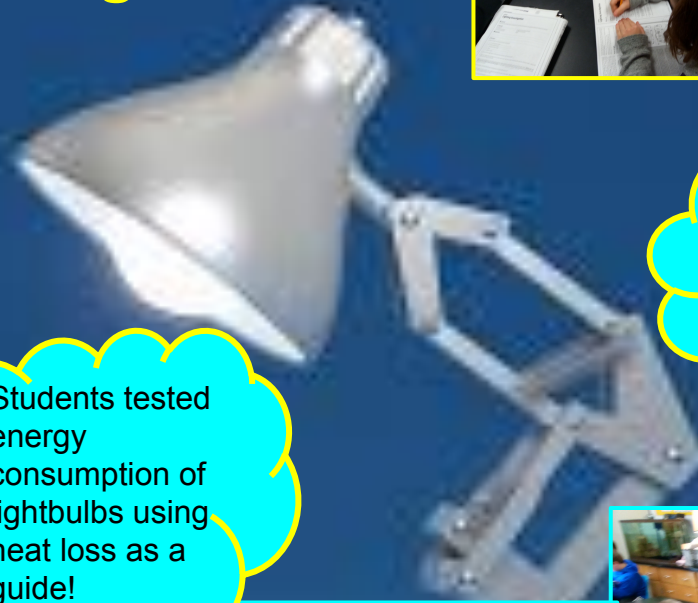
Lighting Lab Investigation - Goal: Learning about 3 types of lightbulbs

Lighting Investigation
2012-2013

Experiment	Incandescent (Watts)	Compact Fluorescent (Watts)	LED (Watts)
1	75.0	23.0	10.0
2	75.0	23.0	10.0
3	75.0	23.0	10.0
4	75.0	23.0	10.0
5	75.0	23.0	10.0
6	75.0	23.0	10.0
7	75.0	23.0	10.0
8	75.0	23.0	10.0
9	75.0	23.0	10.0
10	75.0	23.0	10.0
11	75.0	23.0	10.0
12	75.0	23.0	10.0
13	75.0	23.0	10.0
14	75.0	23.0	10.0
15	75.0	23.0	10.0
16	75.0	23.0	10.0
17	75.0	23.0	10.0
18	75.0	23.0	10.0
19	75.0	23.0	10.0
20	75.0	23.0	10.0



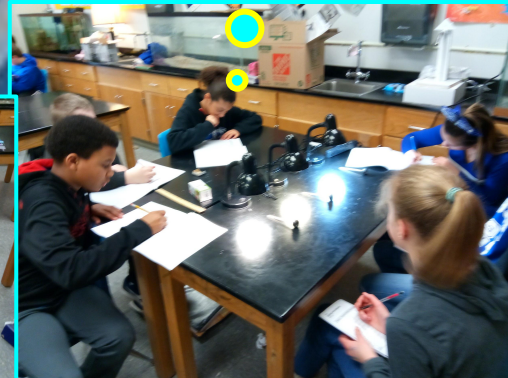
INCANDESCENT?
CFL?
LED?



It's "elementary my dear watson" (The Great Mouse Detective), the LED is the most efficient lightbulb!

