Morningside Elementary

5th Grade 2022 NEED Project
Advisors: Mollie Mukhamedov
and Sara Bolton

It felt so great to have everyone at school this year. We did not have any online classes, so it was wonderful to all be together. We welcomed a new 5th Grade teacher, Mrs. Bolton, to our school. She was excited to help with our NEED project this year. Our principal ordered us new NEED Energy infobooks at the intermediate and elementary level and a new Science of Energy kit. We used those resources to learn about the forms and sources of energy. Students learned how energy can transform through the Science of Energy investigations. Once they learned about energy transformations in their station, they taught other students what they learned. Mrs. M's students taught other students in their own class, and Mrs. Bolton's 5th graders taught 3rd and 4th graders what they learned.

We are super excited to attend the Earth Day festival at the Oxbow eco-center on April 23 of this year. Student have been busy writing essays about sources of energy and transportation fuels and making posters to display at the festival. Students will have a big energy wheel at our table, so it will be a fun way to interact with festival attendees. Thanks to the NEED Project, we have some fun information to share with others at the festival. Kids teaching Kids with the NEED Project curriculum has been very successful for our 5th graders this year.

Goal 1: Learn and Teach the Science of Energy

Energy Content Activities

1. Students studied the Science of Energy.
2. Students taught other students about energy transformations.

Student Leadership

1. Students were in charge of learning their experiment and planning their presentation for other students.
2. Students were given the script to study and the materials and procedure for their experiment.
3. 5th grade students taught 3rd and 4th grade students about forms of energy and energy transformations.

Resources

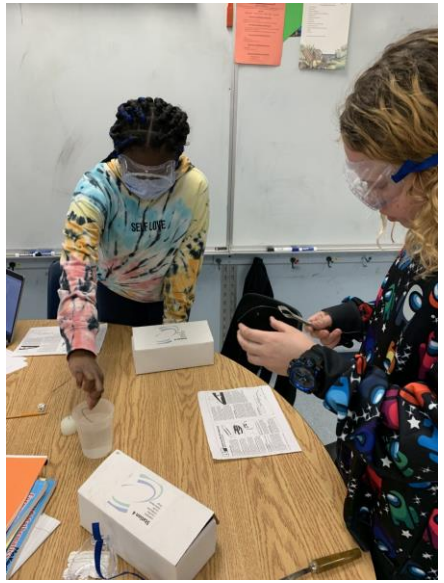
1. NEED Elementary Science of Energy Unit
2. NEED Energy Infobooks

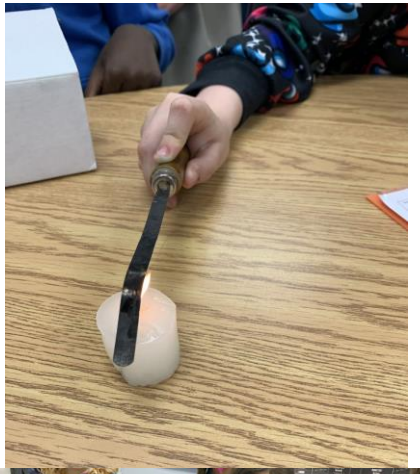
Evaluation:

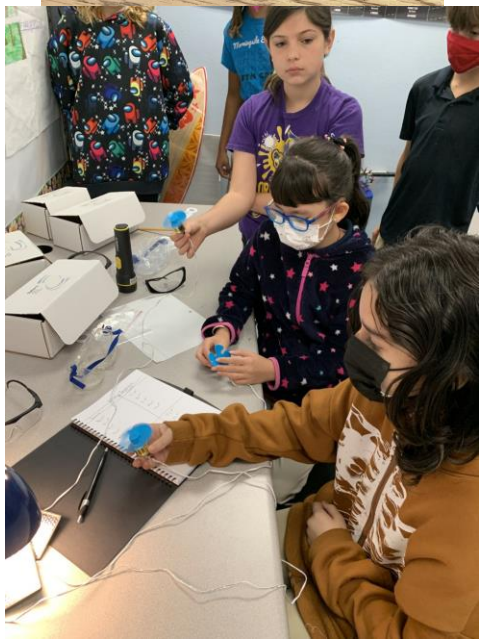
1. Unit test on energy
2. Student interest and participation
3. Teacher monitoring of presentations
4. Feedback from other students and teachers about presentations

