Teacher name: Amanda Davison **Grade:** 3

Goal (Learning Target): After exploring the cause and effect relationships between everyday energy wastes, the students will examine the energy wastes that exist within our school and develop solutions.

Engage: The students will take the Energy Conservation Quiz (from saveonenergy.com The Kids Guide to Saving Energy page 8) as a pretest.

Explore: The teacher will briefly explain to the students the difference between renewable and nonrenewable resources (renewable resources can easily be replaced once it has been used, nonrenewable resources take millions of years to replace it once they have been used).
TTW introduce the 6 natural resources that produce energy: **Wind, Water, Coal, Biomass, Solar, and Natural Gas. (TTW write these resources on the board).**
The teacher will tell the students that it is understandable if they don't know what each resource is or how it is used just yet. TTW explain that he/she wants to know what the students already know about some of these resources and what they will need to learn throughout the lesson.
TTW assign each of the 6 student tables to a different resource. TTW explain that at each table is a model or materials that represents one of each of the resources in action. With their team, they are to answer the following questions 1. What type of resource does your model use? 2. Explain how energy is produced using the model or materials at the table 3. Decide whether their resource is renewable or nonrenewable and explain why.
Each student will receive a handout to answer these questions on as their team explores.

Explain: After each group has had time to explore their renewable or nonrenewable resource, and discuss as well as complete the Explore handouts, the teacher will call the class back together. Each team will take turns sharing what they explored in their natural resource tubs. Each student in each team will take a turn sharing an answer to each question on the Explore sheet. The teacher will add or clarify as needed, using the materials in the tub for all of the classmates to see.
*The teacher will make sure to point out the resources that come from fossil fuels (coal and natural gas), as well as defining what a fossil fuel is. *The teacher will give a brief explanation (age appropriate) of the process that coal and natural gas go through to be produced and stress how they are non-renewable resources because this process takes millions of years.

Extend: The teacher will read the book titled Why Should I Save Energy by Jen Green and Mike Gordon. The students will be instructed to think about what happens if we fail to save energy. After the students listen to the book, students will share with their shoulder partners 1. What happens when we fail to save energy? 2. A few things that we can do to save energy.
The class will come back together to discuss and the teacher will record ideas on what we can to do save energy on chart paper.
From The Kids Guide to Saving Energy (saveonenergy.com), the class will review page 3 and page 5 together from the workbook.
The teacher will tell the students that they are now going to go on a scavenger hunt to find specific energy wasters around the school that could be improved. The teacher will tell the students that in each area, they are to use the clue on their scavenger hunt paper to help them. (The class will take a field trip around the building).
*The teacher will first point out what standby mode is on an electronic and explain that it is different than turning off a power strip or unplugging an electronic.
*The teacher will also show a standard incandescent light bulb vs a CFL light bulb, both of the same watts. The teacher will explain that the CFL light bulbs uses less energy than the standard incandescent bulb does.

Evaluate: The students will take the Energy Conservation Quiz (from saveonenergy.com The Kids Guide to Saving Energy page 8) as a Post Test.

Materials: Explore handout (1 per student), 6 explore models
Explore materials for models: Tub 1 Wind Energy- The teacher will have already assembled the Green Science Windmill Generator (from Amazon- $10.27), Tub 2 Solar Energy- The teacher will have already assembled one of the solar powered objects from the Thames and Kosmos Solar Power kit (Amazon $34.36), Tub 3 Water Energy-The teacher will have already assembled the Hydropower model (Thames and Komos Alternative Energy and Environmental Science Hydropower: Amazon $27.49), Tub 4 Coal Energy-Coal Poster (by National Energy Foundation Amazon $4.00), Lionel O Coal Bag-612732 (Amazon $9.13), Children's Plastic Miner Hard Hat with Light by Jacobson Hat Company (Amazon $8.71), Tub 5 Natural Gas-Natural Gas Poster by Natural Energy Foundation (Amazon $4.00), Plan City Gas Station by Plan Toys (Amazon $30.41), Dollhouse Miniature 1:12 scale White Kitchen Stove T5263 by Town Square (Amazon $17.30), Dollhouse Miniature "Ascot" Gas Water Heater Kit by Phoenix Models (Amazon $28.99), Tub 6 Biomass Energy- Alternative Energy Biomass Chartlet (teachersparadise.com $2.49), T.S Shure Farm Vehicles Wooden Magnets 20 piece MegaFun Set (Amazon $10.24), School Smart Magnetic Wipe off Board-Pupil Size-8X12 inch by School Smart (Amazon $11.43), Hot Wheels-2014 HW off Road 131/250-Hot Trucks '10 Toyota Tundra Silver (Amazon $1.99)

