

Northmoor Elementary:

Exploring and Encouraging Energy Efficiency!

Advisor: Jenn Stormer

For a good part of the year, our 3rd and 4th Grade STEM students have been exploring energy sources, energy efficiency, and energy conservation. In our first Project-Based Learning project, students were posed with the essential question, “How can we design a school that will use Earth’s resources wisely and promote learning in the 21st Century?” Students designed a 3-D, scaled model of a school, implementing energy conservation techniques into their design such as renewable energy sources appropriate for the location, light sensors, natural lighting, and utilizing their spaces wisely.

In the 2nd phase of our energy explorations, students were posed with the prompt of teaching others about energy conservations. Through a grant from NOAA, students were able to attend the DP&L energy fair in order to gain more knowledge and get ideas for educating about energy concepts. Each student received their own Watt Meters in order to conduct energy explorations at home. In groups, students researched and planned a lesson plan teaching the importance of energy efficiency and conservation and tactics to do so. Finally, students travelled to our Early Learning Center and taught their energy lessons to 8 different 1st Grade classes. Students got 1st Graders excited about saving energy through technology including interactive websites, iMovies they made, videos, and on-line energy games. In addition, they incorporated hands-on activities such as Energy Bingo, Jeopardy, and “Stand Up, Sit Down” games.

Design a School Project

Goal 1: To explore energy efficiency concepts in building designs

* Energy Exploration Activities

- * Students were visited by a local architect that spoke to students about building design with energy efficiency in mind
- * Students researched how to include energy efficiency in homes and schools
- * Students designed 3-D, scaled models of a school with energy efficiency concepts infused into their designs.

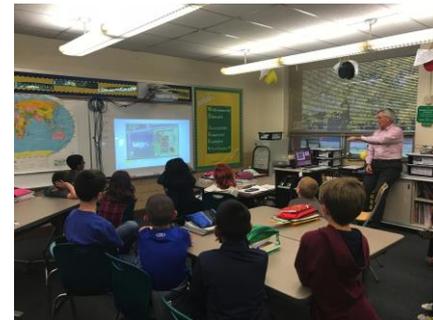
* Student Leadership

- * Students had to present and defend their designs to our superintendent, our business administrator, our principal, and an architect.

Design a School Project Continued...

* Evaluation

- * Students were evaluated based on the energy efficiency concepts they included, as well as their justification for the designs.



Architect Visit: Learning about energy efficiency in building design

Constructing our energy efficient schools:



Shari How Does Our Design Match That Purpose

Since our school is located in Florida, we won't have to use the lights as much because it is a sunny place. To promote learning for the 21st century we have a tech room with computers. We are using solar power. By using solar power we don't use very many nonrenewable resources. Most of our classrooms get light from the windows so the teachers can turn off the lights.

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Presentation Development

- We are trying to use Earth's nonliving resources wisely.
- We are saving energy because
- We are putting all the classrooms on the outskirts of the school, so we won't always have to have the lights on.
- Our school was bigger, but we made it smaller to save energy, because if we still had a bigger building, it would be more energy and we are saving natural resources.

Presenting our designs:



Energy Explorations:

Goal 2: To learn about energy efficiency and how to educate others on conservation concepts

* Energy Exploration Activities

- * Students attended the Ohio Energy Project's Energy Fair to learn about energy concepts and to get ideas for implementing lessons
- * Students received their own watt meters to conduct testing at home and make conclusions about vampire power and energy consumption at home
- * Students conducted energy investigations in the classroom with watt meters and researched energy concepts on their own.
- * Students participated in a Reader's Theatre about nonrenewable and renewable energy

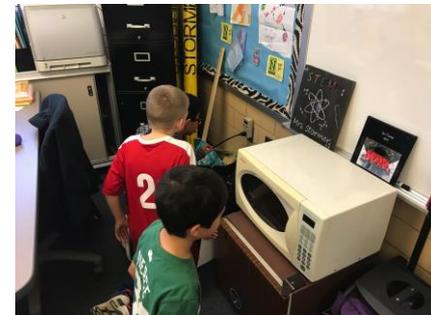
* Student Leadership

- * Students had to communicate their findings from their home energy explorations to their families and share ideas for reducing the amount of energy use within their homes.
- * Students shared the iMovie of their reader's theatre with their homeroom classes.

Energy Explorations Continued...

* Evaluation

- * Students were evaluated with reflection questions and data sheets centering around their explorations with the watt meters.