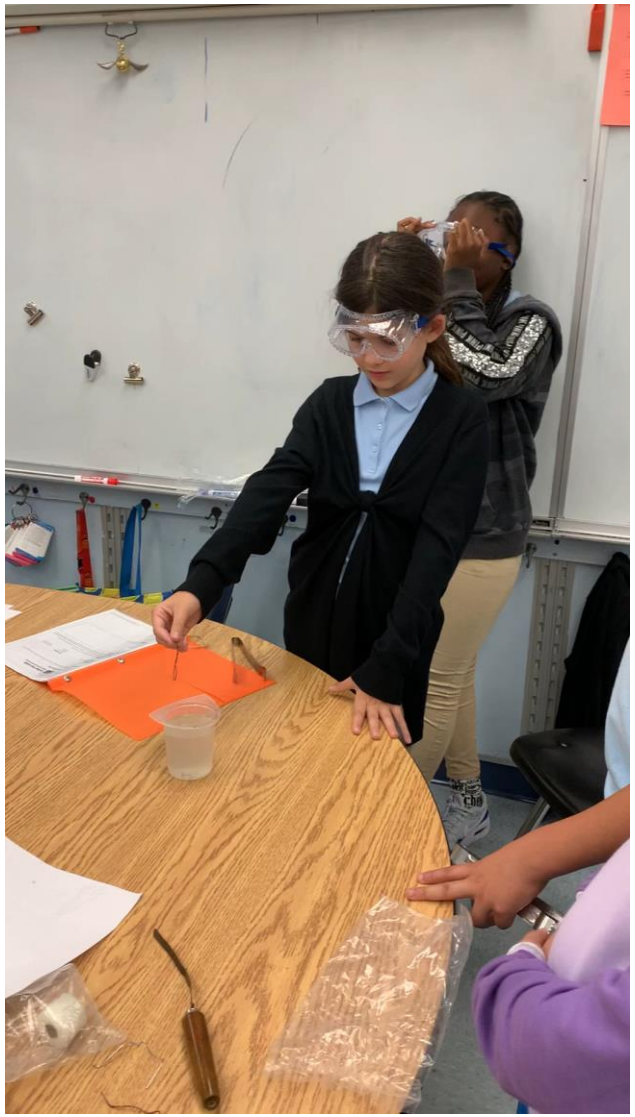
Science of Energy Stations

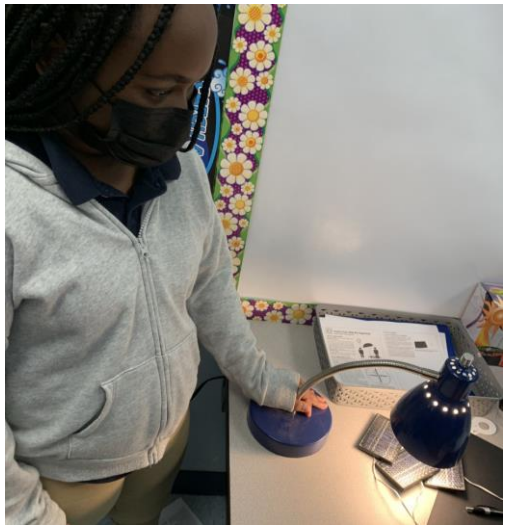
Station One	Potential and Kinetic Energy
Station Two	Endothermic and Exothermic Reactions
Station Three	Radiant Energy Transformations
Station Four	Thermal Energy and Motion Energy
Station Five	Chemical Energy
Station Six	Electrical Energy