Why Should I Save Energy by Jen Green and Mike Gordon (Why Should I books) (Amazon $6.99)

GE 13 Watt Energy Smart TM 8-pack-60 Watt replacement (Amazon $12.25)

Fellowes 6 Outlet Basic Surge Protector (99036) (25 total) (Amazon $5.99 each/ $149.75 total)

Epson Expression Home XP-420 Wireless Color Photo Printer with Scanner & Copier and Epson DURABrite Ultra Standard-Capacity Ink Cartridge, Color Multipack (T220520) (Amazon $94.98), Epson T200120 DURABrite Ultra Standard-Capacity Black Ink Cartridge (Amazon $11.69), Epson DURABrite Ultra Standard-Capacity Ink Cartridge, Color Multipack (T220520) (Amazon $24.99) (extra color cartridge for printing signs) *The printer and the ink cartridges are to print the Save on Energy reminder signs to be hung throughout the building.

Extend Scavenger Huunt (1 per student copied front to back)

Explore

Name_____ **Date** _____ # _____

Directions: Discuss with your team how the model at your table works to produce energy. Then answer the questions below as a team. *Make sure that you write the answers on your own paper in your own words after you discuss with your team.

1. What type of resource does your model use? (Circle one)

   Wind **Water** **Coal** **Biomass** **Solar** **Natural Gas**

2. Using the model at your table, explain how energy is produced (made) using this resource.

   _____

3. Is the resource that the model at your table uses renewable or nonrenewable? (Circle one)

   Renewable Energy **Nonrenewable Energy**

   Explain: _____

   _____

Explore

Name_____ **Date** _____ # _____

Directions: Discuss with your team how the model at your table works to produce energy. Then answer the questions below as a team. *Make sure that you write the answers on your own paper in your own words after you discuss with your team.

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2. Using the model at your table, explain how energy is produced (made) using this resource.

   _____

3. Is the resource that the model at your table uses renewable or nonrenewable? (Circle one)

   Renewable Energy **Nonrenewable Energy**

   Explain: _____

   _____

Extend

Scavenger Hunt

Name_____ Date _____ # _____

1. Let's visit each classroom in our building, beginning with ours. Look for a power strip that is plugged into the wall. Does the power strip have a button that allows the strip to be turned off at night?

   (Circle One)

   Yes No

2. Ask the teacher if he or she turns the power strip off each night.

   (Circle One)

   Yes No

3. Give the teacher a power strip that can be turned on and off every night if he or she needs one. *Also, give the teacher a poster to remind the class to turn off the power strip each night before they leave.

   Did you give the teacher a power strip?

   (Circle One)

   Yes No

4. Why are the knobs on the hallway sink outside of the cafeteria confusing? _____

   _____

   _____

5. What happens because the knobs turn the opposite way as other sinks? _____

   _____

   _____

6. What resource is wasted because this hallway sink does not always get turned off?

_____

_____

7. Let's tape a poster up above the sink to remind our friends in the building how to properly turn off the sink after each use to help save water.

8. Look at the ceiling above you. What do you see that it letting sunlight in? _____

_____

_____

9. So do you think that this light above this hallway sink should be on at all during the day?

(Circle One)

Yes No

10. Why not? _____

_____

11. Let's put a poster above the hallway sink reminding our friends to keep this light off at all times during the day.
12. As we continue walking down the hallway, let's find other areas where natural sunlight comes in. These are also areas where lights do not need to be turned on during the day.