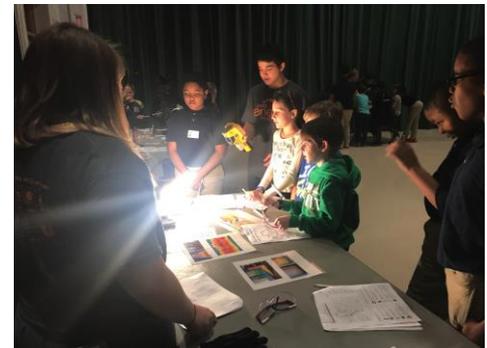
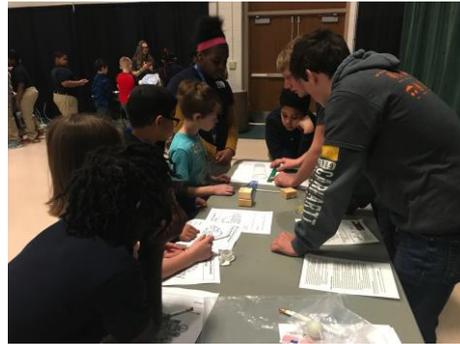


Watt Meter Experimentation in the Classroom

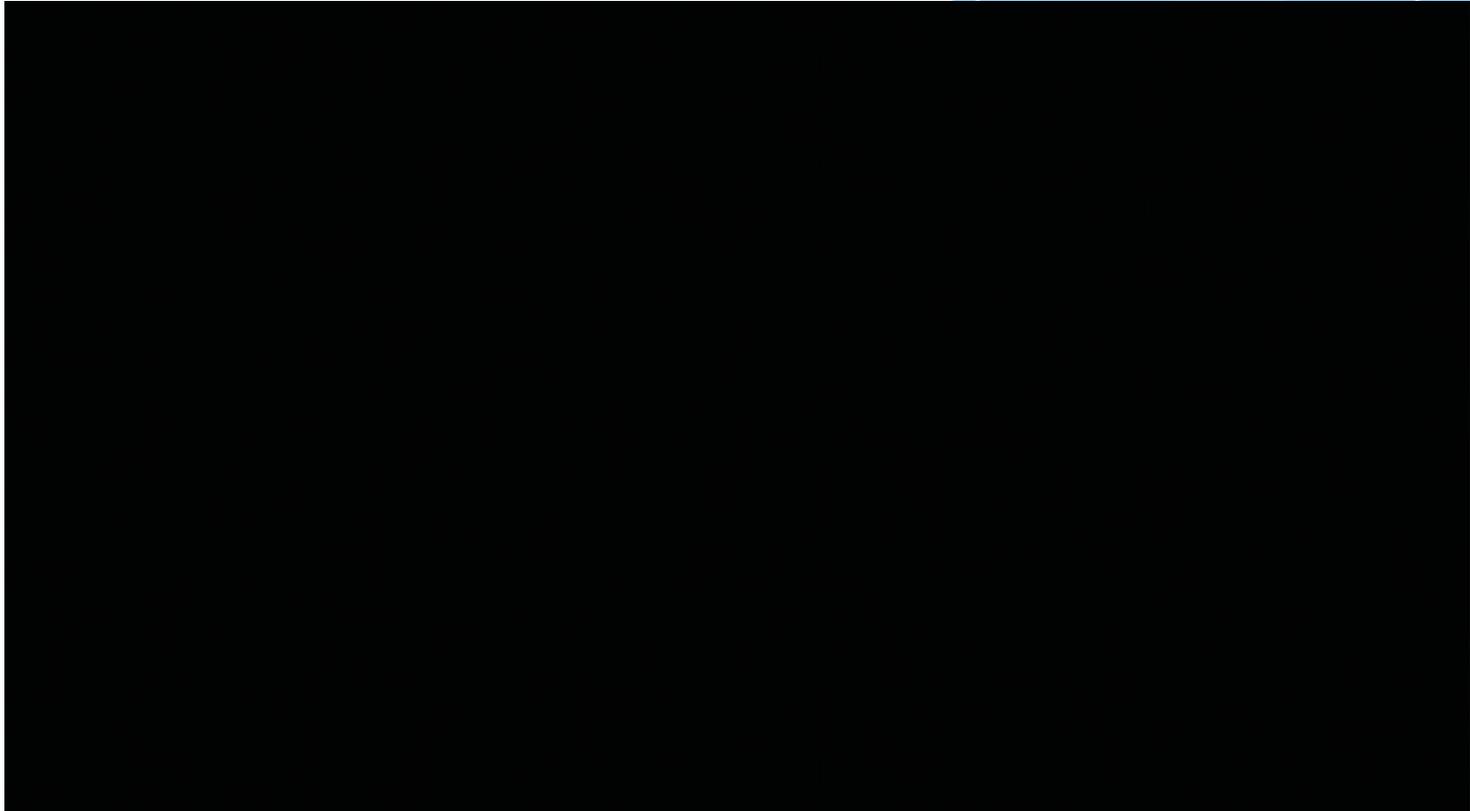
Students got their own Watt Meters and Energy Saving supplies from DP&L and NOAA



Ohio Energy Project Energy Fair:



*Renewable Energy Sources
Reader's Theatre*



Energy Conservation Lessons

Goal 3: To educate younger students about the importance of energy conservation and how to do so

* Energy Exploration Activities

- * Student groups developed lesson plans for 1st Graders that focused on the importance of conserving energy, how to be energy efficient, and other energy concepts.