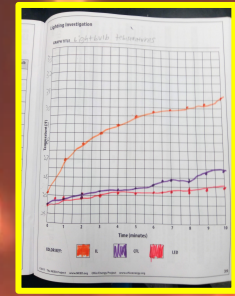
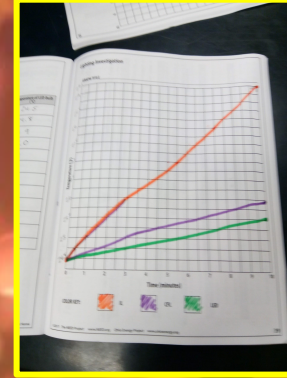
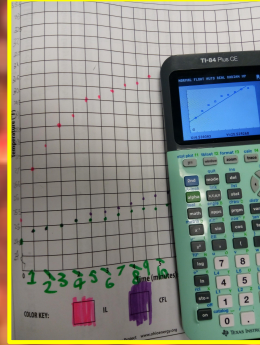
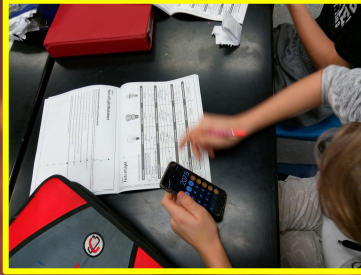
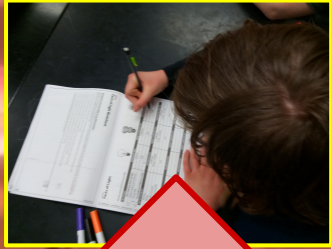
Students tested energy consumption of lightbulbs using heat loss as a guide!

Over 75 energy efficient light bulbs were sent home to families



What Does 25,000 Hours of Light Cost?

GOAL: To determine the cost in \$ of the three types of lightbulbs

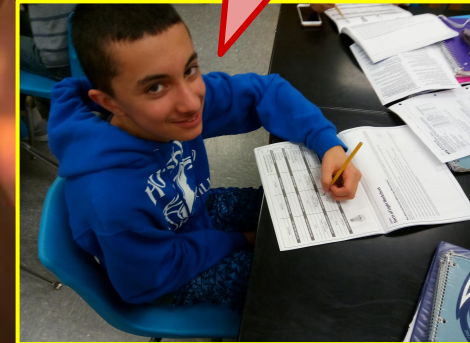


Calculating
the cost of
25,000
hours of
light

If you don't
switch to LED
lightbulbs, you'll
have to "show
me the
money!" (The
Happiest
Millionaire)

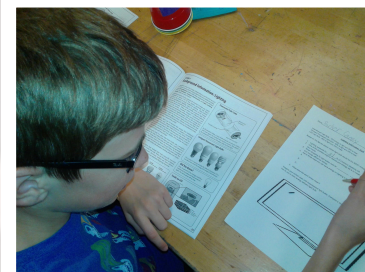
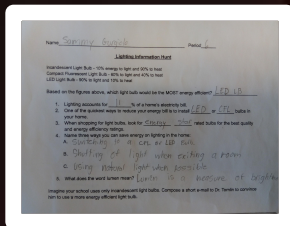
Students calculated the cost of 25,000 hours of light for incandescent, a CFL, and an LED light bulb to determine which light bulb would be the most energy efficient. 100% of the students determined that the LED was the most energy efficient lightbulb.

What lightbulb
was the best
Andrew?

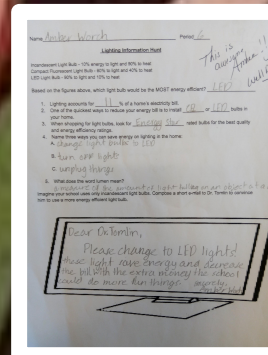


6th Grade Energy Outreach

Goal: To educate the 6th graders about the different types of lightbulbs



6th graders write letters to the principal and district administrators about the results of their investigation and the need to use energy efficient lightbulbs district-wide



"We're off to 6th grade" - Peter Pan



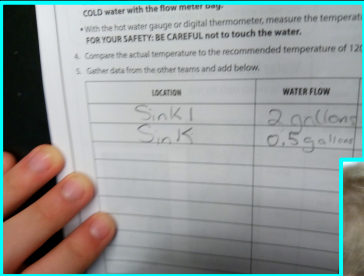
Energy efficient lightbulbs were added at school



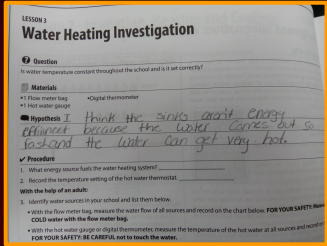
Students calculate, write and graph the results from the lighting investigation

Learning about water heaters, water temperature, and water flow from faucets and sinks