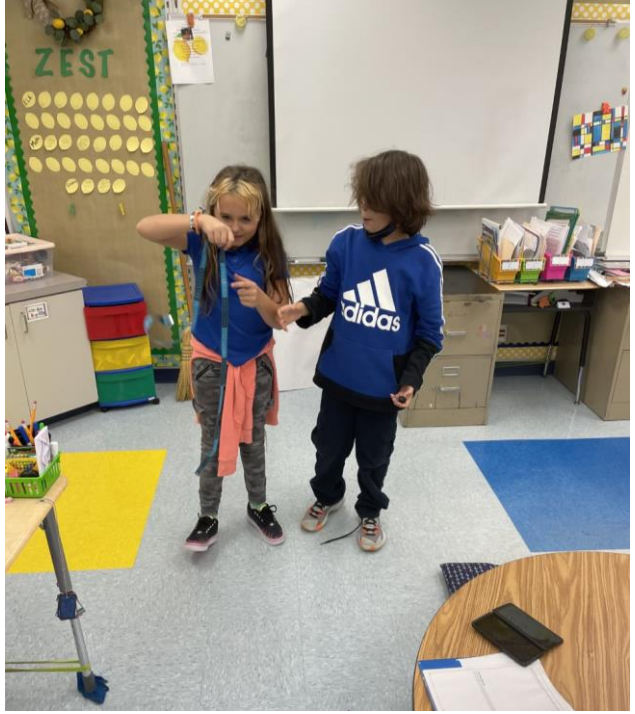


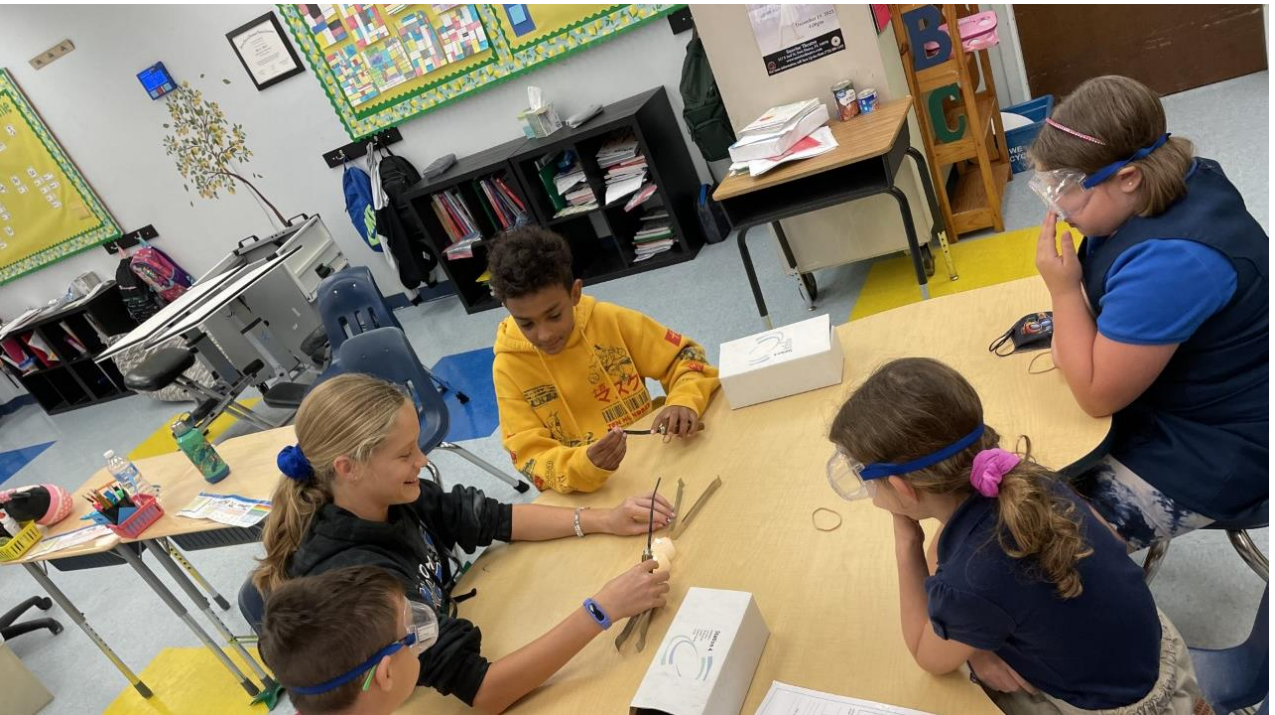


Science of Energy

Kids Teaching Kids!

5th graders teaching 3rd and 4th graders at MSE.





Experiments with fellow students

More Experiments and Education

Goal 2: Host an Energy Expo at the Oxbow Eco Center Earth Day Festival

Energy Content Activities

1. 5th grade students studied a source of energy or a transportation fuel, wrote an essay and created a poster on their source or transportation fuel.
2. Students presented their posters to the class.
3. Students will attend the Earth Day Festival at the Oxbow Eco- Center on April 23 and host an Energy Expo. They will take their posters, an energy wheel and some energy demonstrations to share with visitors at the festival.

Student Leadership

1. Students were responsible for researching their energy source or transportation fuel, writing an informative essay and designing their poster.
2. Students will be responsible for running the table for our school at the festival.
3. Students will be responsible for demonstrating energy transformations to festival attendees.

Resources

1. Energy Expo Unit
2. NEED Energy Infobooks
3. Science of Energy hands on experiment materials

Evaluation

1. Teacher monitoring of student presentations at the festival
2. Informative essay scores
3. Unit test on energy
4. Evaluation of student posters for the Energy Expo

Oxbow Eco-Center

A St. Lucie County Environmental Learning Center

Earth Day Festival 2022

Exhibitor Reservation

Oxbow Eco-Center — A St. Lucie County Environmental Learning Center

Saturday, April 23rd from 10a.m. to 5:00p.m.

** Festival hours have been extended due to high attendance and efforts to spread out visitors. If your organization has difficulty participating due to extended hours, please let us know.