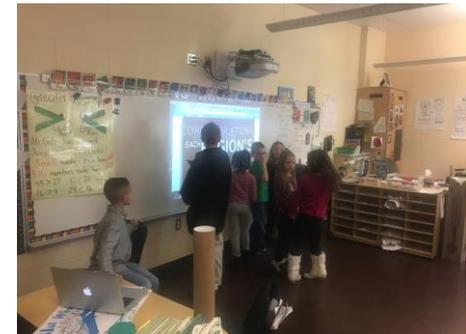
* Student Leadership

- * Students visited our Early Learning Center and taught a 45 minute lesson that they developed using a combination of iMovies, videos, interactive websites, energy games, and direct instruction.

Energy Lessons Continued...

* Evaluation

- * Prior to implementing, students had to present their lesson plans to myself and their peers for critique.
- * Students were evaluated by the teacher using a lesson plan rubric.
- * Students received feedback from the 1st Grade teachers in the classrooms in which they presented.



Example Lesson Plans with technology hyperlinks:

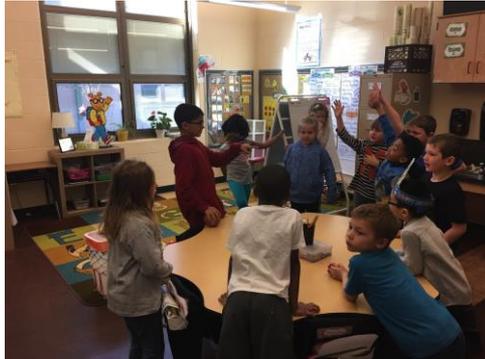
Lesson Plan Template

Lesson Title	
Lesson Objectives (What do you want students to learn/ "take away" from the lesson?)	We want to teach them that energy conservation allows you to help save the existence of humans and the earth, and to know to not be greedy and know that not conserving energy and effects them, not just everyone else/ knowing that it is very important, and about energy conservation itself, and about energy, too.
Summary of tasks/ actions	First we would do a video introducing vampire powers and energy conservation. Then we would talk about why it important and show them a video of why it is #imovieimportant . And talk more of why it's important. About us
Materials Needed	
References (It might be good to hyperlink websites, docs, slides, or videos that you can use quickly during your plan	Different Sources of Energy, Using Energy Responsibly video, Bill Nye the Science Guy Energy video, Superhero family energy video Things that help save energy Why is it a good idea to conserve energy?
Other Notes	

Lesson Plan Template

Lesson Title	Saving Energy!
Lesson Objectives (What do you want students to learn/ "take away" from the lesson?)	We want students to learn how important it is to conserve energy, heat, water, to recycle and to use more renewable resources.
Summary of tasks/ actions	First, we will show Lily's video about saving energy and we will talk about saving energy and how you can save it. We will answer questions on energy. We will tell them about renewable energy and non-renewable energy. We watch Littering. We tell them that it is bad to litter and also to reduce, reuse and recycle. Finally, we do Luke's video about conserving water. We talk about how important it is to save water. After we learn about all of that, we do 2 different stations. The first station will be bingo and the second station will be a soccer game. At the end, we thank them for their time and we then..... we will pass out candy to everyone! (The candy choices are 2 jolly ranchers or 2 suckers or 1 of each.) note 1 strawberry allergy
Materials Needed For This Planning Lesson	Mrs. Stormer - 25 copies of the energy bingo game, Lily - some kind of toys for the winner of bingo, Lily- dum dum suckers and jolly ranchers.
References (It might be good to hyperlink websites, docs, slides, or videos that you can use quickly	Energy, save it! - Lily Littering - Helaina - Ben Save Water - Luke

Presenting to 1st Grade classes:





The Northmoor students enjoyed learning about energy sources, energy conservation, and energy efficiency! Through our PBL projects, students were immersed in learning the concepts and were excited to share our enthusiasm with others! Thanks to Ohio Energy Project, NEED, and NOAA for all of the resources and support in this endeavor!