_____, _____, _____, _____

13. Let's put posters up in these areas to help remind our friends to keep these lights off during the day.
14. Let's take a trip to the office. Do you see any lamps being used in the office?

(Circle One)

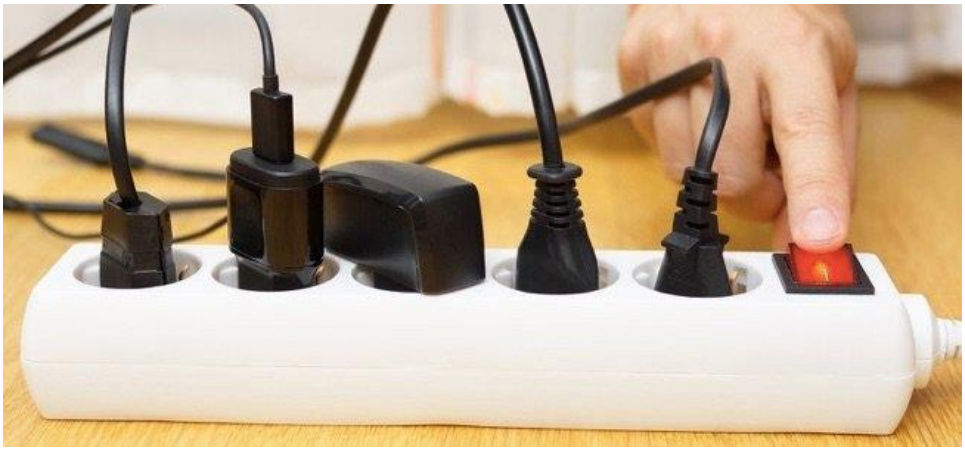
Yes No

15. Are the bulbs in the lamps CFL or incandescent bulbs? lamp 1: _____

lamp 2: _____ lamp 3: _____ lamp 4: _____

16. Let's give a CFL bulb to anyone using an incandescent bulb and explain why we did.

We know how to Save on Energy because we……..



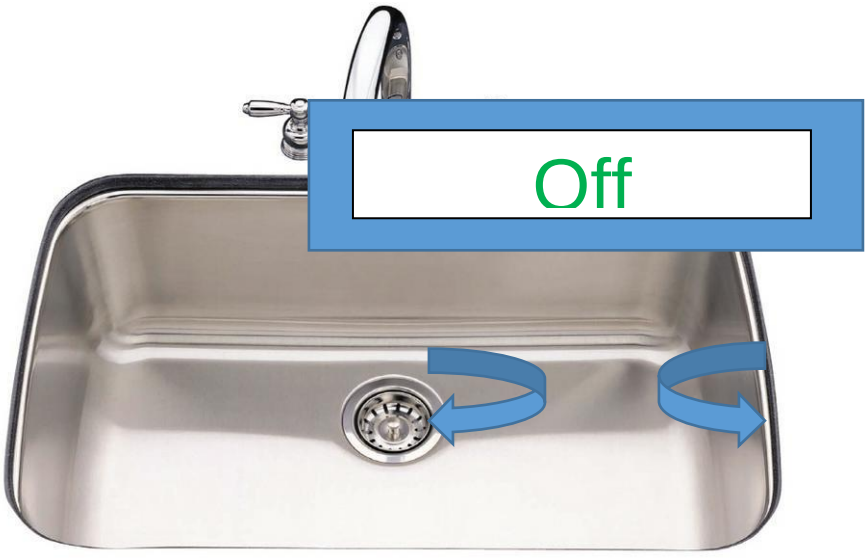
turn our classroom power strip off each night before we leave

school.

We know how to

Save on Energy.

We will turn the sinks **off** all of the way to save Water.



We know how to Save on Energy because we use sunlight during the day instead of turning on lights that we don't need.