FREE, but Reservations are Required

To ensure your participation, please complete this Exhibitor Reservation form and return it to the Oxbow Eco-Center by email or fax. Exhibitor space is limited; please register early. This form must reach us no later than **March 22.**

Exhibitors Provide:

- Hands-on activity or demonstration that engages families
- Tent, Table(s), Chair(s) - Set Up is Friday, April 22nd
- Volunteer set up support may be provided upon request

Important Reservation Requirement:

After reservation submission, please watch for an email from DocuSign containing a Vendor Agreement requiring a digital signature. Staff will assist in this process and can answer any questions.

Exhibitor Information

Organization (SunBiz) Name: Morningside Elementary

Contact Person: Mollie Mukhamedov Email: Mollie.Mukhamedov@stlucieschools.org

Phone: 772 807-0776 Alternate Phone: 772 337-6730

Address (SunBiz): Morningside Elementary

Mailing Address (if different): 2300 SE Gowin Dr Port St Lucie FL 34952

Special Requests:

Note: electricity is very limited and is not guaranteed. Please inquire.

Please describe your booth: Morningside Elementary 5th graders will present an Energy Expo. They will study the forms and sources of energy and create posters and demonstrations. There will be a "Wheel of Energy" that guests can spin and learn facts about sources of energy.

Activity Name & Description: Morningside Elementary's 5th Grade NEED Project (National Energy Education Development)

☐ **Our Green Team can help** you come up with ideas for hands-on, minds-on activities that represent your organization and its services to the community and environment. Check this box if you need assistance and we will pair you up with a member of our team to create a meaningful and memorable activity.