GOAL: TO EDUCATE FAMILIES AND HAVE ENERGY EFFICIENT SUPPLIES INSTALLED AT HOME. OVER 350 LOW FLOW SHOWER HEADS AND AERATORS WENT HOME TO FAMILIES TO BE INSTALLED



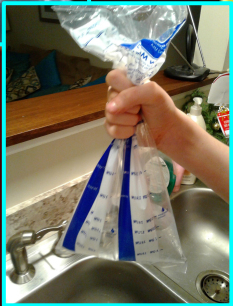
Using the power of energy efficient aerators can save people from high water bills and lead everyone to more efficient faucets. 'Honey, what is the temperature setting on our water heater?!



Using flowmeter bags to determine the water flow out of the school sinks



Checking water flow from aerators at home



It is "INCREDIBLE" how much money you can save when the water heater temperature is set to 120 degrees or lower



Goal: To learn about energy efficient water items and then to use and install these items at school and at home.

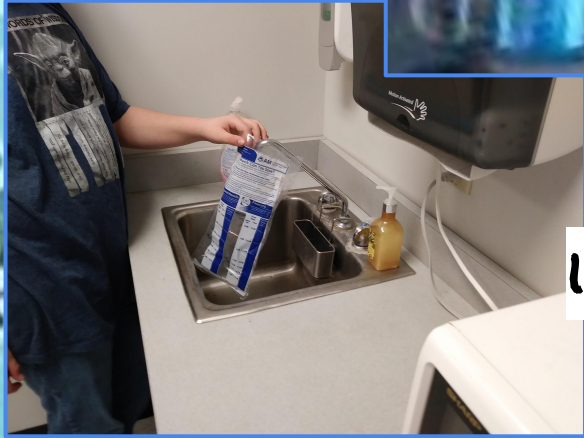
Look at this stuff isn't neat? That we have ways to save energy.



Faucet Aerator



Water flow tester

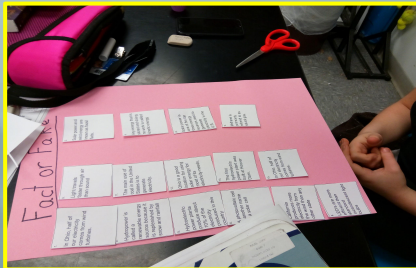


HOW EFFICIENT IS YOUR FAUCET?

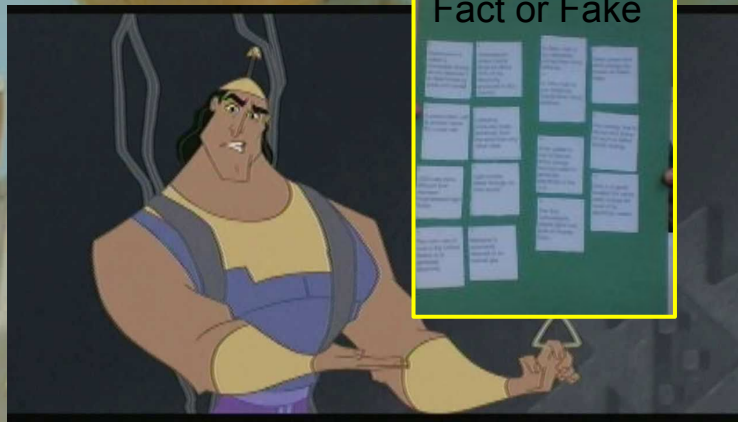
The higher the efficiency the less energy used to heat the water