E-mail: Oxbow@stlucieco.org Phone: (772) 785-5833 Fax: (772) 785-5834

Oxbow Eco-Center at 5400 NE St. James Drive, Port St. Lucie, FL 34983

Rooted in Hope **StLucieEarthDay.com**

18th Annual St. Lucie Earth Day Festival

ST. LUCIE EARTH DAY FESTIVAL

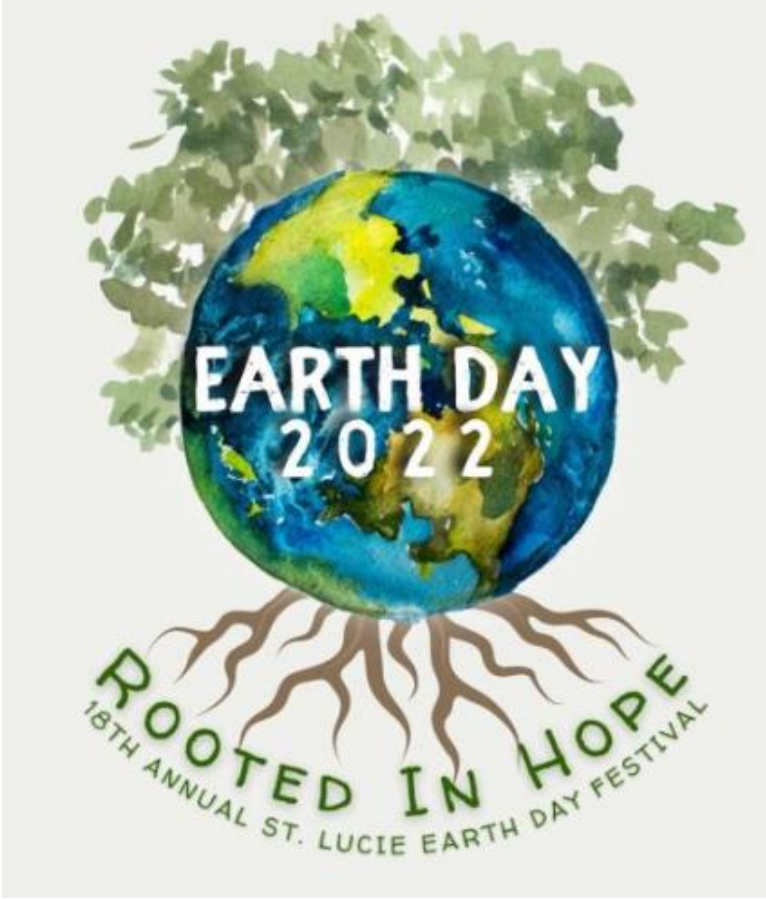
Saturday, April 23 10:00 am - 5:00 pm

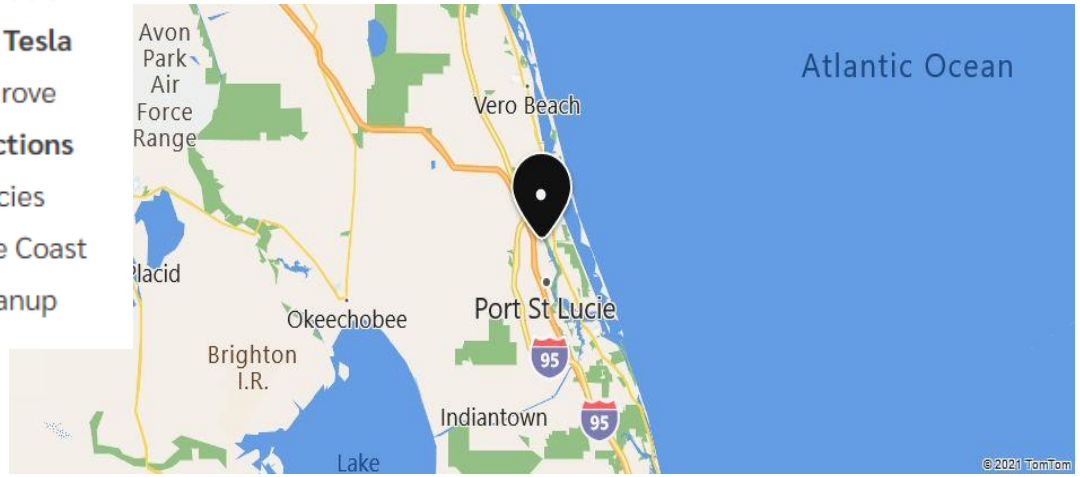
at the

Oxbow Eco-Center

Check out these fun all-day interactives!

Meet & Greet with Oxbow Eco-Center Founders * **Collaborative Snake Eco-Art Drum Circles** by Drumming for Peace * **BIG Bubbles & Nature Wands** by Little Acorns * **Art Demonstrations** by Ft. Pierce Art Club * **Ocean Trash Fishing** by Boys & Girls Clubs * **Wildfire Combat Vehicle Tours** by Florida Forest Service * **Sea Turtle Rescue** by Ecological Associates, Inc * **Leave No Trace Trash Timeline** by Friends of the Spoil Islands * **Animal Prints Sandbox** by Friends of Savannas Preserve * **Dolphin Spotting** by FAU Harbor Branch * **Ground Nesting Beach Birds** by FDEP IRLAP * **Wilderness Medicine Demo** by Little Medical School * **Ladybug Net Tent** by PSL Botanical Gardens * **Seed Dissection** by Samuel Gaines Academy * **Virtual Reality Exploration** by St. Lucie County Libraries * **Mosquito Discovery** by SLC Mosquito Control * **Tesla Showcase** by Ocean Village EV Club * **Take-Home A Pollinator Plant** by Sun Grove Montessori * **Butterfly Crafts** by Heathcote Botanical Gardens * **Coral Connections** by Conservation Alliance of SLC * **Invasive Species ID** by Florida Invasive Species Council * **Energy Expo** by Morningside Elementary * **Bees and Food** by Treasure Coast Beekeepers Association * **Waterway Cleanup** by Treasure Coast Waterway Cleanup





One of the essays:

Have you ever heard of Uranium? Uranium can be found in the Earth's crust. Uranium is a nonrenewable element. This means we cannot produce any more of it. It is also highly radioactive and can have physical effects on humans and animals. Uranium is also used in 'Nuclear Power Plants' which uses fission to create electricity.

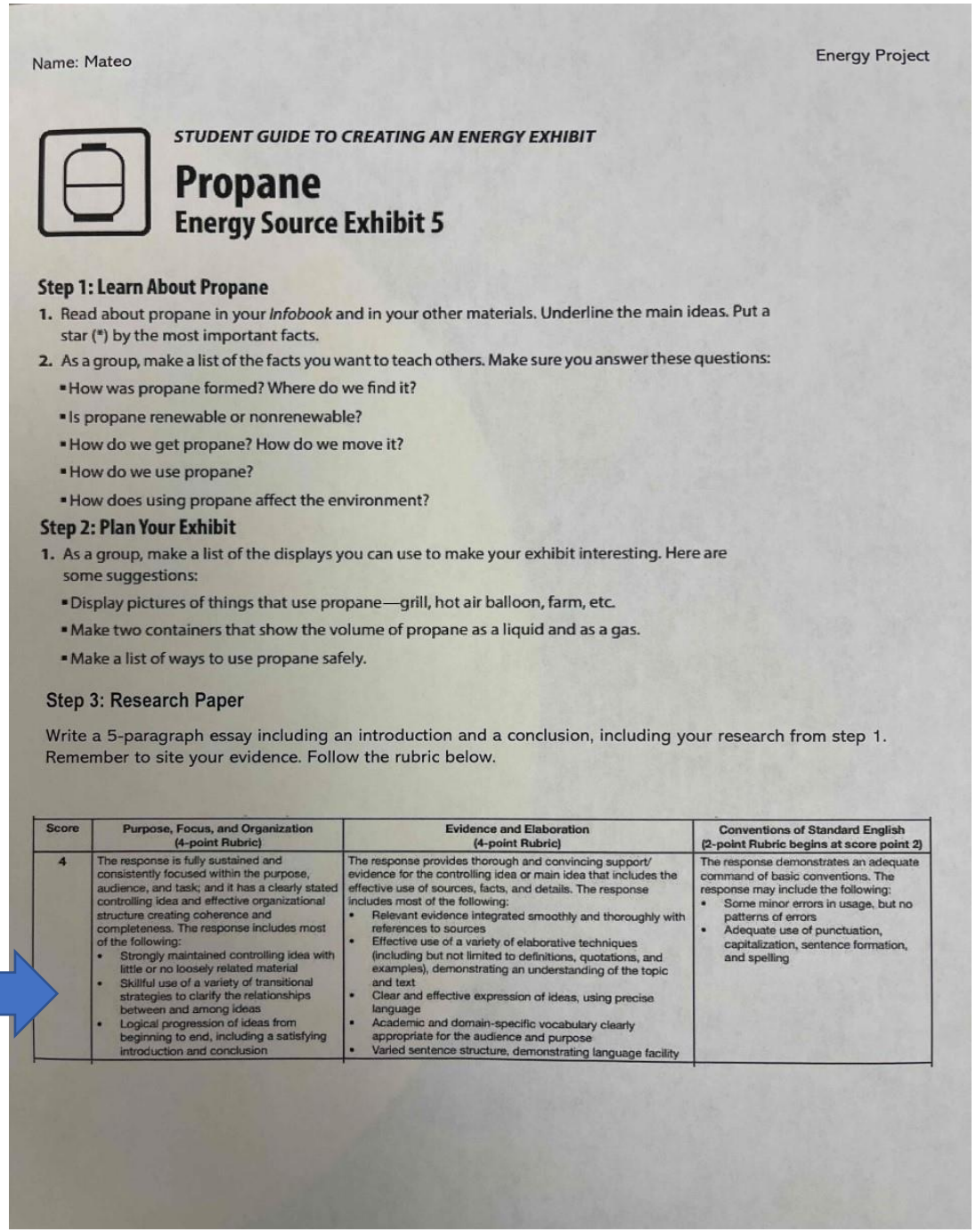
You might think that Uranium is this 'bad thing' that can hurt you, but it can actually be used to help us. Radiation from this element can heal us when we break a bone or can help people with cancer. This doesn't mean it isn't harmful though.

Everyone's heard of a nuclear power plant at least once. You might even get your electricity from one. Nuclear power is cleaner since nothing is burned so it can't pollute the air, and its cheap! 19% of our electricity comes from these power plants. But with all the good things about it, there are some bad things. Radiation is still very dangerous and too much of it can kill our cells and poison the food we eat!

To wrap it up, Uranium is a very special element that can be used for so many things, like healing you or creating electricity so you can see in the dark.

By Johari Campbell

Here is an example of how Mrs. Bolton added the informative essay rubric to the Energy Source Exhibit directions!



Name: Mateo

Energy Project

STUDENT GUIDE TO CREATING AN ENERGY EXHIBIT

Propane

Energy Source Exhibit 5

Step 1: Learn About Propane

1. Read about propane in your *Infobook* and in your other materials. Underline the main ideas. Put a star (*) by the most important facts.
2. As a group, make a list of the facts you want to teach others. Make sure you answer these questions:
   - How was propane formed? Where do we find it?
   - Is propane renewable or nonrenewable?
   - How do we get propane? How do we move it?
   - How do we use propane?
   - How does using propane affect the environment?

Step 2: Plan Your Exhibit

1. As a group, make a list of the displays you can use to make your exhibit interesting. Here are some suggestions:
   - Display pictures of things that use propane—grill, hot air balloon, farm, etc.
   - Make two containers that show the volume of propane as a liquid and as a gas.
   - Make a list of ways to use propane safely.

Step 3: Research Paper

Write a 5-paragraph essay including an introduction and a conclusion, including your research from step 1. Remember to site your evidence. Follow the rubric below.