ENERGY FACT OR FAKE - EDUCATED OURSELVES THEN OUR SCHOOL COMMUNITY

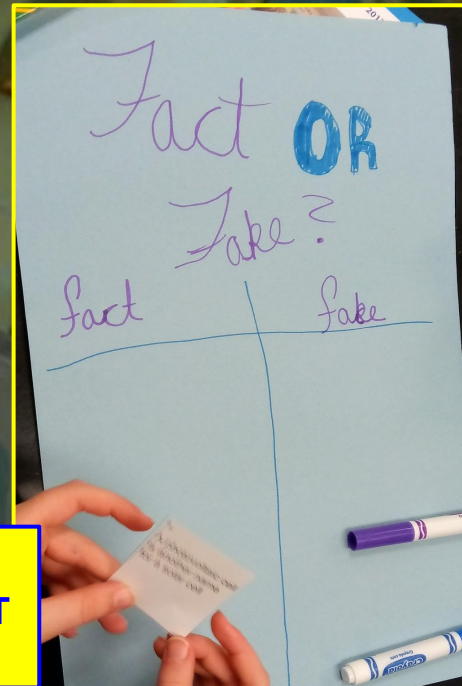
Goal: To educate ourselves and then our school community about energy facts



Students took energy information and had to decide if it was an energy “fact” or if it was “fake”, and then put it in the correct column. Students then used the papers to create a giant school display that spelled out **ENERGY**



Fact or Fake.....LED Light bulbs are more efficient than standard incandescent light bulbs.**FACT**



Teach it in “Home” and “School”

GOAL: TO EDUCATE OUR SCHOOL AND HOME COMMUNITY ABOUT ENERGY SAVING TOPICS

Home Outreach

Install energy efficient lightbulbs
Over 350 CFL lightbulbs were sent home



Checking the water temperature
Checking the temperature in the refrigerator and freezer
Installing weatherstripping



School Outreach

Energy displays with information
about energy at school for over
1,000 students



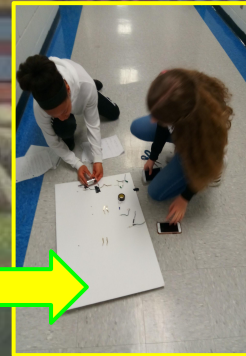
Recycling at school



Believe
you can
then you
will,
(Mulan)