Score	Purpose, Focus, and Organization (4-point Rubric)	Evidence and Elaboration (4-point Rubric)	Conventions of Standard English (2-point Rubric begins at score point 2)
4	The response is fully sustained and consistently focused within the purpose, audience, and task; and it has a clearly stated controlling idea and effective organizational structure creating coherence and completeness. The response includes most of the following: • Strongly maintained controlling idea with little or no loosely related material • Skillful use of a variety of transitional strategies to clarify the relationships between and among ideas • Logical progression of ideas from beginning to end, including a satisfying introduction and conclusion	The response provides thorough and convincing support/evidence for the controlling idea or main idea that includes the effective use of sources, facts, and details. The response includes most of the following: • Relevant evidence integrated smoothly and thoroughly with references to sources • Effective use of a variety of elaborative techniques (including but not limited to definitions, quotations, and examples), demonstrating an understanding of the topic and text • Clear and effective expression of ideas, using precise language • Academic and domain-specific vocabulary clearly appropriate for the audience and purpose • Varied sentence structure, demonstrating language facility	The response demonstrates an adequate command of basic conventions. The response may include the following: • Some minor errors in usage, but no patterns of errors • Adequate use of punctuation, capitalization, sentence formation, and spelling

Essay by Amelia

TAKING CARE OF TRASH

Have you ever looked in your trash-can and wondered," what happens to all that trash?" Making goods for your everyday life requires a lot of energy, in fact it uses about one-fifth of the total energy used in the United States. Taking care of trash properly is extremely critical to save energy. Americans use a ton of trash and don't dispose of it correctly. Disposing of trash improperly can result in an immense amount of wasted energy. They're also ways we can save energy by improving our ways of eliminating our trash.

To begin with, America is ranked No. 3 on the list for the countries that produce the most trash, and America doesn't know what to do with it all. The writer of *word bank* exposed that each person in the United States uses 5.7 pounds of trash each day. To explicitly clarify the meaning of the quote, if each American uses 6 pounds of trash a day that is about 2,000 pounds of trash a year, that is the size of a cow! I have four people in my household, that would be 8,000 pounds per house, each year, and that is a hippo of trash! What do we do with all that trash? *How Stuff Works* informed us,"32.5 percent of the trash is recycled or composted, 12.5 percent is burned, and 55 percent is buried in landfills" The quote implication demonstrates, one-fifth of our trash is burned, to put it in perspective, 400 pounds of my trash is burned, and that is eight billion pounds burned just in Florida. When you burn all that trash it wastes a considerably amount of energy to get those high temperature. Also, all the energy used to process and make what you are burning. Another waste of energy is when we cast aside items that are fixable, or we just don't want and throw them away. Of what we dispose, fifty percent of it is buried in a land fill. That is colossal waste of energy, like I said, all that energy it took it make that paper you just threw out, it is all now wasted. As I have explicitly stated above, Americans are wasting energy left and right, we are taking energy for granted.

Furthermore, as I was stating above, eliminating all your toys that can be fixed, saved, or reused is an extensive waste of energy. To further demonstrate on how this is wasting energy, the author of *Spring power and gas*, implied," Aluminum is an ore that is mined from the raw material bauxite. Bauxite is an amorphous, clayey rock that that must be mined, processed, shipped, and formed into a final product." This illustrates my point because, aluminum is the one of the substances that uses the most energy to make. In order to turn that clay rock into metal requires a considerable amount of heat and electricity, and even more energy to shape the aluminum. Because the aluminum process is so intense, that is why it uses more electricity than any other manufactured item in the United States. So, when Americans throw all that away it wastes a bucket load of energy. The article *How Does Recycling Save Energy?* conveyed the idea that when producing that glass coke bottle, you just drank, that required an immense amount of energy as well. In order to manufacture it you need to mix a bunch of sand and minerals together and then heat and melt them together at extremely high temperatures. The implication of the quote is, making glass requires again, a lot of energy to meet those demanding high temperatures. A vast amount of people do not know what to do with their glass coke bottle so the garbage can is their first resort. What the society doesn't understand is that all the energy that went into making you coke is now going to be buried with it. Manufacturing goods for your everyday life uses a colossal amount of energy that must be preserved.

Finally, we talked about how energy is used and wasted, so now how do we preserve it? *AGI* articulates that when you recycle items it saves energy because when you recycle something it takes a sustainably less amount of energy to process it into a usable material then makes something from scratch. This information impacts the fact that paper is a good example of this, when you recycle a cardboard box or that drawing you messed up on the other day it saves an immense number of trees and the energy to cut them down. The paper you just recycled can be crushed and compacted to create for example, a school lunch tray, or a new cardboard box. It turns out that about every 2,000 pounds of paper recycled 17 trees are saved. World Atlas highlights that even recycling fossil fuels like coal or oil saves energy. This illustrates my point because if we can reuse fossil fuels (those are natural substances like coal or oil that take millions of years to produce) if we can reuse our non-renewable resources then we can use them, and they will be around for a longer amount of time. Another way recycling fossil fuels helps if it saves all the energy used to mine and excavate oil or coal.

To sum it all up, properly taking care of our trash is very important, Americans use a lot of trash and waste all the energy used to make your "trash". By recycling we can save energy and reuse our "trash". Next time you are not sure if something is trash or not, check the lid on you recycling bin or look it up on the web. Saving energy is extremely critical and we need to work together to make it happen!

Essay on Hydro power by Mason

Hydro Power

Splash, that is the sound of water rushing down a river, to a dam. Zap, that is also the sound of the water in the dam being transformed into electrical energy. But do you ever wonder why dams are built and how electricity can come from water? Well, hydropower of course! Hydropower is the energy that comes from the force of moving water, which is exponentially important because of how renewable it is, how easy it is to create and store, and how favorable it is due to its benefits to the environment.

To start things off, hydropower is the source of electricity that is highly renewable because of the water cycle. The 24th page in the Intermediate Energy Info book explicitly declares that" Hydropower is what's called a renewable resource because it is constantly replenished by precipitation (rain, snow, sleet, and hail)." If you consider this fact, rain will cause hydropower to continue to occur repeatedly, which would have the same effect as the sun. Therefore, creates the inference that we're going to have hydroelectric power for as long as we're alive. To think more about the effect the water cycle has on hydropower, the third section of Renewable energy rundown: Hydropower | SaveOnEnergy® highlights the fact that" The amount of precipitation impacts how much water is available in a certain area, which can produce hydropower. Changes in the amount of water in an area heavily impacted by weather can cause hydropower to be a viable source of electricity." Which is significant because the places with lots of rain are highly benefited by hydropower because water is easily accessible to them. Also, the fact that if hydropower is a viable source of electricity is mostly up to your environment and weather means that you most likely need a tropical lifestyle. So, if you live in a dry area but rely on hydropower I would suggest moving to somewhere more tropical and temperate. Well, thanks to the water cycle we can use hydropower as an easy source of electricity that is renewable and never going to run out.

Furthermore, hydropower is a splendid source of electricity because of how easy it is to create and store. According to the Intermediate energy info book," One of the biggest advantages of hydropower dams is their ability to store energy.' After all, the water in the reservoir has gravitational potential energy. Meaning that the water can be stored and released whenever electricity is needed. Also, the fact that it helps save energy and not be wasteful is amazing. In addition, I know that I'm not the only one that wakes up and feels great saving energy and money. But the website How Hydroelectric Energy Works | Union of Concerned Scientists (ucsusa.org) vocalizes the point that," Hydropower can also be generated without a dam, through a process known as run-of-the-river. In this case, the volume and speed of water is not augmented by a dam. Instead, a run-of-river project spins the turbine blades by capturing the kinetic energy of the moving water in the river." This action is extremely efficient because it is a remarkably effortless process due to the lack of building materials and attentive time spent working on the dam that is not needed. Which also makes it a bunch cheaper, and who doesn't like to save money? So, if it weren't for the simple steps it takes to store and create hydropower, we would be wasting precious time, effort, and money.

Finally, hydropower is amazing because of its benefits to the environment. Proof of this claim is noted in Why is hydroelectric power better than fossil fuels? – JanetPanic.com when the author, Alex Dopico, writes that," Hydropower is fueled by water, so it's a clean fuel source, meaning it won't pollute the air like power plants that burn fossil fuels, such as coal or natural gas." Knowing that without being reliant on international fuel sources, the earth is saved from all kinds of pollution, and who doesn't love having the most efficient power source and helping the planet at the same time? Basically, lots of problems would be fixed if more people used hydroelectric energy. But the creator of the website Benefits of Hydropower | Department of Energy articulates the fact that." Hydropower provides benefits beyond electricity generation by providing flood control, irrigation support, and clean drinking water." So, hydropower is a multitasking hero to help those in need of water. While, helping fight off floods with its flood control. Dams also are an immense help with irrigation support, which proves that it doesn't just provide protection for humans. Therefore, hydroelectricity has many outstanding benefits to the environment that help plants and people.

To wrap things up, hydropower is a source that exerts energy from moving water. Which is also a major help due to its renewability, its easy capability of being stored and created, and finally its benefits on the planet. Well now, hopefully you're able to understand the usefulness of hydropower. Next time you turn on the light in your room, consider the significance of hydropower.

Sponsors for the Oxbow Earth Day Festival

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UESI
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#StLucieEarthDay

These students along with 4 others and 5 teachers not pictured will be working at the Earth Day Festival.