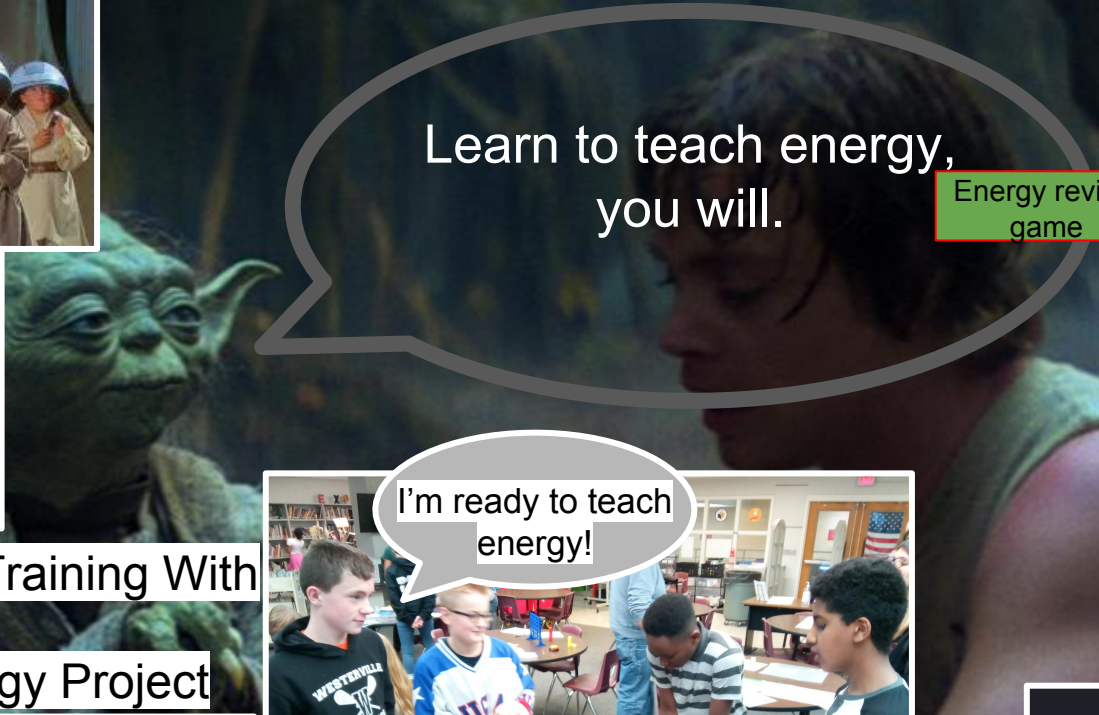


Making circuit boards





Student Leader Training With The Ohio Energy Project



Learn to teach energy,
you will.

Energy review
game



I'm ready to teach
energy!

Sound Energy

Light Energy



Goal: To educate ourselves about energy
topics so we can teach others about energy



ENERGY FAIR AT ANNEHURST ELEMENTARY SCHOOL



Goal: To increase the energy knowledge of the 5th grade students.



Sound and Thermal
Energy Stations



Pretest
Score: 61%

Post Test
Score: 80%

69 students

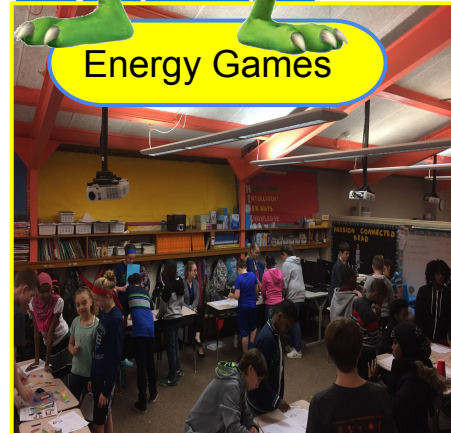
The 5th graders think that this energy fair is “the stuff that dreams are made of”, Monsters, Inc.

Kinetic and Potential Energy Activities



Energy Games

Over 70 fifth graders attended an energy fair in which the Energy Rebels led energy stations to teach the 5th graders



ENERGY FAIR AT CHERRINGTON

We taught 5th grade students about energy circuits, waves, light, and sound using games like energy connect four!

Hakuna Matata!
No worries about energy!

Pre-Test:
73%
Post-Test
91%

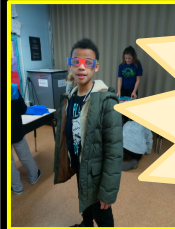
Trust ol' Rafiki!
Energy will move you and help you learn, little one!

Goal: to increase the energy knowledge of the 5th graders

Be prepared to learn



He has learned!!



Goal: To educate our **School**, our **Community**, and **Beyond** about renewable energy and energy efficiency

Wind
Hydropower
Solar

Westerville Energy Manager Chris Monacelli visits our school to hear about the renewable energy sources in the city of the future

In the Future City program, students created a city of the future to solve a certain problem. The Heritage team came in **first** in the state and **16th** in the country.

Sharing our information about energy at the Future City Finals in Washington D.C.

Educated over 1,000 students at our school
Educated over 1,000 people in our community
Educated over 3,000 people nationally



THE ENERGY REBELS

Quotes from the 2017-18 Digital Scrapbook Team and Student Leaders

The Energy Rebels used amazing leadership skills while teaching and learning about energy! Also, best scrapbook team ever! - Mrs. P

I learned that energy can be wasted VERY easily, and that Mrs. Pellington is Awesome! -

"I learned that energy is an important part of our lives and I had a great experience working with this group." - Mollie

I learned about how energy is very costly and every watt counts. I also learned how to teach everything I learned in a fast and efficient way-John B

I learned that energy is expensive, and a little mistake can waste a lot of money- Jon S

"I learned that being more energy efficient can lead to lower costs in electric bills"- Jeffrey

I learned that even the smallest things can help save energy, and that being part of a leadership team is awesome!!!!-Dillon

I learned that the science of energy is good to be taught to others so they can save their energy and understand it better. Jennie